

ADVANCED INFORMATION TECHNOLOGY (AICITSS)

COURSE MATERIAL MODULE – II



Board of Studies
The Institute of Chartered Accountants of India, New Delhi

The objective of this background material is to provide uniform reference material to the students undergoing Advanced Information Technology under AICITSS.

All attempts have been made to make the discussion simple and comprehensive. Students may note that the material has been prepared with an objective to help them in acquiring requisite knowledge and skills in the subject and gain hands on experience.

This is also expected to serve as a source of reference book in their future education and training. In case students have any suggestions to make for further improvement of the material contained herein, they may write to Board of Studies, ICAI Bhawan, A-29, Sector 62, Noida. Queries can also be sent to : helpdeskadvitt@icai.in.

All care has been taken to provide the material in a manner useful to the students. However the material has not been specifically discussed by the Council of the Institute or any of its Committees and the views expressed herein may not be taken to necessarily represent the views of the Council or any of its Committees.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any forms or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission, in writing, from the Institute.

©The Institute of Chartered Accountants of India

Revised Edition : February, 2021

ISBN : 978-81-8441-716-6

Price : ₹ 800/- (For All Modules)

Published by The Publication Department on behalf of The Institute of Chartered Accountants of India, ICAI Bhawan, Post Box No. 7100, Indraprastha Marg, New Delhi- 110 002, India.

CONTENTS

UNIT-3 : ADVANCE DATABASE CONCEPTS		
Chapter - 1	Advanced SQL Queries	3-68
Chapter - 2	Designing Forms and Reports	69-123
Chapter - 3	Building Criteria Expressions	124-159
Chapter - 4	Macros and Switchboards	160-213
UNIT-4 : ADVANCED ERP CONCEPTS		
Chapter - 1	Simplifying Advanced Transactions in Tally	217-285
Chapter - 2	TSS Features and Capabilities	286-304
Chapter - 3	E-Filing	305-388
	Practical Lab Exercises and Case Studies	389-410

UNIT-3
ADVANCE DATABASE CONCEPTS

CHAPTER

1

ADVANCED SQL QUERIES

LEARNING OBJECTIVES

- Writing Advanced Queries
 - Creating Sub-queries
 - Creating Unmatched and Duplicate Queries
 - Grouping and Summarizing Records using Criteria
 - Summarizing Data using Crosstab Query
 - Creating a Pivot Table and a Pivot Chart
- Joining Tables in Queries
- Calculated Fields

1.1 Introduction

Queries are an essential part of database. They are used to extract required data from one or more tables and present the result in a datasheet or on a Form or Report. They can be considered as questions asked to a table in a database. Access provides a graphical tool known as Query Designer to create queries. Queries are not only used to retrieve data from tables, but can also be used to insert, update or append data in tables, to filter data, to perform calculations with data, to summarize data and to automate data management tasks.

This chapter focuses on creating different types of queries and their different usage. The first part of the chapter talks about Sub-queries, in which the criterion for a query is query itself, i.e. writing a query within query. The next part of the chapter talks about working with *Query Wizard* and learning how to find unmatched data between two tables and to find duplicate rows within a table. We will also learn to create a summarised result out of queries using the crosstab queries. Crosstab queries can be taken as a tabular format of Pivot tables. This chapter also introduces the multiple views of the query and how to get query results in the form of Pivot Tables or Pivot Charts.

In addition to the above queries, we will also learn to create a query on multiple tables, specify different join types to retrieve the desired result. We can create joins between the tables using relationship window provided by Access, or we can create joins at the query design window. Access also has many functions and operators which can be used to create expressions. This chapter discusses how to use these functions to create a new column from an existing column. The chapter also highlights some of the advanced queries available in Access and illustrates their significance using case studies.



1.2 Writing Advanced Queries

Access has the capability to handle far advanced queries than the simple criteria based queries. The queries in Access not only allow users to change the existing data, but also to generate summary reports. This section discusses few advanced queries handled by Access, such as *Sub-queries*, *Crosstab Queries*, *Creating Unmatched* and *Duplicate Queries*, and also creating *PivotTable* and *PivotChart* through queries.

1.2.1 Creating Sub-queries

A *sub-query* is a query nested inside another query. We can use Sub-queries within **Select** query, **Action** query or within other Sub-queries. Sub-queries in **Select** statement can be the part of **Where** clause or **having** clause in **Group By** query. For *Action* queries, we can use Sub-queries to change the records which match some values in other tables.

Fig. 1.2.1 shows an example of a sub-query in a **Select** statement.

```
SELECT * FROM Products
WHERE ProductID IN
(SELECT ProductID FROM OrderDetails WHERE Discount >= .25);
```

Fig. 1.2.1. Subquery Example

This query retrieves all the columns from table *Products* based on the criteria that the discount on the products in the *OrderDetails* table must be greater than or equal to 25%. Notice that to present the criteria of discount for *Products*, we have used a sub-query in the WHERE clause.

Points to be noted while writing a sub-query:

- The sub-query must always be written as an SQL statement.
- The sub-query is always written in brackets ().
- If we are using the same table for the main query and sub-query, we need to provide aliases (alternate names) to the tables.
- If a sub-query is returning more than one row, the IN, ANY, ALL or EXISTS clause should be used in the WHERE statement.

1.2.1.1 Problem Scenario

Rohit is an Accountant in Apex Ltd. At the closing of the quarter, he has to check the Invoices for which the payments are made in Quarter-I of year 2008.

Solution

For the purpose of solving the above requirement, a query is created to retrieve all records from *Invoices* table for which the *Payment Date* in *Payments* table lies in Quarter-I i.e. between 1/1/2008 and 4/30/2008. Since we do not require any details from the *Payments* table, we use the table in a sub-query.



Steps for retrieving records from table INVOICES

1. Open the **Show Table** dialog box, by clicking on **Create -> Queries -> Query Design**.
2. Select the *Invoice* table from **Show Table** window and click **Add**, as shown in Fig. 1.2.2.

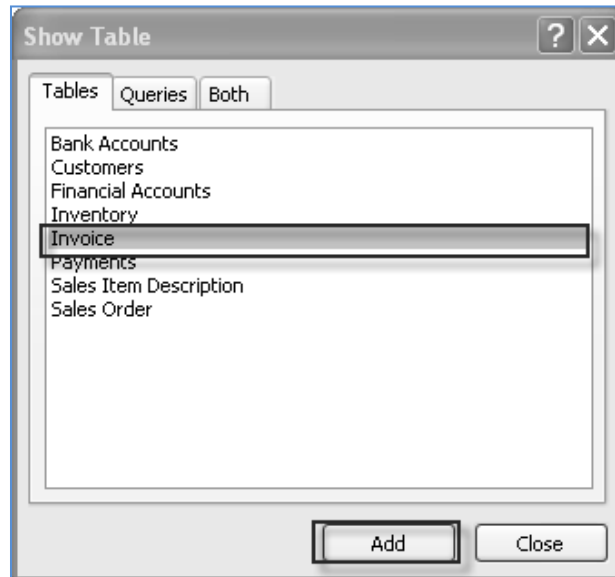


Fig. 1.2.2: Show Table window

3. Click **Close**.
4. The *Query Designer Window* appears, as shown in Fig. 1.2.3.

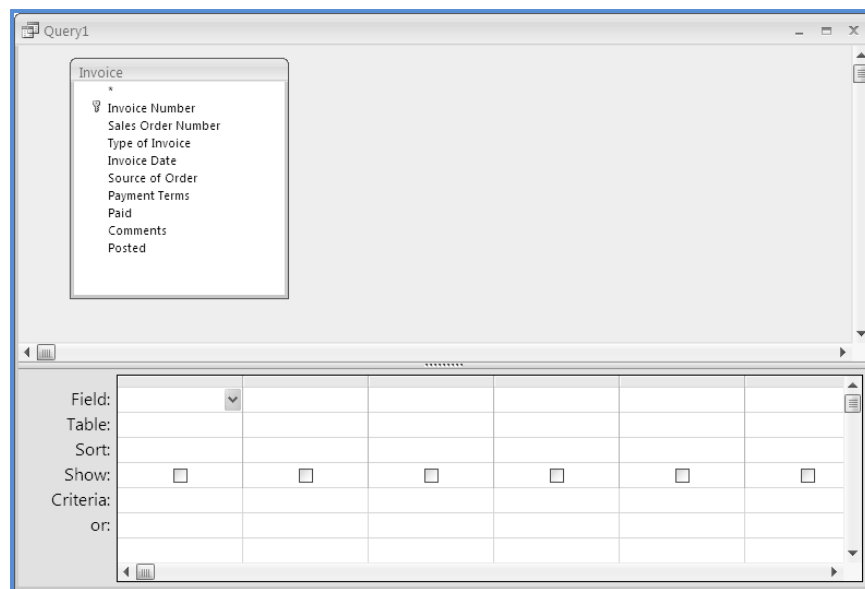


Fig. 1.2.3: Query Designer Window



5. Select the fields *Invoice Number*, *Sales Order Number*, *Type of Invoice*, *Invoice Date*, *Source of Order* and *Payment Terms* from table *Invoice* and drag them to the Columns tab as shown in Fig. 1.2.4.

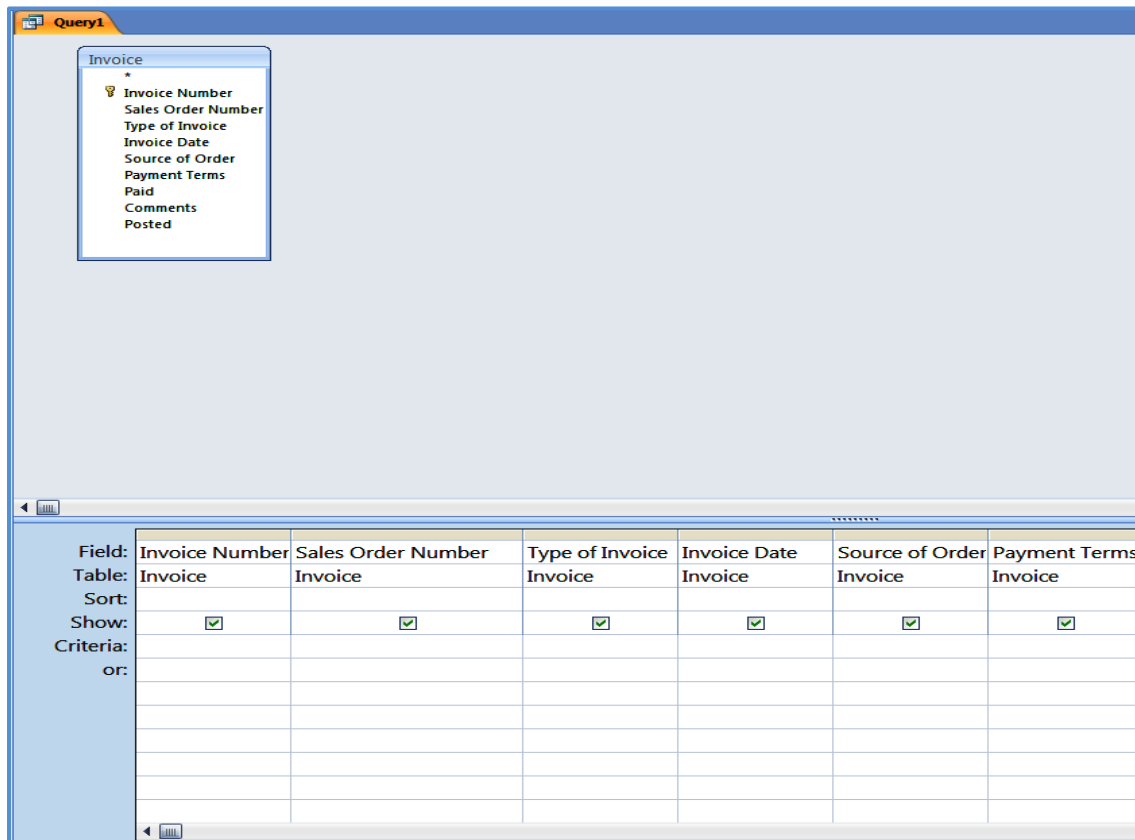



Fig. 1.2.4: Drag the required columns

6. Click the **Save** button  at *Quick Access Toolbar* to save the query. Type the name of query as *Invoices Paid Q1* as shown in Fig. 1.2.5.

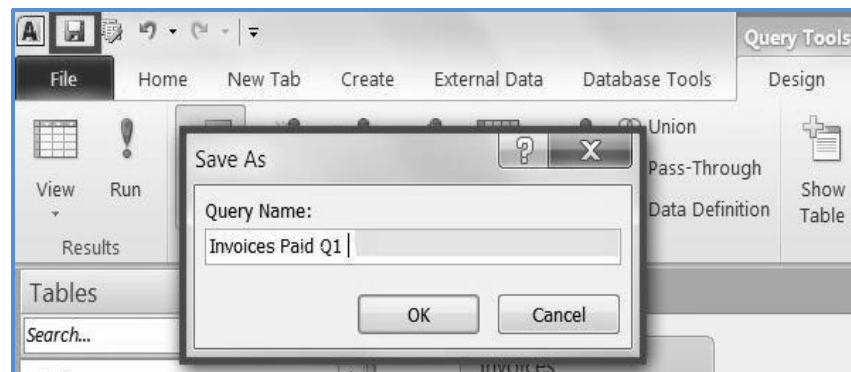


Fig. 1.2.5: Save the Query



Now we create a SQL Statement for *sub-query*. The SQL Statement for the *sub-query* can be written directly in the criteria clause with the *Select* syntax or we may create another query using *Query Designer* and then copy the generated SQL. For the current scenario, we use the latter method.

Steps for writing a query to retrieve Invoice Number from Payments where Paid Date is in Quarter-I of year 2008

1. Open the **Show Table** dialog box, by clicking on **Create -> Queries -> Query Design**.
2. Select the *Payments* table from **Show Table** window and click **Add**, as shown in Fig. 1.2.6.



Fig. 1.2.6: Show Table window

3. Click **Close**.
4. Double-click the columns *Invoice Number* and *Date Paid* so that they appear in the *Columns* tab in *Query Design* as shown in Fig. 1.2.7.

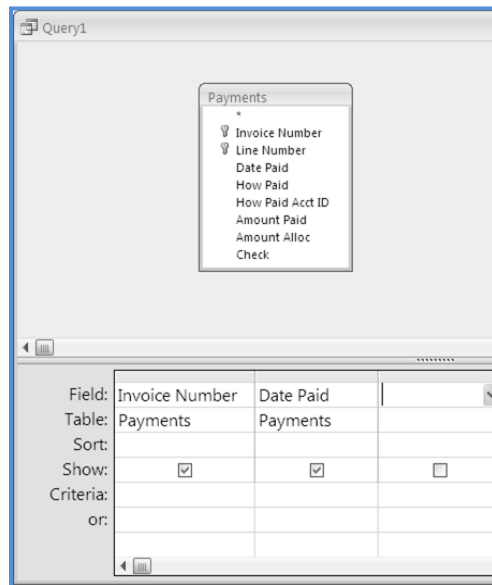


Fig. 1.2.7: Select Required columns

5. In the **Criteria** section of the *Date Paid* Column, write the criteria *BETWEEN #1/1/2008# AND #4/30/2008#* and clear the **Show** checkbox. The *Query Design* window should appear, as shown in Fig. 1.2.8.

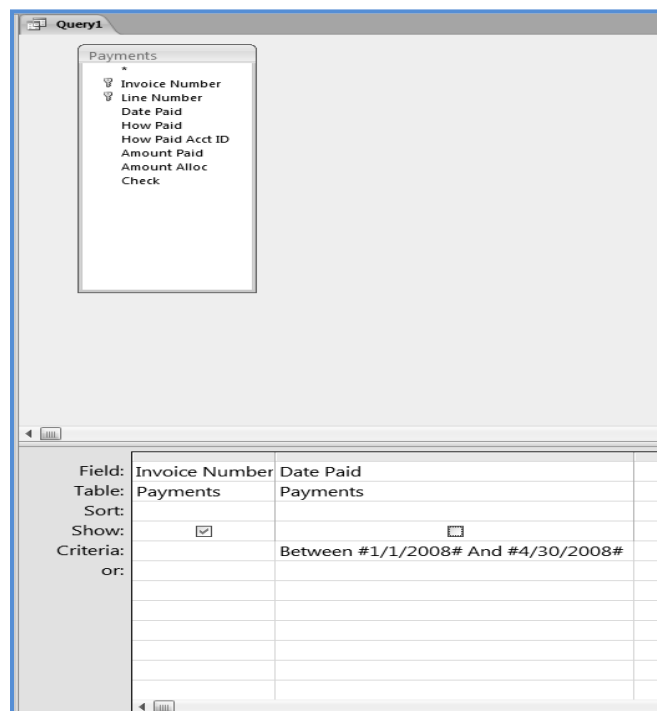



Fig. 1.2.8: Specify the criteria



6. Click the **Run** icon  in **Design -> Results** to view that the proper result is coming.
7. Click on **SQL View** from **Design -> Results -> View** drop-down to view the SQL statement of the query. The SQL statement appears for the query, as shown in Fig. 1.2.9.

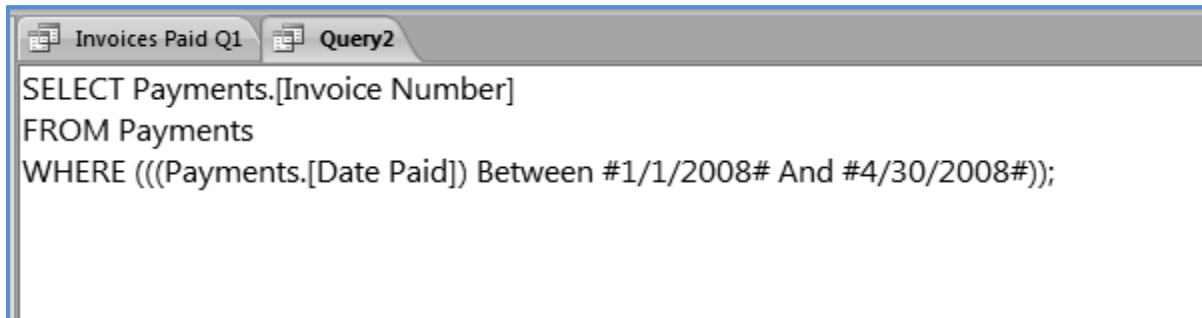


Fig. 1.2.9: Query SQL View

8. Copy the SQL statement and switch to the Query window of Invoices Paid Q1.

Steps to add a sub-query to Invoices Paid Q1 query

9. In the **Criteria** tab of *Invoice Number* column, type IN() and paste the copied query within the braces. The Query window appears, as shown in Fig. 1.2.10.

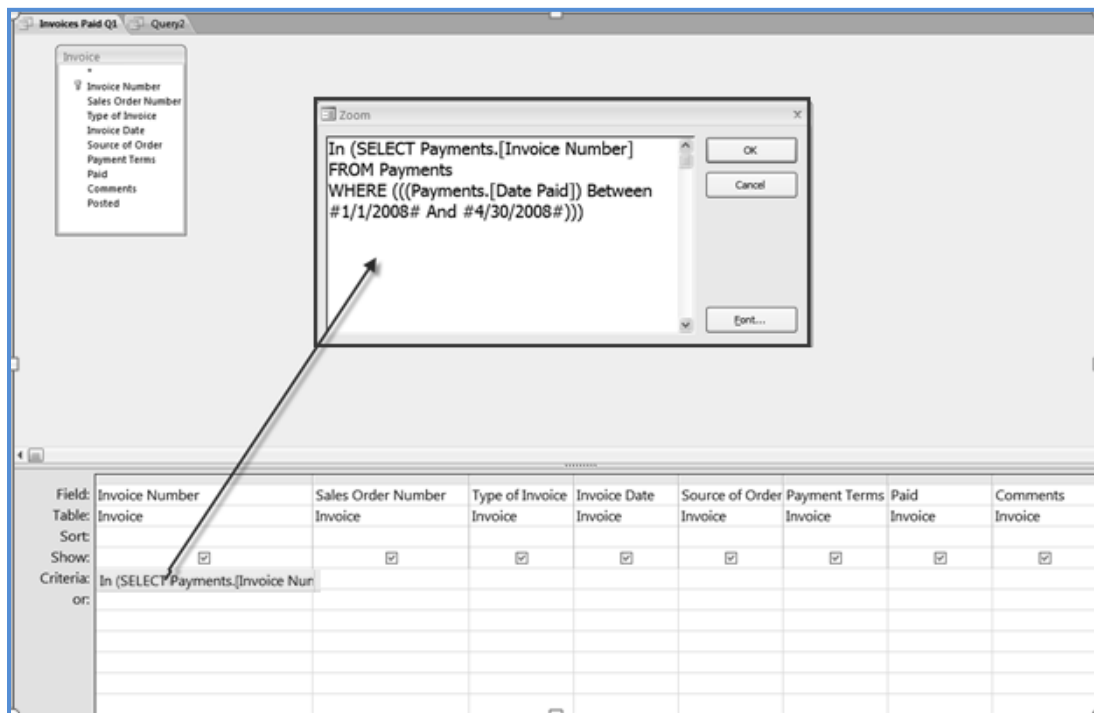


Fig. 1.2.10: Write subquery in Criteria



10. Click the **Run** icon  in **Design** -> **Results** to view that the proper result is coming.

In a similar manner as demonstrated by an example above, Sub-queries can be used as a SQL statement for criteria of *Action* queries, *Group By* queries etc.

NOTE: We can also use Sub-queries as an expression to create a new column as a query result.

1.2.2 Creating Unmatched and Duplicate Queries

Query Wizard available in Access can be used to create different types of queries. Along with several different queries, it also provides queries to find duplicate records in a table on the basis of one or more fields in a table. In a similar manner, we can create *Unmatched Query* to compare two tables and find the records that do not have matching values in given columns.

1.2.2.1 Unmatched Queries

Find Unmatched Records Query will examine the data found in two different tables/queries and compare the records based on a common field. It will return the records from the first table which do not have matching values in second table.

The easiest way to create *Unmatched Query* is by using the *Find Unmatched Query Wizard*. After the wizard builds query, we can modify the query's design to add or remove fields, or to modify joins as required.

Unmatched Query Wizard in Access asks for the names of the two tables to compare, and common field name between the tables. The wizard then confirms the fields that we wish to retrieve from the first table as a query result. Finally, the wizard prompts to enter the query name and creates the query.

This type of query can help find records that have no corresponding records in other tables. For example, we may be looking for products that have not been sold in any order or may be for customers who have not placed any orders.

1.2.2.2 Problem Scenario

Ankur Mathur, Sales Head of Apex Ltd. wishes to reduce the production of few products. To analyse which products should not be produced further, he needs to find out the products which have not been ordered so far.

Solution

For the purpose of finding the unmatched products in *Sales Item Description*, we use *Unmatched Query Wizard* and find out products from *Inventory* table which do not have a matching *Item Number* in *Sales Item Description* table.

Steps for creating Unmatched Query using Query Wizard:

1. Open the *Query Wizard* by selecting **Query Wizard** from **Create** -> **Queries**, as indicated in Fig. 1.2.11.

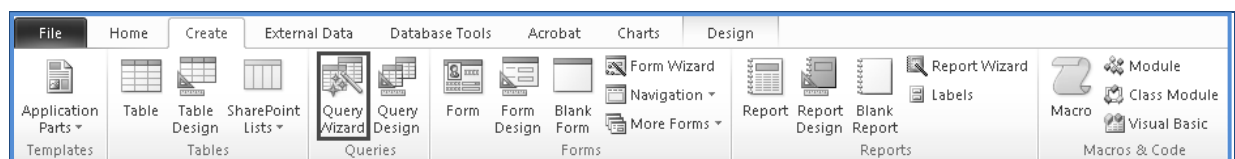


Fig. 1.2.11: Open Query Wizard



2. The New **Query** window appears, as shown in Fig. 1.2.12.

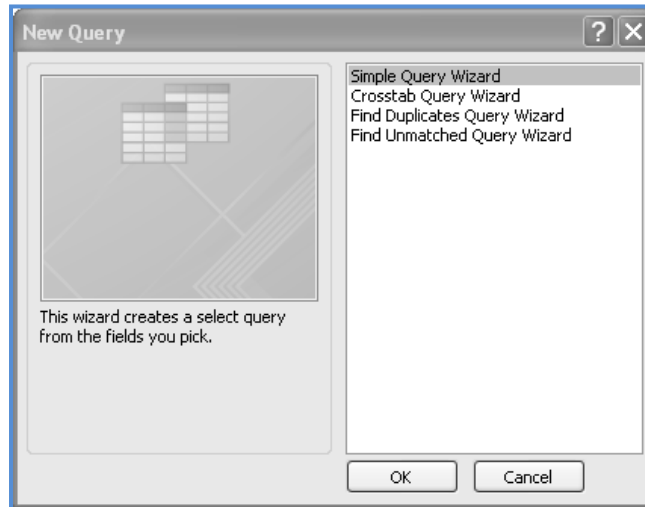


Fig. 1.2.12: New Query Dialog Box

3. Select **Find Unmatched Query Wizard** from the **New Query** window and click **OK**, as shown in Fig. 1.2.13.

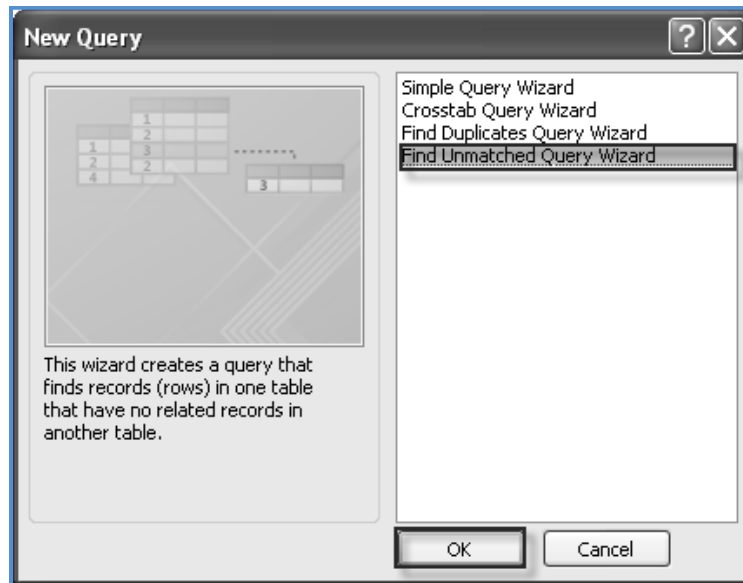


Fig. 1.2.13: Select Find Unmatched Query Wizard

4. The **Find Unmatched Query Wizard** appears. Select the table *Inventory* and click **Next**, as shown in Fig. 1.2.14.



Fig. 1.2.14: Select Table Inventory

5. Select the table *Sales Item Description* from second page of the wizard as we need to compare *Inventory* table to *Sales Item Description* table, as shown in Fig. 1.2.15. Click **Next**.

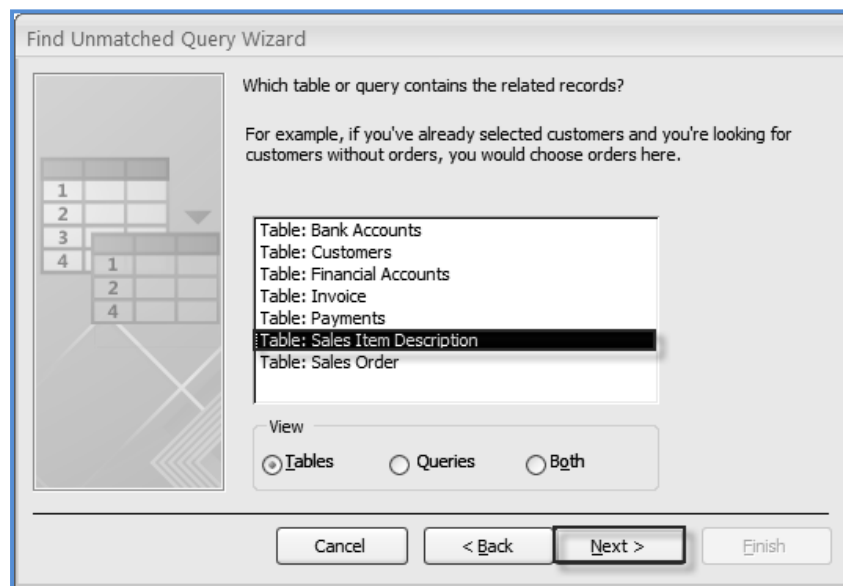



Fig. 1.2.15: Select Table Sales Item Description

6. Now, we need to mark the common field in both the tables to be compared. For this example, select the *Item Number* in both *Inventory* and *Sales Item Description* table and click  button, as



shown in Fig. 1.2.16. Click **Next** to move to next page.

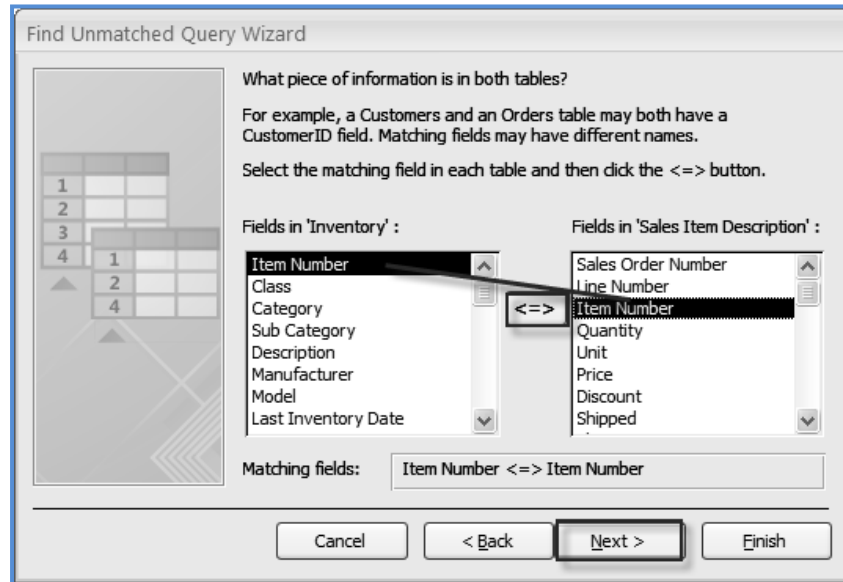


Fig. 1.2.16: Match the common fields between two tables

7. On the next page in wizard, select the columns that should be the part of query result and click **Next**. In this page, select *Item Number*, *Class*, *Category*, *Sub Category*, *Description*, *Manufacturer*, *Model* and *Cost* fields as shown in Fig. 1.2.17. Click **Next** to move to next page.



Fig. 1.2.17: Select the Fields

NOTE: Use  button to move a selected field from **Available fields** to **Selected fields**, 



button to move all fields from **Available fields** to **Selected fields**,  button to move selected field from **Selected fields** to **Available fields**,  button to move all fields from **Selected fields** to **Available fields**.

8. Name the Query as “*Products without Orders*” in the final window that appears and click **Finish** as shown in Fig. 1.2.18.



Fig. 1.2.18: Name the query

9. The result of the query appears as in datasheet form, indicating the products that do not have an order associated with them, as shown in Fig. 1.2.19.

Products without Orders							
Item Number	Class	Category	Sub Category	Description	Manufacturer	Model	Cost
\$COUPON\$	Non-Stock			Coupon			\$0.00
CLE-7333	Stock			Non Amonia Cleaning Supplies	Mr. Clean and Associates		\$4.99
FOG-5064	Stock	Truck	Accessories	Fog Lights	Truckland USA		\$49.99
GLO-33110	Stock	ATV	Accessories	Gloves without fingers	Bombay Trax Company	GL-200	\$4.74
INS-4001	Labor			Safety Inspection Services			\$0.00
KNE-0013	Stock	ATV	Accessories	Knee Pads	Trike Heaven	KP-870	\$4.87
LYN-47731	Stock	Snowmobile		Lynxer Snowmobile (2002 Model)	Lynxer Motor Corp.	2002 Lynxer 35i	\$1,300.00
PAP-8331	Non-Stock			Computer and Printer Paper	Stapled and Bound Office Supply		\$24.74
PER-8044	Stock	Boat	Accessories	Personal Cooler Attachment	Weekend Fisherman's Corp.		\$13.49
POL-0191	Stock	ATV		Polarkis Magnum 650 6x6	Polarkis Vehicle Corp.	Magnum 650 6i	\$4,998.20
PON-2001	Stock	Car		Sunfire Convertible	Pontiac	2001 Sunfire Cc	\$15,589.00
RUN-34997	Stock	Truck	Accessories	Running Boards	Truckland USA		\$13.62
SGU-0400	Stock	Snowmobile	parts	Snow Guard	Guards of Ours		\$49.99
UNI-5004	Stock	Truck	parts	Universal Joint	Dodge City Trucks	UJ-88	\$7.80
VAC-80773	Stock	Car		Car Vacuum Services			\$0.00
WAX-0477	Service	Car		Waxing Services for Cars			\$0.00
WAX-70041	Service	Truck		Truck Waxing Session			\$0.00
WIN-4001	Stock	Personal Watercraft		Windrunner 2000	Windrunner Inc.	2002 Sport Moc	\$6,275.00
*							

Fig. 1.2.19: Query Result



1.2.2.3 Duplicate Queries

The *Duplicate Queries* option creates a query that reports which records in a table are duplicated by matching one or more fields in the table. The *Query Wizard* first confirms which fields have to be used to check for duplication and then prompts to enter some other fields that may be a part of query result. Finally, Access accepts a name for the query and displays the results as a datasheet.

This type of query is useful when we have no unique indexes or primary key in the table, or the data for the table is imported from a source where we do not have mechanism to check duplicate values.

1.2.2.4 Problem Scenario

Varun Gupta, a Chartered Accountant in Apex Ltd., is required to audit the invoices and the payments. While tracking the payments he noticed that multiple invoices have been created for a single sales order. To sort out the things, he wishes to check all the sales order having duplicate invoices.

Solution

Create a *Find Duplicate Query* for table *Invoices* based on the field *Sales Order Number* so that it displays all the duplicate invoices created for a single sales order.

Steps for Finding Duplicate records in the table Invoices

1. Open the *Query Wizard* by selecting **Query Wizard** from **Create -> Queries**.
2. Select **Find Duplicates Query Wizard** from the **New Query** dialog box and click **OK**, as shown in Fig. 1.2.20.

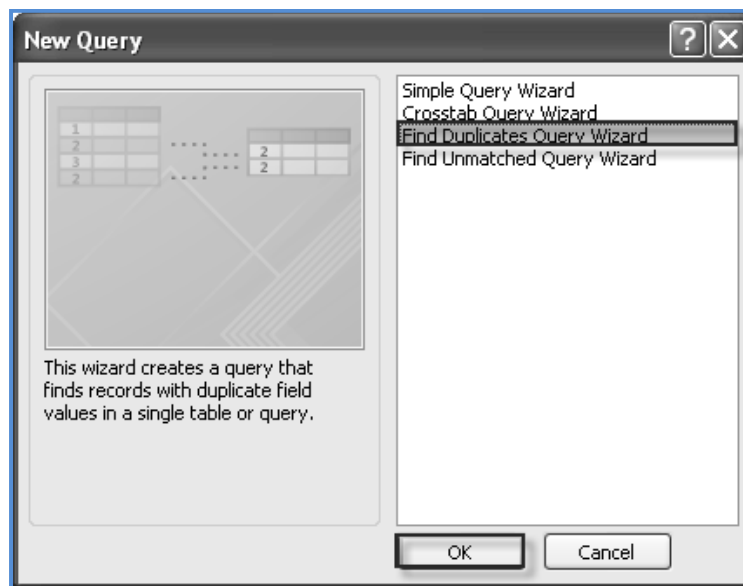


Fig. 1.2.20: Select Find Duplicates Query Wizard

3. The **Find Duplicates Query Wizard** appears. Select the table *Invoice* and click **Next** as shown in Fig. 1.2.21.

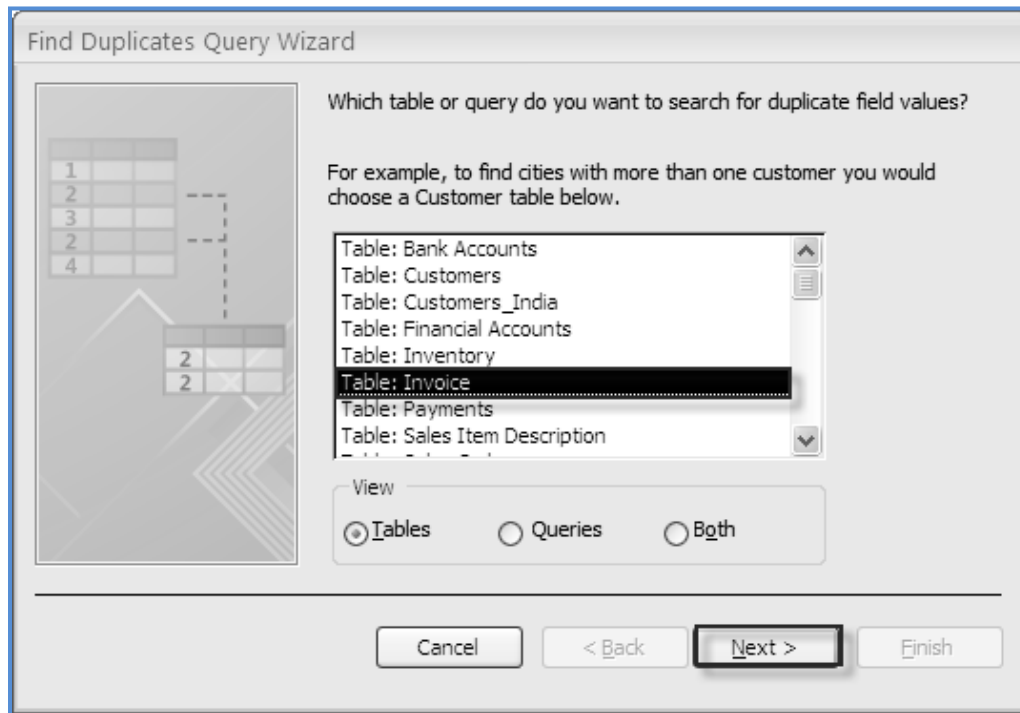


Fig. 1.2.21: Select Table Invoice

4. Select the column on the basis of which the duplicate records need to be matched and click **Next**. In this scenario, select **Sales Order Number** as shown in Fig. 1.2.22. Click **Next**.

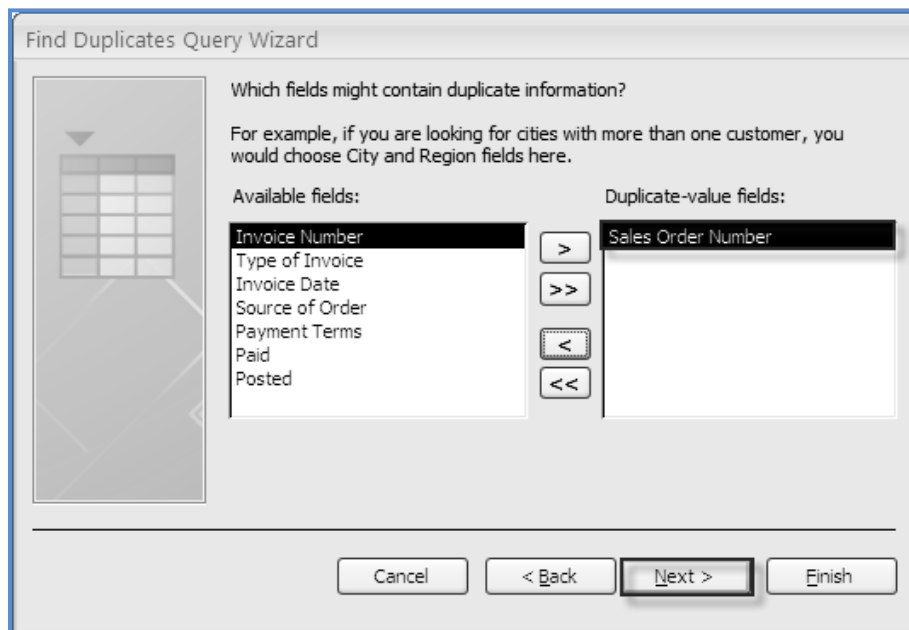


Fig. 1.2.22: Select the column for Duplicate values



5. Select the columns that should be the part of the query result and click **Next**. In this dialog box, select *Invoice Number*, *Type of Invoice*, *Invoice Date*, *Source of Order* and *Payments Terms*, as shown in Fig. 1.2.23. Click **Next**.

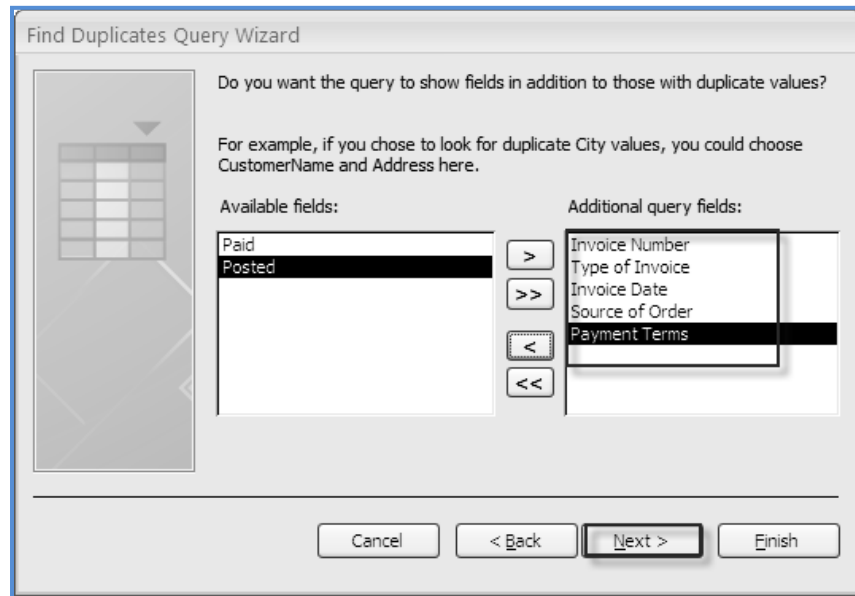


Fig. 1.2.23: Select the columns for Query Result

6. Name the Query as "*Duplicate Invoices*" in the final window that appears and click **Finish**, as shown in Fig. 1.2.24.

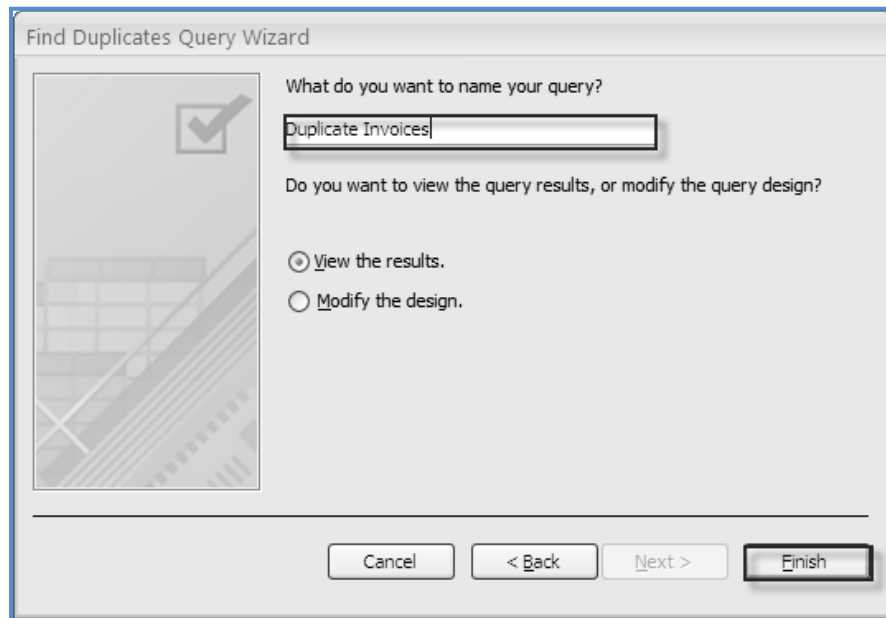


Fig. 1.2.24: Name the Query



7. The result of the query appears in Datasheet form with all the Sales Order having multiple invoices, as shown in Fig. 1.2.25.

NOTE: We can create *Find Duplicate Query* by matching records on multiple fields also. This query can also be used to find duplicate records in a table by matching records on all the fields (considering that we can match only 10 fields at a time).

Duplicate Invoices					
Sales Order Numb	Invoice Numb	Type of Invoice	Invoice Date	Source of Order	Payment Terms
00001	A2000201-56	Product Detail	2/1/2008	POS	Cheque
00001	990622-08	Service	6/22/2007	Mailings	1/10 Net 30
00001	2000105-06	Product Detail	1/5/2008	POS	Cash
00001	010228-01	Product Detail	2/28/2009	Newspaper	Credit Card
00001	000714-01	Product Detail	7/14/2008		Check
000111-03	000111-03	Product Detail	1/11/2008	Internet	Cash
000111-03	A2000720-01	Product Detail	12/28/2007	POS	Lease
000311-01	000311-01	Product Detail	3/11/2008	Referral	2/10 Net 45
000311-01	A2000811-08	Product Detail	12/30/2007	POS	1/10 Net 30
000312-02	A2000215-23	Product Detail	12/30/2007	POS	Lease
000312-02	000312-02	Product Detail	3/12/2008		PO Net 30
000407-01	A2000215-27	Product Detail	12/30/2007	POS	1/10 Net 30
000407-01	000407-01	Product Detail	4/7/2008		Lease
000423-02	000423-02	Professional	4/23/2008	Referral	2/10 Net 45
000423-02	A2000620-18	Product Detail	12/30/2007	POS	1/10 Net 30
000423-02	A2000214-05	Product Detail	2/14/2008	POS	Cheque
000511-01	A2000106-01	Product Detail	1/6/2008		Cash
000511-01	990413-01	Product Detail	4/13/2007	Internet	Credit Card
000511-01	2000105-12	Product Detail	1/5/2008	POS	Cash
000528-07	000528-07	Product Detail	5/28/2008		Check
000528-07	A2000201-04	Product Detail	2/1/2008	POS	Online Payment
000528-07	000111-01	Product Detail	9/17/2007		Lease

Fig. 1.2.25: Query Result

1.2.3 Grouping and summarising Records using Criteria

Access provides queries that can be used for obtaining the aggregated results instead of individual records. These queries may be helpful in retrieving count of records, sum, average, and maximum or minimum of the values in a column. These queries are known as *Group By* queries or *Totals Query*. Such queries can return the aggregated results from the entire table or the records of the table filtered by a certain criteria.

1.2.3.1 Grouping and summarising Records

At times, it is required to retrieve information in tables based on a group of one or more fields. For example, total number of contacts from a particular area or a sum of all the payments received in a month. Access provides a method to obtain the desired result using queries without the need of any complex programming. It calculates the totals using several aggregate functions.

Access performs grouping of the records by using **Totals** option available in the **Query Tools** tab, as shown in Fig. 1.2.26.

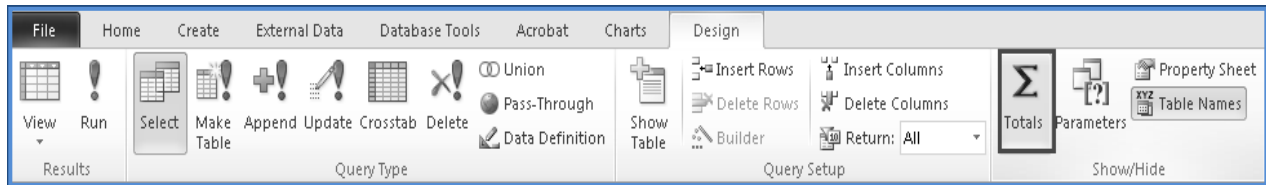


Fig. 1.2.26: Totals option in Design tab

The **Totals** option adds a new row in the *Query Designer* window which enables the application of summary functions to columns as indicated in Fig. 1.2.27.

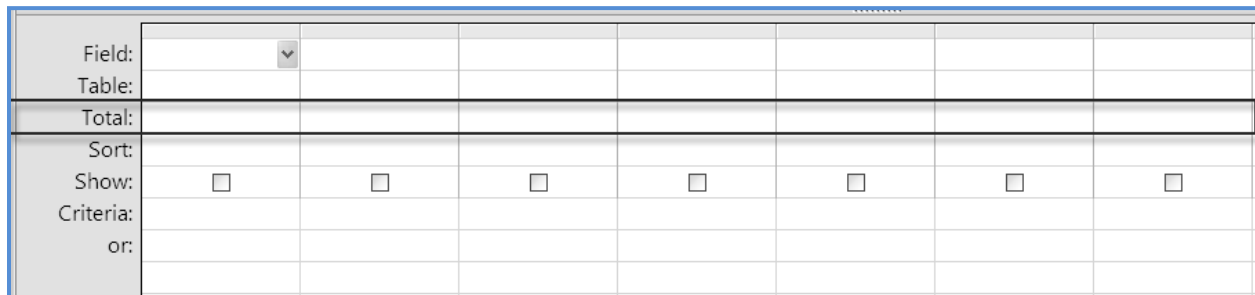


Fig. 1.2.27: Total Row added

A list of *Aggregate Functions* that can be used with *Totals* Query is given in Table 1.2.1.

FUNCTION NAME	EXPLANATION
Sum()	Returns the sum of numeric data for a column or set of values in a column
Count()	Counts the set of values that satisfy the given criteria
Avg()	Returns average of numeric data for a column or set of values in a column
Max()	Returns a maximum value from a set of values
Min()	Returns a minimum value from a set of values
Var()	Returns the variance of values in a column or set of values
Stdev()	Returns a standard deviation for a set of data values
First()	Returns the first value from a list of text values
Last()	Returns the last value from a list of text values

Table 1.2.1: Aggregate Functions

1.2.3.2 Problem Scenario

The Country Head in Apex Ltd. wishes to compute the sales volume of its products. He also would like to see the number of orders placed for each product, so that they can focus on products with greater sales volume.



Solution:

Create a Total query that calculates the count of orders placed for each product and arrange them in descending order of the counts so as to find the products which are sold more.

Steps for creating a total query

1. Open the *Query Design* window by selecting **Query Design** from **Create -> Queries**, as indicated in Fig. 1.2.28.

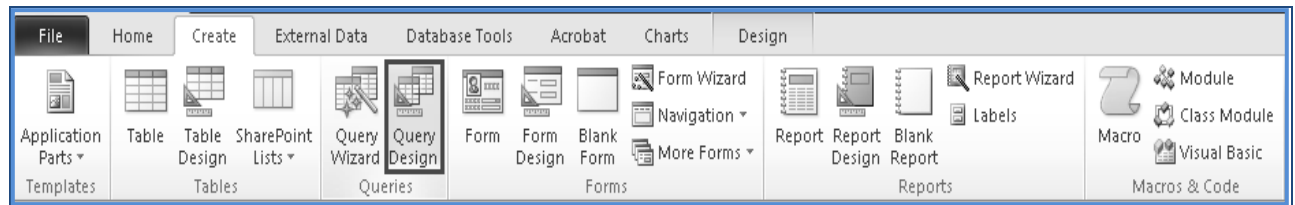


Fig. 1.2.28: Opening the Query Design window

2. Select the *Inventory* and *Sales Item Description* tables from **Show Table** dialog box and click **Add**, as shown in Fig. 1.2.29.

NOTE: Multiple tables can be selected in the **Show Table** window by pressing **CTRL** key and then selecting the tables.

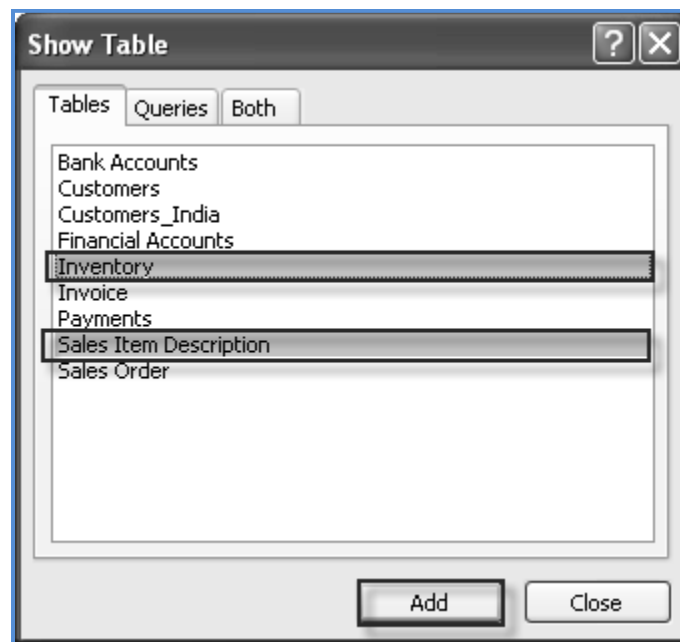


Fig. 1.2.29: Show Table window

3. Click **Close**. We can see the two tables with a 1:∞ relationship. This relationship has been created while creating the database.



4. Click the **Totals** button in the **Show/Hide** group on the **Design** tab, as shown as Fig. 1.2.30.

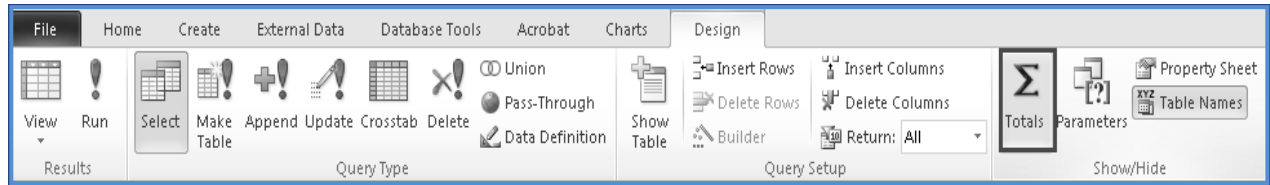


Fig. 1.2.30: Click on Totals button

5. Select the fields *Category* and *Item Number* from *Inventory* table and drag them to the Columns tab. Similarly, select fields *Sales Order Number* from *Sales Item Description* table and drag it to Columns tab. The *Query Window* appears as shown in Fig. 1.2.31.

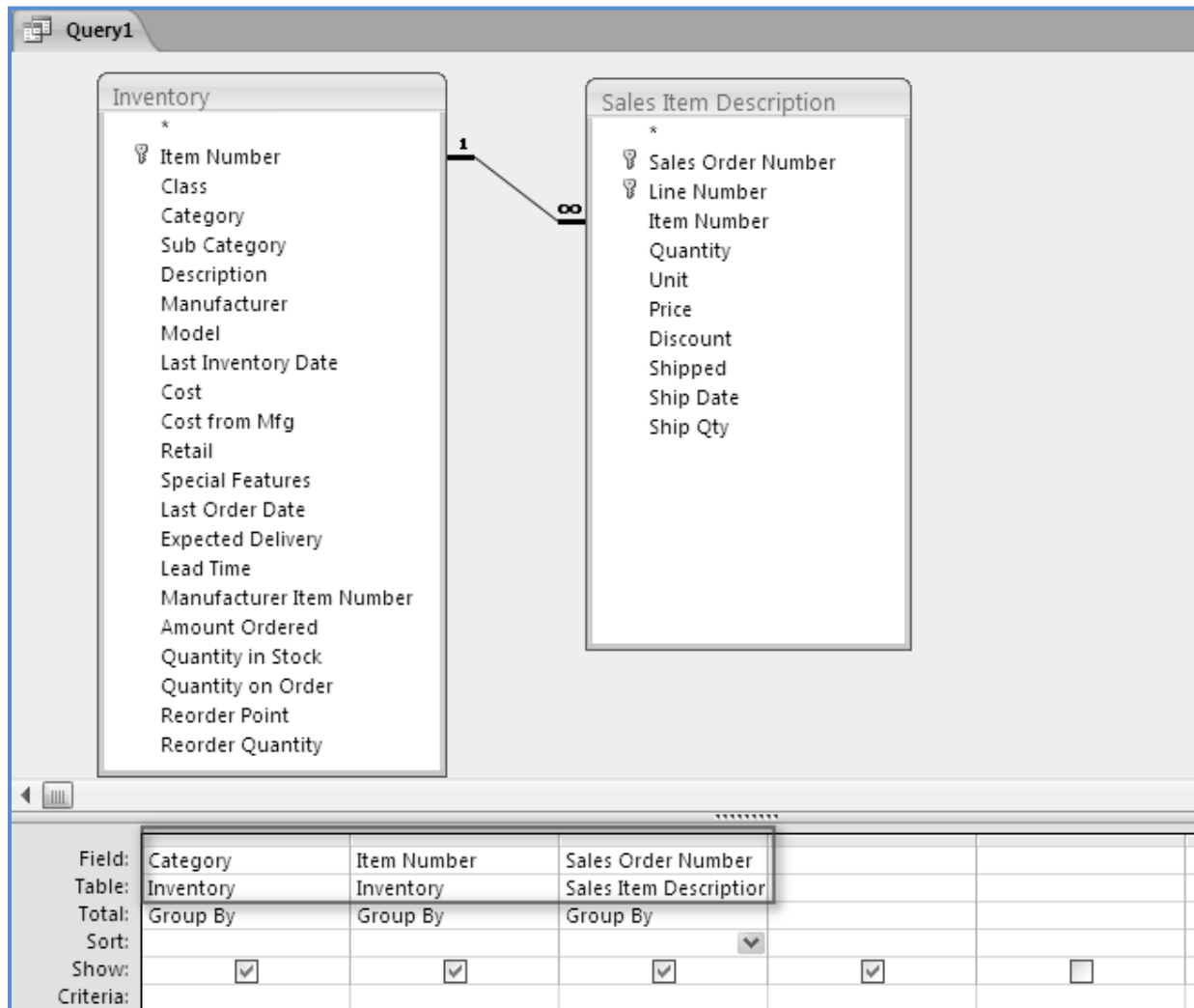


Fig. 1.2.31: Select the required columns



6. In the column *Sales Order Number*, change the **Group By** function to **Count**, as shown in Fig. 1.2.32.

Notice that we have set **Group By** on columns *Category* and *Item Number*, so that the query first groups all the items according to their category and then all the items in same category on the basis of *Item Number*. The **Count** function with *Sales Order Number* indicates that we wish to compute the count of total Sales Orders for a group created.

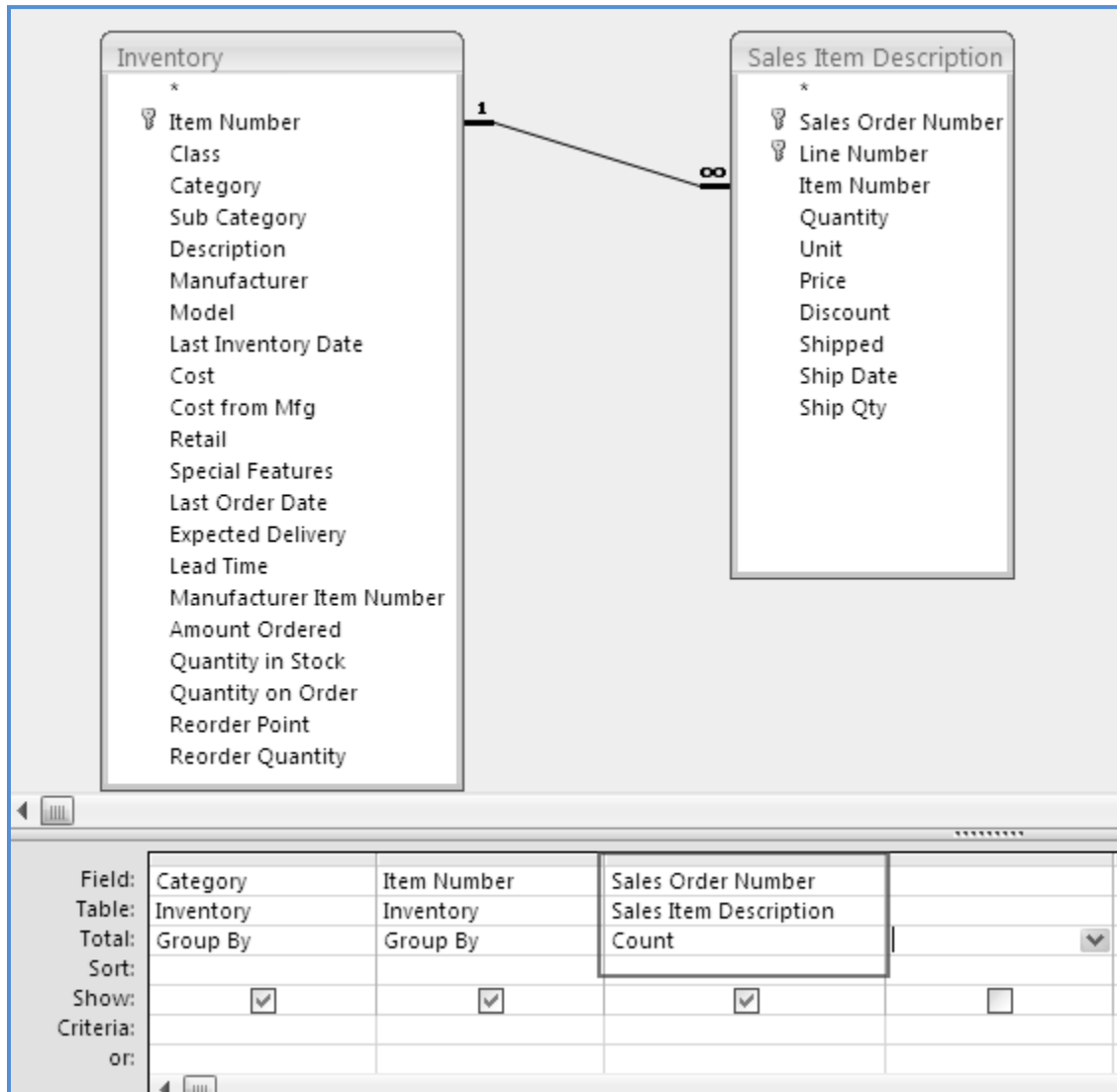


Fig. 1.2.32: Set the Totals Function

7. Click **Run** in **Design** -> **Results** to view the results. The result of the query appears, as shown in Fig. 1.2.33.



Category	Item Number	CountOfSales Order Number
ATV	LEG-30012	1
ATV	SAF-0011	2
ATV	SPA-47315	3
ATV	TIR-16443	1
ATV	TRA-0150	1
Boat	BAP-8800	3
Boat	BAS-5400	2
Boat	BOA-2003	5
Boat	BOA-87013	2
Boat	CAN-87004	3
Boat	CUS-0115	4
Boat	FIS-9700	2
Boat	LIF-5001	2
Boat	MAR-5040	2
Boat	OAR-00345	3
Boat	PAD-80773	2
Boat	PON-90012	3
Boat	TRO-80114	2
Car	ALE-8011	1
Car	ALT-6011	3
Car	BAT-9115	1
Car	CAR-7006	4
Car	CAV-2002	2
Car	FIL-80334	2
Car	FOR-4000	1

Fig. 1.2.33: Query Result

NOTE: The Query result just shows all the products arranged in group of Category and Item Number and their volume sold. To get the products which are sold more, the column *CountOfSales Order Number* has to be arranged in order that it appears from most sold to least sold.

8. Reopen the query in *Design View* by clicking **Design View** from **Home** -> **Views**.
9. In the column *Sales Order Number*, set the sort order as descending, as shown in Fig. 1.2.34.

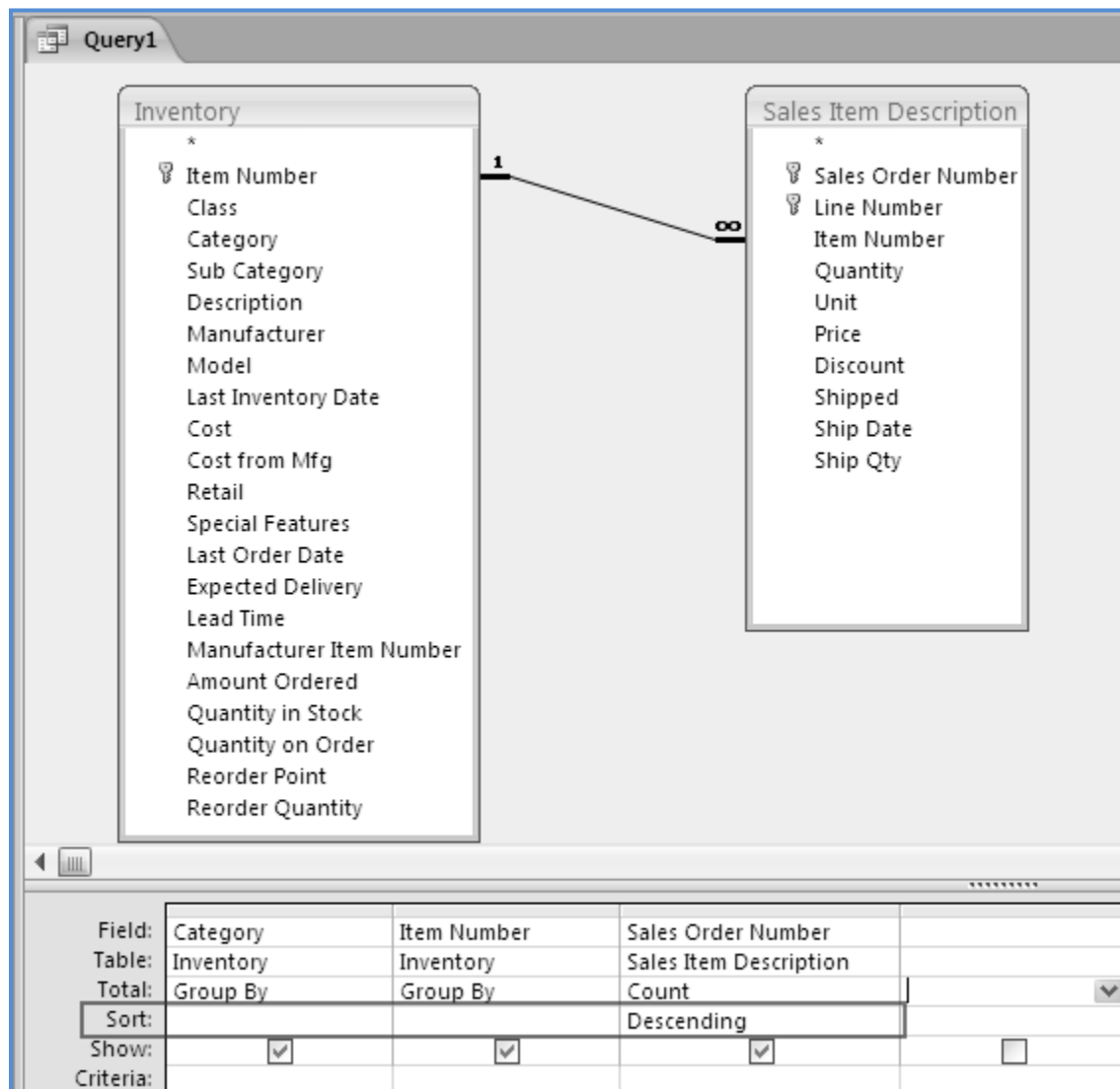



Fig. 1.2.34: Set the sort order


10. Click **Run**  in **Design -> Results** to view the result. The result appears as shown in Fig. 1.2.35.



Category	Item Number	CountOfSales Order Number
Truck	AIR-4615	12
Personal Watercraft	PAT-70804	5
Boat	BOA-2003	5
Car	CAR-7006	4
Snowmobile	SNO-8005	4
Truck	BLA-0001	4
Snowmobile	ALF-9000	4
Boat	CUS-0115	4
Personal Watercraft	LIF-05113	3
Boat	CAN-87004	3
Personal Watercraft	JET-5004	3
Boat	OAR-00345	3
Boat	PON-90012	3
Car	ALT-6011	3
ATV	BEA-1664	3
Personal Watercraft	WET-0133	3
ATV	CLU-0257	3
Truck	SUV-87031	3
Truck	BUG-2000	3

Products sold
most appear on
Top

Fig. 1.2.35: Query Results sorted according to sales of Product

- Click the **Save** button  on *Quick Access Toolbar* to save the query. Type the name of query as *Product Sales Volume*.

NOTE: Queries are required to be saved for future use if the same result is desired again; it saves the effort and time of recreating the query.

1.2.3.3 Applying Criteria to Records

A criterion limits the records that are displayed as result, on the basis of values in a field. A criterion in Total queries can be created against *Group By*, *Aggregate Total*, *Non-Aggregate Total* fields. For *Group By* and *Aggregate Total*, criteria can be mentioned using **Criteria** tab of Query Design window. For the *Non-Aggregate Total* field, the criteria can only be specified using the *Where* clause instead of *Group By* or *Aggregate* function in *Total* tab of Query Design window.

Using any one, any two, or all three of these criteria, the scope of Total query can be limited to finite criteria.

1.2.3.4 Problem Scenario

Considering the problem of retrieving Sales volume of Products as discussed in Section 2.2.3.1, Country Head wants to have a look at only the products with at least an order count of three. The management authority also thought of maintaining the products which are cheaper and have more sales volume.

Solution

Update the Total query *Product Sales Volume* created above and apply criteria ">=3" on the *Sales Order Number* count to ensure that only the products with at least an order count of three are retrieved as a query result. Also, add criteria "<50" to the *Cost* field of the products so that management can have a view on the cheaper products.



1. Open the query *Product Sales Volume* in Design view. To do this, right-click the query and select *Design View*.
2. In the column *Sales Order Number*, type ">=3" in the Criteria tab as shown in Fig. 1.2.36.

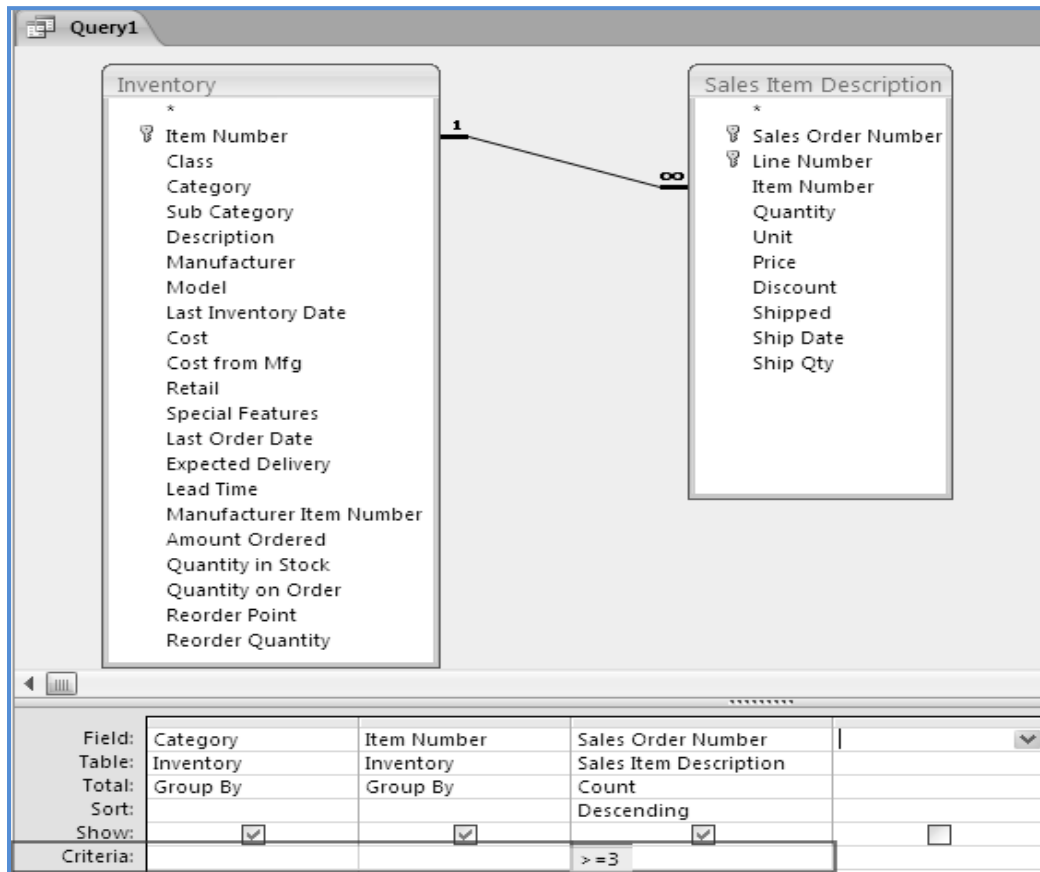



Fig. 1.2.36: Insert Criteria for Sales Order Number

3. Click **Run**  in **Design -> Results** to view the result. The result of the query appears as shown in Fig. 1.2.37.



Category	Item Number	CountOfSales Order Number
Truck	AIR-4615	12
Personal Watercraft	PAT-70804	5
Boat	BOA-2003	5
Car	CAR-7006	4
Truck	BLA-0001	4
Snowmobile	SNO-8005	4
Snowmobile	ALF-9000	4
Boat	CUS-0115	4
ATV	CLU-0257	3
ATV	ELB-7701	3
ATV	SPA-47315	3
Boat	BAP-8800	3
Boat	CAN-87004	3
Boat	OAR-00345	3
ATV	BEA-1664	3
Car	ALT-6011	3
Truck	SUV-87031	3
Personal Watercraft	JET-5004	3
Personal Watercraft	LIF-05113	3
Personal Watercraft	WET-0133	3
Truck	BUG-2000	3
Boat	PON-90012	3

The results have discarded values less than 3

Fig. 1.2.37: Query Result for Products having at least 3 Sales Orders

Now, include only the products which cost less than 50.00 in the query result. Since *Cost* is a non-aggregate field, the criteria for the *Cost* is included in the *Where* clause of **Total** tab.

- Double-click the field *Cost* in the *Inventory* table so as to include it into the **Field** tab of *Query Design* window.
- Change the *Group By* function of column *Cost* to *Where* clause in **Total** tab and write "<50" in the **Criteria** tab, as shown in Fig. 1.2.38.

Note that the **Show** checkbox is cleared as *Cost* is a non-aggregate field and not a part of the query result.

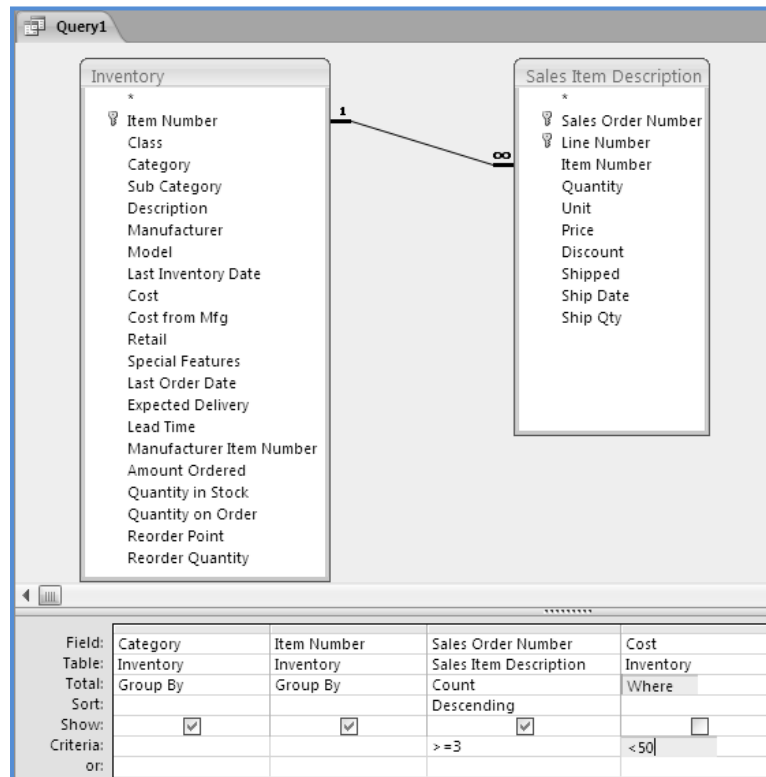


Fig. 1.2.38: Products with cost <50

6. Click **Run** in **Design** -> **Results** to view the result of the query, as shown in Fig. 1.2.39.

Query1

Category	Item Number	CountOfSales Order Number
Truck	AIR-4615	12
Personal Watercraft	PAT-70804	5
Boat	BOA-2003	5
Snowmobile	SNO-8005	4
Car	CAR-7006	4
Boat	CUS-0115	4
Truck	BUG-2000	3
Personal Watercraft	WET-0133	3
Personal Watercraft	LIF-05113	3
Car	ALT-6011	3
Boat	OAR-00345	3
ATV	SPA-47315	3
ATV	ELB-7701	3

Fig. 1.2.39: Query Result



7. Click **Save**  at *Quick Access Toolbar* to save the query.

1.2.4 Grouping and summarizing Records using a Crosstab Query

Crosstab query is an excellent analytical tool. It is a special type of query that can be created to describe one numerical quantity in terms of two other fields. Crosstab queries are useful for summarizing information, and are somewhat similar to pivot tables in MS-Excel.

For example, we might want to have a table that contains the sales figures of entire inventory for the whole year, and the amount of money that is made per product during each month of the year. In this case, a crosstab query would be the right way to display the information.

Access provides an option to create *Crosstab query* through *Query Wizard*. Each crosstab query will include one or more Row Heading, a single Column Heading and a Value to be displayed at the intersection of row and column.

1.2.4.1 Problem Scenario

The company Apex Ltd. wishes to revise the credit limit of its customers. For this purpose, Ashish, the PRO needs a summary report that indicates the count of orders placed by each customer in every month of last financial year i.e. 2011-2012.

Solution

To obtain the desired summary report, create a *Crosstab query* on table *Sales Order* with month of *Sales Date* as row heading, *Customer Number* as column heading and count of *Sales Order Number* as values. We create this query using the *Query Wizard*.

Steps for creating Crosstab queries

1. Open the *Query Wizard* by selecting **Query Wizard** from **Create -> Queries**
2. Select **Crosstab Query Wizard** from the **New Query** dialog box and click **OK** as in Fig. 1.2.40.

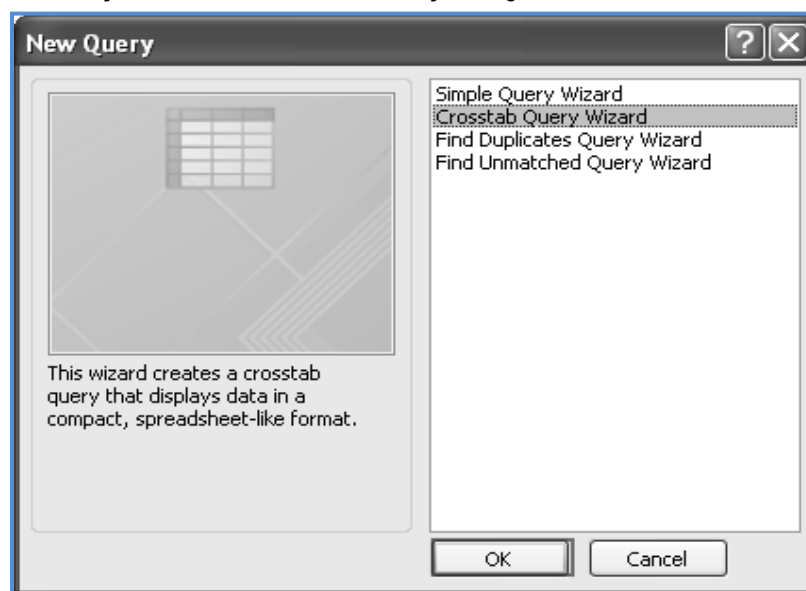


Fig. 1.2.40: Select Crosstab Query Wizard



3. The **Crosstab Query Wizard** appears. Select the table **Sales Order** and click **Next** as shown in Fig. 1.2.41.

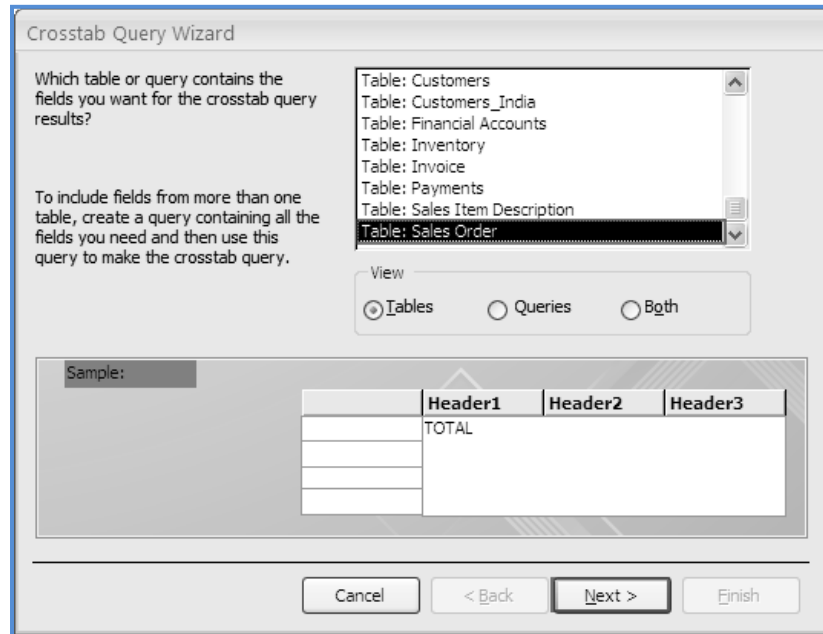


Fig. 1.2.41: Select Table Sales Order

4. The next page in **Query Wizard** confirms the column to be taken as Row Heading. In this window, select the column **Sales Date** as shown in Fig. 1.2.42 and click **Next**.



Fig. 1.2.42: Select column Sales Date for Row Heading



5. Select the column to be taken as Column Heading in the next window of the *Query Wizard* that appears. In this window, select the column *Sold to Customer* as shown in Fig. 1.2.43 and click **Next**.

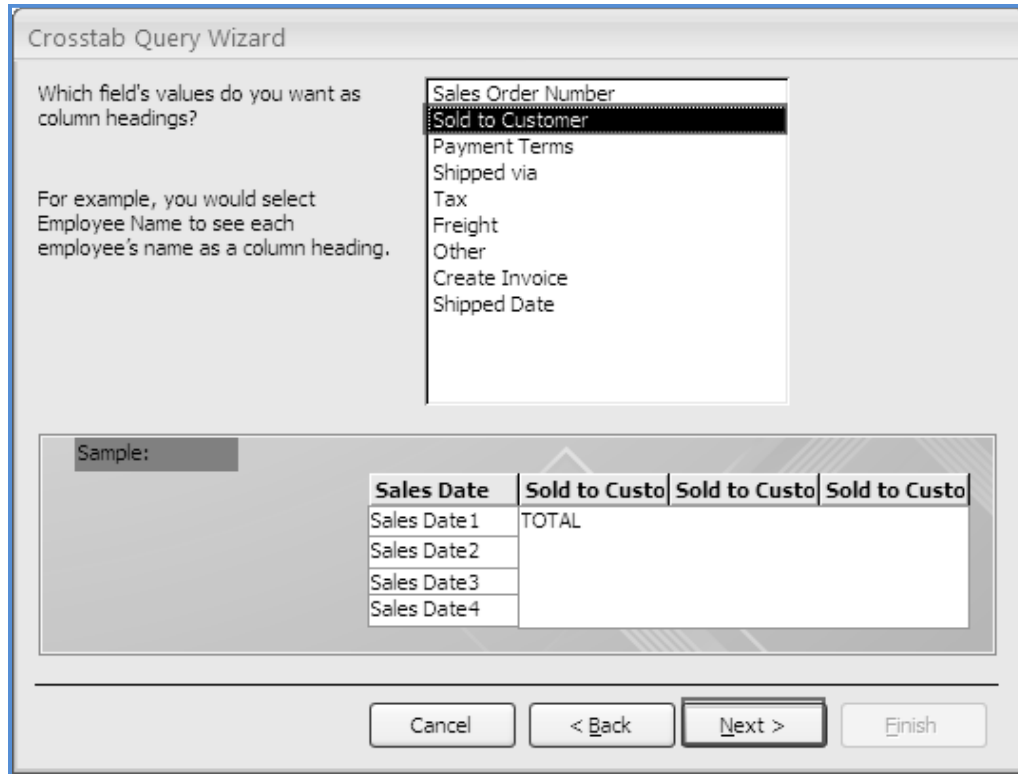


Fig. 1.2.43: Select column Sold to Customer for Column Heading

6. Next page in the wizard prompts to specify the values that should appear on the intersection of rows and columns. Select the column *Sales Order Number* from the **Fields** tab and **Count** from the **Functions** tab in this page, as shown in Fig. 1.2.44. Click **Next**.

NOTE: This page has a checkbox **Yes, include row sums**; which if checked, allows the inclusion of the grand total of values in the row as a column in the query result.



Crosstab Query Wizard

What number do you want calculated for each column and row intersection?

For example, you could calculate the sum of the field Order Amount for each employee (column) by country and region (row).

Do you want to summarize each row?

☒ Yes, include row sums.

Fields:

- Sales Order Number
- Payment Terms
- Shipped via
- Tax
- Freight
- Other
- Create Invoice
- Shipped Date

Functions:

- Count
- First
- Last
- Max
- Min

Sample:

Sales Date	Sold to Custo	Sold to Custo	Sold to Custo
Sales Date1	Count(Sales Order Number)		
Sales Date2			
Sales Date3			
Sales Date4			

Cancel < Back Next > Finish

Fig. 1.2.44: Select Sales Order Number Count as values

- Write the name for the query as "Customer-Month wise Sales" in the final window that appears and click **Finish**, as shown in Fig. 1.2.45. We can also choose the default query name that the wizard displays.

Crosstab Query Wizard

What do you want to name your query?

Customer-Month wise Sales

That's all the information the wizard needs to create the query.

Do you want to view the query, or modify the query design?

☒ View the query.

☐ Modify the design.

Cancel < Back Next > Finish

Fig. 1.2.45: Name the query



8. The result of the query appears in Datasheet form, as shown in Fig. 1.2.46.

Customer-Month wise Sales								
Sales Date	Total Of Sale	ALS-0034	BIL-0042	BRU-0001	CHU-0017	DAL-0029	DER-0008	END-0010
16-Feb-07	1							1
11-Jan-08	19	4	1			1	3	
15-Jan-08	2			1				
23-Jan-08	1							
16-Feb-08	1							
05-Mar-08	1							
11-Mar-08	1							
12-Mar-08	2		2					
16-Mar-08	1			1				
04-Apr-08	1							
07-Apr-08	1				1			
08-Apr-08	1							
09-Apr-08	1							
11-Apr-08	1							
12-Apr-08	2					1		1
16-Apr-08	1	1						
17-Apr-08	1							
23-Apr-08	1		1					
05-May-08	2			1	1			
11-May-08	1							
22-May-08	1				1			
28-May-08	1			1				

Fig. 1.2.46: Query Result

NOTE: The query result is not as desired as it displays the values on the basis of the Sales Date and not on Sales Month. To view these results on the basis of Sales Month, we are required to make changes in the query design and change the column *Sales Date* to the *Month (Sales Date)* and also provide a criterion that the months must be in last financial year.

Steps to group results on Sales Order Month

1. Reopen the query in design view by clicking the **Design View** from **Home -> Views**.
2. Click on field *Sales Date* and write the expression *Sales Month: Month ([Sales Date])* in **Field** tab as shown in Fig. 1.2.47.

NOTE: We can use the function **Month Name()** to get names of month instead of numbers in query results.

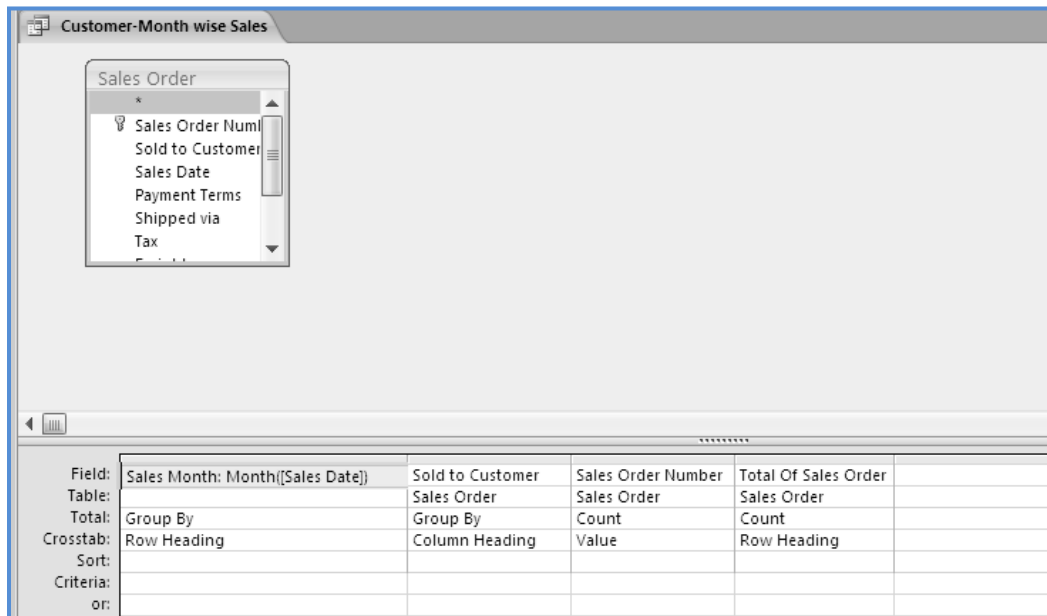


Fig. 1.2.47: Change the expression of field Sales Date

Steps to provide the criteria for last financial year

1. Double-click the column *Sales Date* from table *Sales Order* such that it appears in **Field** tab. Change the value of **Total** tab to *Where* and add the expression **Between 4/1/2011 AND 3/31/2012** to the **Criteria** tab as shown in Fig. 1.2.48.

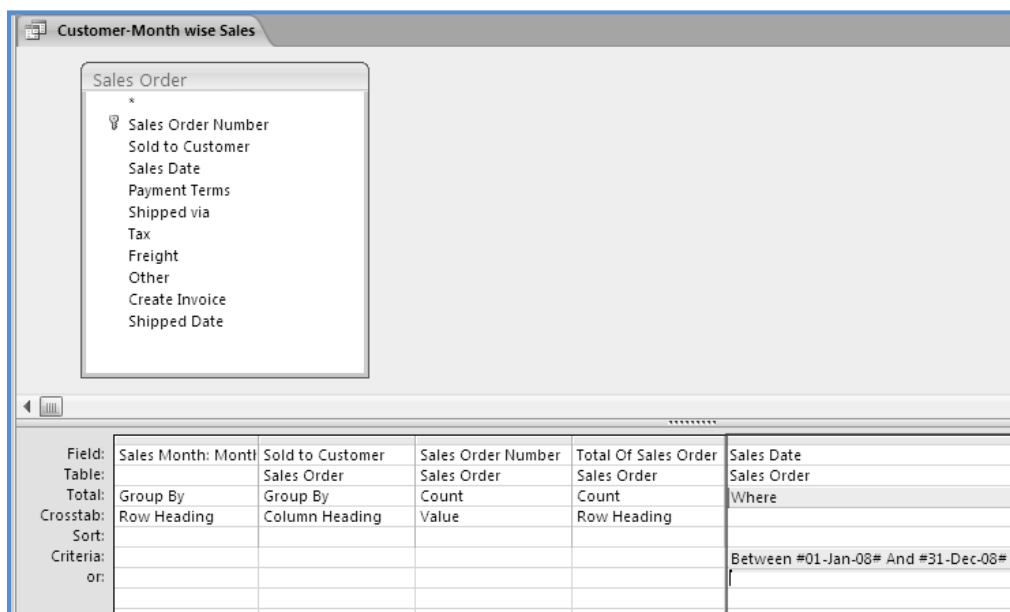


Fig. 1.2.48: Provide a criteria to Sales Date column



NOTE: The Access query window has changed the criteria expression suitable to match column values.

- Click **Run** in **Design** -> **Results** to view the modified result as shown in Fig.1.2.49.

Sales Month	Total Of Sales	ALS-0034	BIL-0042	BRU-0001	CHU-0017	DAL-0029	DER-0008	END-0010	FRE-0048
1	17	4	1	1	2	1	3	2	3
2	2			1				1	
3	4		2	1				1	
4	9	1	1	3	1	1		1	1
5	6			2	2			1	1
6	8	1		1	1	1		1	3
7	6			1	2	1		2	
8	7	1			1		1	3	1
9	3							2	1
10	2		1					1	
11	1						1		
12	3							2	1

Fig. 1.2.49: Query Result

NOTE: The result of the query appears as a 3-dimensional table with *Months* on rows, *Customer No.* on columns and the *Count of orders* as values.

Crosstab Queries are capable of handling much more complex calculations. These queries can be based on another query using multiple tables or may use different level of grouping by having more than one row heading. Also, Crosstab queries can be created by Query Design by changing the query type to **Crosstab**.

1.2.5 Creating a PivotTable and PivotChart

The powerful tool of MS-Excel *PivotTable* and *PivotChart* is also available in Access to summarize data. Interactive *Pivot Tables* and *Pivot Charts* enable the manipulation of summary data, and therefore can save ample time to create multiple queries and reports to achieve the same results.

1.2.5.1 PivotTable

A *PivotTable* is a view in Access Queries that allows summarising and examining data in a datasheet form. It is used to group values as rows and columns with a calculated value at the intersection of each row and column. A *PivotTable* can be considered as a modified form of Crosstab queries discussed in the above section. A *PivotTable* is created by dragging fields to the appropriate area on the design screen. Data can also be broken down to different levels of detail, such as showing earnings by year, quarter, or month.

The *PivotTable* view in a query can be obtained by selecting the **PivotTable View** from the **Views** drop-down in **Home** tab as indicated in Fig. 1.2.50.

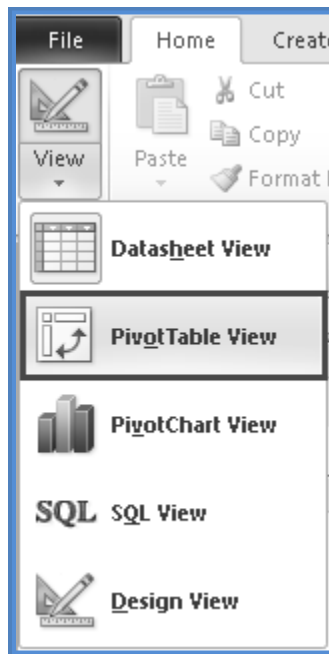


Fig. 1.2.50: PivotTable View

The *PivotTable* is shown in Fig. 1.2.51.

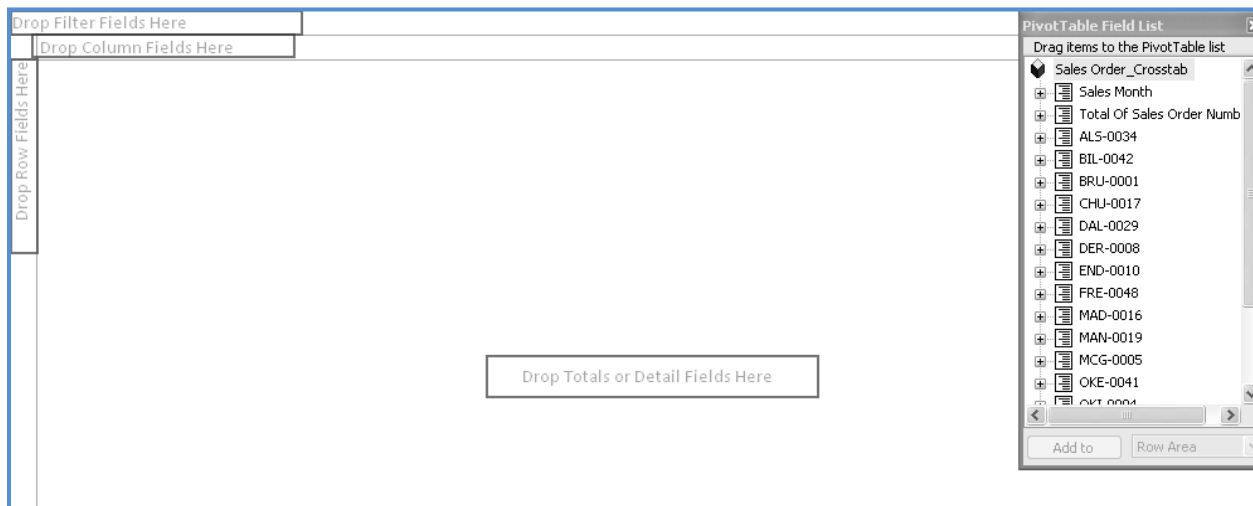


Fig. 1.2.51: PivotTable

A *PivotTable* has four areas for dropping fields whose values are summarized. The description of these areas is shown in Table 2.2.2.



Drop Area	Description
Filter Area	Is used for the fields that are used as a filter for PivotTable
Column Area	The fields selected to be displayed as column headings are included in this area
Row Area	The fields selected to be displayed as row headings are dropped in this area
Totals Or Detail Area	The field values to be used for calculations or summarization are dragged and dropped in this area, and the value is displayed at the intersection of a row and column

Table 1.2.2: Drop Area in Pivot Table

1.2.5.2 Problem Scenario

The Head of Sales Department in Apex Ltd. has demanded a Sales Summary report for review. The following are the desired requirements: the sales of the products can be viewed in terms of Year, Quarters and Months; the report should enable the user to view the products filtered by Category.

Solution

To create this Summary report, first a query is created that displays the Products and their Category, Sales amount of each product, and also the date on which they were sold. Then to create summary sheet, we create a *PivotTable* view of the query having:

- Category field as a filter
- Product field on row
- Year, Quarter and Month on columns
- Total Sales (which is computed as Quantity sold into Product cost) displayed as values

Steps for creating the query to obtain Sales Data

1. Open the *Query Design* window, by clicking **Create -> Queries -> Query Design**.
2. Select the *Inventory*, *Sales Item Description* and *Sales Order* tables from **Show Table** window and click **Add**, as shown in Fig. 1.2.52.

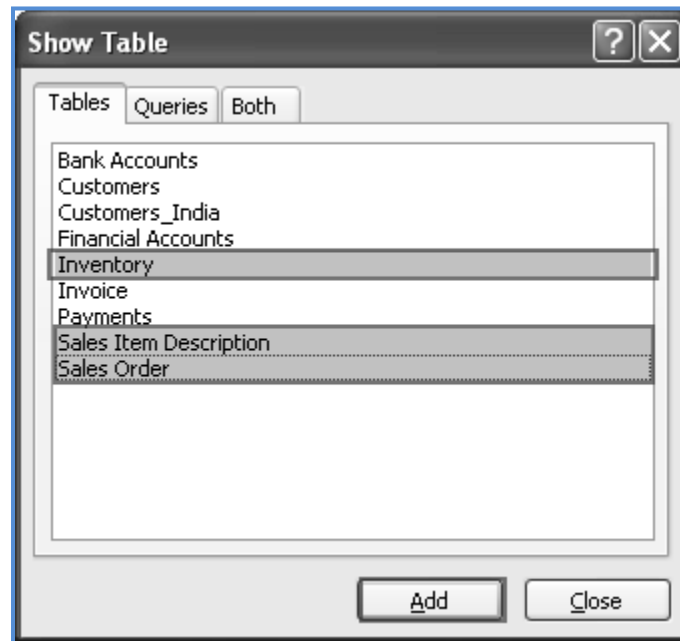


Fig. 1.2.52: Show Table window

3. Select the columns *Category* and *Item Number* from *Inventory* Table and drag them to the columns tab. Similarly, select column *Sales Date* from table *Sales Order* and drag it to the columns tab. The query window appears as in Fig. 1.2.53.

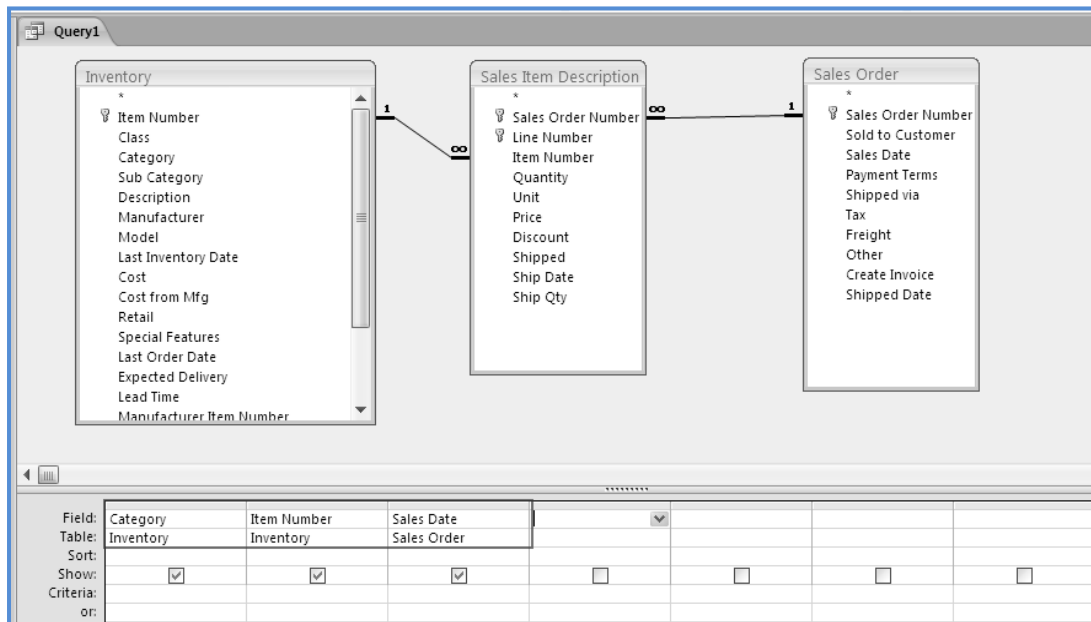


Fig. 1.2.53: Select the required columns



4. Now to compute the Total Sales of the Product, multiply *Quantity* * *Price* and create a new column. Write the expression *Total Sales: [Quantity]*[Price]* in the **Field** tab of the next column as displayed in Fig. 1.2.54.

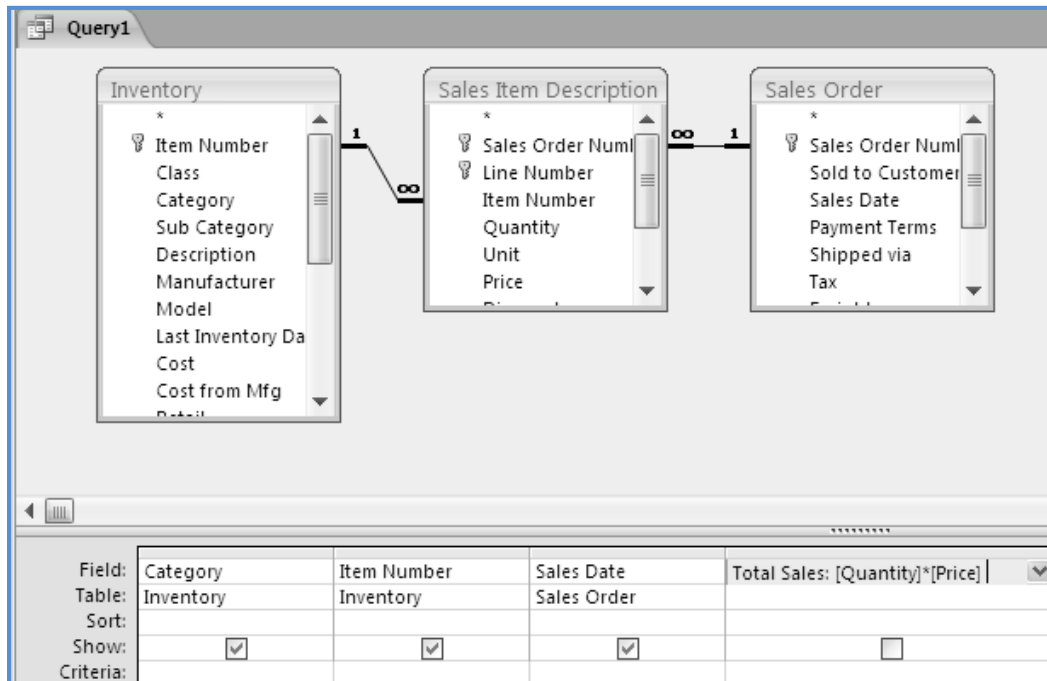


Fig. 1.2.54: Compute Total Sales

5. Click **Run** (indicated by a red exclamation mark icon) in **Design** → **Results** to view the query result. The result appears as shown in Fig. 1.2.55.

Category	Item Number	Sales Date	Total Sales
ATV	BEA-1664	11-Jan-08	15990
ATV	BEA-1664	11-Jan-08	7995
ATV	CLU-0257	11-Jan-08	1199.98
ATV	TIR-16443	11-Jan-08	79.98
ATV	SPA-47315	11-Jan-08	4.98
Boat	BOA-2003	11-Mar-08	69.93
Boat	CUS-0115	11-Mar-08	104.95
Boat	BAS-5400	12-Mar-08	899
Boat	BOA-2003	12-Mar-08	99.9
Boat	FIS-9700	12-Mar-08	44.95
Boat	CUS-0115	12-Mar-08	209.9

Fig. 1.2.55: Query Result



Now, we have achieved the desired result from the query. However, the Summary Report through *PivotTable* is required to be created.

Steps for Creating PivotTable from the query

1. Open the query in **PivotTable View** by clicking **PivotTable View** from **Home -> Views**, as displayed in Fig. 1.2.56.

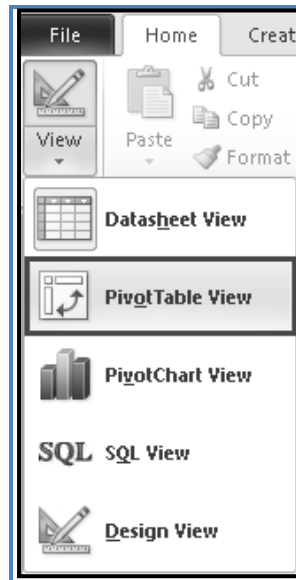


Fig. 1.2.56: Select PivotTable View

2. The PivotTable view appears with the field list on right side as displayed in Fig. 1.2.57.

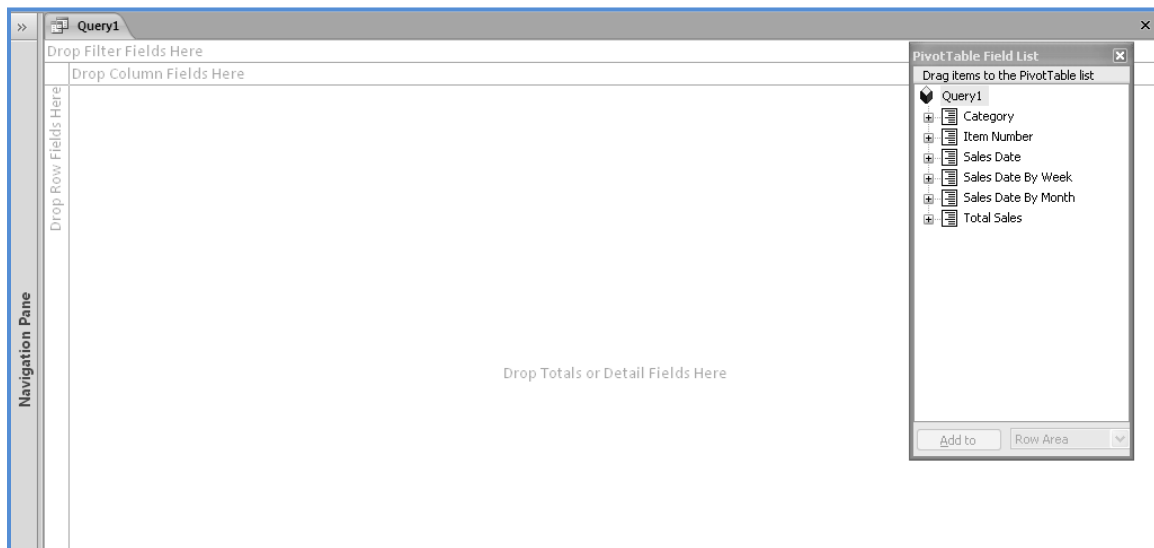


Fig. 1.2.57: PivotTable View



NOTE: If the **PivotTable Field List** does not appear, obtain the list by clicking **Field List** from **Show/Hide** group on the **Design** tab as indicated in Fig. 1.2.58.

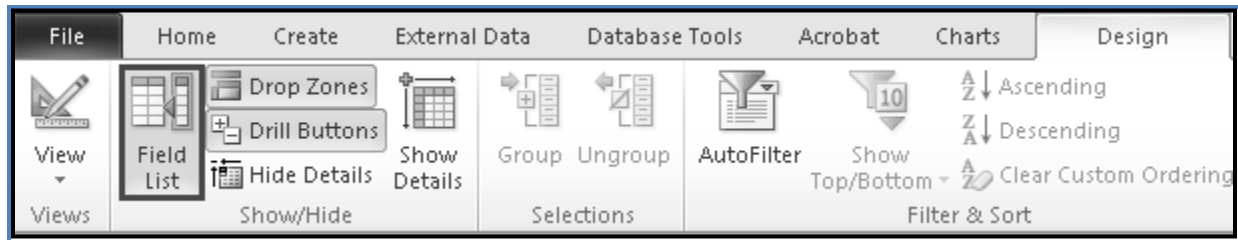


Fig. 1.2.58: Field List Button

3. Select the *Category* field from **PivotTable Field List** and drag it to the **Drop Filter Fields Here** area.
4. Select the *Item Number* field from **PivotTable Field List** and drag it to the **Drop Row Fields Here** area.
5. Select the Year by expanding the *Sales Date By Month* field and drag it to the **Drop Column Fields Here** area. Similarly, select and drag Quarter and Month to the **Drop Column Fields Here** area.
6. Select and drag the *Total Sales* field to the **Drop Totals or Detail Fields Here** area. The *PivotTable* window should appear as in Fig. 1.2.59.

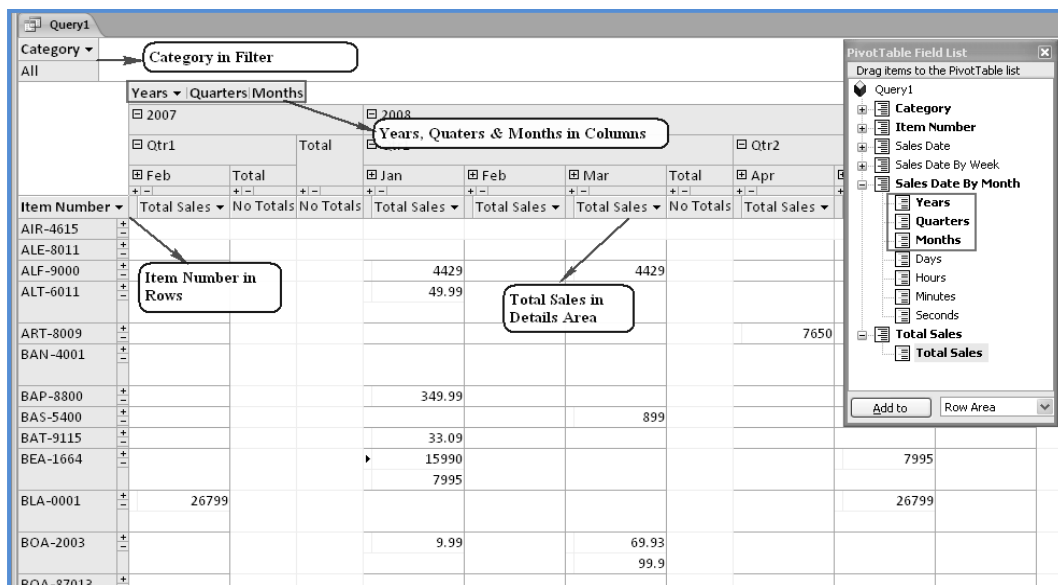



Fig. 1.2.59: Drag Fields in PivotTable Area

7. Click **Save**  at **Quick Access Toolbar** to save the query. Type the name of the query as "Sales Summary Report".

If we wish to see the Quarterly sales of all the Products from Personal Watercraft category, the *PivotTable* query is obtained as follows:



- Open the drop-down in *Category Filter Area*, clear all checkboxes and check the *Personal Watercraft* and click **OK** as in Fig. 1.2.60.

Sales Summary Report

Category

- ☒ (All)
- ☐ ATV
- ☐ Boat
- ☐ Car
- ☒ Personal Watercraft
- ☐ Snowmobile
- ☐ Truck

Check the Personal Watercraft Checkbox only

OK **Cancel**

Item Number	Total	May	Jun
FUZ-10332			
JET-5004			11097
LIF-05113	16.99	84.95	
PAT-70804	8.99	44.95	
WET-0133			55.98

Fig. 1.2.60: Select Personal Watercraft from Category Filter

- Click on the negative sign on *Quarter* tab so that the months disappear. Also, click on the plus sign with *Totals* to make the Grand Total appear. Make sure that all the plus signs in *Item Number* Row are clicked so as to make the Total Sales value appear. The final query should appear as shown in Fig. 1.2.61.



Sales Summary Report						
Category ▾						
Personal Watercraft						
		Years ▾ Quarters Months				
		2008				Grand Total
		Qtr1	Qtr2	Qtr3	Total	
		+ -	+ -	+ -	+ -	
Item Number ▾		Total Sales ▾	Total Sales ▾	Total Sales ▾	Total Sales ▾	Total Sales ▾
BAN-4001	+			4643.97	4643.97	4643.97
	-			4643.97	4643.97	4643.97
FUZ-10332	+			10947	10947	10947
	-			10947	10947	10947
JET-5004	+		11097	11097	11097	11097
	-			3699	3699	3699
					11097	11097
					11097	11097
LIF-05113	+	16.99	84.95	84.95	84.95	84.95
	-			84.95	84.95	
				16.99	16.99	
PAT-70804	+	8.99	44.95	89.9	44.95	44.95
	-			89.9	89.9	
				17.98	89.9	
				8.99	8.99	
				17.98	17.98	
WET-0133	+		55.98	139.95	139.95	139.95
	-			27.99	27.99	
				55.98	55.98	
Grand Total	+	8.99	84.95	11097	84.95	84.95
	-	16.99	44.95	3699	44.95	44.95

Fig. 1.2.61: Quarterly sales of all the Products from Personal Watercraft category

1.2.5.3 PivotChart

A PivotChart is a tool used for graphical analysis of data. In simple terms, PivotChart helps visualize a PivotTable, Query or a Form. It can display summarized data in different chart formats and enables data analysis. Data can be presented by using different chart formats as required, and unwanted items can be hidden from being viewed.

The *PivotChart* view in a query can be obtained by selecting the **PivotChart View** from **Home -> Views**, as indicated in Fig. 1.2.62.

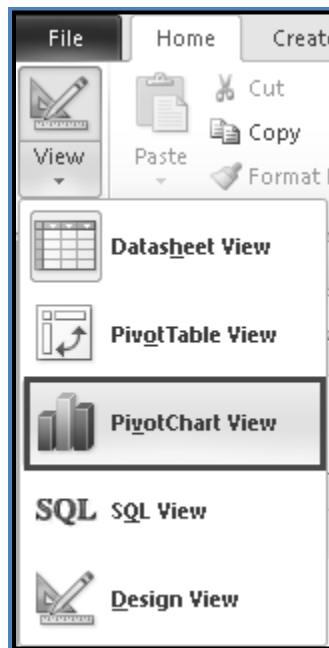


Fig. 1.2.62: PivotChart View

A sample PivotChart indicating sales of a Category of Products in each Quarter in a year is shown in Fig. 1.2.63.

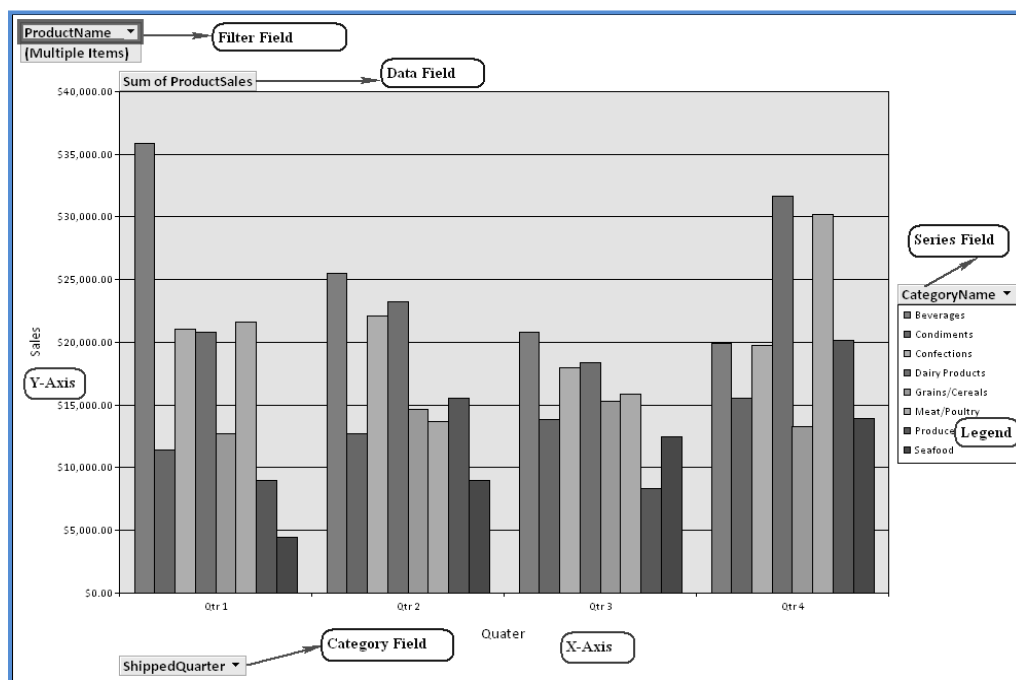


Fig. 1.2.63: PivotChart View



Description of the various headings marked in PivotChart above is given in Table 2.2.3.

Headings	Description
X-Axis	The horizontal axis in PivotChart
Y-Axis	The vertical axis in PivotChart
Legend	A table displaying the color code used for each data series in PivotChart
Filter Field	A field on basis of which filter can be applied on PivotChart.
Data Field	Field values to be shown along the Y-axis.
Category Field	Field values to be shown along the X-axis.
Series Field	Field values that will form the legend of the graph.

Table 1.2.3: Various fields in PivotChart

1.2.5.4 Problem Scenario

Considering the Summary Sales Report discussed in Section 1.2.5.1, a graphical representation of the same data is required.

Solution

To represent the data graphically, we need to create a *PivotChart*. For this purpose, we first create a query to display Summary Report and then create a *PivotChart* based on that query. In the Pivot Chart, the fields will be placed as:

- *Category* as Filter Field
- *Years & Quarters* field on X-Axis
- *Total Sales* on Y-Axis
- *Item Number* as Series Field

Steps to create a query of Summary Report

Follow the steps discussed in Section 1.2.5.1 to create a query *Sales Summary Report* and create another query *Graph of Sales Summary Report* with columns as *Category*, *Item Number*, *Sales Date* and *Total Sales* (*Quantity * Price*).

Steps to create a copy of Summary Report

1. Double-click the *Graph of Sales Summary Report* query to open it in the Datasheet view.
2. Open the PivotChart view of the query by selecting **PivotChart View** from **Home** -> **Views** drop-down list. The PivotChart view appears as in Fig. 1.2.64.



Fig. 1.2.64: PivotChart View

3. If the **Chart Field List** is not there, select the **Field List** option from the **Show/Hide** group on the **Design** tab.
4. Select the *Category* field from **Chart Field List** and drag it to the **Drop Filter Fields Here** area.
5. Select *Years* by expanding the *Sales Date By Month* field and drag it to the **Drop Category Fields Here** area. Similarly, select and drag *Quarters* to the **Drop Category Fields Here** area.
6. Select the *Item Number* field and drag it to the **Drop Series Fields Here** area.
7. Select and drag the *Total Sales* field to the **Drop Data Fields Here** area.
8. To display the legend, select **Legend** from the **Show/Hide** group on the **Design** tab, as indicated in Fig. 1.2.65.

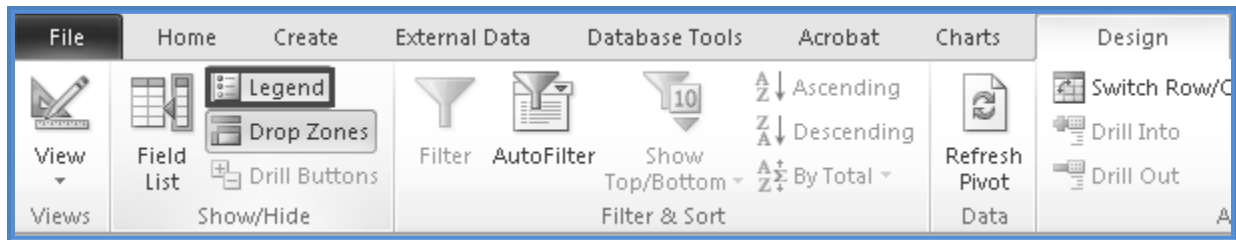


Fig. 1.2.65: Select Legend option



9. The *PivotChart* window should appear, as shown in Fig. 1.2.66.

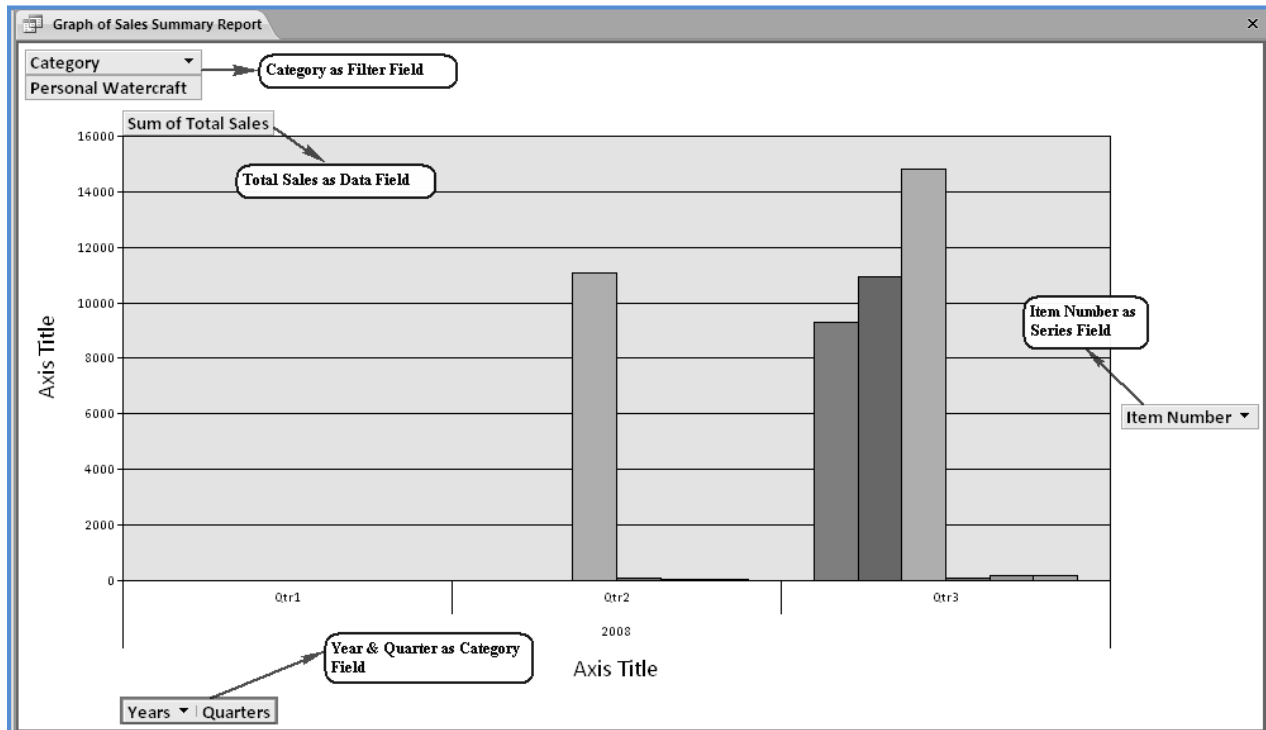


Fig. 1.2.66: Drag and Drop Fields in PivotChart Area

NOTE: The Total Sales of few products is much lesser as compared to other products that they are hardly visible on data bar. To solve this problem, the axis has to be changed to Logarithmic axis so as to make data bars more visible.

Steps for changing the axis to logarithmic axis

1. Right-click on any value in Y-axis so the entire scale is selected and select **Properties** from the menu, as shown in Fig. 1.2.67.

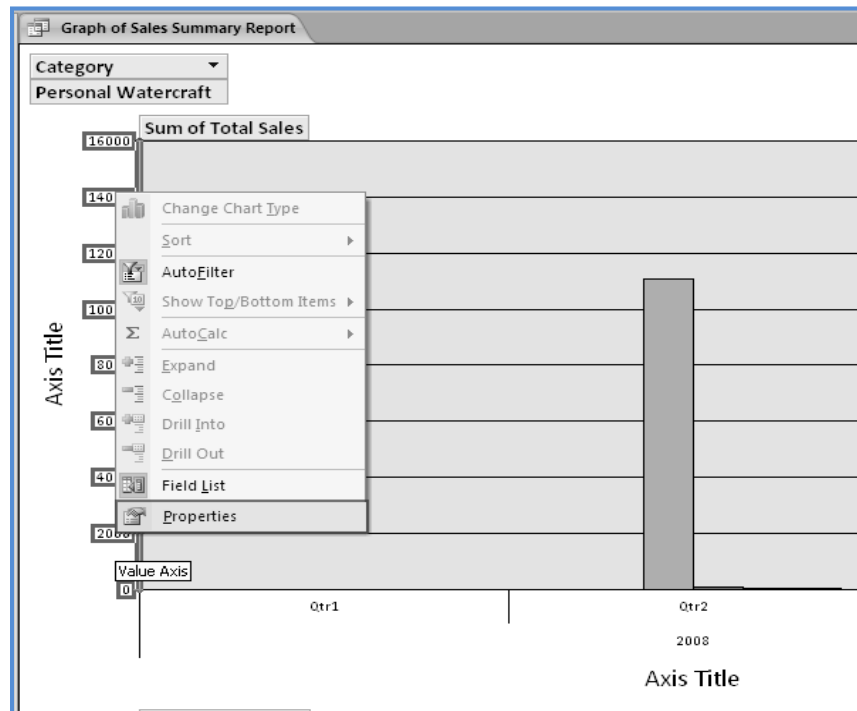


Fig. 1.2.67: Select properties for Y-Axis

2. In the **Properties** window that appears, go to the **Scale** tab and check **Logarithmic Scale** checkbox as displayed in Fig. 1.2.68.

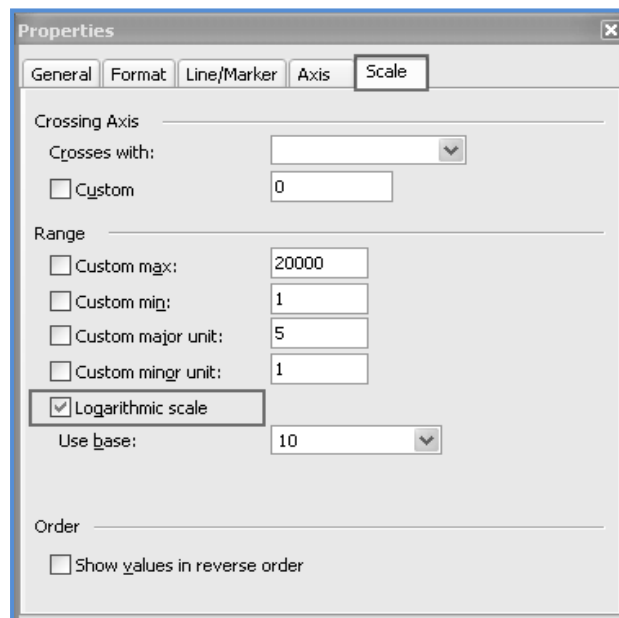


Fig. 1.2.68: Scale Properties



3. Close the **Properties** window.

In order to make graph more explanatory, we will provide a name to X-Axis and Y-Axis of the graph.

Steps for naming Axis in PivotChart

1. Right-click the **Axis Title** on X-Axis and select **Properties** from the menu, as shown in Fig. 1.2.69.

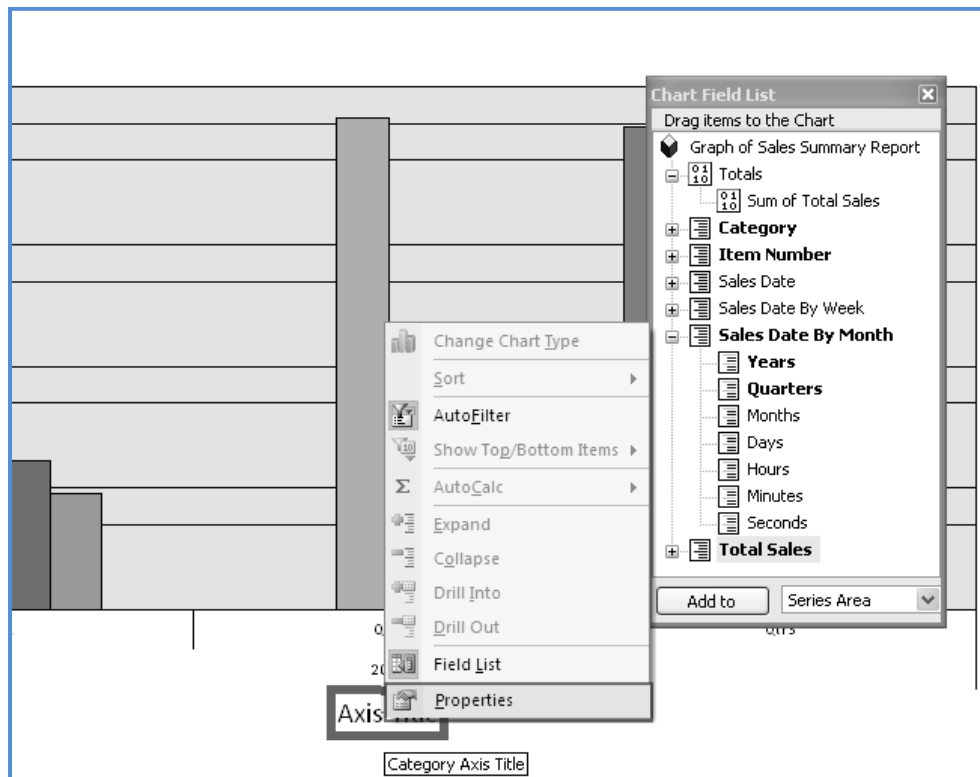


Fig. 1.2.69: Open X-Axis Properties

2. In the **Properties** window, go to the **Format** tab and change the **Caption** property to *Sales Quarter* as in Fig. 1.2.70.

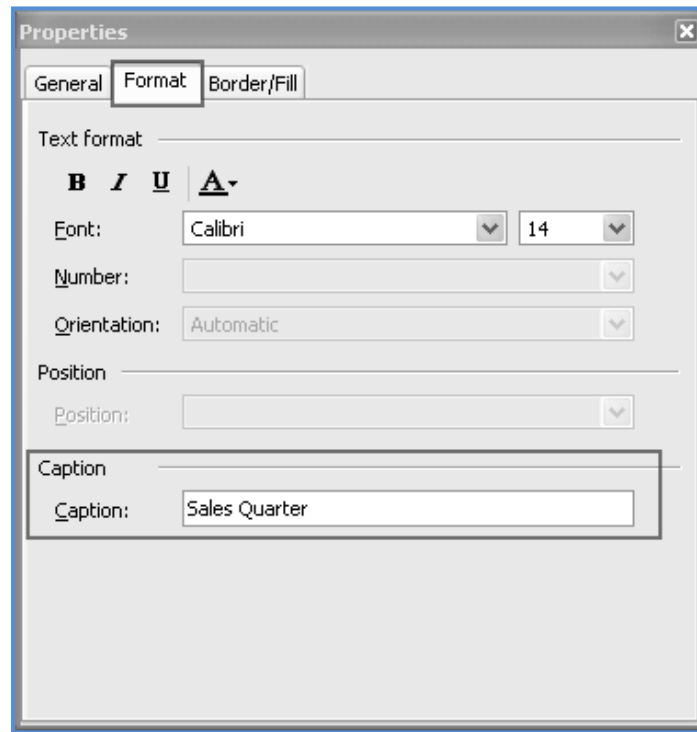


Fig. 1.2.70: Change caption of X-Axis

3. In a similar manner, change the caption of Y-Axis to *Total Sales*. The *PivotChart* appears as in Fig. 1.2.71.

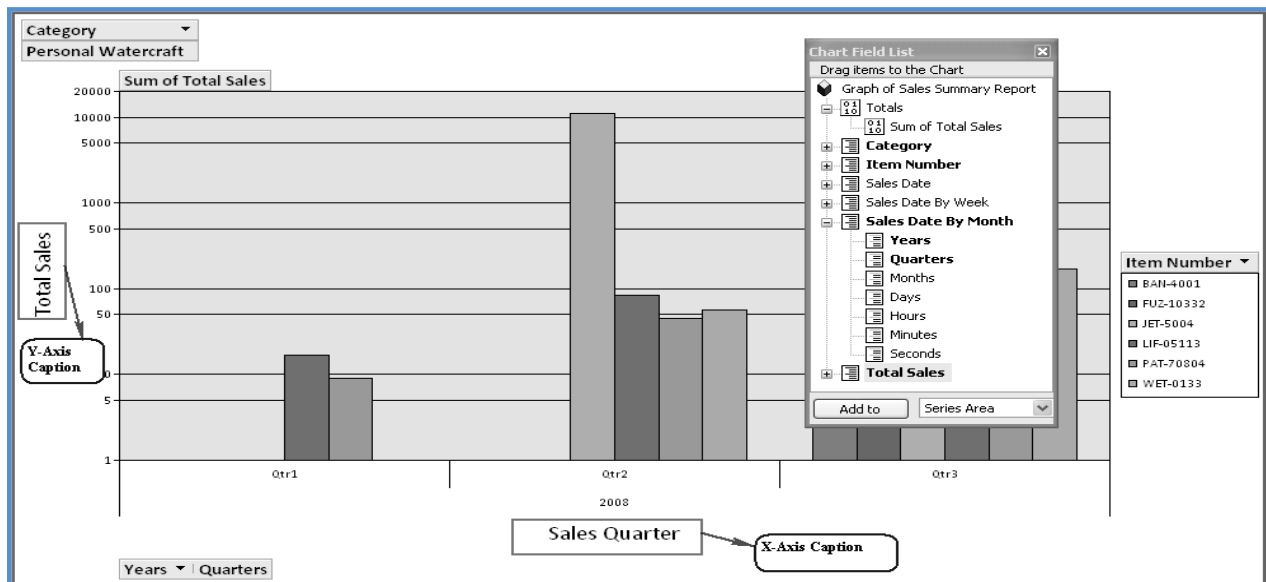


Fig. 1.2.71: Pivot Chart with Axis Captions



Now if we wish to see the chart of quarterly sales of all the products from Truck category for the year 2011, the *PivotChart* will be obtained as follows:

4. Open the drop-down in the *Category* Filter area, clear all checkboxes check the *Truck* checkbox and click **OK** as in Fig. 1.2.72.

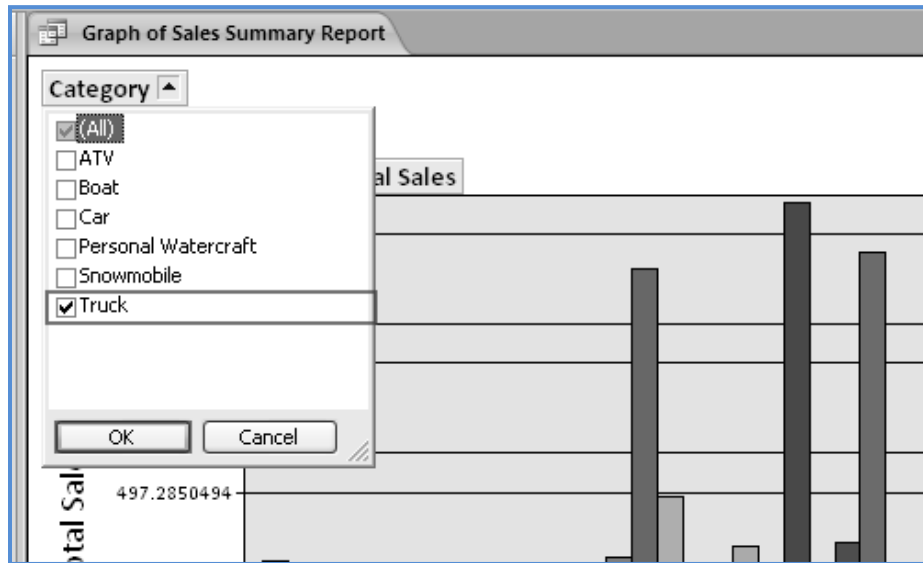


Fig. 1.2.72: Select Truck from Category

5. In a similar manner, select *2011* from *Years* drop-down in horizontal axis. The resultant chart appears as in Fig. 1.2.73 indicating the sale of different items of *Truck* category, which is maximum in Quarter2 and minimum in Quarter4.

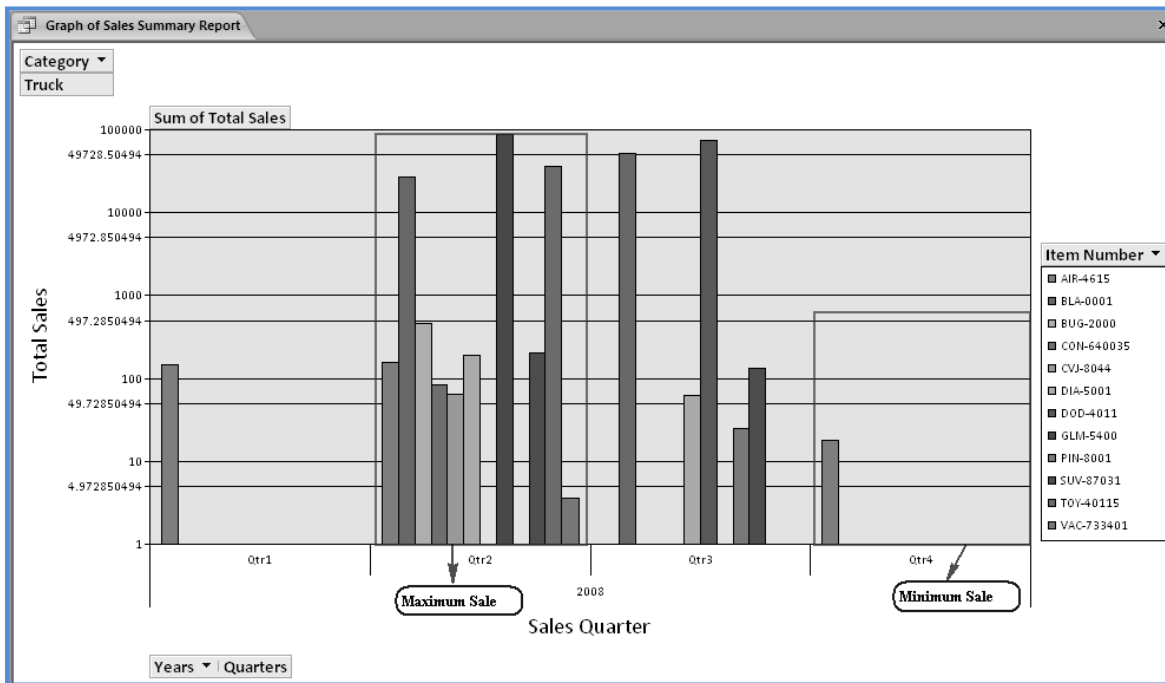


Fig. 1.2.73: Quarter-wise Truck Sales

NOTE: Different PivotCharts can be made to represent different kinds of data. Both PivotChart and PivotTable can also be made directly on tables rather than making a query first.

1.3 Joining Tables in Queries

A Join is a temporary relationship that is created between two tables in a query or the relationship window using a common field in both the tables having same data type and usually the same name. Joins created in a query are temporary and are meant for the current query only. Joining tables in a query is required to view data from two or more tables. For example, to retrieve products ordered by each customer, tables *Customers*, *Sales Order* and *Inventory* are required to be joined to get the desired output.

When two or more tables are added to the *Query Design* window, Access creates Joins between them based on the relationships that have been defined in the relationship window. Joins establish the criteria that the data must match to be included in the query operations. If the tables are not joined, the query result will match each record of one table to every record in another table, resulting in spurious rows. Different types of joins are available to get a different set of records as query result.

There are three types of joins available in Access: inner join, left outer join, and right outer join.

Inner Join: Returns only those rows from both tables that match on the joining field.

Left Outer Join: The query returns all of the rows from left table, and also those rows from the right table that share a common value on both sides of the join. Since some of the rows in left table of a left outer join will not have corresponding rows in right table, some of the fields returned as a query result will be empty when the rows do not correspond.



Right Outer Join: It is just the opposite of left outer join. The query using right outer join returns all the rows from right table, and also those rows from the left table that share a common value on both sides of the join.

1.3.1 Problem Scenario

The Operations Regional Head of Apex Ltd. is required to produce a report giving the details of the payments received.

For this purpose, two reports are required to be prepared:

- First report indicating the Invoices for which payments have been made, including the invoice and payments detail.
- Second report displaying a list of all the sales order, their invoices and details of payments, including those invoices for which payments have not been received.

Solution

To get the desired result, we create two queries:

First query to fulfill the requirement using inner join between tables *Invoice* and *Payments*.

Second query to achieve the second requirement which includes *Sales Order*, *Invoice* and *Payments* tables with an left outer join between *Invoice* and *Payments* tables.

Steps to create the first query - to obtain invoices for which payments have been made

1. Open the *Query Design* window, by clicking **Create -> Queries -> Query Design**.
2. Select the *Invoice* and *Payments* tables from **Show Table** window and click **Add**. Click **Close**.
3. To join the two tables, click the *Invoice Number* from *Invoice* table and drag it to *Invoice Number* in *Payments* table. The query window appears, as shown in Fig. 1.3.1.

NOTE: If the tables are already related through relationship window, the joining line automatically appears between the tables.

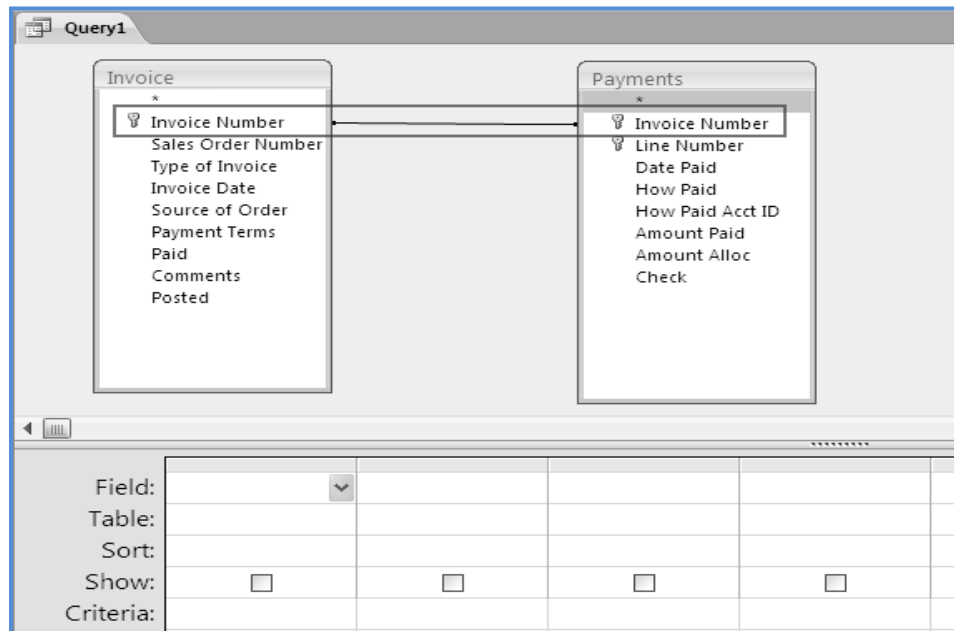


Fig. 1.3.1: Create Relationship between tables

4. Select the columns *Invoice Number*, *Sales Order Number*, *Type of Invoice*, *Invoice Date* and *Source of Order* from the table *Invoice* and drag them to the columns tab. Similarly, select columns *Date Paid*, *How Paid*, *Amount Paid* and *Amount Alloc* from *Payments* table and drag them to the columns tab. The query window appears as shown in Fig. 1.3.2.

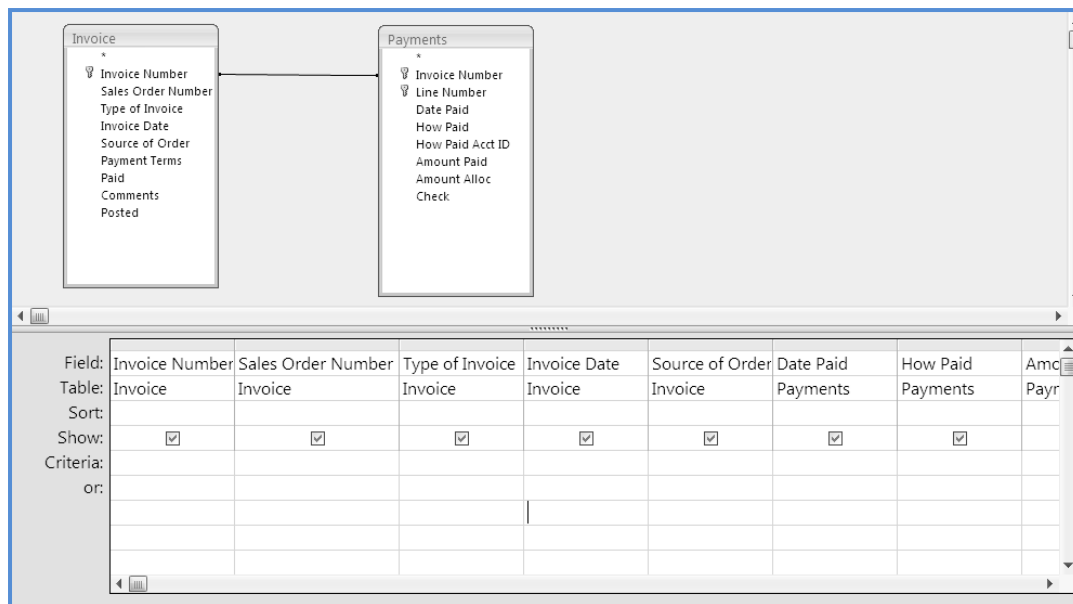




Fig. 1.3.2: Add required columns



5. Click the **Save** button  on *Quick Access Toolbar* to save the query. Type the name of the query as *Payment Made*.
6. Click the **Run** icon  in **Design -> Results** to view the query result displaying invoices with their payment details as shown in Fig. 1.3.3.

Payment Made						
Invoice Number	Sales Order Number	Type of Invoice	Invoice Date	Source of Order	Date Paid	How Paid
000311-01	000311-01	Product Detail	11-Mar-08	Referral	11-Mar-08	
000315-01	000718-01	Product Detail	15-Mar-08		15-Mar-08	
000630-01	000630-01	Product Detail	30-Jun-08		05-Jul-08	
000718-01B1	000718-01B1	Product Detail	18-Jul-08	Catalog	10-Aug-08	
000718-01B1	000718-01B1	Product Detail	18-Jul-08	Catalog	14-Feb-08	Unknown
001008-01	001008-01	Service	08-Oct-08	Mailings	08-Oct-08	
001008-01	001008-01	Service	08-Oct-08	Mailings	09-Oct-08	
001008-01	001008-01	Service	08-Oct-08	Mailings	15-Feb-08	Cash
020115-01	020115-01	Product Detail	15-Jan-10	Newspaper	15-Jan-10	
020123-01	020123-01	Professional	23-Jan-10	Referral	23-Jan-10	
020801-01	020801-01	Product Detail	01-Aug-10	Catalog	01-Aug-10	
2000105-06	00001	Product Detail	05-Jan-08	POS	05-Jan-08	Check
2000105-07	990616-03	Product Detail	05-Jan-08	POS	05-Jan-08	Cash
2000105-07	990616-03	Product Detail	05-Jan-08	POS	05-Jan-08	Change
2000105-09	A2000111-01	Product Detail	05-Jan-08	POS	05-Jan-08	Check
2000105-10	000718-01B1	Product Detail	05-Jan-08	POS	05-Jan-08	Cash
2000105-11	A2000111-03	Product Detail	05-Jan-08	POS	05-Jan-08	Visa
2000105-12	000511-01	Product Detail	05-Jan-08	POS	05-Jan-08	Check
2000105-13	010417-02	Product Detail	05-Jan-08	POS	05-Jan-08	Check
2000105-14	A2000111-05	Product Detail	05-Jan-08	POS	05-Jan-08	Cash

Fig. 1.3.3: Query Result

Steps to create the second query - to display list of all the sales order, their invoices and payments details, including those invoices for which payments have not been received

1. Open the *Query Design* window, by clicking **Create -> Queries -> Query Design**.
2. Select the *Sales Order*, *Invoice* and *Payments* table from **Show Table** window and click **Add**. Click **Close**.
3. To join the tables, click the *Sales Order Number* from *Sales Order* table and drag it to the *Sales Order Number* in *Invoice* table. Similarly, join *Invoice* and *Payments* table on *Invoice Number* field. The query window appears as shown in Fig. 1.3.4.

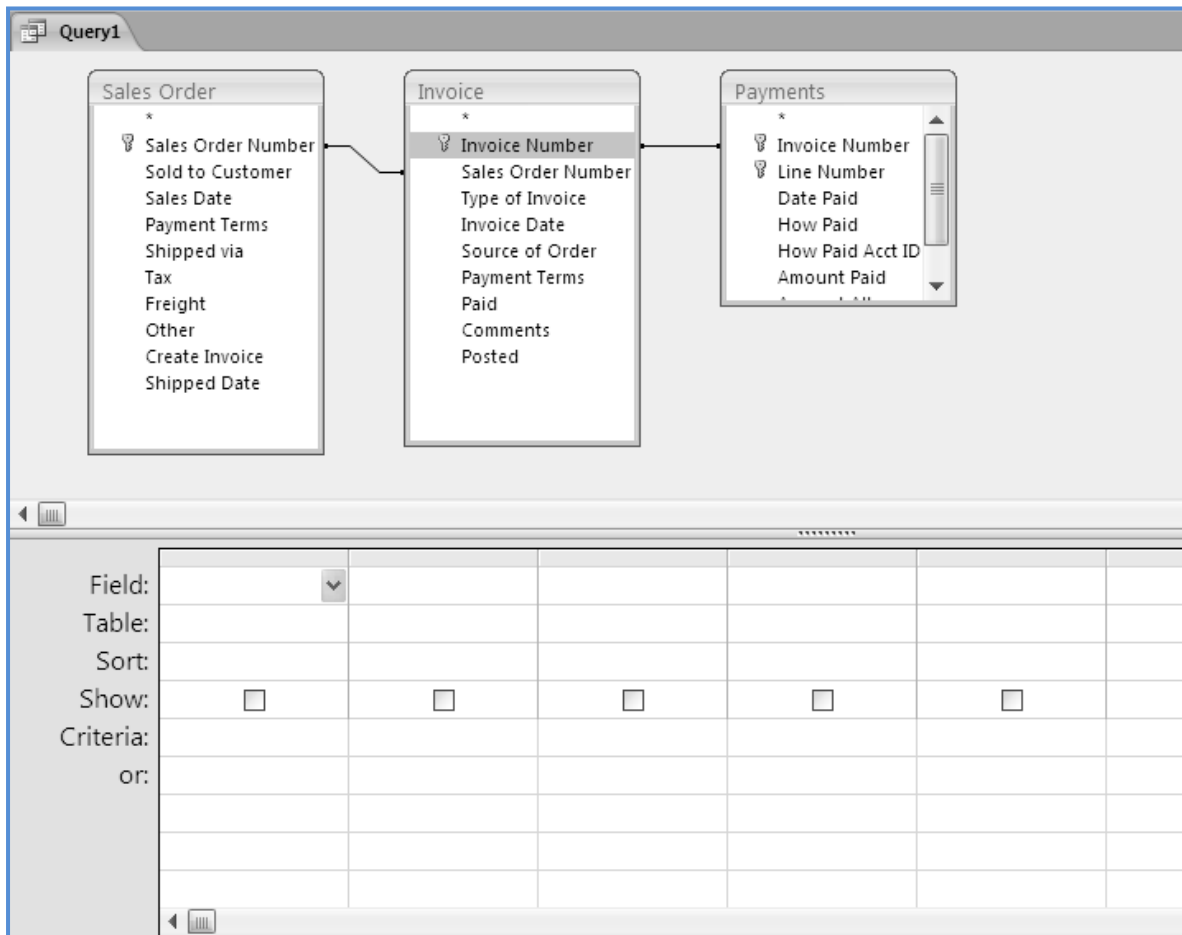


Fig. 1.3.4: Join Tables

4. Select the fields *Sales Order Number*, *Sold to Customer* and *Sales Date* from *Sales Order* table and drag them to the Columns tab. Similarly, select fields *Invoice Number*, *Type of Invoice*, *Invoice Date*, *Source of Order* and *Payment Terms* from *Invoice* table and columns *Date Paid*, *How Paid*, *Amount Paid* and *Amount Alloc* from *Payments* table. The query window appears as in Fig. 1.3.5.

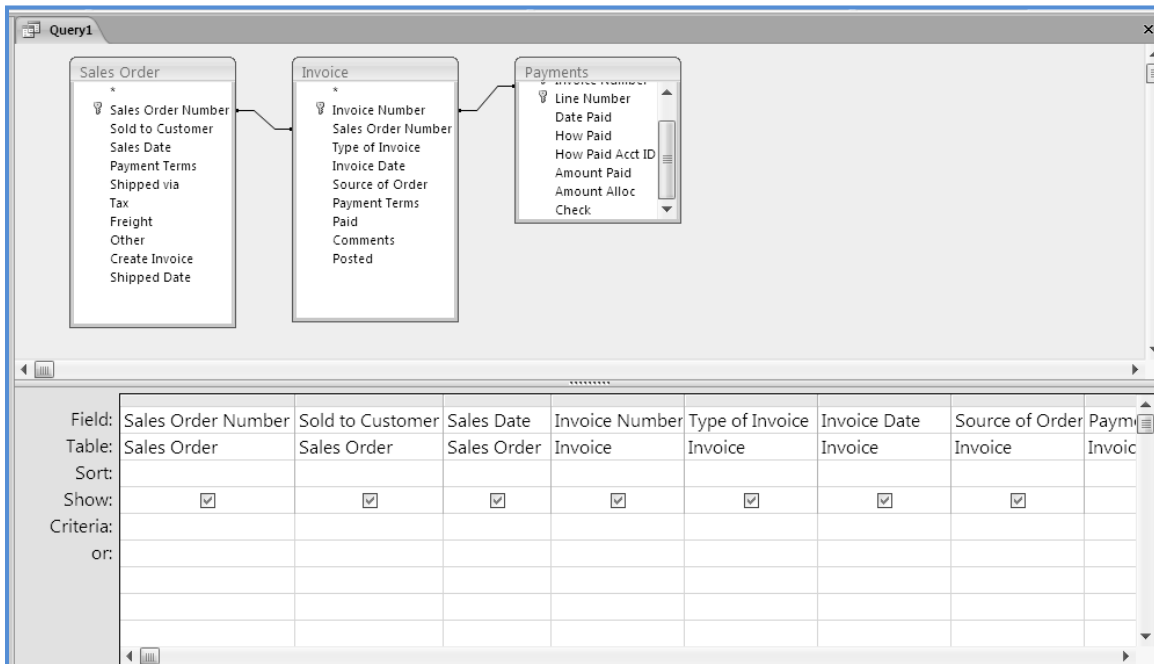


Fig. 1.3.5: Select required columns

5. Click **Run** in **Design** -> **Results** to view the query result as shown in Fig. 1.3.6.

Sales Order Number	Sold to Customer	Sales Date	Invoice Number	Type of Invoice	Invoice Date	Source of Order	Payment Terms	Date
000311-01	END-0010	11-Mar-08	000311-01	Product Detail	11-Mar-08	Referral	2/10 Net 45	11-
000718-01	CHU-0017	18-Jul-08	000315-01	Product Detail	15-Mar-08		Credit Card	15-
000630-01	END-0010	30-Jun-08	000630-01	Product Detail	30-Jun-08		Lease	01-
000718-01	CHU-0017	18-Jul-08	000718-01	Product Detail	18-Jul-08	Catalog	Check	10-
000718-01	CHU-0017	18-Jul-08	000718-01	Product Detail	18-Jul-08	Catalog	Check	14-
001008-01	END-0010	08-Oct-08	001008-01	Service	08-Oct-08	Mailings	1/10 Net 30	08-
001008-01	END-0010	08-Oct-08	001008-01	Service	08-Oct-08	Mailings	1/10 Net 30	09-
001008-01	END-0010	08-Oct-08	001008-01	Service	08-Oct-08	Mailings	1/10 Net 30	15-
990701-01	END-0010	01-Jul-08	A2000215-1	Service	17-Sep-07		Lease	15-
020115-01	CHU-0017	15-Jan-08	020115-01	Product Detail	15-Jan-10	Newspaper	Check	15-
020123-01	OKI-0004	23-Jan-08	020123-01	Professional	23-Jan-10	Referral	PO Net 30	23-
020801-01	SWA-0044	01-Aug-08	020801-01	Product Detail	01-Aug-10	Catalog	PO Net 30	01-
111111-1	THO-0043	21-Dec-08	A2000218-0	Product Detail	21-Dec-07		Credit Card	18-
99070106	FRE-0048	21-Dec-08	A2000218-0	Product Detail	21-Dec-07		Cash	18-
00001	END-0010	06-Aug-08	2000105-0	Product Detail	05-Jan-08	POS	Cash	05-
990616-03	MAD-0016	16-Jun-08	2000105-0	Product Detail	05-Jan-08	POS	Credit Card	05-
990616-03	MAD-0016	16-Jun-08	2000105-0	Product Detail	05-Jan-08	POS	Credit Card	05-
A2000111-0	END-0010	11-Jan-08	2000105-0	Product Detail	05-Jan-08	POS	Cash	05-
000718-01	CHU-0017	18-Jul-08	2000105-1	Product Detail	05-Jan-08	POS	Cheque	05-
A2000111-0	MCG-0005	11-Jan-08	2000105-1	Product Detail	05-Jan-08	POS	Online Payment	05-

Fig. 1.3.6: Sales Order with Payments



Notice that these query results are showing only the records for which payments have been received. To get the records for which the payment are not yet received, the join between *Invoice* and *Payments* table has to be converted to left outer join.

Steps to create left outer join between *Invoice* and *Payments* tables

- Switch to the query design view by clicking **Design View** in **Home** -> **Views**.
- Right-click the joining line between *Invoice* and *Payments* tables and select **Join Properties** from the menu, or double-click the joining line. The **Join Properties** window appears, as shown in Fig. 1.3.7.

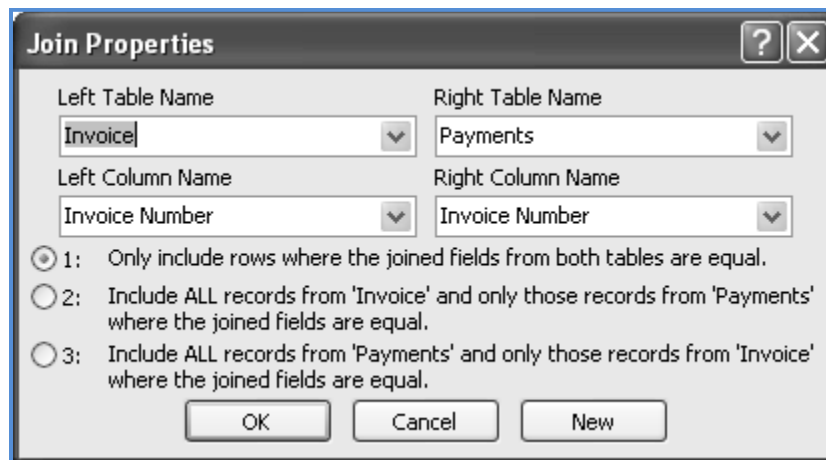


Fig. 1.3.7: Join Properties dialog box

- Select the option **2: Include ALL records from 'Invoice' and only those records from 'Payments' where the joined fields are equal.**, and click **OK**. The **Join Properties** window appears as displayed in Fig. 1.3.8.

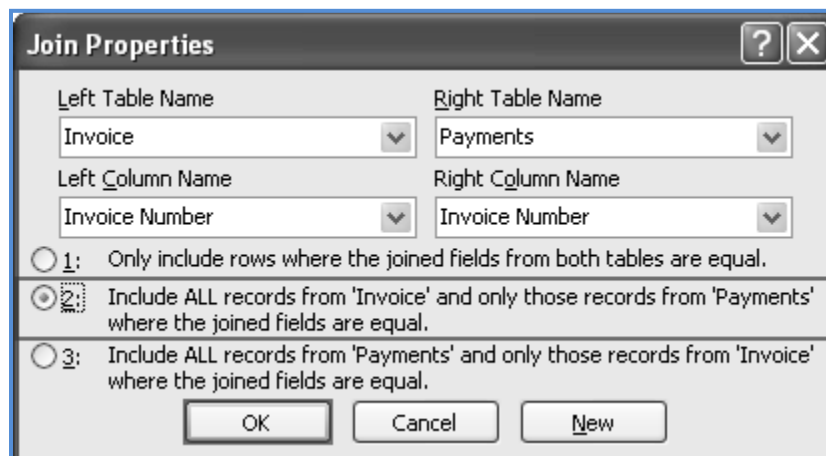


Fig. 1.3.8: Set the Join Properties to Left Outer Join



9. The Join line changes to indicate that it is a left outer join. Notice an arrow pointing towards the *Payments* table as indicated in Fig. 1.3.9.

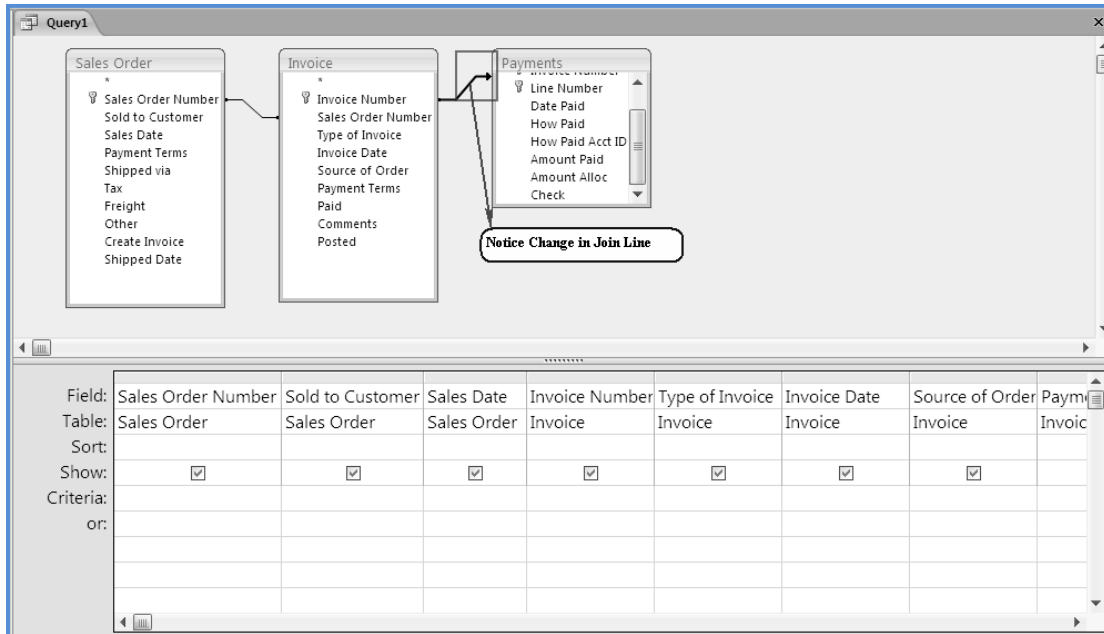




Fig. 1.3.9: Left Outer Join between Invoice and Payments tables

10. Click **Save**  on *Quick Access Toolbar* to save the query. Type the name of the query as *Sales Order Details*.
11. Click **Run**  in **Design -> Results** to view the query result shown in Fig. 1.3.10. Notice that the *Date Paid*, *How Paid*, *Amount Paid* and *Amount Alloc* fields from table *Payments* are blank for few records, indicating the invoices for which payments have not been received.



Invoice No.	Type of Invoice	Invoice Date	Source of Order	Payment Terms	Date Paid	How Paid	Amount Paid	Amount
000320-01	Professional	20-Mar-08	Newspaper	Credit Card				
000407-01	Product Detail	07-Apr-08		Lease				
000416-03	Simple	16-Apr-08	Catalog	Credit Card				
000423-02	Professional	23-Apr-08	Referral	2/10 Net 45				
000510-01	Product Detail	10-May-09	Catalog	Cash				
000522-01	Product Detail	22-May-08		Lease				
000528-07	Product Detail	28-May-08		Check				
000601-01	Product Detail	01-Jun-08		Check				
000617-04	Professional	17-Jun-07		Check				
000630-01	Product Detail	30-Jun-08		Lease	05-Jul-08		\$2,000.00	\$2,
000714-01	Product Detail	14-Jul-08		Check				
000718-01	Product Detail	18-Jul-08	Catalog	Check				
000718-01f	Product Detail	18-Jul-08	Catalog	Check	10-Aug-08		\$500.00	\$
000718-01f	Product Detail	18-Jul-08	Catalog	Check	14-Feb-08	Unknown	\$41.85	
000811-01	Product Detail	11-Aug-08		Check				
000811-01f	Product Detail	23-Jun-07		Check				
000817-01	Service	17-Aug-09		Credit Card				
000823-02	Product Detail	23-Aug-08	Newspaper	PO Net 30				
000914-01	Product Detail	14-Sep-08	Internet	1/10 Net 30				
001008-01	Service	08-Oct-08	Mailings	1/10 Net 30	08-Oct-08		\$125.00	\$

Fig. 1.3.10: Query Result

A more complex join can be created among any number of tables and modified accordingly to get the desired results.

1.4 Calculated Fields

The Access query's result is not restricted to the fields in tables only, but can display many other computed columns known as **Calculated Fields**. The Calculated fields can be compared to cells containing functions or formulas in Excel Worksheet. In Access, these cells can be considered as the columns of the table. Normalization forbids tables to have columns whose values can be computed using the existing fields. Calculations in a query are recomputed each time the query is run. As such, data is always current. The results of the calculations are not stored in a table. A calculated field performs some type of arithmetic calculations on one or more fields in a table to come up with a completely new field. For example, if a table has an *Order Total* field and a *Tax Rate* field, Access can calculate these two fields to find out the *Sales Tax* for each order as $[Order\ Total] * [Tax\ Rate]$.

The calculated fields create new fields in a record by combining the values of other fields in the record. Calculated fields can store numeric, date, or text fields for each record using expressions and functions.

1.4.1 Problem Scenario

Ramit, an executive in Apex Ltd. is required to produce a report displaying all the sales orders which contains the field *Total Amount Paid* as a sum of Tax, Freight and Other Charges.

Solution

As a solution to the above problem, a query has to be created on table *Sales Order* with a calculated column *Total Amount Paid* computed as a sum of Tax, Freight and Other Charges.



Steps for creating query with Calculated Columns

1. Open the *Query Design* window, by clicking **Create -> Queries -> Query Design**.
2. Select the *Sales Order* table from **Show Table** window and click **Add**. Click **Close**.
3. Select the columns *Sales Order Number*, *Sold to Customer*, *Sales Date*, *Payment Terms* and *Shipped via* from *Sales Order* table and drag them to the columns tab as displayed in Fig. 1.4.1.

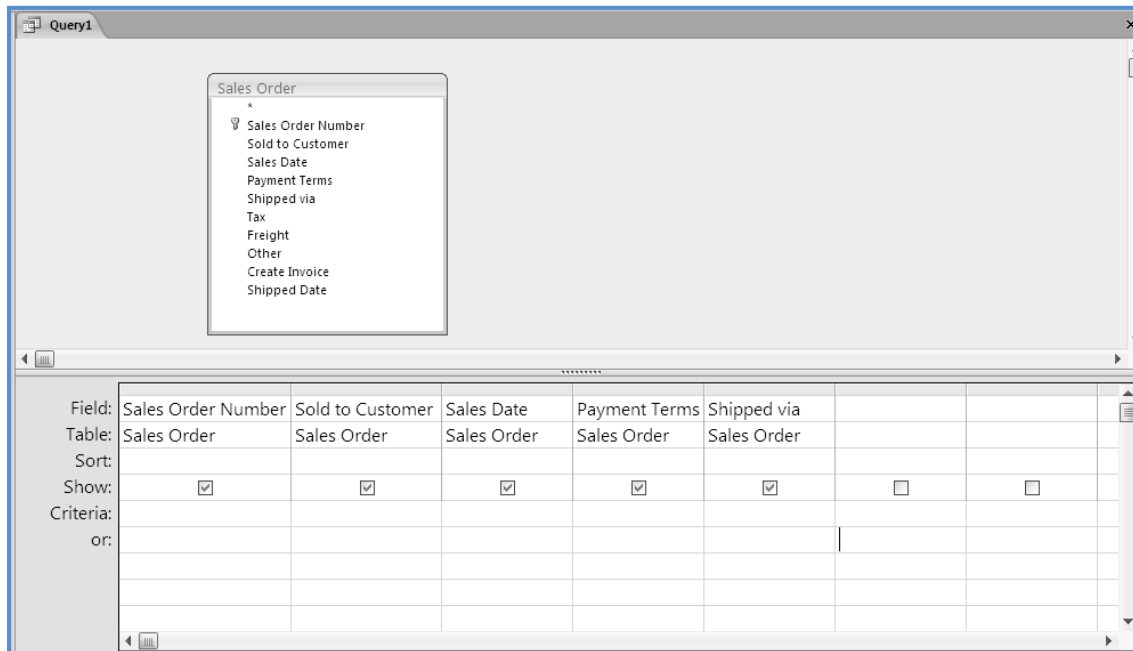


Fig. 1.4.1: Select Required Columns

4. To create the calculated column, write the expression *Total Amount Paid: [Tax] + [Freight] + [Other]* in the **Field** tab of the next column as displayed in Fig. 1.4.2.

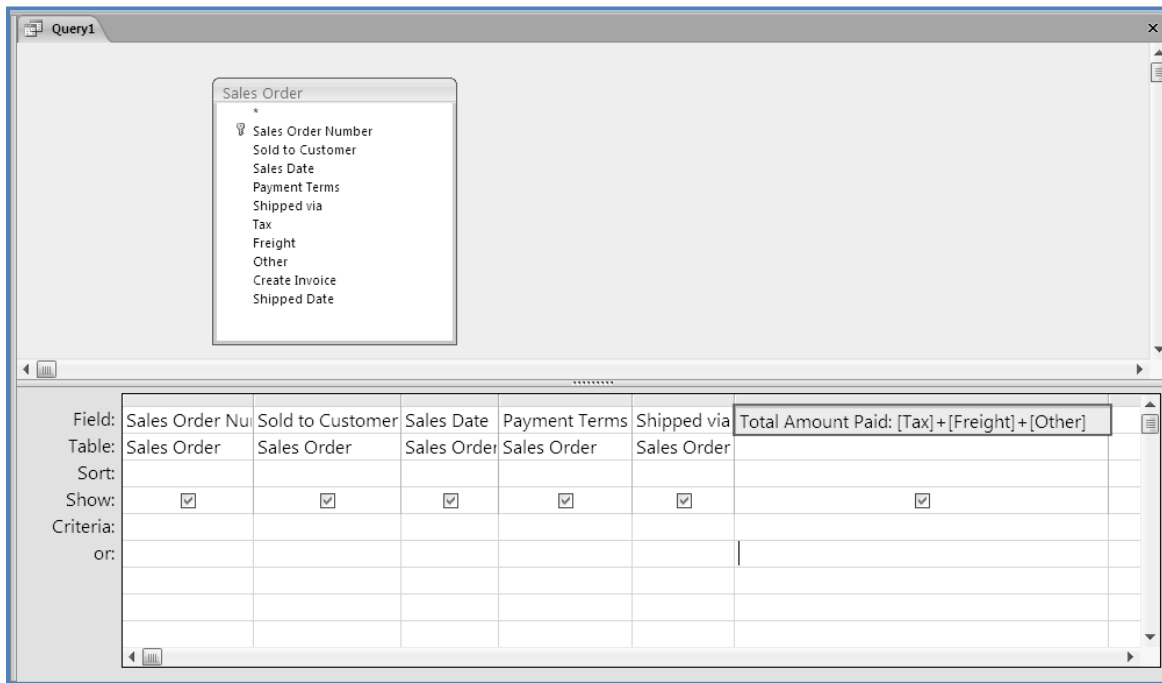


Fig. 1.4.2: Calculated Column - Total Amount Paid

- Click **Run** in **Design** -> **Results** to view the query result. The result is displayed in Fig. 1.4.3. Note the calculated column *Total Amount Paid* in query result.



Sales Ord	Sold to Custor	Sales Dat	Payment	Shipped v	Tax	Freight	Other	Total Amount Pai
00001	END-0010	06-Aug-08	Lease	Pick Up	\$50.00	\$20.00	\$0.00	\$70.00
000111-03	ALS-0034	11-Jan-08	Cash	Transport C	\$1,541.97	\$429.49	\$10.00	\$1,981.46
000311-01	END-0010	11-Mar-08	2/10 Net 45	Fed Ex Econ	\$10.85	\$5.95	\$0.00	\$16.80
000312-02	BIL-0042	12-Mar-08	PO Net 30	Pick Up	\$62.63	\$20.00	\$10.00	\$92.63
000407-01	CHU-0017	07-Apr-08	Lease	UPS Grounc	\$0.00	\$200.00		\$25.00
000416-03	ALS-0034	16-Apr-08	Credit Card	Pick Up	\$5.38	\$0.00	Calculated as 1541.97 + 429.49 + 10.00	\$25.38
000423-02	BIL-0042	23-Apr-08	2/10 Net 45	Pick Up	\$17.55	\$5.00	\$100.00	\$122.55
000511-01	FRE-0048	11-May-08	2/10 Net 45	Transport C	\$7.79	\$0.00	\$0.00	\$7.79
000522-01	CHU-0017	22-May-08	Lease	UPS Grounc	\$0.00	\$0.00	\$0.00	\$0.00
000528-07	BRU-0001	28-May-08	Check	U.S Mail	\$59.88	\$99.00	\$0.00	\$158.88
000601-01	OKE-0041	01-Jun-08	Check	UPS Grounc	\$7.55	\$9.95	\$0.00	\$17.50
000617-04	FRE-0048	17-Jun-08	Check	Fed Ex Econ	\$2.25	\$0.00	\$0.00	\$2.25
000630-01	END-0010	30-Jun-08	Lease	Pick Up	\$1,078.20	\$0.00	\$0.00	\$1,078.20
000718-01	CHU-0017	18-Jul-08	Check	Transport C	\$1,026.24	\$299.99	\$0.00	\$1,326.23
000718-01	CHU-0017	18-Jul-08	Check	Transport C	\$295.92	\$0.00	\$0.00	\$295.92
000801-02	ALS-0034	01-Aug-08	Lease	Pick Up	\$922.20	\$200.00	\$35.00	\$1,157.20
000811-01	END-0010	11-Aug-08	Check	U.S Mail	\$13.79	\$0.00	\$0.00	\$13.79
000811-01	END-0010	11-Aug-08	Check	U.S Mail	\$284.03	\$0.00	\$0.00	\$284.03
000817-01	DER-0008	17-Aug-08	Credit Card	Pick Up	\$0.84	\$0.00	\$4.00	\$4.84
000823-02	FRE-0048	23-Aug-08	PO Net 30	Pick Up	\$786.87	\$0.00	\$0.00	\$786.87

Fig. 1.4.3: Query Result

6. Save the query as *Sales Order Report* and close the query window.

1.5 Summary

Queries are the heart of every database application. Queries are responsible for converting diffuse data contained in tables into information that users can actually use. Without queries, we would have to write a complex code for every data extraction and transformation.

This chapter talks about more complex part of queries. *Sub-queries*, as the name indicates is a query within query and helps us to retrieve data from multiple tables, and can also be used to replace Joins. The *Query Wizard* can be used to create queries like *Find Unmatched* and *Find Duplicate*. Apart from this, queries can generate summary reports using *Group By* and *Crosstab Queries*. Queries can be very interactive in terms of *PivotTables* and *PivotCharts* which can be obtained by just changing the query view.

Queries can be based on multiple tables using different types of joins. Joins can be Inner Join or Outer Joins. Queries provide much more liberty, such as adding newly calculated columns to query result or restrict number of rows returned by specifying the criteria. Calculated columns enable us to implement normalization by omitting unnecessary columns in the table and introducing them as calculated columns later.



1.6 Lab Exercises

1.2.6 Case Study

For the database Apex Inventory Shipment of Apex Ltd., consider the scenario and provide their solutions.

1. The company is launching a new sales campaign for its existing customers. For this, the marketing department needs the list of customers with the highest credit limit. Create a query using sub-query to retrieve this list.
2. A sales person made a mistake and skipped entering the item description for an order made by the customer. Using query, retrieve the sales order information for which the item description has not been entered.
3. For the above exercise, retrieve the information about the customer who has placed the order so that the items can be reconfirmed.
4. The company launched its new office in India and asked the sales executive to interact with various people and enter the details of possible customers in a table named *Customers_India*. The table has the following structure:

Field Name	Data type
Customer Number	Text
Salutation	Text
First Name	Text
Last Name	Text
Company	Text
Phone	Text
Email	Text
Street	Text
City	Text
State	Text
ZIP Code	Text

In the absence of any constraints on the table, the sales team ended up inserting duplicate records of a single customer. Write a query to find these duplicate records. (Consider the *Customer Number* as unique for each customer.)

5. The Finance Head who keeps track of their inventory shipped, requires the report displaying the quantity of items shipped every month of year 2011. Create a Totals query displaying the required data.
6. The company is issuing a discount policy to its customers. For this purpose, the Marketing Regional Manager needs a detailed report of the customers. The report should contain Customers Names on rows and Month Name as columns, and count of orders placed by each customer on the intersection cells of rows and columns.



7. Create a user interactive report using PivotTable to display payments made by customers. The user should be able to filter the customers according to their states and should be able to drill the payments in terms of years, quarters, months and days.
8. Considering the scenario given in the above exercise, create a graphical view using PivotChart indicating the total payments received quarter-wise from all the customers from a particular city. User should be able to filter the city on the basis of their country.
9. Create a query containing mailing address list for all the customers with the following field list:

1	Salutation FirstName Last Name
2	Company
3	Street, City
4	State
5	Country
6	Postal Code

10. Display the list of all customers from New York (State Code – NY), with details of items they have ordered and Total Amount to be paid by them.

1.2.7 Multiple Choice Questions

1. For the database Apex Inventory Shipment of the Apex Ltd., we wish to retrieve records for customers who have not placed any orders yet. What type of query can be used?
 - (a) Duplicate Query
 - (b) Crosstab Query
 - (c) Find Unmatched Query
 - (d) Group By query
2. Considering the database Apex Inventory Shipment of the Apex Ltd., how can we display sales grouped by country, state, and customer, all at the same time?
 - (a) Use the Sort Descending command
 - (b) Use the PivotTable View command
 - (c) Use the Find command on specified groups
 - (d) All of the above
3. For the database Apex Inventory Shipment, the number of items for each category is required to be computed, which query type is required to be used?
 - (a) Select Query
 - (b) Group By query
 - (c) Crosstab Query
 - (d) Duplicate Query




4. Considering the scenario in question above, which function should be used with *Item Number* in query?
 - (a) Count
 - (b) Compute
 - (c) Sum
 - (d) Calculate
5. In the database Apex Inventory Shipment, to see total amount received from *Payments* table, it should be dragged into which area of the PivotTable?
 - (a) Drop Column Fields Here
 - (b) Drop Row Fields Here
 - (c) Drop Totals or Detail Fields Here
 - (d) None of the above
6. Considering the database Apex Inventory Shipment, we wish to get all the sales orders with cash payments. What needs to be done to achieve this?
 - (a) Create a sub-query with *Sales Order* as Payment type
 - (b) Create a select query on *Sales Order* table and write *Cash* as criteria for *Payment Terms*
 - (c) Create a Group-By query on *Payment Terms*
 - (d) None of the above
7. From the database Apex Inventory Shipment, we wish to retrieve a report displaying details of all the invoices including the payments details (if already made) of the invoices. What type of Join should be used in Query window to achieve the desired result?
 - (a) Left outer join
 - (b) Right outer join
 - (c) Default join
 - (d) No joins will be used
8. How can we add a table to the *Query Design* window?
 - (a) Select **Create -> Add Table**
 - (b) Select **Database Tools -> Add Table**
 - (c) Select **Design -> Show Table**
 - (d) Select the table from the **Navigation Pane**
9. If we are creating a Crosstab query, the table we are querying must contain what?
 - (a) Lots of confusing information
 - (b) More than 100 records



- (c) At least one field
 - (d) At least three fields
10. _____ type of query summarises information in a grid, organized by regions and months.
- (a) An update query
 - (b) A parameter query
 - (c) An action query
 - (d) A Crosstab query
11. When we double click a query object, we open
- (a) The object in design view
 - (b) The object in print preview
 - (c) The result of the query
 - (d) The underlying table on which the query is based
12. What is the primary difference between a PivotTable report and a Crosstab query?
- (a) A PivotTable report can contain sums, counts, and averages, while a Crosstab query cannot
 - (b) We cannot create a PivotTable from a Crosstab query
 - (c) A Crosstab query lets us group similar items, while a PivotTable query does not
 - (d) None of the above
13. In Access, the best types of queries to use for data analysis are:
- (a) Select queries
 - (b) Parameter queries
 - (c) Action queries
 - (d) All of the above
14. Which view allows adding tables to the query?
- (a) Datasheet view
 - (b) PivotTable view
 - (c) PivotChart view
 - (d) Design view
15. Which type of join in multi-table query permits to view all the records from one table and matching from another?
- (a) Inner Join
 - (b) Outer Join
 - (c) Equi Join
 - (d) Non-Equi Join



16. For the database Apex Inventory Shipment, we need to present a graphical view of the sales volume of products. User should have the liberty to view all the products, or products from a particular category. For this purpose, a PivotChart is created. Which field should be placed in area **Drop Series Fields Here**?
- (a) Category
 - (b) Total Sales
 - (c) Month
 - (d) Item Number
17. For the above question, the area **Drop Filter Fields Here** should contain _____ field.
- (a) Category
 - (b) Item Number
 - (c) Years
 - (d) Month
18. To view the results in Datasheet view of the query created, do the following _____.
- (a) Press F5 key
 - (b) Click **Run** on **Design** tab
 - (c) Press CTRL + R
 - (d) All of the above
19. The  option in **Design** ribbon permits us to create what type of queries?
- (a) Crosstab Queries
 - (b) Action Queries
 - (c) Parameter Queries
 - (d) Group By Queries
20. For the database Apex Inventory Shipment, if we wish to delete all the invoices for which the payments were made in last quarter of year 2011, what should be done?
- (a) Create a select query and delete records manually
 - (b) Create a sub-query with action query
 - (c) Create simple action query
 - (d) Cannot be done using queries

CHAPTER

2

DESIGNING FORMS AND REPORTS

LEARNING OBJECTIVES

- Advanced Form Design
 - ☐ Adding Unbound Controls
 - ☐ Adding Graphics to Form
 - ☐ Adding Calculated Values
 - ☐ Adding Combo Boxes
- Make effective use of forms
 - ☐ Displaying a calendar control on a form
 - ☐ Organising information with tab pages
 - ☐ Displaying a summary of data in a form
- Advanced Reports
 - ☐ Creating customised headers and footers
 - ☐ Adding calculated values
 - ☐ Sub-reports
- Make Reports more effective
 - ☐ Including a chart in a report
 - ☐ Printing data in columns
 - ☐ Cancelling the printing of a blank report

2.1 Introduction

Forms help to display, add, modify, and delete data. Different features available in Access enable to create forms such that it becomes easier for the users to handle data. Access provides various methods to make forms handier and simpler. Different controls can be added to a form to enhance their working. Access also provides ActiveX controls which are Microsoft control meant for different purposes. A form can be divided into pages to increase the readability, or can include a summary section to display grouped data.

Reports can be considered as the static version of forms. Reports are the best way to present data to higher authority and communicate the information to the people. They can be customized using header and footers, calculated values, and sub-reports to represent linked data. Access also provides the facility to create charts in



reports which represents data diagrammatically. Since reports are used for business communication, it must be available for everyone.

2.2 Advanced Form Design

Forms are an important medium of representing data in Access. Forms are not only used for entering of data, but also to view the data in a user friendly manner. Access provides various controls and utility to make the forms more presentable. For example, forms can contain unbounded controls, graphics, calculated values, and combo boxes.

2.2.1 Adding Unbound Controls

An Access Form can contain multiple controls, each having its own significance. These controls can be selected from *Create* tab in *Forms* ribbon. In general, all the controls are bounded to one field of the table or query the form is based on. However, there are few controls which retain the entered value, but are not linked with any table fields. These controls can be used for text label display, for controls such as lines and rectangles, or for holding unbound OLE objects (such as bitmap pictures or logo) that are not stored in a table, but in the form itself. Unbound controls are also known as variables or memory variables.

2.2.2 Problem Scenario

The database Apex Inventory Shipment has a form *frmOrders* as shown in Fig. 2.2.1, based on table *Sales Order* which keeps track of all the orders placed. The Sales Manager wishes to add a current date on the form, so that it becomes easy for the user to keep track of dates.

Sales Order	
sales order number	101
Sale to customer	raj
sale date	24-05-2012
ship date	01-06-2012
payment terms	OK
shipped via	Road

Fig 2.2.1. frmOrders form

Solution

The Database Developer adds an unbounded control, a label to the form and sets its property to store the current date.



Steps for adding an unbounded control

1. Right-click the form *frmOrders* under *All Access Objects* -> *Forms* tab. Select *Design View* from the dropdown to open the table in *Design View*, as shown in Fig. 2.2.2.

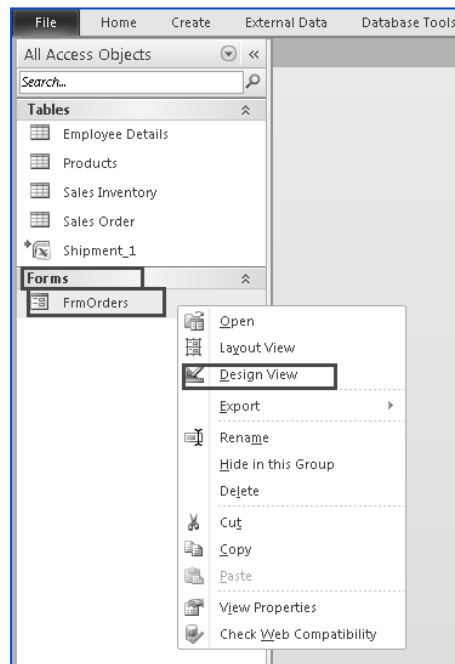

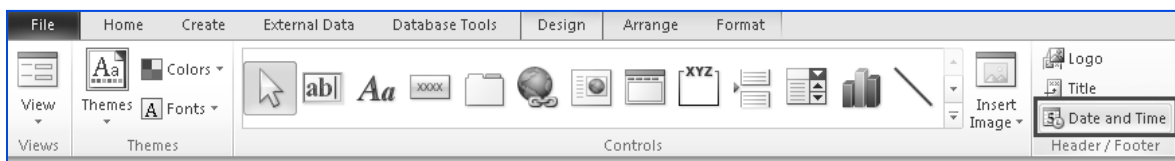


Fig 2.2.2. Open the form *frmOrders* in Design view

2. Select the *Date & Time* control  from *Design ribbon* -> *Header/Footer* tab. The *Date and Time* window appears, as shown in Fig. 2.2.3 select the date & time format from this window.



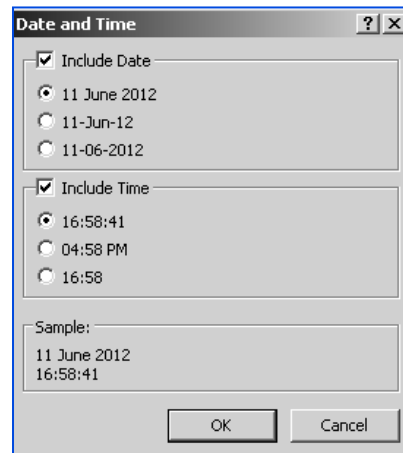


Fig. 2.2.3: Date and Time window

3. Click OK to close the window and draw the control on the *Form Header* portion on the form. The form should appear, as shown in Fig. 2.2.4.

Fig. 2.2.4: Date and Time unbounded control added to a form

NOTE: In a same way, other controls like shapes, logo, etc. can be added to form. The properties of these controls can be set to meet user requirements.

2.2.3 Adding Graphics to Form

Attractive forms are always a valuable addition. Access makes it easy to add a graphic to the background of a form, such as a “watermark” which appear on expensive bond paper. The picture can contain a company logo, text, or any other graphic element. The picture is specified by the form’s picture property and can be embedded



in the form or linked to an external file. If the picture is linked, the graphic displayed on the form changes any time the external file is edited.

The graphic can be inserted into the form in the following ways:

1. Import a graphic file (clip art, gif, jpeg, bmp, etc.) directly into the form.
2. Attach a link to the graphic that opens a website or other database object.
3. Associate the graphic with an existing macro in the database.

2.2.4 Problem Scenario

Consider the *frmOrders* discussed in section 2.2.1. The Database Developer wants to make it more presentable and thought of adding a picture to the background of the form.

Solution

The picture can be set as form background using the image control. Select the picture to be added, draw the image control and adjust its properties to make image as a background.

Steps for adding graphics

1. Right-click the form *frmOrders* under *All Access Objects* -> *Forms* tab. Select *Design View* from the dropdown to open the table in *Design View*.
2. Select the insert image button from *Design ribbon* -> *Controls* tab and drag it to cover the *Details* section of the form.
3. The *Insert Picture* window appears. Browse for the picture to be inserted and click *OK* to close the window. The *Insert Picture* window is displayed in Fig. 2.2.5.

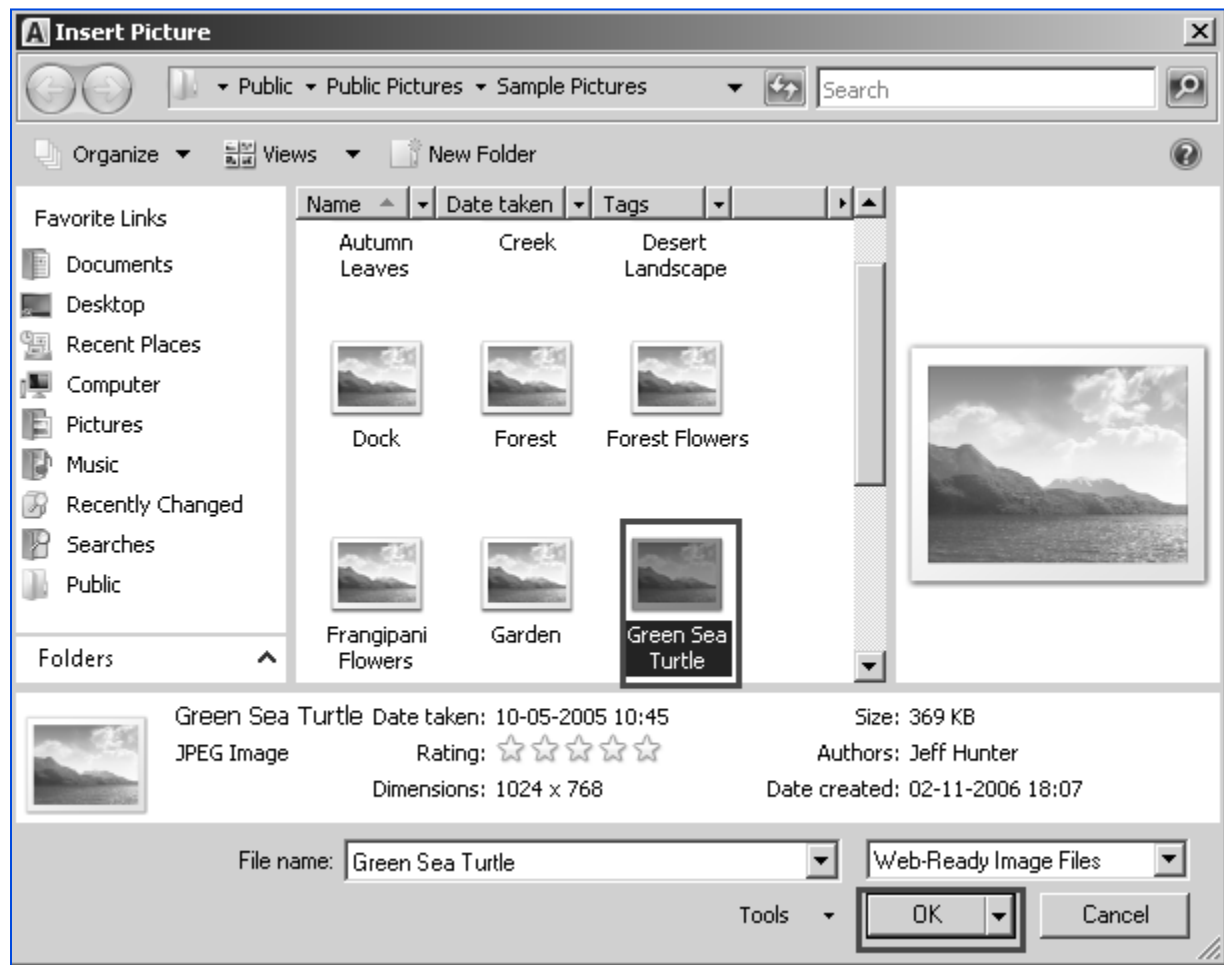


Fig. 2.2.5. Insert Picture window

4. The form after the picture is inserted appears, as shown in Fig. 2.2.6.



Fig. 2.2.6: Image inserted in form frmOrders

5. The picture is required to move to the back of controls. Right-click the picture and select *Position -> Send to Back* from the dropdown, as indicated in Fig. 2.2.7.

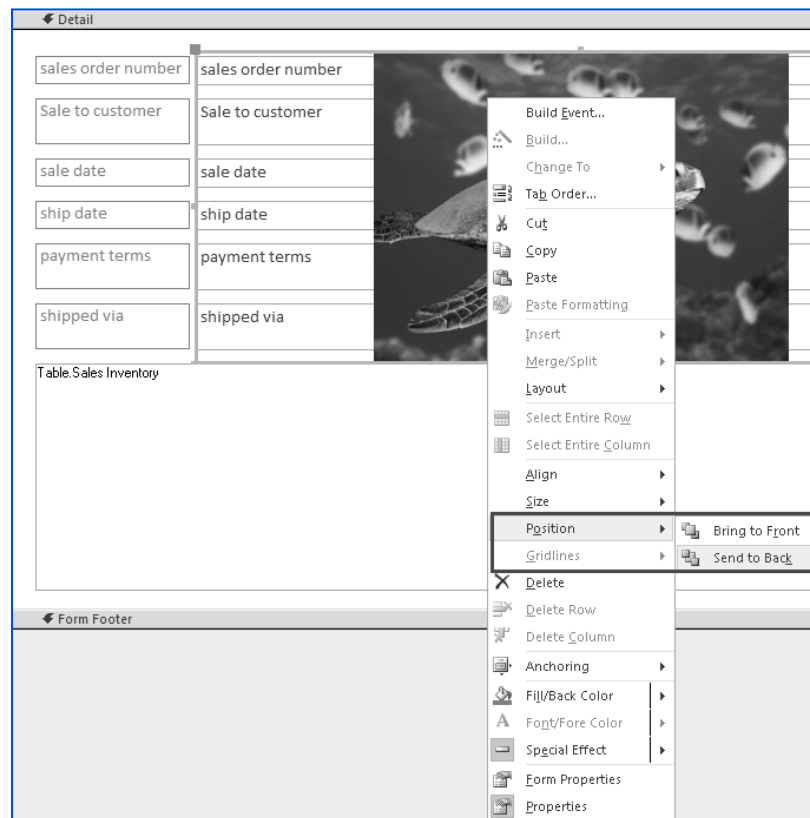


Fig. 2.2.7. Send the picture to back of controls

6. The form appears, as shown in Fig. 2.2.8.



sales order number	sales order number
Sale to customer	Sale to customer
sale date	sale date
ship date	ship date
payment terms	payment terms
shipped via	shipped via

Fig. 2.2.8. Form with Graphics

7. Select the picture and press *F4* to view its properties. In the property sheet, move to format and set the *Size Mode* property of picture to stretch, as shown in Fig 3.2.9.

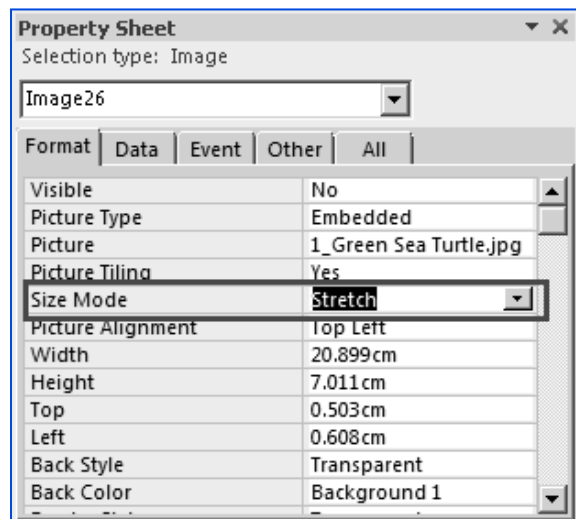


Fig. 2.2.9. Set the image property

8. The final form appears, as in Fig. 2.2.10.



Fig. 2.2.10. *frmOrders* with Graphics inserted

NOTE: While adding a graphic to the form, a link to that graphic can also be created. The link ensures that the changes made to original file are also reflected in form.

2.2.5 Adding Calculated Values

Access provides many features to give forms enhanced behavior and a modern look. One of the major requirements in Accessform that it can be display computed results. These results may be bounded to some field in the table or may be unbounded. For example, we may need to display the complete name of the customer instead of displaying the first name and last name separately.

Calculated controls can use any of the existing function or user build function available in Access. Calculated values can also be expressions computed with a combination of other fields and operators.


2.2.6 Problem Scenario

Consider the form *frmOrders* discussed in section 3.2.1. The Manager wishes to add another date in form, which may indicate when the order will reach customers. This date can be computed as 15 days after the date of shipment.

Solution

A textbox is added to the form. This textbox contains calculated value, which is computed as 15 days + date of shipment.

Steps to add calculated values to form

1. Right-click the form *frmOrders* under *All Access Objects* -> *Forms* tab. Select *Design View* from the dropdown to open the table in *Design View*.
2. Select the textbox control  from *Design ribbon* -> *Controls* tab and draw it on the details section of the form. The form should appear, as in Fig. 2.2.11.



The screenshot shows the 'FrmOrders' form in Design View. The 'Form Header' section contains a title 'Sales Order' and two empty text boxes with formulas '=Date()' and '=Time()'. The 'Detail' section contains several text boxes with labels: 'sales order number', 'Sale to customer', 'sale date', 'ship date', 'payment terms', and 'shipped via'. At the bottom, there is a text box with the label 'Text25' and an empty text box with the property 'Unbound'.

Fig. 2.2.11. Insert Textbox in Form

3. Double-click the label and type *Delivery Date* instead of *Text25*. Similarly, double-click the textbox and type `=DateAdd("d",15,[Ship Date])`. The form should appear, as shown in Fig. 2.2.12.

The screenshot shows the 'FrmOrders' form in Design View. The 'Form Header' section contains a title 'Sales Order' and two empty text boxes with formulas '=Date()' and '=Time()'. The 'Detail' section contains several text boxes with labels: 'sales order number', 'Sale to customer', 'sale date', 'ship date', 'payment terms', and 'shipped via'. At the bottom, there is a text box with the label 'Delivery Date' and an empty text box with the formula '=DateAdd("d",15,[Ship Date])'.

Fig. 2.2.12. Specify values for Textbox control



NOTE: The formatting of the new added textbox can be copied from above cells.

4. Select *Form View* from *Home ribbon* -> *Views* tab to open the form in *Form View*. Confirm the textbox displays the calculated value.

2.2.7 Adding Combo Boxes

Combo boxes in Access provide a way of selecting a value from a list. This is quicker than remembering which value to type and ensures that the entered value is valid. A combo box is a compact method of presenting a list of choices and allows user to enter a value that is not in the list.

The values in a combo box are displayed by clicking the arrow at the end. In combo box values can be selected by clicking it or by typing the first few characters of the value into the text box area of the combo box. If the *Auto Expand* property is set to *Yes*, the default setting, Access automatically fills in the rest of the value. Combo box consists of rows of data with one or more columns, which can appear with or without headings. One of the columns contains the values to be stored in the field (bound control) or use for other purposes (unbound control); the other columns contain explanatory information.

2.2.8 Problem Scenario

Consider the form *frmOrders* created in section 3.2.1. The executives are making many mistakes while typing the reference of the customer to which orders are sold. The Sales Manager asked the Database Developer to find the solution to this problem.

Solution

The Database Developer thought that it will be a good way to add a combo box for the customers. Users will have an option to choose the value from the list or type a new value if required, thereby decreasing the typing mistakes.

Steps to add a combo box in Form

1. Right-click the form and select *Design View* from the dropdown to open the form in *Design View*. The form appears, as shown in Fig. 2.2.13.



Fig. 2.2.13: frmOrders in Design View


2. Delete the *Sale to Customer* textbox.
3. Select the Combo Box control  from *Design ribbon -> Controls* tab and draw it in the place of *Sale to Customer* textbox. The *Combo Box wizard* appears, as shown in Fig. 2.2.14.

Fig. 2.2.14. Combo Box wizard



4. Select the first option i.e. *I want the combo box to look up the values in a table or query* and click *Next*.
5. In the *Select Table or Query* window, select the table option from *View tab* and choose table *Customer* from the list, as indicated in Fig. 2.2.15. Click *Next* to continue.

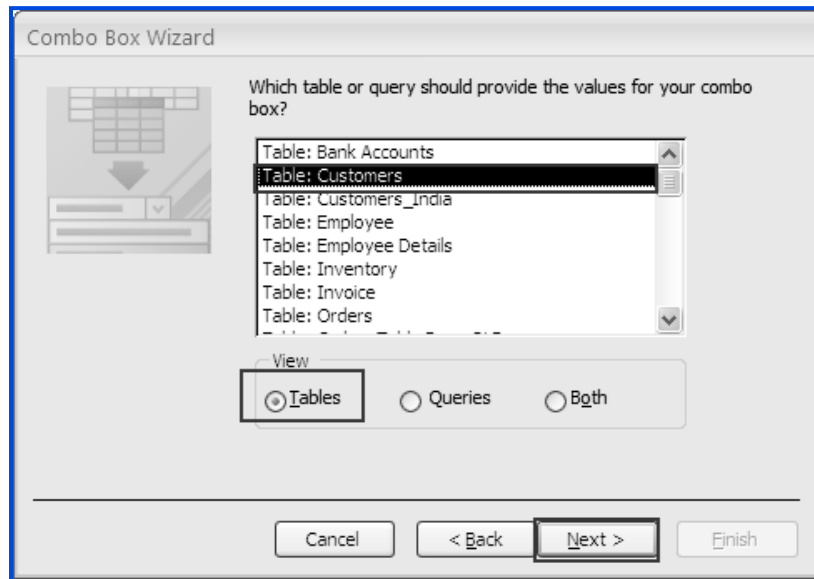



Fig. 2.2.15. Select the required table

6. In the *Select Field* window, select field *Customer Number* from *Available field* and click on  sign to put it into selected fields. Similarly, add *First Name* and *Last Name* to selected field. The window appears, as shown in Fig. 2.2.16. Alternatively, the user can double-click the fields to add them to selected field.

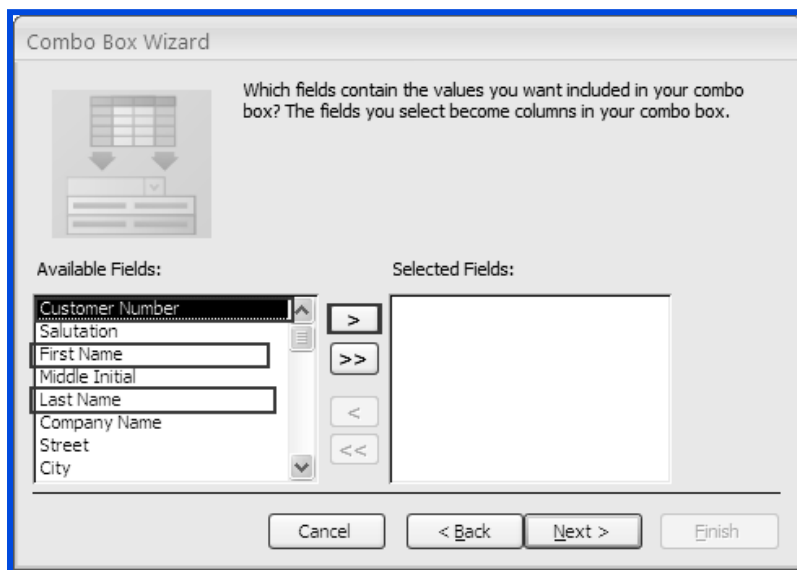


Fig. 2.2.16. Add field to Combo Box



NOTE: Even if the multiple fields are selected to be displayed in Combo Box, the Primary Key will be stored in table or form.

- Click *Next* to continue. In the *Sort Order* window select *Customer Number* as 1. This is indicated in Fig. 2.2.17.

Combo Box Wizard

What sort order do you want for the items in your list box?

You can sort records by up to four fields, in either ascending or descending order.

1	Customer Number	Ascending
2		Ascending
3		Ascending
4		Ascending

Cancel < Back Next > Finish

Fig. 2.2.17. Select Customer Number for Sort Order

- In the *Hide Key Column* window, uncheck the *Hide Key Column* checkbox, as shown in Fig. 2.2.18. Click *Next* to proceed.

Combo Box Wizard

How wide would you like the columns in your combo box?

To adjust the width of a column, drag its right edge to the width you want, or double-click the right edge of the column heading to get the best fit.

☐ Hide key column (recommended) Uncheck

Customer Number	First Name	Last Name
SCASHS	Cash	Sale
ALS-0034	Allen	Rochester
ATV-0027	Christine	Lyndsey
BAN-0009	Robert	Ocean
BIL-0042	William	Harte
BRU-0001	Ronald	Henderson
BUC-0037	Buck	Starboard

Cancel < Back Next > Finish

Fig. 2.2.18. Uncheck Hide Key Column Option



NOTE: *Hide Key Column* hides the Primary Key to be displayed as a value in combo box, though internally only Primary key is stored.

9. The next window confirms a unique value to be stored in table. Select *Customer Number* and click *Next*, as indicated in Fig. 2.2.19.

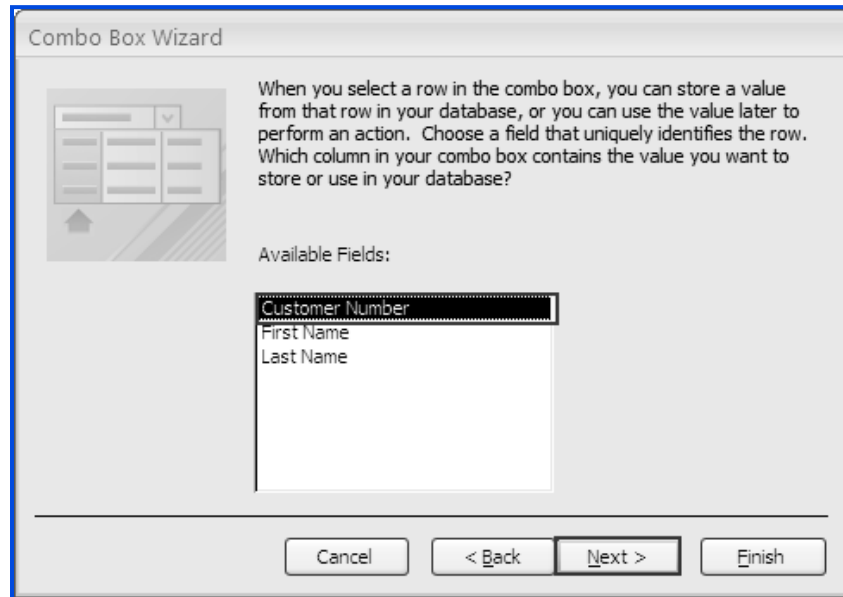


Fig. 2.2.19. Select Field to be stored in Table

10. In the next window that appears, select the option *Store the value in this field* and select the value *Sale to Customer* from the dropdown, as indicated in Fig. 2.2.20.

NOTE: The first option *Remember the value for later use* is used in case of unbound controls.

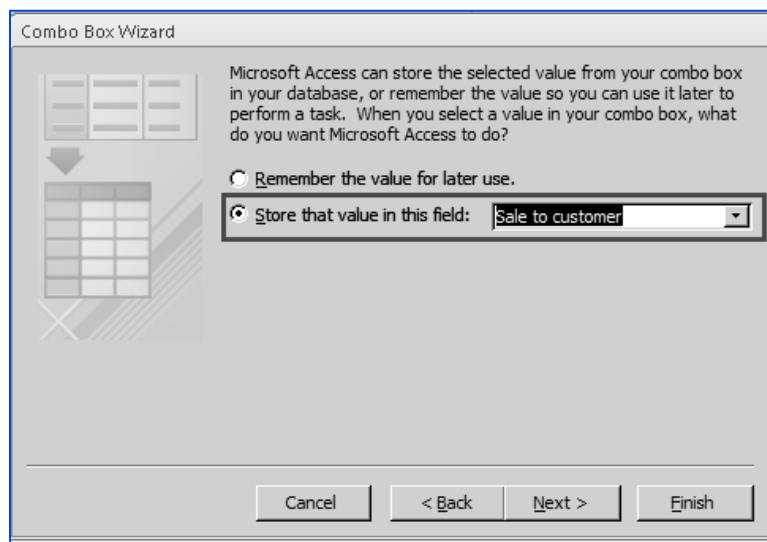


Fig. 2.2.20. Select field to store the value



- Click *Next* to make the *Name* window appear. Type the name *cmbCustomers* for the Combo Box and click *Finish* to close the wizard, as indicated in Fig. 2.2.21.

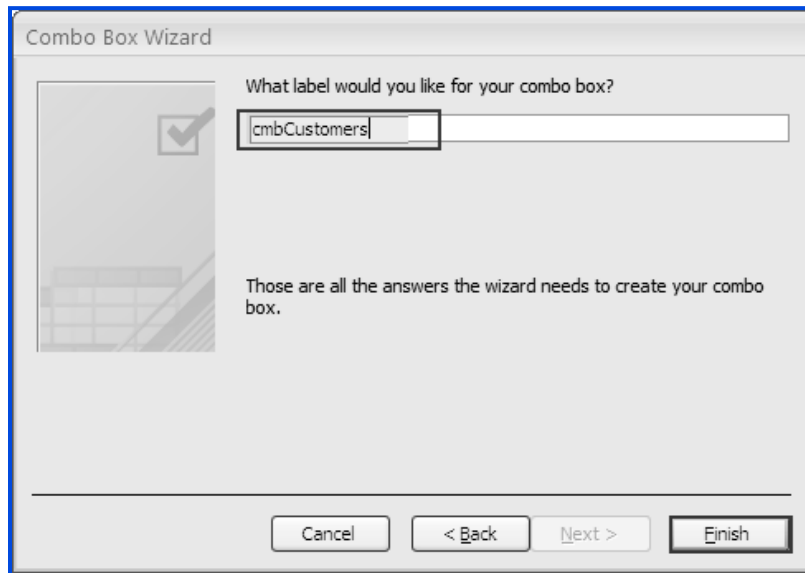


Fig. 2.2.21: Type Name for Combo Box

- The *Sale to Customer* combo box appears on the form, as displayed in Fig. 2.2.22.

Fig. 2.2.22. Combo Box added in form

- Set the formatting of the label and combo box to make it more presentable. Open the form in *Form View* to verify the added combo box. The form should appear, as shown in Fig. 2.2.23.



Fig. 2.2.23. The Combo Box List appears

2.3 Make effective use of Forms

Most databases provide forms for data entry and for viewing data. Access provides few techniques that help enhancing the usability of forms, and in turn, the productivity of the users of database. Forms are used by most of the users on a regular basis, and hence it is very crucial to make the effective use of forms. Adding more capabilities to forms helps to save user time and work, and also present data in a more organised way. Some of the extended functionality of the form can be:

- Adding calendar control on a form
- Organising information with tab pages
- Displaying a summary with tab pages

2.3.1 Displaying a calendar control on a Form

To make forms more presentable and user friendly, different types of controls can be added to forms. These controls can be as simple as controls that are available in the *design ribbon* -> *controls* tab, or can be a third party ActiveX control. ActiveX controls are usually graphical objects that do not operate as standalone solutions, and they run only in the Windows environment.

Calendar control is one of the most popular ActiveX controls. While working with dates, it is always helpful to have a calendar nearby. If a form contains a date field, it is always good to add a calendar control which displays dates graphically and make the form more user-friendly. The calendar control provides properties that enable to set and retrieve dates in/from a table.

2.3.2 Problem Scenario

Database Designer of Apex Ltd. has designed the *frmOrders* form to be used for *Sales Orders* table, as shown in Fig. 2.3.1 The Supervisor of the Customer Service Group informs the designer that the people taking orders



often need to refer to a calendar to answer customer questions, such as when they will receive a shipment. A calendar is necessary so that the customer service employees can take weekends and holidays into account when they make an estimate as to when orders will be shipped.

The screenshot shows a Microsoft Access form titled 'Sales Order' with a tab 'FrmOrders'. The form contains the following fields and values:

Field Name	Value
sales order number	101
cmbCustomers	101
sale date	24-05-2012
ship date	01-06-2012
payment terms	OK
shipped via	Road

Fig. 2.3.1. frmOrders Form

Solution

A Calendar control is added to all the date fields to make the form convenient for the users. The Database Developer adds a calendar control for Sales Date and Ship Date for users to pick up date graphically.

Steps to add a Calendar Control

1. Right-click the *frmOrders* and select *Design View* from the dropdown to open the form in *Design View*, as shown in Fig. 2.3.2.

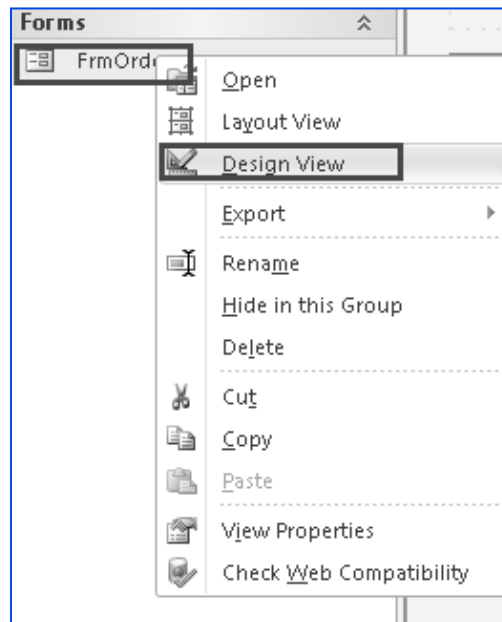

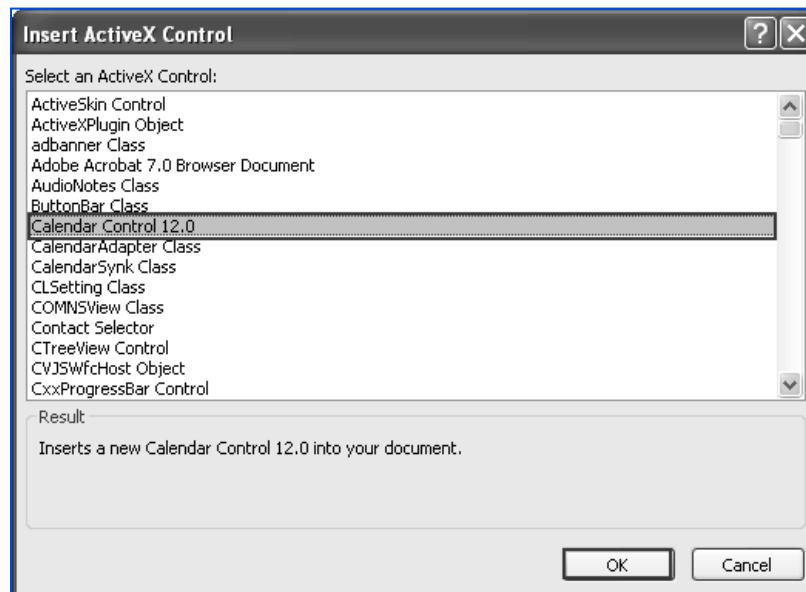


Fig. 2.3.2. Open form frmOrders in Design View

2. From *Design ribbon* -> *Controls* tab, click the *Insert ActiveX Control Command* .
3. The *Insert ActiveX* control window appears. Select *Calendar Control 11.0* from the list and click *OK*, as shown in Fig. 2.3.3.



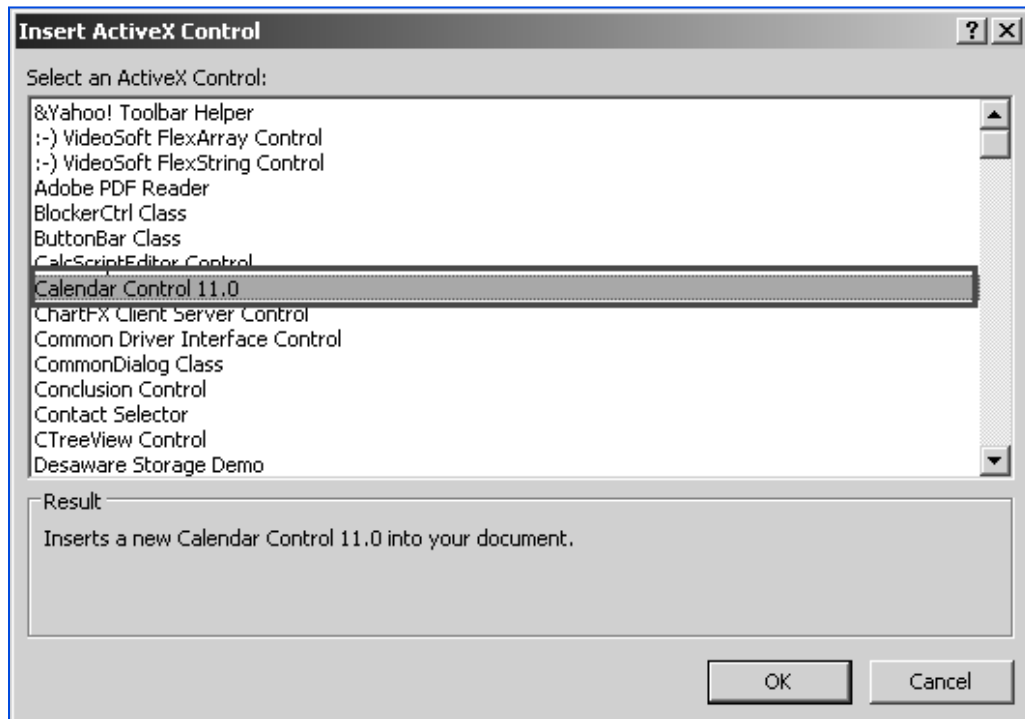


Fig. 2.3.3. Select Calendar control

4. The Calendar control is placed in the upper-left corner of the form. Drag it to the required position. The *frmOrders* after inserting the Calendar control appears, as displayed in Fig. 2.3.4.




Fig. 2.3.4: Calendar control inserted on the form

5. Select the Calendar control and press *F4* to open the *Property Sheet* for the Calendar control
6. Move to the data tab in property sheet. Click the arrow next to the *Control Source* property, and choose *Sales Date* from the list, as shown in Fig. 2.3.5.

Fig. 2.3.5. Set the Control Source property



NOTE: The Calendar control has many properties that you can set to create a custom appearance.

7. To set other properties of Calendar control, click on  button in the *Custom property in Other* tab. The Calendar properties appear, as shown in Fig. 2.3.6.

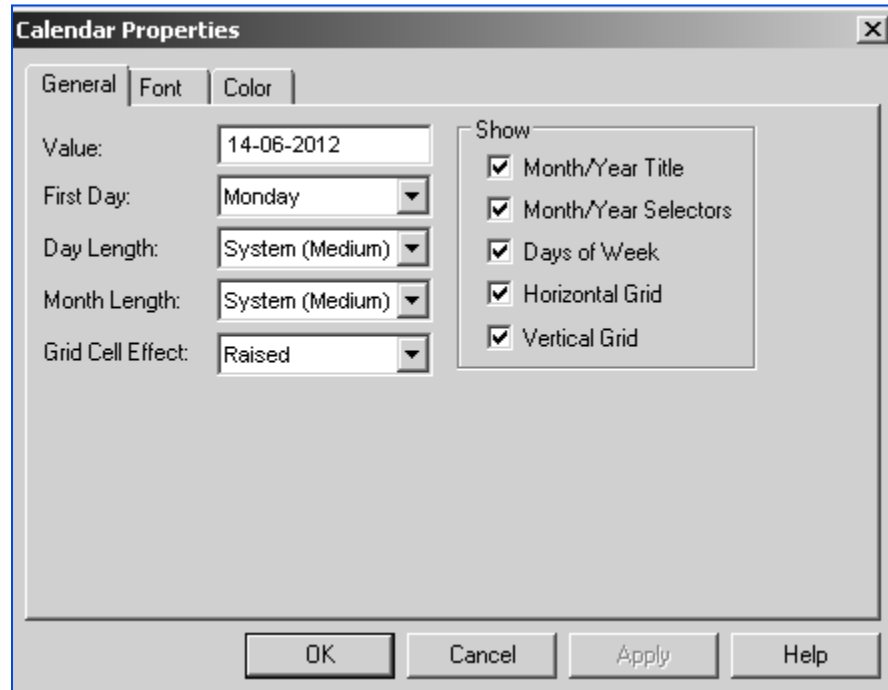


Fig. 2.3.6. Calendar Properties

2.3.3 Organising information with Tab Pages

A Tab control is an Accesscontrol that allows user to create multiple pages in one form. Each page is separated by its own tab and becomes active when the user selects a tab. Tab controls are useful for presenting grouped information that can be assembled by category. A tab control has pages, each with a tab of its own. Each tab page can contain all types of controls, such as text boxes, combo boxes, images, and even command buttons.

2.3.4 Problem Scenario

The Sales Manager asks the Information Analyst to store the information of the customer which could be displayed in a friendly manner, such that the customer's personal details and company details can be viewed separately.

Solution

The Information Analyst advises the developer to divide the information into separate tab in a form. One tab in the form should contain customer contact detail, while the other can contain customer's company details, and third tab can contain customer's terms with the company.



Steps to add tab in a form

1. On the *Create ribbon -> Forms* tab, click *Blank Form* to create a new form, as shown in Fig. 2.3.7.

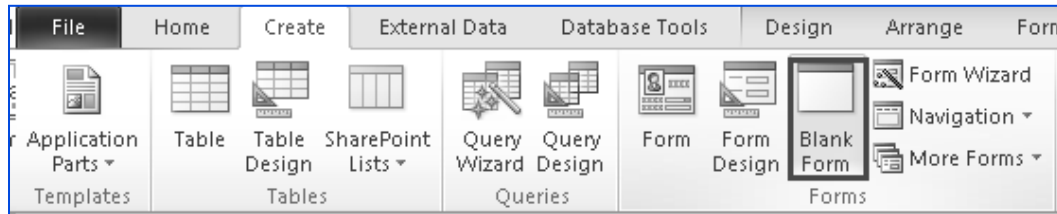


Fig. 2.3.7: Open a blank Form

2. From the *Field List* window, open the plus sign with *Customers* table and drag the fields *Customer Number*, *First Name*, *Middle Name* and *Last Name* to the form. The form appears, as shown in Fig. 2.3.8.

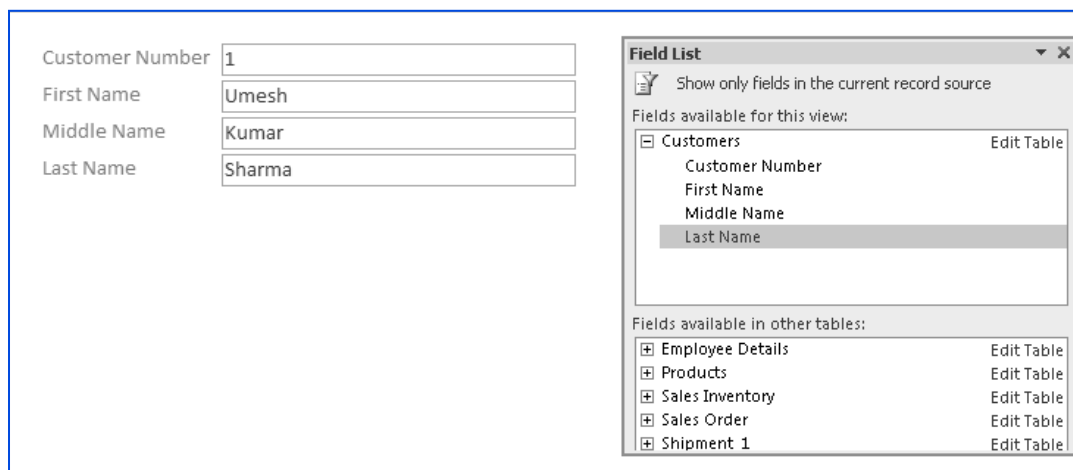


Fig. 2.3.8. Add Fields to a blank form

NOTE: If the field list window does not appear, click on *Add Existing Field* from *Design ribbon -> Tools* tab.

3. Click *Home ribbon -> Views* tab -> *View* and select *Design View* from the dropdown to open the form in *Design View*. The form appears in *Design View*, as shown in Fig. 2.3.9.

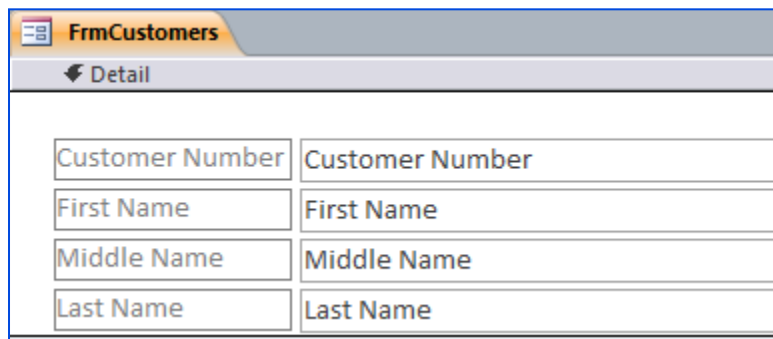



Fig. 2.3.9. Form in Design View



4. Extend the size of the form as required. Click on tab control  in *Design ribbon* -> *Controls* tab and draw it into the form. The form appears, as shown in Fig. 2.3.10.

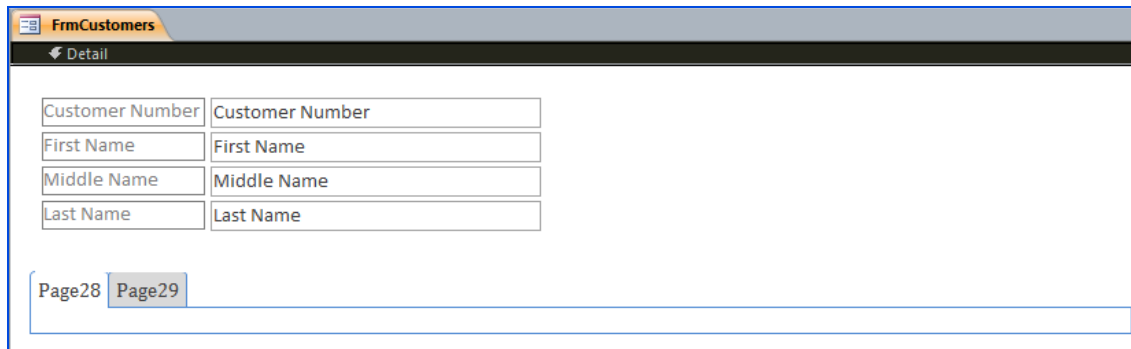


Fig. 2.3.10. Add tab control to a form

5. Double-click the tab *Page28*. Property sheet appears. Type the value *Personal Details* in *Name* property, as shown in Fig. 2.3.11.

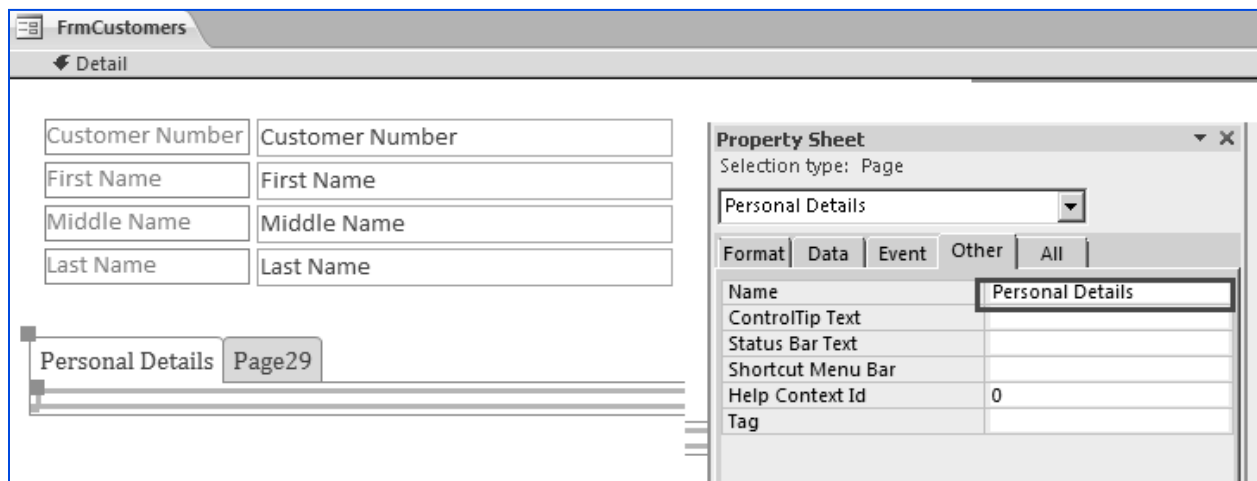


Fig. 2.3.11. Change the name of first tab

6. In a similar manner, change the name of the second tab to *Company Details*. Right-click the Tab control and select *Insert Page* from the dropdown to add a new tab and change its name to *Other Details*. The form should appear, as in Fig. 2.3.12.



Fig. 2.3.12. Add three tabs to Form

7. Move to the *Personal Details* tab, and select the field *Street*, *City*, *Country*, *Zip/Postal Code*, *Phone*, *Other Phone*, and *Email* from the *Field List* window. The resultant form is displayed in Fig. 2.3.13.

Fig. 2.3.13: Add required field to personal Details tab



8. In a similar manner, add the fields *CompanyName*, *Company Details* and *Job Title* to the *Company Details* tab and also the fields *Credit Limit*, *Payment Terms*, *Comments*, and *Document* submitted to the *Other Details* tab.
9. A tabbed form is prepared. Now the user can navigate between different tabs to view the information required.
10. Save the form as *frmCutomers*.

2.3.5 Displaying a Summary of Data in a Form

Presenting a summary of data can be very useful to users who access database. PivotCharts and PivotTables are created in forms to display a summary of data. Pivot Table is used to summarize and analyzes data in a form. The idea of Pivot Table is to let users slice and dice the data in any way required at a given moment in time. Pivot Table represents the data in spreadsheet form, while Pivot Chart represents the same data in a graphical form. Both Pivot Chart and Pivot Table are different views of a form.

Pivot Table represents the data in tabular form, in which one or more vales are represented in rows, another value in columns, and a summarized value at the intersection of row and column. Forms that lend themselves to be displayed in PivotTable or PivotChart view provide many ways for users to manipulate data. An example of such a form is one that contains information about country, city, salesperson, sales, and date of sale. Such form can be used to determine sales by city and salesperson for each month, or sales in each country for each salesperson during the year.

2.3.6 Problem Scenario

The Sales Manager wishes to see the summarized data of sales. He requests the Database Developer to create a form in such a manner, that it should display the summarized data in terms of cost of Item Sold per year, per country. For example, he needs a report displaying summary of the items sold country wise and state wise in year 2008 Quarter-2.

Solution

The Database Developer first creates a query based on table *Sales Order*, *Customers*, *Sales Item Description*, and *Inventory* and fetches the required data from it. Once query is created, then a form using pivot table option is created over the query.

Steps for creating a query

1. Open the *Query Design* window by clicking *Create ribbon ->Queries tab -> Query Design*.
2. Select the tables *Customers*, *Sales Order*, *Sales Item Description* and *Inventory* table from the *Show Table* window. Click *OK* to close the window. The *Query Design* window appears, as shown in Fig. 2.3.14.

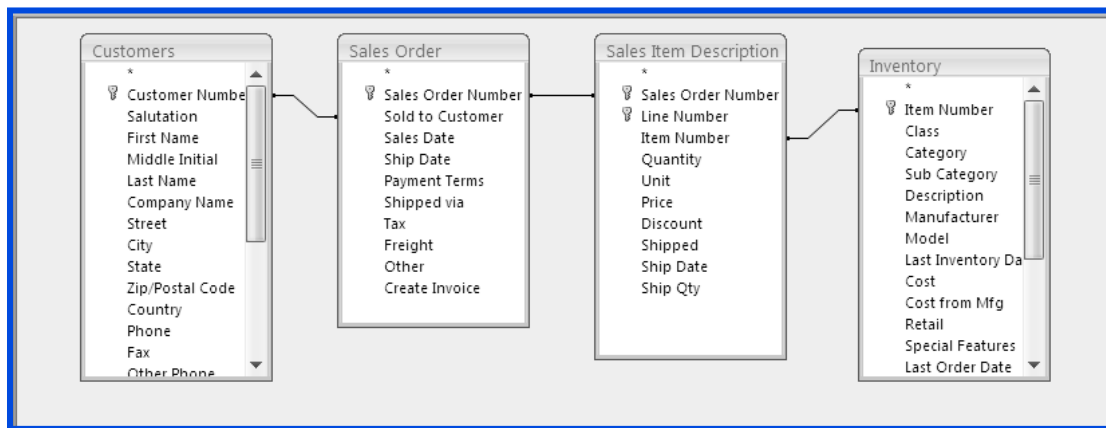


Fig. 2.3.14. Query Design window

3. Select *Country* and *State* from the *Customers* table and drag them to the *Add Columns* tab. Similarly add the column *Sales Date* from *Sales Order* table and *Item Number* from *Inventory* table. Also add a calculated column as *Total Sale: [Quantity] * [Price]*. The resultant query window is displayed in Fig. 2.3.15.

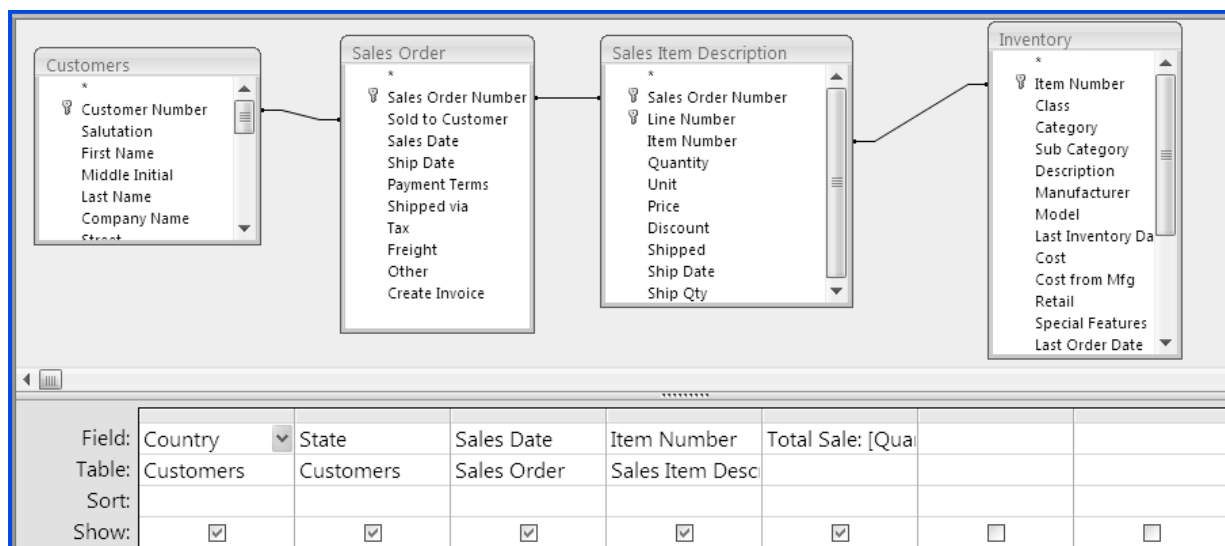


Fig. 2.3.15. The query Design window

4. Save the query as *SummarizedData* and run to confirm the results.

Steps for creating a Pivot Table Form

1. Select the query *SummarizedData* under *All Access Objects* -> *Queries* tab. From the *Create ribbon* -> *Forms tab* ->, click the dropdown arrow near *More Forms* and select *Pivot Table* from the list, as indicated in Fig. 2.3.16.

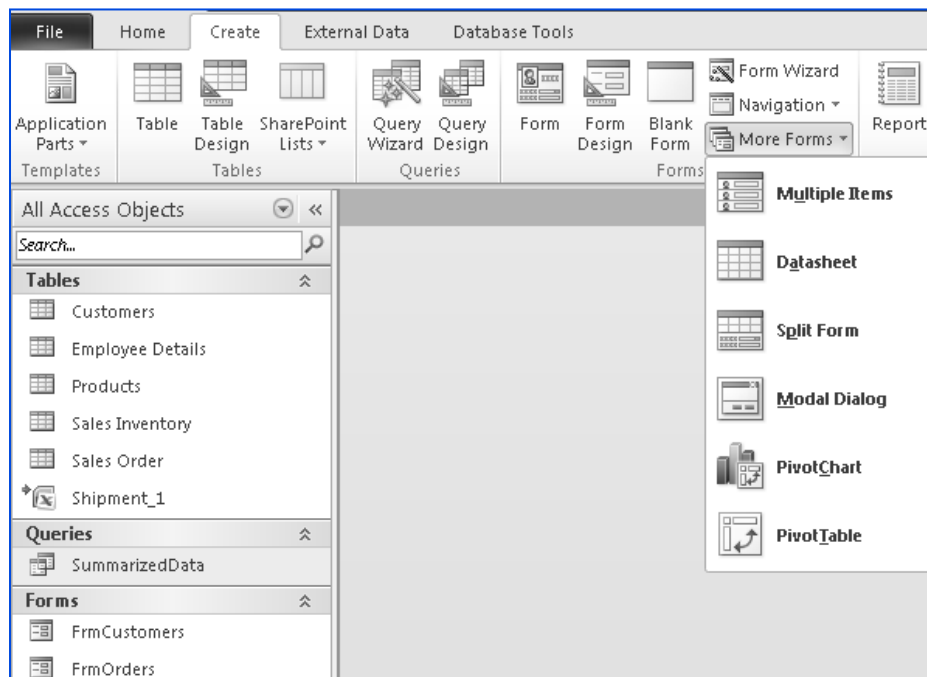


Fig. 2.3.16. Select the Pivot Table option

2. The *Pivot Table* window appears along with the field list, as shown in Fig. 2.3.17.

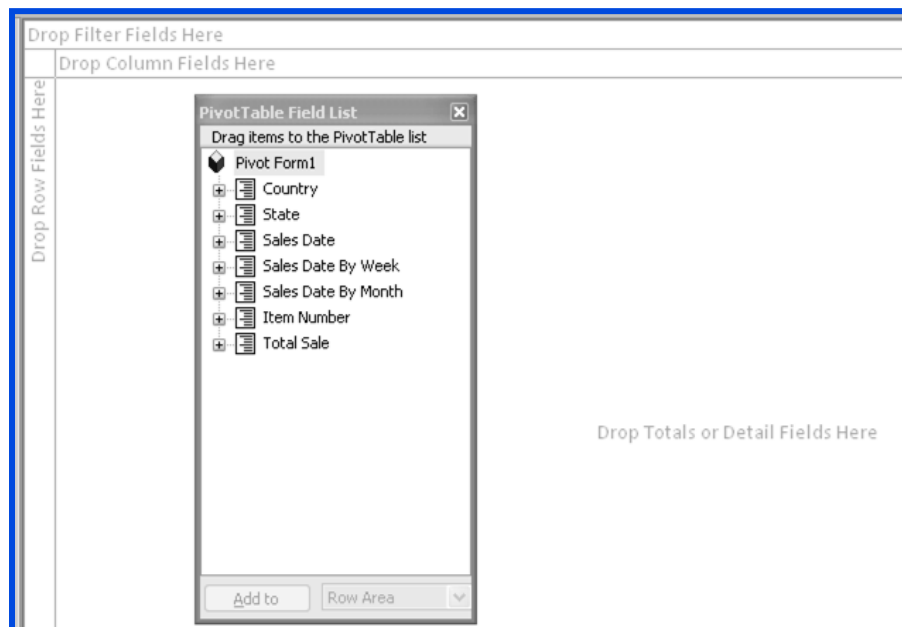


Fig. 2.3.17. The Pivot Table window

NOTE: If the *Field List* window does not appear, click *Design ribbon* -> *Show/Hide* tab and *Field List*.



- Open the plus sign of the field *Item Number* and drag the field to *Drop Row Fields Here*. Open the plus sign of *Country* and *State* drag *Country* and then *State* to *Drop Column Fields Here*. Similarly, open the plus sign for *Total Sale* and drag the column *Total Sale* to *Drop Totals or Detail Fields Here*, and open the plus sign of *Sales Date By Month* and drag the fields *Years* and *Quarters* to *Drop Filter Field Here*. The resultant *Pivot Table* window is shown in Fig. 2.3.18.

Sales Date By Month		Country	State	
(Multiple Items)				
		USA		
		AZ	CA	CT
		+ -	+ -	+ -
Item Number	Total Sale	Total Sale	Total Sale	Total Sale
AIR-4615				
ALF-9000				
ALT-6011				
BAP-8800				
BAT-9115	33.09			
BLA-0001				
BOA-2003				
BUG-2000				
CAN-87004				
CAV-2002				
CHL-0257	274.99			

PivotTable Field List

Drag items to the PivotTable list

- Pivot Form1
 - Country
 - Country
 - State
 - State
 - Sales Date
 - Sales Date By Week
 - Sales Date By Month
 - Years
 - Quarters
 - Months
 - Days
 - Hours
 - Minutes
 - Seconds
 - Item Number
 - Item Number
 - Total Sale
 - Total Sale

Add to Row Area

Fig. 2.3.18. Pivot Table window

- Click the dropdown arrow of *Sales Date by Month* field. Deselect the *Select All* option and open the plus sign of year 2008, and select Qtr2 from the year 2008, as shown in Figure 2.3.19.

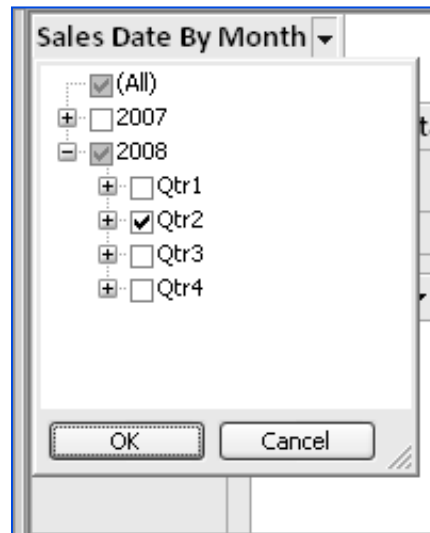


Fig. 2.3.19. Select the required year

5. The *Pivot Table* window displays the sales made for each item country and state wise in Quarter2 of year 2008.

NOTE: Pivot Table gives you a flexibility of selecting the desired data and view the data according to your requirements.

2.4 Advanced Reports

Reports are one of the best ways to represent data. Reports can be made more advanced and more user friendly to represent the data in a more organized form. The Reports can include customized Headers and Footers such as to display the company Logo or the department. Also the calculated controls can be added to report to display computed values.

2.4.1 Creating Customised Headers and Footers

Reports can include pairs of header and footer sections:

- Report Header and Footer for printing information at the beginning and end of the report.
- Page Header and Footer for printing information at the top and bottom of each page.
- Group Header and Footer for printing information when the group starts or the group ends, if groups exist in the report.

To add a header/footer pair, right-click in the report design and choose *Page Header/Footer* or *Report Header/Footer* from the shortcut menu. Page and report headers and footers are added as pairs, while In Group only Headers can be added.



Controls in the *Report Header & Footer* section are printed only once at the beginning and the end of the report. A common use of a Report Header section is as a cover page or a cover letter, or for presenting information that needs to be communicated only once to the user of the report. The Report Footer section can be used to display the summarized data of whole report, like author of report, date & time, etc.

Controls in the *Page Header & Footer* section are normally printed at the top and bottom of every page. Typically, Page Headers serve as column headers in group/total reports; they can also contain a title for the report. A Group Header section normally displays the name of the group. Group Headers immediately precede *Detail* sections. A Group Header is added to the report if any grouping is done in the report.

Each *Header & Footer* section in reports can be customized from their traditional look to meet user's requirement. Different controls can be added to header and footer. The textboxes or labels can be used to display a user-defined message. Various functions and expression can be used to display summary results and computed data.

2.4.2 Problem Scenario

The Database Developer has prepared a report *rptCustomers* to display all the details of the customers, as shown in Fig. 2.4.1. The Zonal Sales Head requires the report to be customized; each page of the report must contain the *Report Title* at the top and date & time at bottom.

Customers				
Customer Number	First Name	Last Name	Company Name	State
\$CASH\$	Cash	Sale	Cash Sale	
ALS-0034	Allen	Rochester	Al's All Terrain Vehicles	CT
ATV-0027	Christine	Lyndsey	ATV Motor Sports	CT
BAN-0009	Robert	Ocean	Banana Boats and More	CT
BIL-0042	William	Harte	Bill's Dodge Pontiac Oldsmobil	CT
BRU-0001	Ronald	Henderson	Boats R Us	TX
BUC-0037	Buck	Starboard	Bucky's Boat-a-Rama	CT
CAR-0047	Shelley	Rogers	Cars of Ours	NY
CHU-0017	Charles	Motorman	Chuck's Trucks	CT

Fig. 2.4.1: Report *rptCustomers*



Solution

The Database Developer adds a Page Header & Footer to the report and customizes the *Page Header* to hold a label with *Report Title*, and *Page Footer* to contain the date & Time using *Date Time* control.

Steps to customize Page Header & Footer of the Report

1. Right-click the report *rptCustomers* under *All Access Object* -> *Reports* tab and select *Design View* from the dropdown to open the report in *Design View*. The *Report Design View* should appear, as in Fig. 2.4.2.

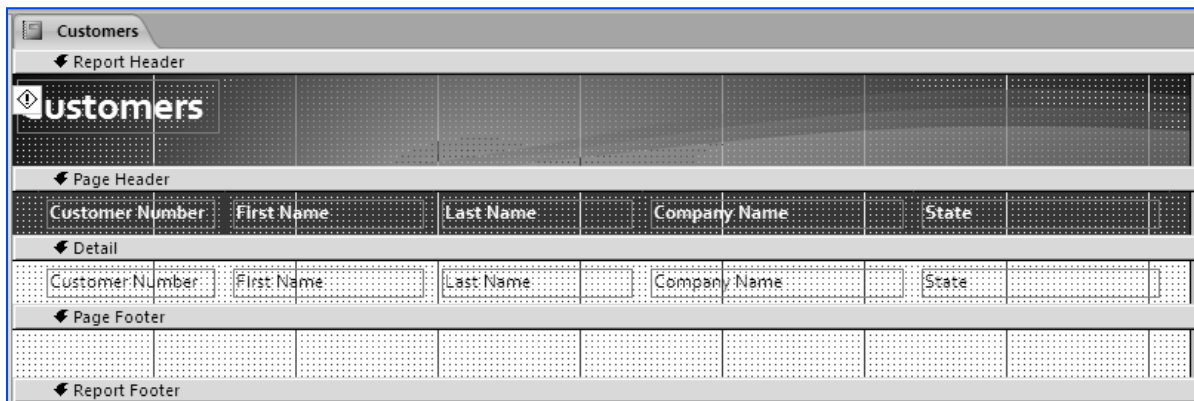



Fig. 2.4.2: Report rptCustomers Design view

2. Expand the *Page Header* section. Select a label control  from *Design ribbon* -> *Controls* tab and draw it on the *Page Header* section, as indicated in Fig. 2.4.3.

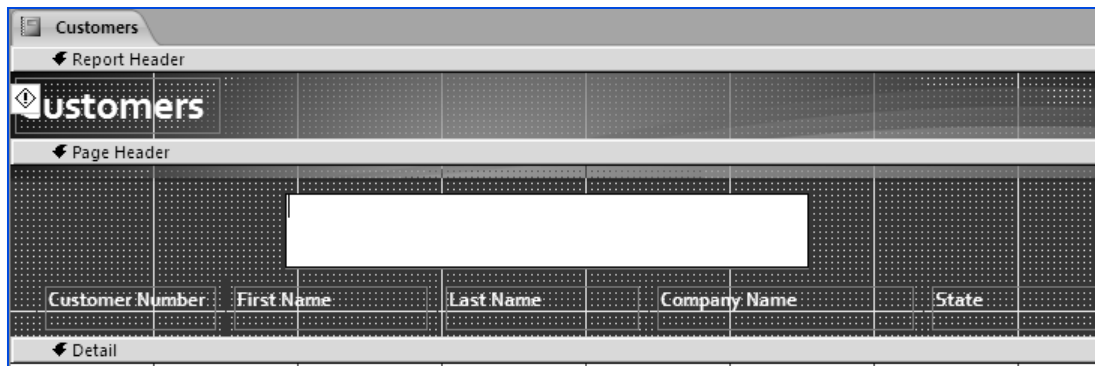


Fig. 2.4.3. Add Label to Page Header

NOTE: If *Report Header* does not appear right-click the report and select *Page Header* /*Footer* to view them.



3. Type the text *Customers* into the label and format it according to the requirement, as shown in Fig. 2.4.4.



Fig. 2.4.4. Add Title to Label

4. In a similar manner, add a Textbox control `abl` to the *Page Footer* of the report from *Design ribbon* -> *Controls* tab. The resultant report appears, as shown in Fig. 2.4.5.

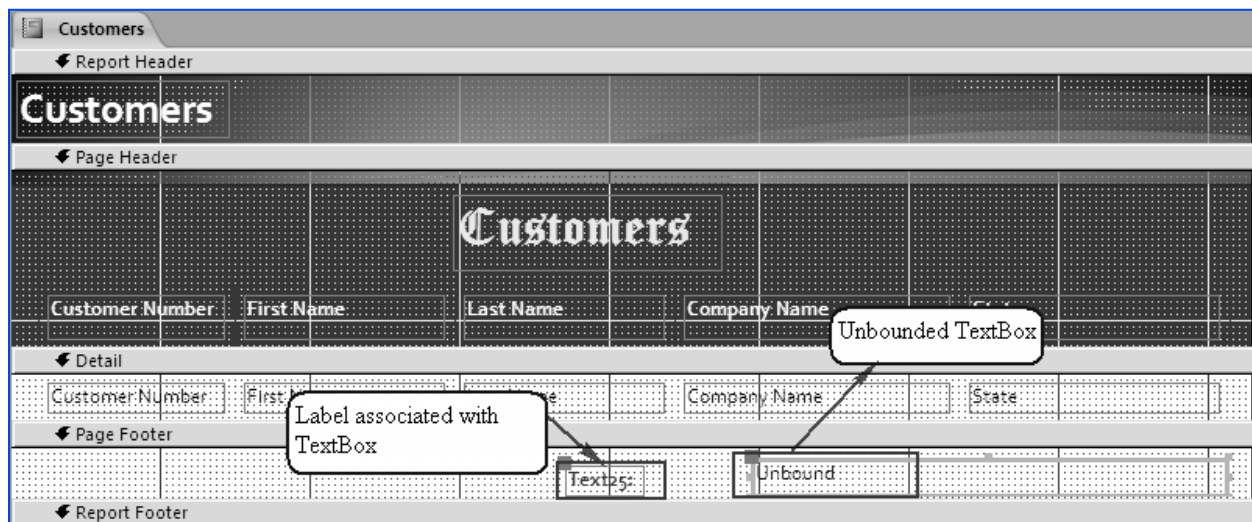


Fig. 2.4.5: Add Textbox to the Report

5. Delete the label of the Textbox and type `=Now()` in the textbox. The report appears, as shown in Fig. 2.4.6.



Customer Number	First Name	Last Name	Company Name	State

Fig. 2.4.6. Add Textbox in Page Footer

6. Right-click the report and deselect *Report Header/ Footer* to remove the report header and footer. This is optional. The report header can contain some different text and can be displayed.
7. Open the report in *Report View* format by selecting *Report View* from *Home ribbon* -> *Views* tab to verify the data. The report should appear as in Fig. 2.4.7. Note that each page of the report contains the Report Title and Date/Time.

Customer Number	First Name	Last Name	Company Name	State
JER-0030	Jerry	Swimmer	Jerry's Jet-Ski Action Park	CT
Kev-0020	Kevin	Wheeler	Kevin's Quads	CT
LEA-0038	Shirley	Tribuani	Leapin Lizards Jet Ski's and Bo	CT
MAN-0019	Dominic	Mancini	Mancini Truck Rentals	CT
DAL-0029	Timothy	Dalton		CT
DAN-0039	Daniel	Merrimack	Dan's Car and Truck Super Stor	CT
WAV-0028	April	Waves		CT
WES-0049	Allison	Wesley		Ct
WET-0023	Barbara	Wetworth		CT
WHE-0035	Douglas	Gronser	Wheels and Deals	CT
WIP-0024	Henry	Chippany	Wipeout Sports Store	CA
ZEE-0045	Christopher	Zurkowitz	Zee Brothers ATV Rental	CT

Fig. 2.4.7. Report View



2.4.3 Adding Calculated Values

Reports in Access can be modified to display the data as per user requirements. In general, reports contain fields from the table, but many times it becomes necessary to add some computed values in reports. These computed values may count, sum, or calculate an average of the numeric values in a group created in the report. Also, these computed values can be calculated using one or more fields in a table, for example, to display the total cost by multiplying quantity and price.

The calculated values in reports are added using a text box and specifying an expression. The liberty of displaying computed values helps to display the reports in a user-friendly format. The calculated values in the report can be displayed in two ways: using queries with calculated columns and creating reports based on them, or by computing values in the report itself using *Expression* and *Functions*. The calculated values in queries are displayed as fields in reports which use them.

2.4.4 Problem scenario

Consider the report *rptCustomers* discussed in section 3.4.1. The Sales Head wishes the customer name should be displayed as a complete name, not as first name and last name. He requests the Database Developer to implement the change.

Solution

The Database Developer adds a calculated value that concatenates first name and last name in the report *rptCustomers* and replaces the *First Name* and *Last Name* textboxes.

Steps to add Calculated Values

1. Right-click the report *rptCustomers* under *All Access Objects* -> *Reports* tab and select *Design View* from the dropdown. The report appears in *Design View*, as shown in Fig. 2.4.8.



Fig.2.4.8: report in Design View

2. Select the *First Name* and *Last Name* textboxes and delete them. Add a new Textbox control **ab|** from *Design ribbon* -> *Controls* tab.
3. Drag the *Textbox* in place of *First Name* and *Last Name* textboxes. The report should appear, as shown in Fig. 2.4.9.

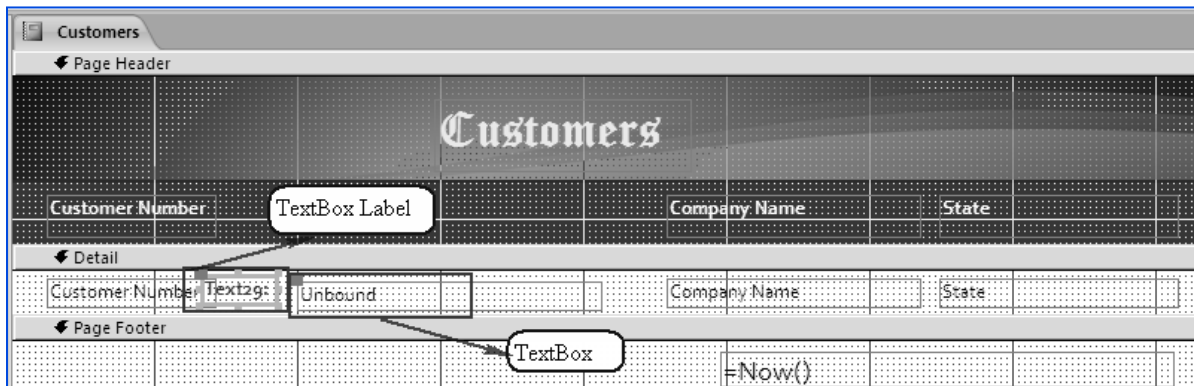


Fig. 2.4.9. Add Textbox control to Report

4. Delete the *Textbox Label* and type the text = [First Name] + " " + [Last Name] in the textbox. The report window appears, as shown in Fig. 2.4.10.



Fig. 2.4.10. Write the expression in calculated control

5. Add a label control **Aa** from *Design ribbon -> Controls* tab in the Page Header tab along with other headings. The Report should appear, as in Fig. 2.4.11.

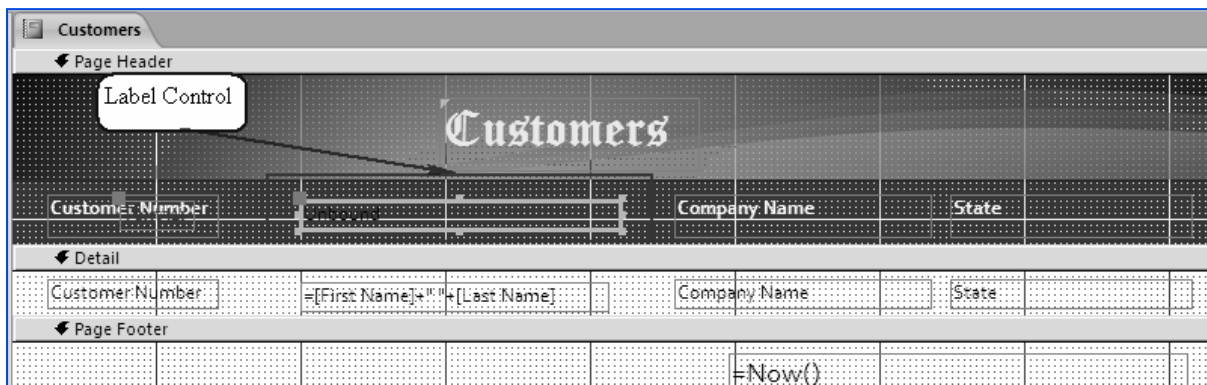


Fig. 2.4.11. Add Label Control to Page Header



6. Type text *Name* in label and format the label accordingly. The Report should appear, as shown in Fig. 2.4.12.

Fig. 2.4.12: Format the label

7. Select *Report View* from *Home ribbon -> Views tab* to open the report in *Report View*. The resultant report should appear, as in Fig. 2.4.13.

Customer Number	Name	Company Name	State
sCASHs	Cash Sale	Cash Sale	
ALS-0034	Allen Rochester	Al's All Terrain Vehicles	CT
ATV-0027	Christine Lyndsey	ATV Motor Sports	CT
BAN-0009	Robert Ocean	Banana Boats and More	CT
BIL-0042	William Harte	Bill's Dodge Pontiac Oldsmobil	CT
BRU-0001	Ronald Henderson	Boats R Us	TX
BUC-0037	Buck Starboard	Bucky's Boat-a-Rama	CT
CAR-0047	Shelley Rogers	Cars of Ours	NY

Fig. 2.4.13. Report view

2.4.5 Sub-Reports

Sub-Report is a report that is inserted in another report. A sub-report, a complete report in its own right, is inserted into another report, called the *Main Report*. Main Report can be either bound or unbound. A bound main report is based on a table or query and its sub-reports contain related information. An unbound main report is not based on a table or query, but can serve as a container for one or more sub-reports. A main report can include as many sub-reports as necessary. The sub-reports can be added to two hierarchy levels.



Sub-Reports are usually an extension of data in main report. For example, the main report can contain details about the sales in a year, while the sub-report can show data for sale of each item or charts and graphs summarising and illustrating the numbers in the main report. If a sub report is inserted in a bounded main report, it should contain some field to link to main report.


2.4.6 Problem Scenario

Consider the Report *rptCustomers* discussed in section 3.4.1. The Regional Head notices that the database users face a big problem while tracing the orders placed by each customer. He asks the Database Developer to create a user-friendly object which can display both the customer's details and orders placed by the customer.

Solution

The Database Developer decides to add a sub report to the report *rptCustomers* which include details of the orders placed by the customers. For this purpose, the table Sales Order is used and the fields *Sale to Customer* from Sales Order and *Customer Number* from Customers are mapped.

Steps to add a Sub Report to Main Report

1. Right-click the report *rptCustomers* and select *Design View* from the dropdown to open the report in *Design View*.
2. In the *Design View*, expand the *Details* section. Select the sub-report control  from *Design ribbon* -> *Controls* tab and draw the control in *Details* section.
3. The *SubReport Wizard* appears, as shown in Fig. 2.4.14.

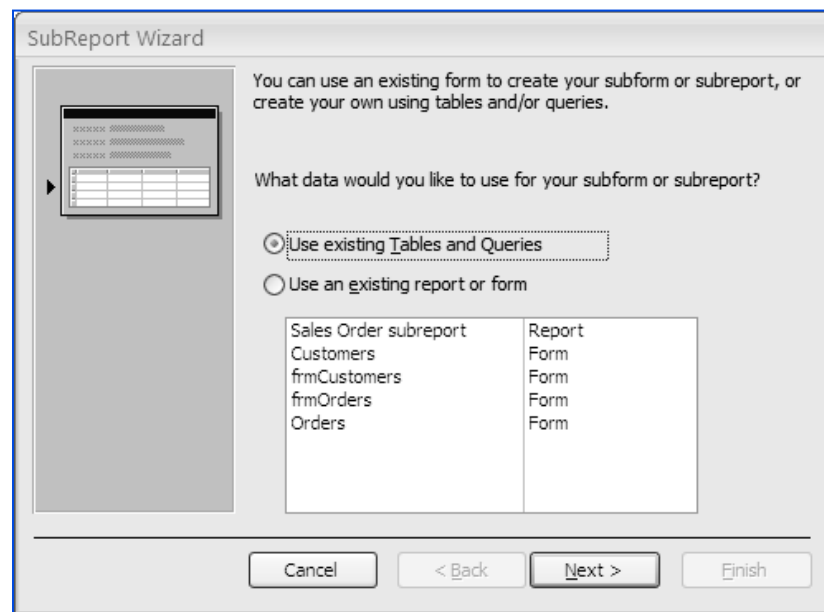


Fig. 2.4.14. SubReport Wizard



4. Select the option *Use Existing Tables and Queries* and click *Next* to proceed further, as shown in Fig. 2.4.15.

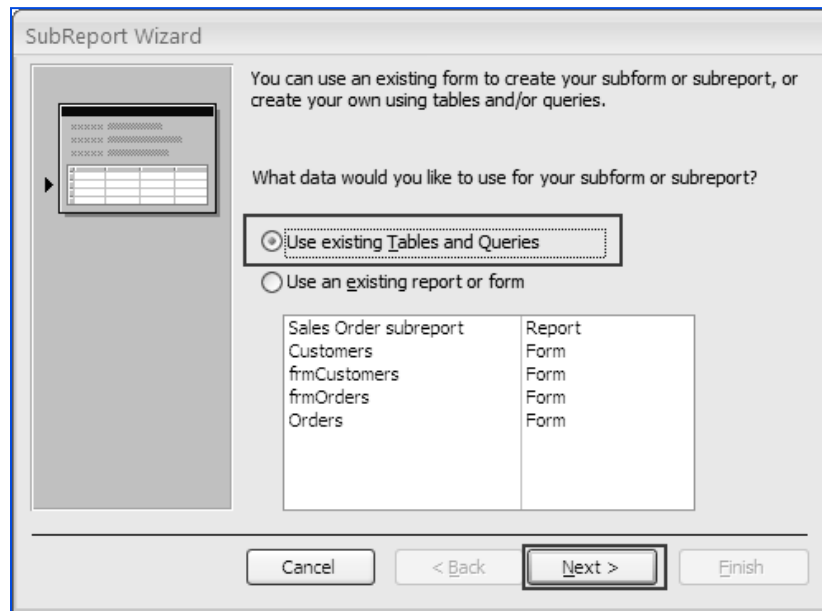


Fig. 2.4.15. Select option to use existing table

5. In the *Select Table or Query* window, select the table *Sales Orders* from the list. Select the fields *Sales Order Number*, *Sale to Customer*, *Sales Date*, *Ship Date* from selected field to available field, as shown in Fig. 2.4.16.

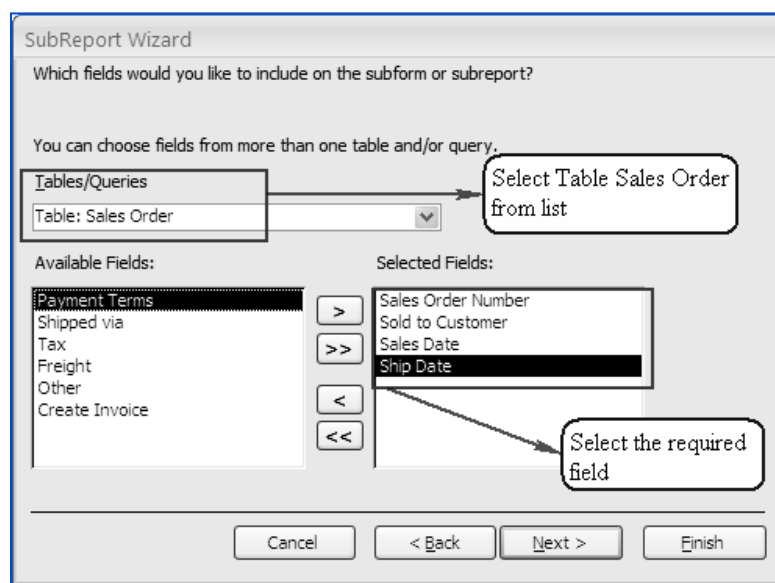


Fig. 2.4.16. Select required Table



- Click *Next* to advance. The *Link Field* window appears. Select *Customer Number* from *Forms/Reports* field and *Sale to Customer* from *Subforms /Sub reports* field. The *Sub Report Wizard* appears, as shown in Fig. 2.4.17.

Fig. 2.4.17. Link fields of main report and sub report

- Click *Next* to proceed to *Name of Sub report* window. Provide a suitable name to your sub report, and click *Finish* to close the window as indicated in Fig. 2.4.18.

Fig. 2.4.18: Provide a name to the sub report.



8. Open the resultant report in *Report View* by selecting *Report View* from *Home ribbon* -> *Views* tab. Final report appears, as shown in Figure 2.4.19.

Customers			
Customer Number	Name	Company Name	State
ALS-0034	Allen Rochester	Al's All Terrain Vehicles	CT
Sales Order subreport			
Sales Order Number	Sold to Customer	Sales Date	Ship Date
000416-03	ALS-0034	16-Apr-08	21-Apr-08
000801-02	ALS-0034	01-Aug-08	04-Aug-08
990618-01	ALS-0034	18-Jun-08	23-Jun-08
A2000111-08	ALS-0034	11-Jan-08	18-Jan-08
A2000111-10	ALS-0034	11-Jan-08	18-Jan-08
A2000111-15	ALS-0034	11-Jan-08	18-Jan-08

Fig. 2.4.19. Customers and Orders placed by them

2.5 Make Reports more effective

Reports are a way of communicating database information. By customizing reports, the information can be presented in the most effective format. A customized report developed by using Access tools can reach a wider audience and enable more users to handle them. Different methods to make reports effective can be :

- including charts in a report
- printing data in columns
- canceling the printing of a blank report
- creating report snapshot

2.5.1 Including a Chart in a Report

Chart is a graphical representation of information used to illustrate quantitative relationships. It is a diagram that depicts a relationship, often functional, between two sets of numbers or between a set of numbers and a set of categories.

Microsoft Graph is used to chart data from any of the database tables or data stored within other applications. It creates graphs in a wide variety of styles, such as bar graphs, pie charts, line charts, and others. Because Microsoft Graph is an embedded OLE application, it does not work by itself. As such, it has to be run from within Access. In other words, it is dependent on Access.



Different Chart Types

Chart Type	Purpose
Column Chart	Used to compare multiple values of categories or differences over a period of time. The horizontal axis depicts categories and the vertical axis depicts values.
Bar Chart	Used for the same purposes as a Column Chart. However, the horizontal axis of a Bar Chart shows values and the vertical axis shows categories or periods of time.
Area Chart	Used to emphasize differences in individual values to the total, over a period of time.
Line Chart	Used to compare trends over a period of time.
Pie Chart	Used to show the relationship of a part to the whole. It is suitable for depicting one data series or data at a point in time.

Charts can be included in reports to illustrate the information more clearly. Charts enhance the data presented in reports by summarising the information and illustrating it in easily understandable ways. The reader can analyse trends and make comparisons using charting tools. The chart can be linked to a field in the underlying table or query.

2.5.2 Problem Scenario

The Sales Head wishes to create a summary report. The report should show the quarterly total sales for each category. The Sales Head requests the Information Analyst to show a diagrammatic representation of the report.

Solution

The best way to display the summary report is to create charts to represent the data. The charts can be included in a report, and based on a query to show its diagrammatic representation.

Steps to Include Chart in Report

1. The Query Sales data represents the summarized data for per quarter sale. The design of the query is displayed in Fig. 2.5.1.

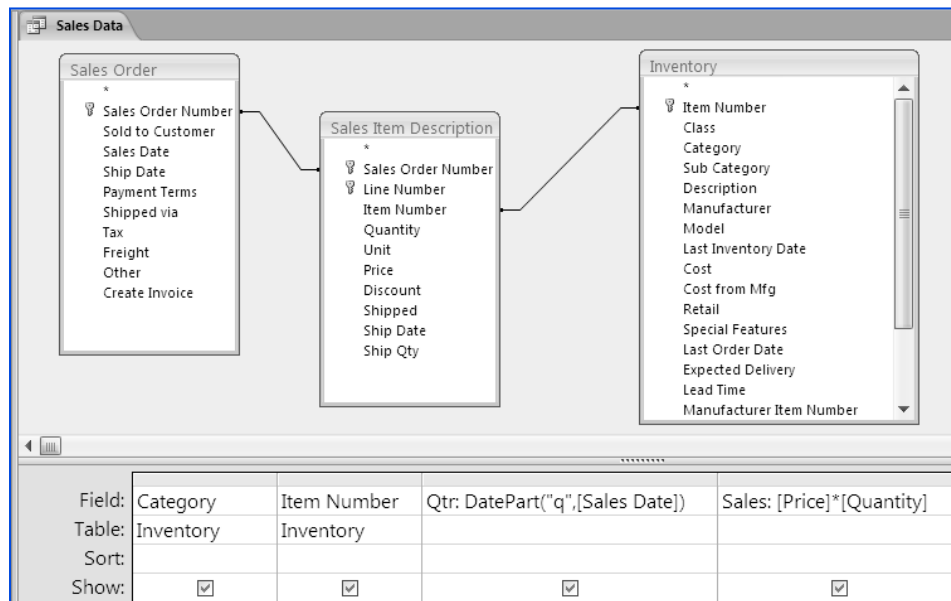



Fig. 2.5.1. Sales Data Query

2. Select *Report Design* from *Create ribbon* -> *Reports* tab. A blank report opens.
3. Select *Chart control*  from *Design ribbon* -> *Controls* tab and draw it on the report. The *Chart Wizard* appears, as shown in Fig. 2.5.2.

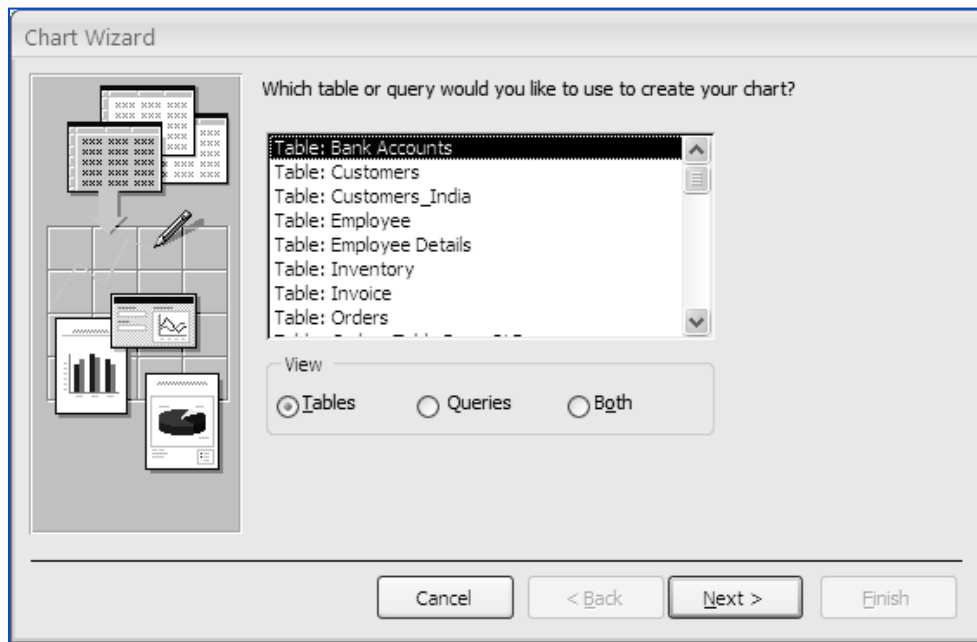


Fig. 2.5.2. Chat Wizard



4. Select the *Queries* option, and select *Query: Sales Data* from the list, as indicated in Fig. 2.5.3.

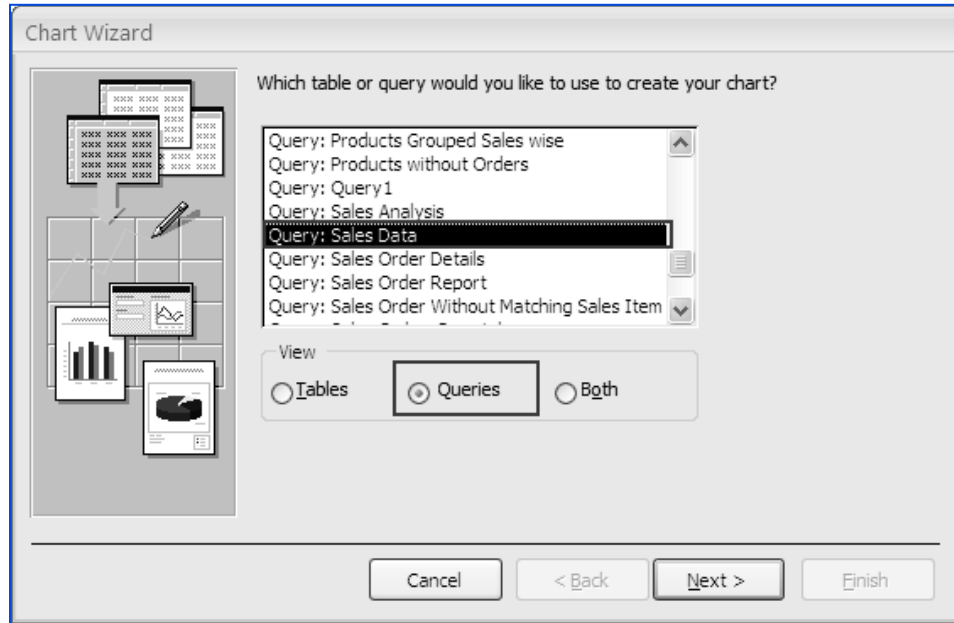


Fig. 2.5.3. Select Queries Sales Data

5. Click *Next* to advance. The *Select Field* window appears. Select all the fields: *Category*, *Qtr*, and *Sales*, as shown in Fig. 2.5.4.

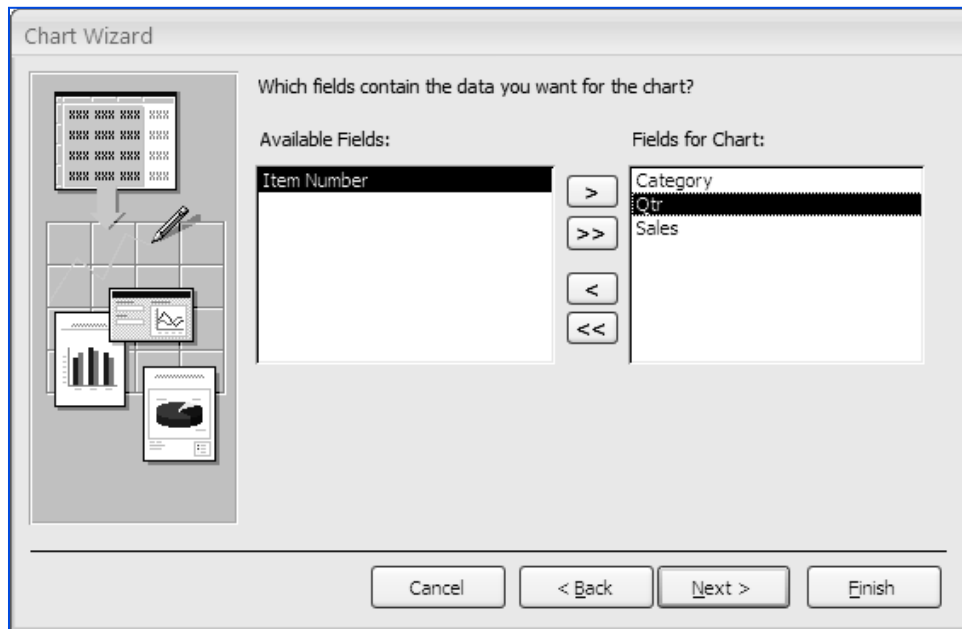



Fig. 2.5.4. Select required fields



6. Click *Next* to proceed. In the *Choose Chart Type*, select the *Column Chart*  and click *Next*.
7. In *Preview Chart* window drag field *Qtr* to *Axis*, *Category* to *Series* and *Sales* to *Data* as shown in Fig. 2.5.5. Click *Next* to advance.

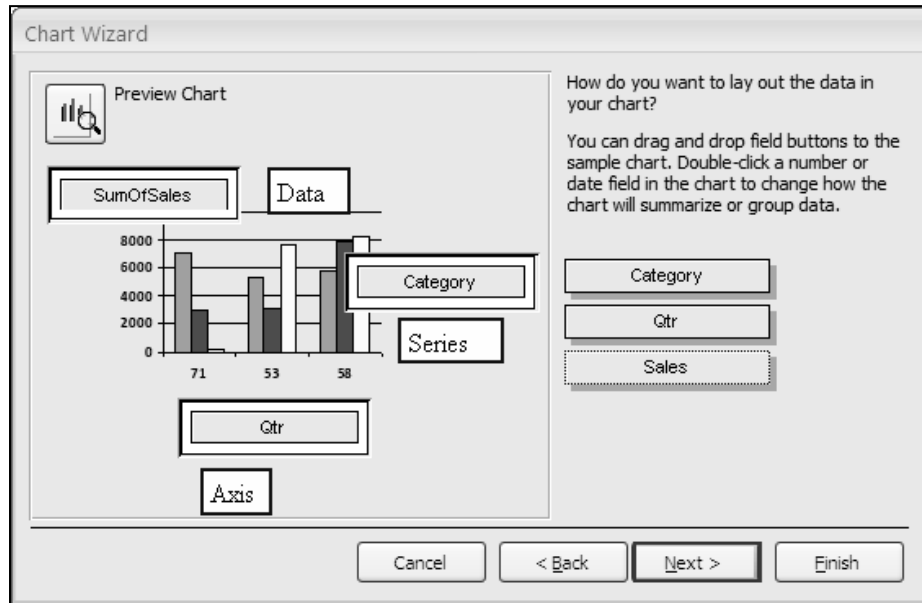


Fig. 2.5.5. Drag the fields to chart

8. Specify the title for the chart and select the *Display Legend* option. Click *Finish* to close the window.
9. The resultant chart appears, as shown in Fig. 2.5.6.

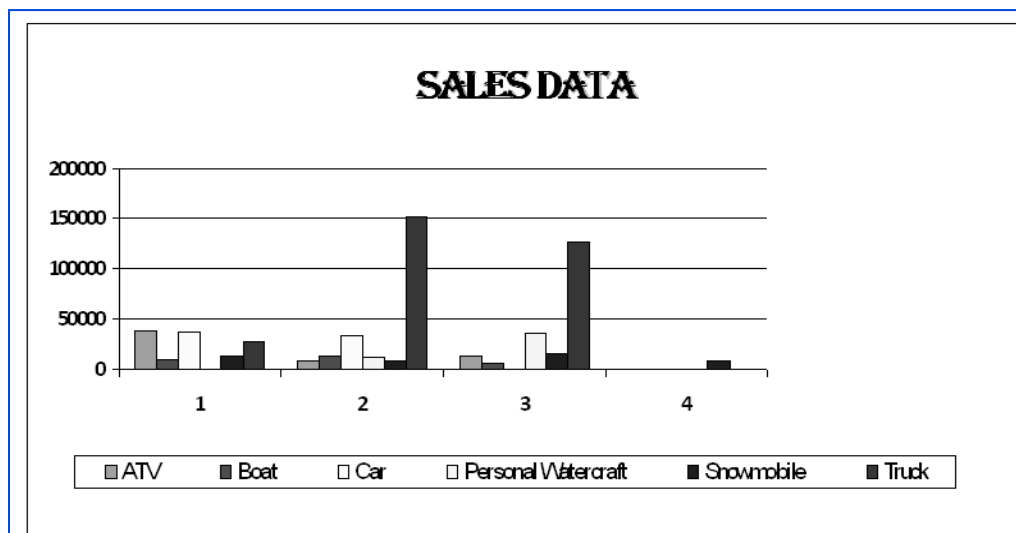


Fig. 2.5.6. The Sales Data Report



NOTE: The chart object can be modified by right-clicking and selecting *Chart Object -> Edit* from the dropdown. Also, the chart object can be embedded with existing data in the report so that the chart changes with each record display.

2.5.3 Printing Data in Columns

Reports are a handy tool to represent data. The visibility of the reports makes an impact on how data can be viewed. Some of the reports may involve long lists of just a few fields of data—such as a phone or product list. These may be best arranged in multiple columns for better readability.

While working with many databases, it is natural to come across some that consists of long lists of information. As a result, printing such data can mean printing a single column on many pages.

The multiple columns for the report can be set using the *Report Page Setup* property and setting the number of columns to 2 or more, as shown in Fig. 2.5.7.

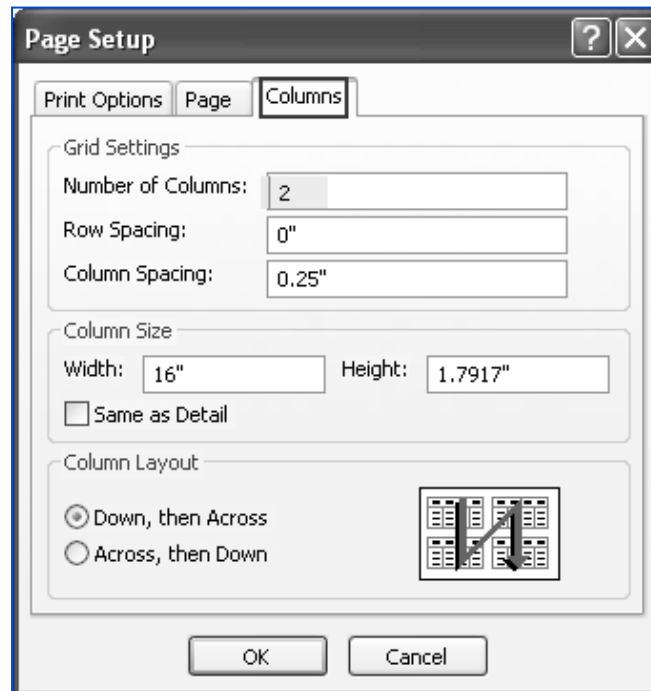


Fig. 2.5.7. Select multiple columns from Page Setup

2.5.4 Cancelling the Printing of a Blank Report

If a report contains no records, the detail area of the report will be blank. While printing reports, it is not advisable to print blank report. Macros can be used to cancel printing of a blank report and thus save time and effort. Depending on the availability of data, certain records may be absent in a report and printing a blank report would be meaningless.



To cancel previewing or printing of a blank report when the underlying query has been run with no records returned, the *On No Data* event of the report is used.

2.5.5 Problem scenario

The Database Developer has prepared a report *CustOrders*, which accepts the customer's first name and displays all orders placed by the customer in the current quarter. However, most users while printing the report found that the even when the query returns no results, the report is printed. They requested the Database Developer to resolve the problem.

Solution

The report event *On No Data* can be used to cancel the printing of report when no data is returned.

Steps for Canceling the Print

1. Open the *CustOrders Report* in *Design View*.
2. Press *F4* to open the property sheet of report. Make sure that the report is selected in the *Selection Type* textbox. On the *Event* tab, select the property *On No Data*, as indicated in Fig. 2.5.8.

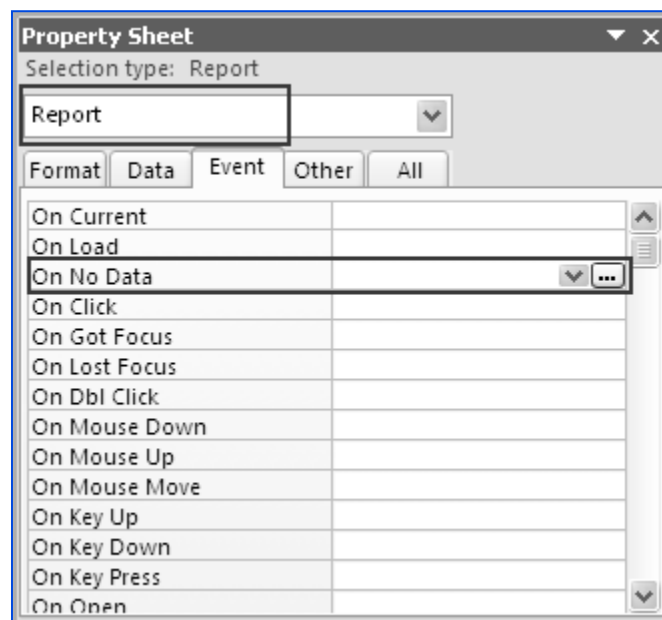


Fig. 2.5.8. Property Sheet of Report

3. Select button of *On No Data* property. Choose *Builder* window appears. Select *Macro Builder* and click *OK* as shown in Fig. 2.5.9.

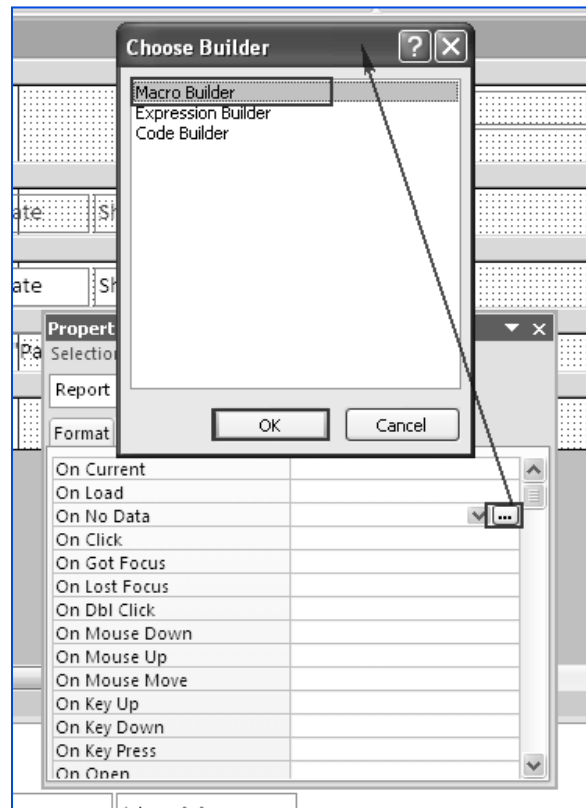


Fig. 2.5.9. Open Macro Builder

4. In the *Macro Builder* window, select *Action MsgBox* and specify the value of message *Arguments* as *No Records Found*, *Title* as *Customers Orders*, as indicated in Fig. 2.5.10.

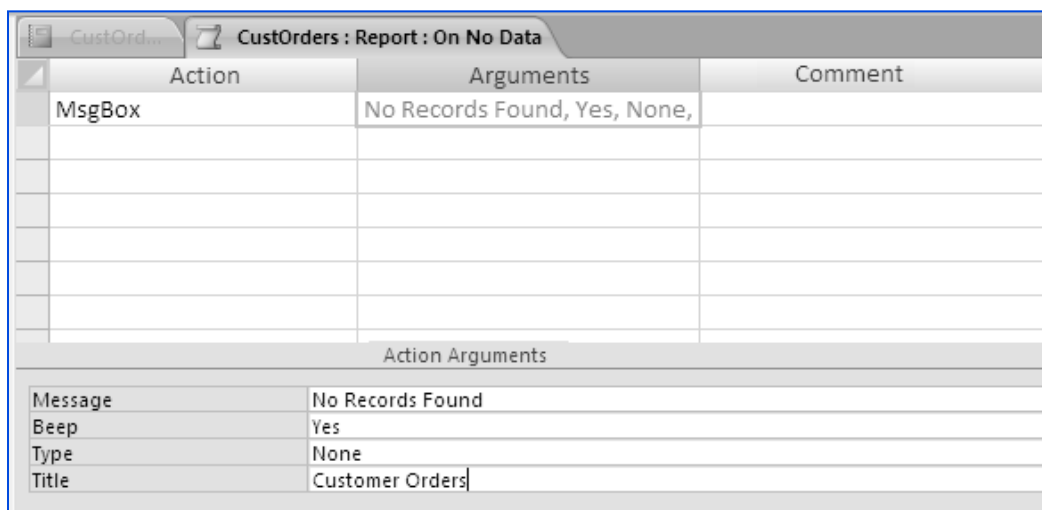


Fig. 2.5.10. Specify MsgBox Action



4. Specify the second action as *CancelEvent* and click the *Close* button to close the *Macro* window. The confirmation message appears, as indicated in Fig. 2.5.11.

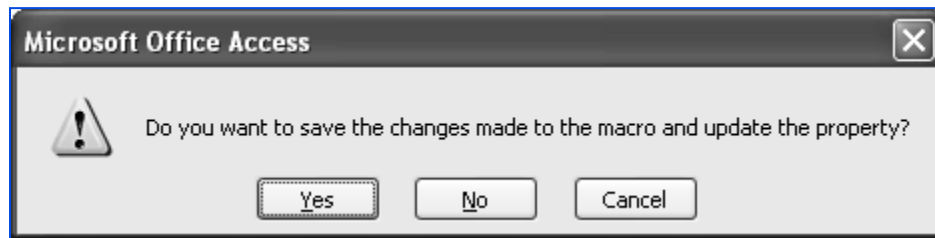


Fig. 2.5.11. Confirm to close the macro

5. Click *Yes* to save the macro and close the message window. The macro now appears on *No Data* event.
6. Open the report and verify that the macro is working.

2.6 Summary

Forms and Reports are a crucial part of data representation in Access. Access provides various utilities to make Forms and Reports more user-friendly and presentable. Different controls can be added to forms to display the logo of the company, date and time, and pictures. Forms also permit the inclusion calculated values and combo boxes which make it much easier to handle the controls and present data to user. This control helps make data handling easier for the user. Access provides various ActiveX like calendar control to make forms more interactive. Sometimes, it is required to display the information on a form in groups. The tab control available with Access can be used for this purpose. The popular utility for summarizing data of Pivot Table to summarize data is also available in Access.

Reports represent static data, but are a useful way of communicating. Reports in Access can be customized to user's requirements including its header and footers. Another crucial feature available with reports is sub-reports, which enable data linking in several tables. Apart from this, we can add charts and calculated controls to reports to make them more visible. The properties of reports can be used to avoid printing of blank reports.

2.7 Lab Exercises

Considering the Apex Inventory Shipment database of Apex Ltd. Provide a solution to the following problem scenarios:

1. The Sales Manager of the company has demanded a form displaying the details of the orders, containing with Items ordered, Shipping Details and Invoice Information. Design the form Order Details as displayed in Figure below. Create tabs to represent the data.



Order Details

Order ID: 30 Order Date: 1/15/2006
Customer: Company AA

Order Details Shipping Information Invoice Information

Ship Date: 1/22/2006 Shipping Fee: \$200.00

Ship Name: Karen Toh
Ship Address: 789 27th Street
City: Las Vegas
State/Province: NV
Zip/Postal Code: 99999
Country/Region: USA

On the Order Details Form created in Question1 implement the Question 2 to 7:

2. In the Order Details form, convert the Customer Textbox to Combo Box which contains Customer Number and Company Name.
3. To make the Order Details form more user-friendly, add a calendar control to the form to select the Order Date.
4. The Sales Manager asked the developer to add a logo of the company the Order Details form as the form will be circulated among all divisions.
5. The database developer needs to make the form more presentable and has to add a picture on the background of each tab. Implement the needful.
6. In the Order Details tab of the form, add a calculated value that calculates the Total Price as Qty * Unit Price – Discount as shown in Figure below:

Order Details

Order ID: 30 Order Date: 1/15/2006
Customer: Company AA

Order Details Shipping Information Invoice Information

Product	Qty	Unit Price	Discount	Total Price
Personal Watercraft	100	\$14.00	0.00%	\$1,400.00
Snowmobile	30	\$3.50	0.00%	\$105.00
*				



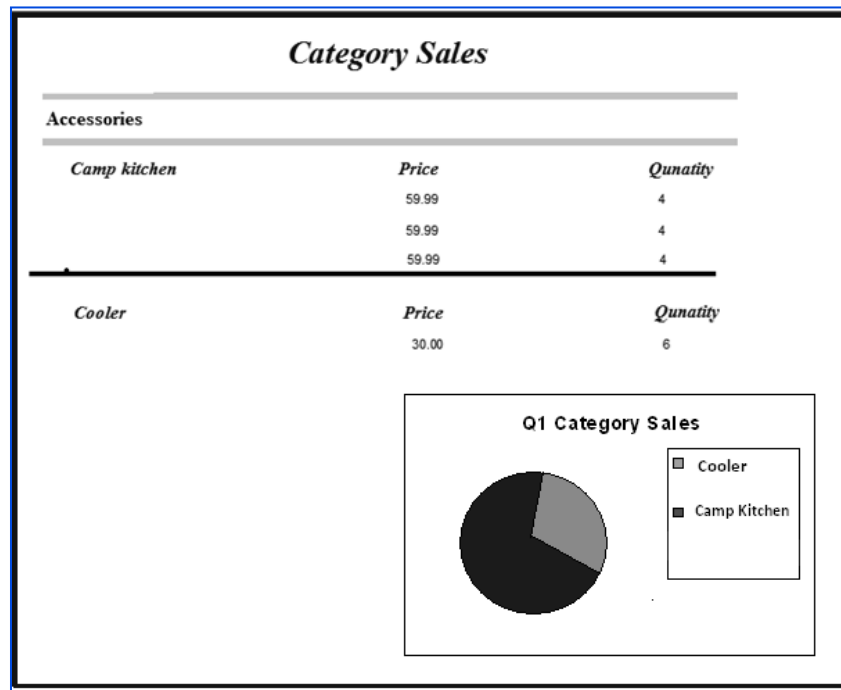
7. The Sales Manager of the Company wishes to launch some sales promotional offers. He requested the database developer to create a form which should display the summarized count and cost of Orders placed by each customer on Quarter and month basis. He should also be able to view the same results for a particular category. Create a form containing Summary of Data.

The developer of Apex Inventory Shipment database needs to create Item Sales report. The report should be grouped by Category and then Item and should display quantity and price of Item sold. The report is displayed in Figure below:

<i>Category Sales</i>		
Accessories		
<i>Camp kitchen</i>	<i>Price</i>	<i>Qunatity</i>
	59.99	4
	59.99	4
	59.99	4
<i>Cooler</i>	<i>Price</i>	<i>Qunatity</i>
	30.00	6
Backpacks		
<i>Day pack</i>	<i>Price</i>	<i>Qunatity</i>
	65.00	4
	65.00	4

Implement the Questions 8 – 14 based on the report Item Sales.

8. Add a calculated control *Total Sales* on the report that should display the Total Sales as Price * Quantity.
9. Add a Page Header and Footer on the Report. The header must contain the logo of the company and Footer must contain the current Quarter and Month.
10. Compute the Total Sales for each product in group footer.
11. Include a pie chart in the Category group footer that should display the ratio of sales of each product in that category. The report should look like as in Figure below:



12. The details of the Sales of Item were to be presented in the Monthly meeting as a hardcopy. So the Manager asked the executive to get the report into columnar format so that is more readable. Remove the Page Headers and the chart, and print the report in two columns.
13. For the Annual review of the sales, the Vice President demanded a report displaying the product sales by month. The reports should display the products from a particular category, which is given by the user. The report should represent the data diagrammatically using charts. Create the required Report.
14. The Sales Manager found that there are few categories which are not produced any more by the company but are not discarded in the report. As a result if such category is entered, a blank report gets printed. As a report administrator, cancel the printing of the blank report.

Multiple Choice Questions

1. The controls that are not linked to any field of the table or query on the form are known as _____.
 - (a) ActiveX control
 - (b) Unbounded Controls
 - (c) Graphics Control
 - (d) Bound Controls
2. The Vice President of the Company wishes to add the image of the company vision statement as a background of all the forms. Which control can be used for the purpose?
 - (a) Calendar Control



- (b) ActiveX control
 - (c) Image Control
 - (d) Graphics Control
3. Which of the Header in reports can be viewed separately from the Footer?
- (a) Page Header
 - (b) Group Header
 - (c) Report Header
 - (d) All of the above
4. The Manager requested the developer to create a Inventory form in a manner such that the Product's description is stored in one group, the cost and supplier information another group. Which is the best control to display the required information?
- (a) Use the Tab Control
 - (b) Use SubForms
 - (c) Add ActiveX Control
 - (d) None of the above
5. Which property of the form can be used to insert a background image?
- (a) Caption
 - (b) Background
 - (c) Record Source
 - (d) Picture
6. The Sales Executive while filling the details of the orders placed find it very difficult to type the name of each product every time it is ordered. They demanded that the form should provide them a drop down to select the product to be ordered. How can we implement the required?
- (a) Using the query in the form
 - (b) Using the Combo Box control
 - (c) Using a SubForm
 - (d) Cannot be done
7. The Calendar control can be selected from _____
- (a) Microsoft Office-> Access Options
 - (b) Design -> Controls
 - (c) Design -> Controls -> ActiveX controls
 - (d) Create -> Forms



8. The Regional Sales Head demanded a summary report indicating the monthly sales done by each employee in each zone. Which kind of form is best to display the required data?
- (a) Use tabbed browsing
 - (b) Insert an Image in form
 - (c) Insert SubForm
 - (d) Create Pivot Table
9. To print the multi-columnar report, the number of columns can be set through _____ property.
- (a) Report property sheet
 - (b) Page Setup
 - (c) Report wizard
 - (d) Grouping
10. The persons from the delivery team found it very annoying that even when the reports contained no data, they are printed and they have to search for such reports among all the printed data. They requested the developer to find the solution to this problem. Which property of report can be used to implement the requirement?
- (a) CancelPrint
 - (b) CancelEvent
 - (c) Create a macro called On No Data
 - (d) Create a macro called On Print
11. To display the data of the Products and the orders placed for each product in the current month. The following feature available in Reports can be used.
- (a) Report Wizard
 - (b) Nested Reports
 - (c) Grouping
 - (d) SubReports
12. The Regional Head wishes to view the diagrammatic representation of data indicating the sales made by each zone in his region. Which feature can help to implement the requirement?
- (a) Graphics
 - (b) ActiveX
 - (c) Charts
 - (d) Pivot Table
13. To display the list of employees grouped according to first letter of their name, which type of controls can be used in reports?



- (a) Use Calculated values in group
 - (b) Add grouping control
 - (c) Add Function control
 - (d) Add ActiveX control
14. Which property of the control is used to bind it to a field of a table or a query?
- (a) Data
 - (b) Record Source
 - (c) Field
 - (d) None of the above
15. Each tab in a tab control is known as _____.
- (a) Page
 - (b) Data Tab
 - (c) Control Page
 - (d) Control
16. The Sales Manager requested a summary form which should enable him to choose the category and display the monthly sale of each product in the category. In the created Pivot Table Form, The category field should be placed in which area?
- (a) Drop Row Fields Here
 - (b) Drop Column Fields Here
 - (c) Drop Totals or Detail Fields Here
 - (d) Drop Filter Field Here
17. A developer created a report displaying the information of customer grouped according to country and state. To add a count of customer in each state the count textbox should be placed in which section of the report?
- (a) Page Footer
 - (b) Report Footer
 - (c) State Group Footer
 - (d) Country Group Footer
18. The Sub Report in the main report can be inserted to _____ hierarchy level?
- (a) 7
 - (b) 3
 - (c) 2
 - (d) 4

CHAPTER

3

BUILDING CRITERIA EXPRESSIONS

LEARNING OBJECTIVES

- Using operands in Criteria Expressions
- Using built-in functions
- Working with Expression Builder

3.1 Introduction

Expressions in Microsoft Access can be considered similar to formulae in Microsoft Excel. Expressions are a combination of operands, operators, functions, and values that are evaluated according to their order of precedence. Expressions can be used with tables, queries, forms, reports, and macros. In Access, expressions are used to obtain calculated values, provide criteria, and query or supply constraint to table columns. Access also provides a powerful user interactive graphical tool to create expressions known as *Expression Builder*.

In this chapter, we will discuss how to build criteria expressions in Access. We will also look at using various components of an expression for building query criteria. This chapter will also identify various operators available in Access. Next, we will discuss the available built-in functions in Access. We will discuss the different type of functions and their utilisation. Further, this chapter will cover how to use *Expression Builder* to create expressions using Objects, Functions, Operators, and Identifiers.

3.2 Using Operands in Criteria Expressions

Query criteria are the most important part of any query as they permit users to select only the desired records from an existing table. An operand is a value on which a calculation is performed. In other words, an operand is a data value that gets manipulated in the query expression. Operands can be *literals*, *identifiers*, or *functions*.

3.2.1 Literals

A literal is value that is not addressed by any name. It can be typed directly into the criteria expression. In Access, literal can be of type *number*, *text*, *date*, or *logical* value (i.e. True or False). Literals are also referred as constants as their values remain static throughout the evaluation of expression.

Examples of literal:

“Hello” + “ “ + “Everyone” , Here Hello and Everyone are Text literals

[Date] > #1/1/2011#, Here 1/1/2011 (1-Jan-2011) is a Date literal



3.2.2 Identifiers

Identifiers are variables. In Access, identifiers represent field name, table name, or control name. Identifiers are a crucial part of expression building as they specify the column to which an expression represents. While creating an expression in Access, identifiers are always represented in square brackets [].

Examples of identifiers used in an expression:

[Basic Salary] + [Tax]: Where Basic Salary and Tax are identifiers

3.2.3 Functions

Functions provide specialised operations to enhance the working of Access. Functions are built-in expressions that take an input, perform necessary calculations on it, and return the output. The input accepted by the function is called arguments; a function may have one or more number of arguments. Access provides us different functions to work with different type of data, such as Text functions, Date and Time functions, Numeric functions, and Mathematical functions.

For example, a text function Length takes an input string as an argument and returns the length of the string in number as:

Length ("MS Access") will return 9.

3.2.3.1 Problem Scenario

Apex Ltd. is launching a new production unit in "California", which will also focus on some new products. To promote these products a detailed list of all existing customers from "California" (state code CA) is required.

Solution

To achieve this, a query displaying *Name*, *Contact Info*, and *Address* of the customers is required. To get only the customers from "California", the value CA in the criteria for the state field needs to be specified. Here, CA is a literal operand and is typed direct in query criteria.

Steps for creating required query

1. Click *Create ribbon* -> *Other* -> *Query Design* to open the *Query Design* window.
2. Select *Customers* from *Show Table* and click *Add*, as displayed in Fig. 3.2.1.



Fig. 3.2.1. Show Table window

3. Select the columns *Salutation*, *First Name*, *Middle Name*, *Last Name*, *Company*, *Street City*, *State*, *Zip/Postal Code* *Phone*, and *Email* from table *Customers* and drag them to the columns tab. The Query window appears, as shown in Fig. 3.2.2.

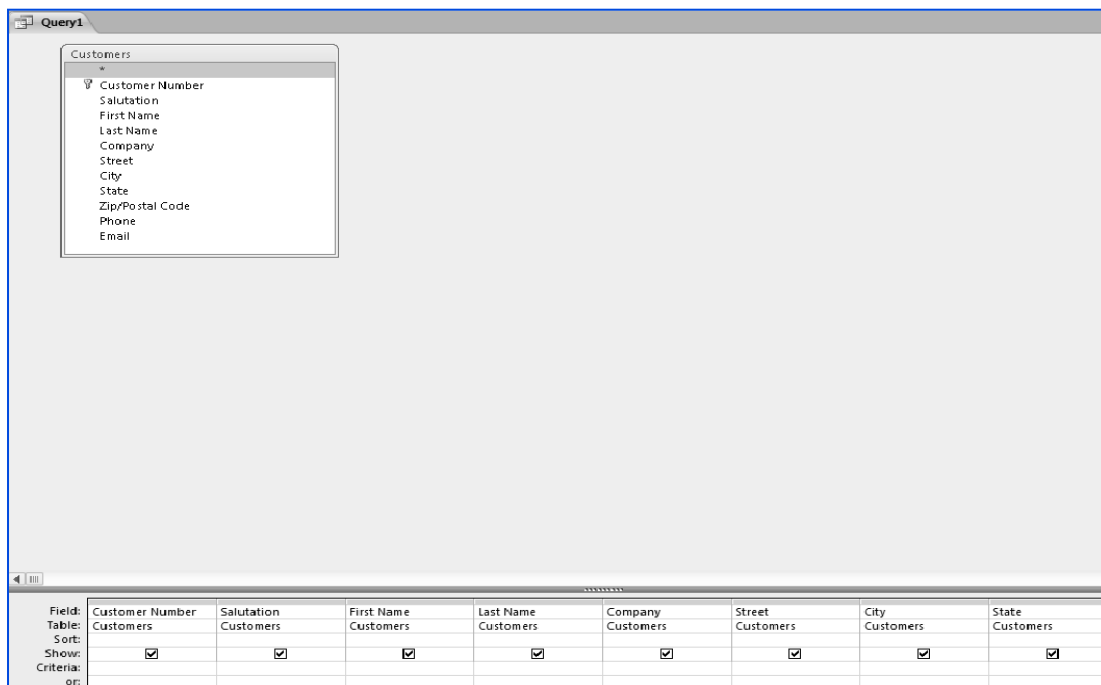


Fig. 3.2.2. Select Required Columns



Now, we will add criteria to get records from “California”.

4. In the *Criteria* tab of field *State*, write the literal “CA”, as indicated in Fig. 3.2.3.

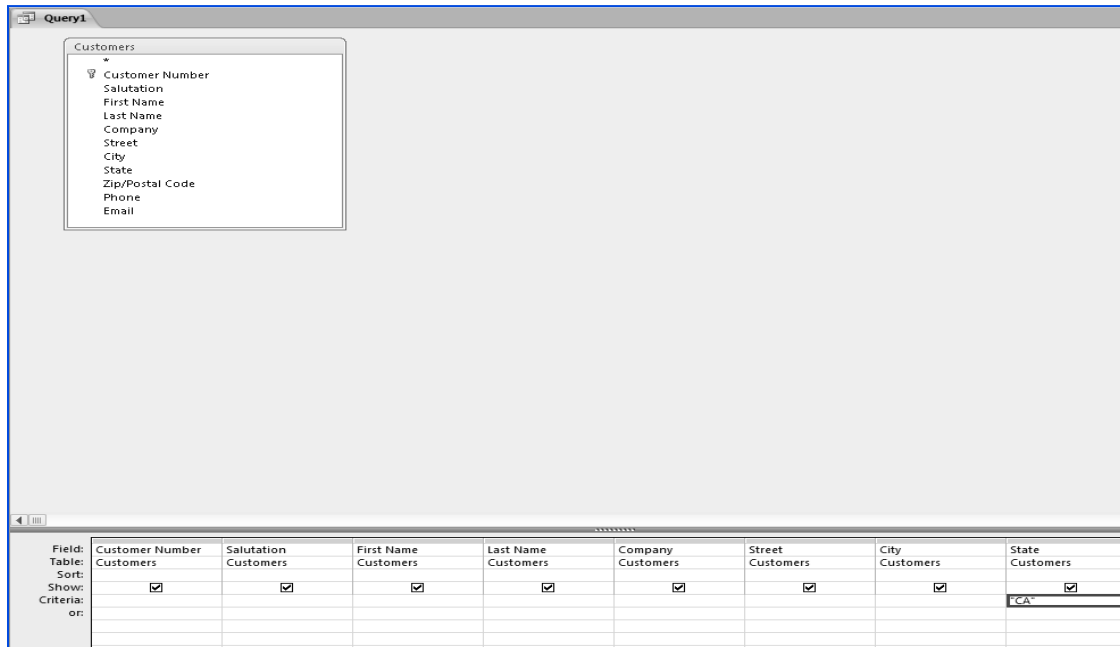




Fig. 3.2.3. Specify criteria for State

5. Click Save  in the toolbar to save the query. Type the name of query as “Customers from California”.
6. Click the Run sign  in *Design ribbon* -> *Results* to view the results of the query, as shown in Fig. 3.2.4.

NOTE: Literals are usually combined with operators to form complex expressions for query criteria.

The screenshot shows the 'Query1' results grid. The 'State' column is highlighted, and a box labeled 'All Customers from California' points to the 'State' column. The results show a list of customers with their details.

Salutation	First Name	Last Name	Company	Street	City	State	Zip/Postal C	Phone	Email
Mr.	Cash	Sale	Cash Sale	141 Newport R	Bristol	CA	06010	860-550-1440	
Mr.	Timothy	Dalton		76 Daybreak St	Plainville	CA	06062	860-555-6556	
Ms.	Ronda	Derrick		14 Newport Rd	Bristol	CA	06010	860-555-4698	Derrick@snet.i
Mr.	Kimberly	Bankcroft	Freaky Friday's Water Fun Park	310 Torpedo Rc	Shingelton	CA	65114	800-555-4472	
Mr.	Herbert	Frog		490 South Mins	Paris	CA	16544-5809	808-555-9999	Frog@aol.com
Mr.	Frank	Iceburg		44 Snowy La.	Quebec	CA	55523-5431	555-855-9982	
Ms.	Wendy	O'Keefe		1212 Terrance /	San Francisco	CA	90224	800-555-3340	
Mr.	Gregory	Lawrence	Seawater Swans	277 Seaweed S	Waterloo	CA	55399	800-555-3311	
Mr.	Anthony	Fasulo	Truckland USA	675 Sportsworl	Truck Stop	CA	90221	800-555-4949	
Mrs.	Esmerelda	Van Hinkelburg	Hinkleburg's Auto Mall	902 South Terr	Denver	CA	44236	800-555-8799	
Mr.	Gerlad	Wasley	Wasley Chevy Pontiac	210 New Car Rc	Farmington	CA	06032	800-555-2456	Cars@walsey.c
Ms.	Allison	Wesley		4210 Franklin A	Hartford	CA	06105	555-555-9923	
Mr.	Henry	Chippany	Wipeout Sports Store	275 Surf La.	Los Angelis	CA	90210	800-555-9849	watersports@v

Fig. 3.2.4. Query Results



3.3 Using Operators in Criteria Expressions

Operators make the expression complete. They are special symbols, such as +, -, used with operands to perform calculations. Every operator has a specific meaning and a symbol. Operators help create expressions with the combination of identifiers and values. Every operator is executed according to its priority.

For example: In [BasicSalary] + [Tax], "+" is an operator.

Different types of operators are:

- Comparison operators
- Arithmetic operators
- Miscellaneous operators
- Compound criteria and logical operators

3.3.1 Comparison Operators

Comparison operators, also known as relational operators, define relation between two identifiers or two values by comparing them. These operators can be used with *Numeric* or *Date* data type.

Comparison Operators are listed in Table 3.1

OPERATOR	NAME	EXPLANATION
>	Greater Than	Num1 > Num2 returns true if Num1 is greater than Num2
<	Less Than	Num1 < Num2 returns true if Num1 is less than Num2
>=	Greater Than Equal to	Num1 >= Num2 returns true if Num1 is greater than or Equal to Num2
<=	Less Than Equal To	Num1 <= Num2 returns true if Num1 is less than or equal to Num2
<>	Not Equal To	Num1 <> Num2 returns true if Num1 is not equal to Num2
=	Equal To	Num1 = Num2 returns true if Num1 is equal to Num2

Table 3.1: Comparison Operators

3.3.2 Arithmetic Operators

Arithmetic operators, commonly known as mathematical operators, are used with numeric data to perform calculations.



Arithmetic Operators are displayed in Table 3.2.

OPERATOR	NAME	EXPLANATION
+	Addition	
-	Subtraction	
*	Multiplication	
/	Divide	Returns integer as a result of division of integer numbers and decimal as a result of division of decimal numbers, that is, 5\2 will return 2.5 and 5\2.5 will return 2.
\	Integer Divide	Returns integer as a result of division, that is, 5\2 will return 2 and 5\2.5 will return 2.
^	Exponentiation	Computes power, that is, the result of 5^3 is 125.
Mod	Modulo	Returns the remainder of the division of two integers, that is, 5/2 will return 1.

Table 3.2: Arithmetic Operator

3.3.3 Miscellaneous operators

In Access, a special set of operators is used with multiple data types. These operators provide an additional functionality to create expressions. Some of the miscellaneous operators are – LIKE, Between, IN, Is Null etc.

3.3.3.1 The LIKE Operator

The *LIKE* operator works with text or date data type. *LIKE* is used to match text patterns in the query criteria. This operator uses various wildcards to form different patterns. The various wildcards that can be used with *LIKE* are mentioned in Table 3.3.

Wildcard	Explanation	Example
*	Denotes any number of characters (0 or more)	LIKE 'A*' will match all the characters starting from A For example, Accounts, Audit
?	Denotes a single character	LIKE 'B??K' will match all the text with B as first letter, k as last letter and 2 letters in between. For example- Book, Back
#	Denotes a single digit	LIKE '#ABC' will match text which starts from a digit followed by ABC.
[xyz]	Denotes a set of characters	LIKE [ABC]* will match all text starting from either A, B, or C.

Table 3.3: Wildcards with LIKE operators



3.3.3.2 The Between... And Operator

The *Between* operator is used with *Numeric* and *Date* data type to obtain a set of values within a specified range of values.

For Example:

Between 10 and 20 will give all the values within the range of 10 and 20 including 10 and 20.

Between #1/1/2011# And #8/1/2011# will return all the dates *between 1-Jan-2011 And 1-Aug-2011*.

(Note that dates are included between # and are written in “mm/dd/yyyy” format).

3.3.3.3 The IN operator

The *IN* operator is used to match a value to a set of values given. This operator can be used with *Numeric*, *Text*, or *Date* data types.

For Example:

[Month] IN ('Jan', 'Feb', 'Apr', 'May') will match all the month values which are either from the specified values.

3.3.3.4 The IS NULL operator

The *IS NULL* operator is used to find the null records in table. We use *IS* with *NULL* to indicate all the record which are null in the table. Note: Null is not “0” or “blank”.

For Example:

[Discount] IS NULL will return all the records with *[Discount]* value as NULL.

Similar to *IS NULL*, *IS NOT NULL* searches for non-null values.

For Example:

[Advance Amount] IS NOT NULL will return all records where *[Advance Amount]* is not null.

3.3.4 The Logical Operators

A logical operator results in expression that returns True or False. These operators are used to combine multiple expressions. They are also known as *Boolean operators*.

The logical operators are listed in Table 3.4.

OPERATOR	NAME	EXPLANATION
And	Logical And	Returns True if both the expressions compared are True
Or	Logical Or	Returns True if either of the expressions compared is True
Eqv	Logical Exclusive Nor	Return True if either both the expressions are True or both the expressions are False
Xor	Logical Exclusive Or	Return True if either of the expressions is True
Not	Logical Not	Works with a single expression and returns True if the expression is False

Table 3.4: List of Logical Operators



3.3.5 Understanding the Operator Precedence

Access permits to create complex expressions containing multiple operators. To evaluate these expressions, Access determines which operator to be evaluated first, and then which is next, and so forth according to a predetermined order. This order is known as *operator precedence*. Every operator is assigned a precedence order and is calculated in the same order.

The only exception to this rule is parenthesis (). Parentheses are used to group expressions and override the default order of precedence. Operations within parentheses are performed before any operations outside them. Within the parenthesis all operators are computed on basis of their precedence.

Operator precedence is similar to *BODMAS* order that is followed in algebra. Parenthesis or brackets over here perform the same function to change the priority order of operators.

Note: BODMAS =

<u>B</u>	<u>Brackets first</u>
<u>O</u>	<u>Orders (ie Powers and Square Roots, etc.)</u>
<u>DM</u>	<u>Division and Multiplication (left-to-right)</u>
<u>AS</u>	<u>Addition and Subtraction (left-to-right)</u>

Operators are first preceded in the order of their category and then within each category each operator has its own precedence order. *Operators precedence* according to their category is displayed in Table 3.5, from the highest to the lowest.

Operator Category	Precedence Order
Arithmetic	I
Comparison	II
Boolean	III

Table 3.5: Operator Precedence according to Category

Table 3.6 displays precedence of each operator within different categories from the highest to the lowest.

Category	Operator	Symbol	Precedence Order
Arithmetic			
	Exponentiation	^	I
	Multiplication and/or division (left to right)	*, /	II
	Integer division	\	III
	Modulo	Mod	IV
	Addition and/or subtraction (left to right)	+, -	V



Comparison			
	Equal	=	I
	Not equal	<>	II
	Less than	<	III
	Greater than	>	IV
	Less than or equal to	<=	V
	Greater than or equal to	>=	VI
Logical			
	Not		I
	And		II
	Or		III
	Xor		IV
	Eqv		V
	Imp		VI

Table 3.6: Operator Precedence within Category

3.3.6 Using Compound Criteria

Queries can help retrieve data in any form. Queries are usually created on multiple criteria, known as *compound criteria*.

There are two types of compound criteria - “AND” and “OR.”

3.3.6.1 AND Criterion

In *AND*, compound criteria will return results only if each individual criterion is true.

For example, if we add criteria to the query from the *Customer* table as:

[State] = “CA” AND [Credit Limit] > 500000, it will return customers from California who have credit limit greater than 500000.

The *AND* criteria in a query designer is specified by writing all the criteria in some row of the *Criteria* tab, as shown in Fig.3.3.1.



Field:	Company	Street	City	State	Zip/Postal Code	Phone	Email	Credit Limit
Table:	Customers	Customers	Customers	Customers	Customers	Customers	Customers	Customers
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				"CA"				> 500000
or:								

Fig. 3.3.1. Specifying AND compound criteria

3.3.6.2 OR Criteria

The *OR* compound criteria are used in queries where we need to match either of the criterion specified in query criteria. *OR* returns result even if any criterion is true.

For example, if we add criteria to the query from the Customer table as:

[State] = "CA" *OR* [Credit Limit] > 500000, it will return all customers who are either from California or who have credit limit greater than 500000.

The *OR* criteria in a query designer is specified by writing all the criteria in different rows of the *Criteria* tab, as shown in Fig. 3.3.2.



Query1

Customers

- City
- State
- Zip/Postal Code
- Country
- Phone
- Fax
- Other Phone
- Email
- Credit Limit
- Comments
- Payment Terms
- Documents
- Documents.Fill
- Documents.Fill
- Documents.Fill

Field:	Salutation	First Name	Last Name	City	State	Country	Credit Limit
Table:	Customers	Customers	Customers	Customers	Customers	Customers	Customers
Sort:							
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				"CA"			
or:							> 30000

Customer

Customers

- * Customer Number
- Salutation
- First Name
- Last Name
- Company
- Street
- City
- State
- Zip/Postal Code
- Phone
- Email
- Credit Limit

Field:	Company	Street	City	State	Zip/Postal Code	Phone	Email	Credit Limit
Table:	Customers	Customers	Customers	Customers	Customers	Customers	Customers	Customers
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				"CA"				
or:								> 500000

Fig. 3.3.2: Specifying OR Compound Criteria



3.3.6.3 Problem Scenario

This case study focuses on the operators discussed above and how to use them as a Criteria Expression.

At the end of a quarter, Country Head of Apex Ltd. wishes to review the following data:

- A report displaying all sales orders placed in from January to March 2008.
- All inventory details from the “Car”, “Snowmobile”, and “Boat” categories along with the details of the order placed for them.
- A list of all the products that were sold with a quantity greater than 5, or the price greater than 1000.
- A contact list for all Customers whose first name starts with A, B, or C.

Solution

For creating the query containing the report of Sales Order, the query will be created on the Sales Order table, using “Between” and “And” operator in query criteria.

The *inventory details* query will contain the *Inventory* table and *Sales Item Description*. The query criteria will be based on the *IN* operator.

For obtaining the list of products, query needs to be based on *Inventory* and *Sales Item Description* containing compound criteria.

To retrieve the contact list of Customers, query will be based on the *Customers* table and the criteria for the first name will contain the *LIKE* operator.

Steps for creating query containing the report of Sales Order

1. Click *Create ribbon* -> *Queries* -> *Query Design* to open the *Query Design* window.
2. Select the *Sales Order* table from the *Show Table* window and click *Add*, as shown in Fig. 3.3.3.



Fig. 3.3.3. Show Table window



Select all the columns from the *Sales Order* table and drag them to the *Columns* tab. The *Query* window appears, as shown in Fig. 3.3.4.

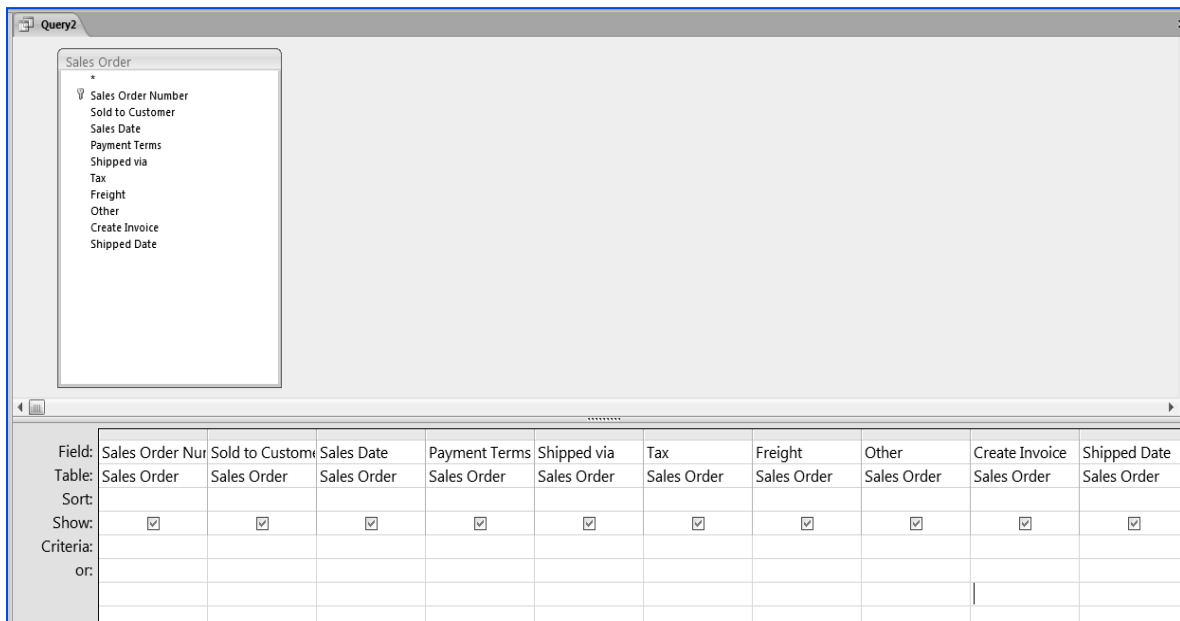


Fig. 3.3.4. Select Required Columns

3. In the *Criteria* section of the *Sales Date* column, write the criteria BETWEEN 1/1/2008 AND 3/31/2008. Set the *Sort* order of column as Ascending, as shown in Fig. 3.3.5.

NOTE: The *Query Builder* window formats the date with # sign.

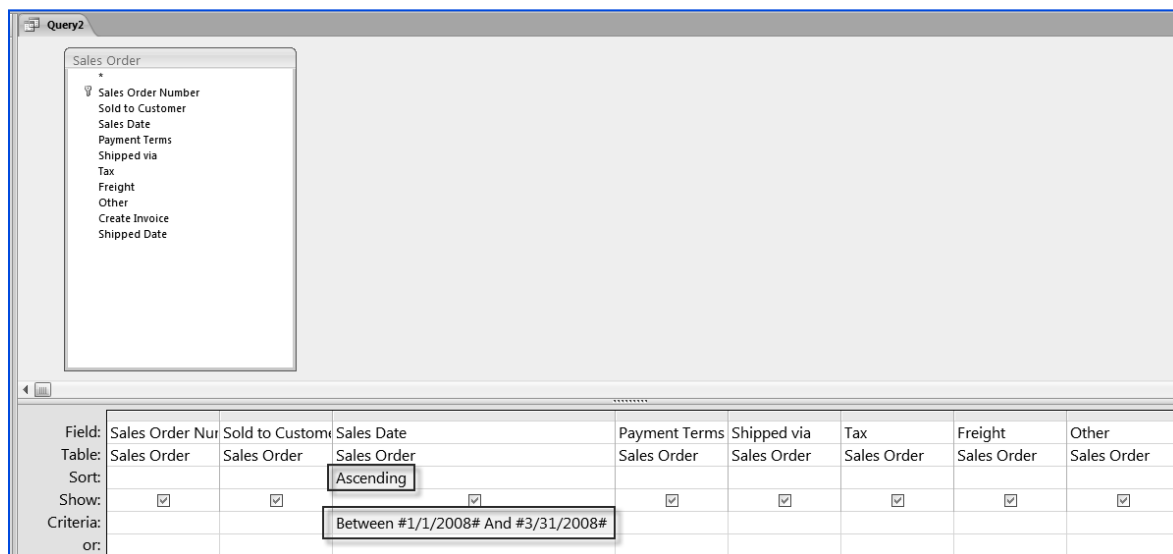




Fig. 3.3.5. Specify Query Criteria



4. Click the **Run** sign  in **Design ribbon** -> **Results** to view results, as shown in Fig. 3.3.6.

Sales Order	Sold to Customer	Sales Date	Payment Ter	Shipped via	Tax	Freight	Other	Create Invoi
A2000111-09	DER-0008	1/11/2008	Credit Card	Pick Up	\$1.08	\$0.00	\$0.00	No
A2000111-01	HAR-0003	1/11/2008	Lease	Pick Up	\$21.00	\$0.00	\$0.00	No
A2000111-02	MCG-0005	1/11/2008	Credit Card	Fed Ex Economy	\$12.37	\$0.00	\$0.00	No
A2000111-03	MCG-0005	1/11/2008	Credit Card	Fed Ex Economy	\$1.99	\$0.00	\$0.00	No
A2000111-05	BIL-0042	1/11/2008	2/10 Net 45	Transport Carrier	\$265.74	\$0.00	\$0.00	No
A2000111-06	DAL-0029	1/11/2008	Lease	Transport Carrier	\$1.35	\$0.00	\$0.00	No
000111-03	ALS-0034	1/11/2008	Cash	Transport Carrier	\$1,541.97	\$429.49	\$0.00	No
A2000111-08	SCASH\$	1/11/2008	1/10 Net 30	Transport Carrier	\$0.99	\$0.00	\$0.00	No
A2000111-10	ATV-0027	1/11/2008	1/10 Net 30	Transport Carrier	\$1.08	\$0.00	\$0.00	No
A2000111-18	Fun-0026	1/11/2008	1/10 Net 30	Transport Carrier	\$1.24	\$0.00	\$0.00	No
A2000111-07	DER-0008	1/11/2008	Credit Card	Pick Up	\$3.00	\$0.00	\$0.00	No
A2000111-19	OKI-0004	1/11/2008	Cash	Transport Carrier	\$0.00	\$0.00	\$0.00	No
A2000111-11	DER-0008	1/11/2008	Credit Card	Pick Up	\$1.08	\$0.00	\$0.00	No
A2000111-17	PLE-0040	1/11/2008	Credit Card	U.S Mail	\$197.94	\$0.00	\$0.00	No
A2000111-16	WAL-0014	1/11/2008	2/10 Net 45	Transport Carrier	\$25.50	\$0.00	\$0.00	No
A2000111-15	WIP-0024	1/11/2008	2/10 Net 45	Fed Ex Economy	\$287.18	\$0.00	\$0.00	No
A2000111-14	MAD-0016	1/11/2008	1/10 Net 30	Pick Up	\$0.14	\$0.00	\$0.00	No
A2000111-13	FRE-0048	1/11/2008	Check	o	\$0.90	\$0.00	\$0.00	No
A2000111-20	TRU-0036	1/11/2008	2/10 Net 45	Transport Carrier	\$0.75	\$0.00	\$0.00	No
990115-02	BRU-0001	1/15/2008	Check	Fed Ex Economy	\$0.00	\$119.95	\$0.00	No
A2000216-01	ICE-0021	2/16/2008	Credit Card	Transport Carrier	\$0.00	\$0.00	\$0.00	No
010305-01	SOU-0018	3/5/2008	2/10 Net 45	Pick Up	\$752.23	\$0.00	\$0.00	No
000311-01	LEA-0038	3/11/2008	2/10 Net 45	Fed Ex Economy	\$10.85	\$5.95	\$0.00	No
000312-02	BUC-0037	3/12/2008	PO Net 30	Pick Up	\$62.63	\$0.00	\$0.00	No
990316-01	BRU-0001	3/16/2008	Check	U.S Mail	\$0.00	\$49.95	\$0.00	No
*					\$0.00	\$0.00	\$0.00	No

Fig. 3.3.6. Query Result

5. Click  on the toolbar to save the query. Type the name of query as "Sales Order QTR1".

Steps for creating inventory details query

1. Click **Create ribbon** -> **Queries** -> **Query Design** to open the **Query Design** window.
2. Select the **Inventory** and **Sales Item Description** table from the **Show Table** window and click **Add**, as shown in Fig. 3.3.7.



Fig. 3.3.7: Show Table Window



3. Select *Item Number*, *Category*, *Sub Category*, *Description*, and *Model* from the *Inventory* table and drag them to the *Columns* tab. Similarly drag *Sales Order Number*, *Quantity*, *Unit*, and *Price*. The *Query* window appears, as shown in Fig. 3.3.8.

Field:	Item Number	Category	Sub Category	Description	Model	Sales Order Number	Quantity	Unit	Price
Table:	Inventory	Inventory	Inventory	Inventory	Inventory	Sales Item Description	Sales Item Desc	Sales Item Desc	Sales Item Desc
Sort:									
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:									
or:									


Fig. 3.3.8: Specify Required Fields

4. In the *Criteria* section of the *Category* column write the criteria *IN* (Car, Snowmobile, Boat), as shown in Fig. 3.3.9.

Field:	Item Number	Category	Sub Category	Description	Model	Sales Order Number	Quantity	Unit
Table:	Inventory	Inventory	Inventory	Inventory	Inventory	Sales Item Description	Sales Item Desc	Sales Item Desc
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		In ("Car","Snowmobile","Boat ")						
or:								

Fig. 3.3.9: Specify Criteria for Column



- Click  on the toolbar to save the query. Type the name of query as "Inventory Sales".

Steps for creating the query to obtain the list of products

- Click *Create ribbon -> Queries -> Query Design* to open the *Query Design* window.
- Select the *Inventory* and *Sales Item Description* table from the *Show Table* window and click *Add*.
- Select *Item Number*, *Category*, *Sub Category*, *Description*, and *Model* from the *Inventory* table and drag them to the *Columns* tab. Similarly, drag *Sales Order Number*, *Quantity*, and *Price*. The *Query* window appears, as shown in Fig. 3.3.10.

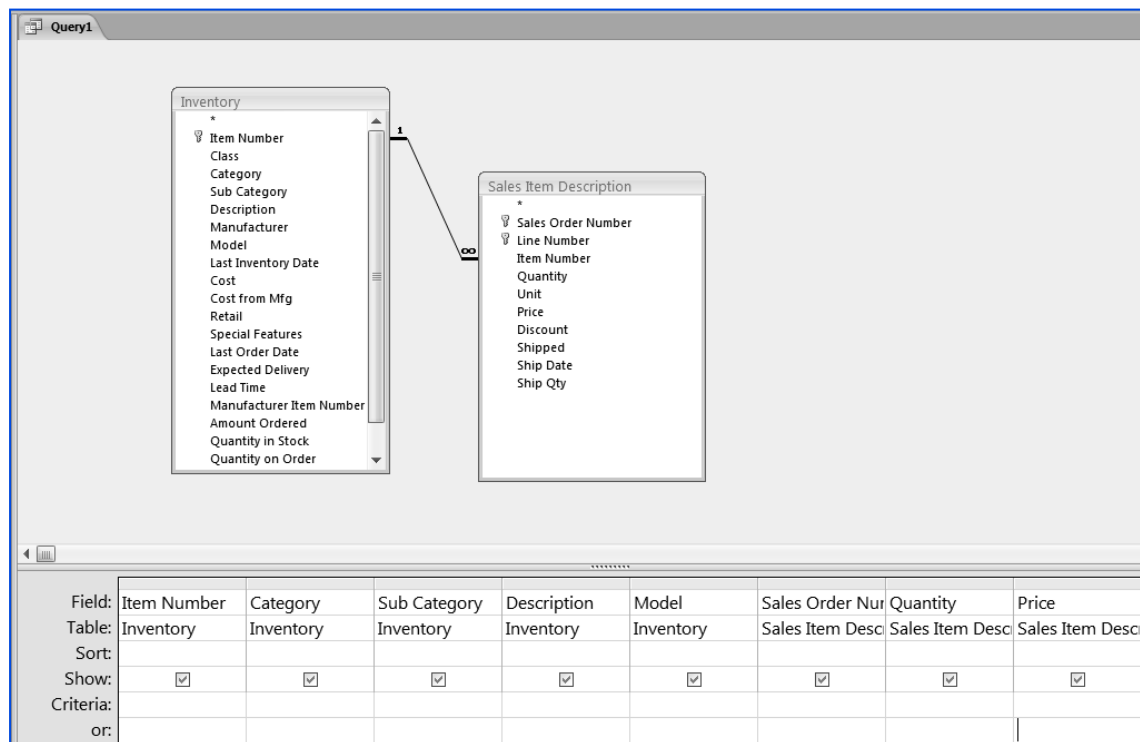


Fig. 3.3.10. Specify Required Columns

- In the *Criteria* section of the *Quantity* column write the criteria > 5 . In the next row, write the criteria for *Price* as > 1000 . The *Query* design window should appear as shown in Fig. 3.3.11.

NOTE: Since this is an *OR* compound criteria, both the criteria are written in different rows.

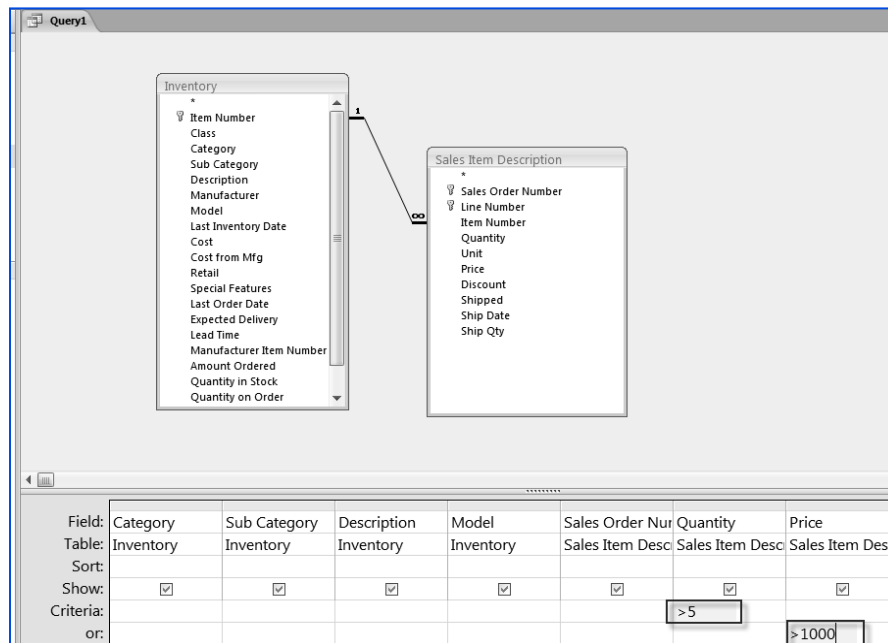




Fig. 3.3.11. Specify Compound Criteria

- Click  on the toolbar to save the query. Type the name of query as "Inventory Sales – Qty Price".
- Click  in *Design ribbon* -> *Results* to view the results, as shown in Fig. 3.3.12.

Item Number	Category	Sub Category	Description	Model	Sales Order	Quantity	Price
BEA-1664	ATV		Dog Bear All Terrain Vehicle	Xploring 650	000111-03	2.0	\$7,995.00
BEA-1664	ATV		Dog Bear All Terrain Vehicle	Xploring 650	000111-03	1.0	\$7,995.00
BOA-2003	Boat	parts	Boat Sealer	Peels-400	000311-01	7.0	\$9.99
BOA-2003	Boat	parts	Boat Sealer	Peels-400	000312-02	10.0	\$9.99
CUS-0115	Boat	Accessories	Cushion seat for a small boat	CU-22	000312-02	10.0	\$20.99
BEA-1664	ATV		Dog Bear All Terrain Vehicle	Xploring 650	000522-01	1.0	\$7,995.00
ALE-8011	Car		GLM Aleron (2000 Model)	Oldsmobile	000630-01	1.0	\$17,895.00
JET-5004	Personal Watercraft		Jet Ski 5000 Series	JS-5000	000718-01	3.0	\$3,699.00
JET-5004	Personal Watercraft		Jet Ski 5000 Series	JS-5000	000718-01B1	1.0	\$3,699.00
ART-8009	Snowmobile		Snow Glider - Artikat	Artikat 2001	000801-02	2.0	\$7,650.00
PAT-70804	Personal Watercraft	parts	Patches for Inflatables		000811-01	10.0	\$8.99
PAT-70804	Personal Watercraft	parts	Patches for Inflatables		000811-01B1	10.0	\$8.99
BAN-4001	Personal Watercraft		Inflatable Banana Boat	BX-2100	000811		\$1,547.99
TRA-0150	ATV		Toyoda Traxer 550 ATV	2000 Traxer 550	000823		\$4,295.00
DOD-4011	Truck		Ram Truck	Dodge	000914		\$37,537.48
DOD-4011	Truck		Ram Truck	Dodge	000914		\$37,537.48
FUZ-9900	ATV		Fuzuki 9900 Ranger Series Sport ATV	9900 Ranger Se	010305-01	5.0	\$2,495.00
ART-8009	Snowmobile		Snow Glider - Artikat	Artikat 2001	010417-02	1.0	\$7,650.00
TOY-40115	Truck		Toyoda Jedi Runner (2001 Model)	Jedi Runner 4x	010505-02	2.0	\$17,995.00
GLM-5400	Truck		GLM Jammy Truck	2001 GLM Jamr	010505-02	1.0	\$26,775.00
BLA-0001	Truck	2 Wheel Drive	Trail Blazer	2000 Blazer	010505-02	1.0	\$26,799.00
ALT-6011	Car	parts	Alternator by GLM	RS-800	010731/02	6.0	\$49.99
LIF-5001	Boat		Lifeboat	2001 LifeSaver	010927-01	2.0	\$1,250.00
PON-90012	Boat		Pontoon Boat	Pontoon Versi	010927-01	2.0	\$1,100.00
ALF-9000	Snowmobile		Snowmobile - Alfi 9000	2001 9000 Serie	011214-03	1.0	\$4,429.00
FUZ-10332	Personal Watercraft		Fuzuki Jet Ski 2002	Jet Ski 2002	020824-01	3.0	\$3,649.00
BAN-4001	Personal Watercraft		Inflatable Banana Boat	BX-2100	020824-01	3.0	\$1,547.99

Fig. 3.3.12. Query Results



Steps for creating query to retrieve the contact list of Customers

1. Click *Create ribbon* -> *Queries* -> *Query Design* to open the *Query Design* window.
2. Select the *Customers* table from the *Show Table* window and click *Add*.
3. Select *Customer Number*, *First Name*, *Last Name*, *Company*, *City*, *State*, *Country*, and *Phone* from *Customers* and drag them to the *Columns* tab. The *Query* window appears, as shown in Fig. 3.3.13.

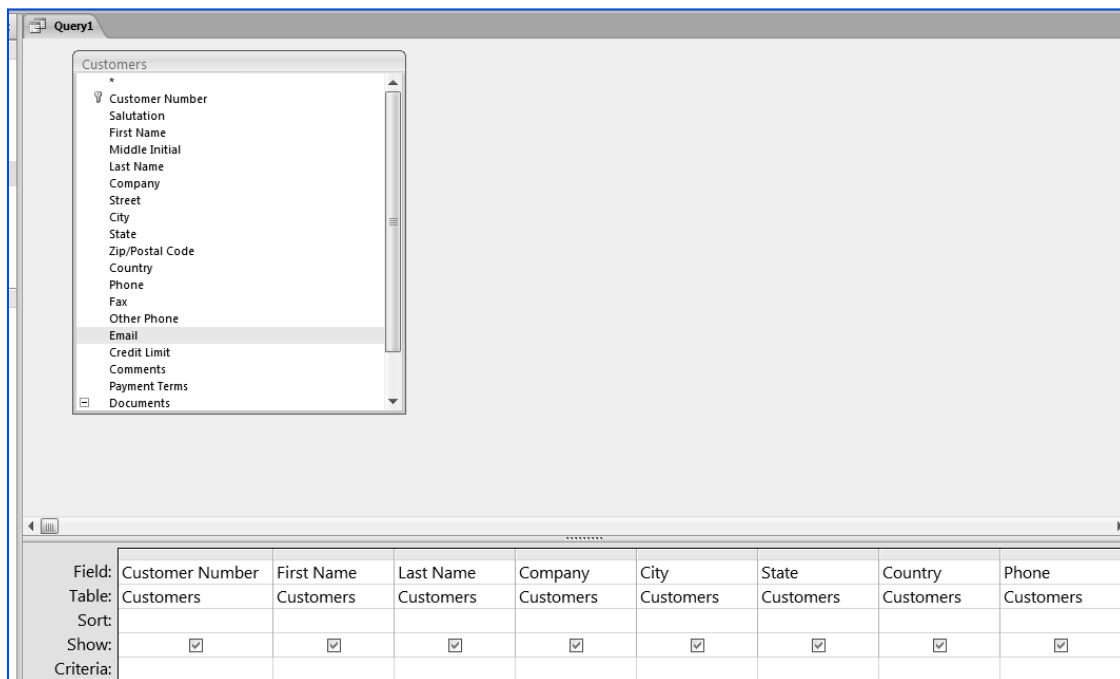


Fig. 3.3.13. Specify Require Fields

4. In the *Criteria* section of the *First Name* column write the criteria LIKE "[ABC]*". The wildcard *[ABC]** with operator *LIKE* specifies that it should match any string starting from A, B, or C. Also set the sort order of the *First Name* field to *Ascending*. The *Query Design* window should appear as shown in Fig. 3.3.14.

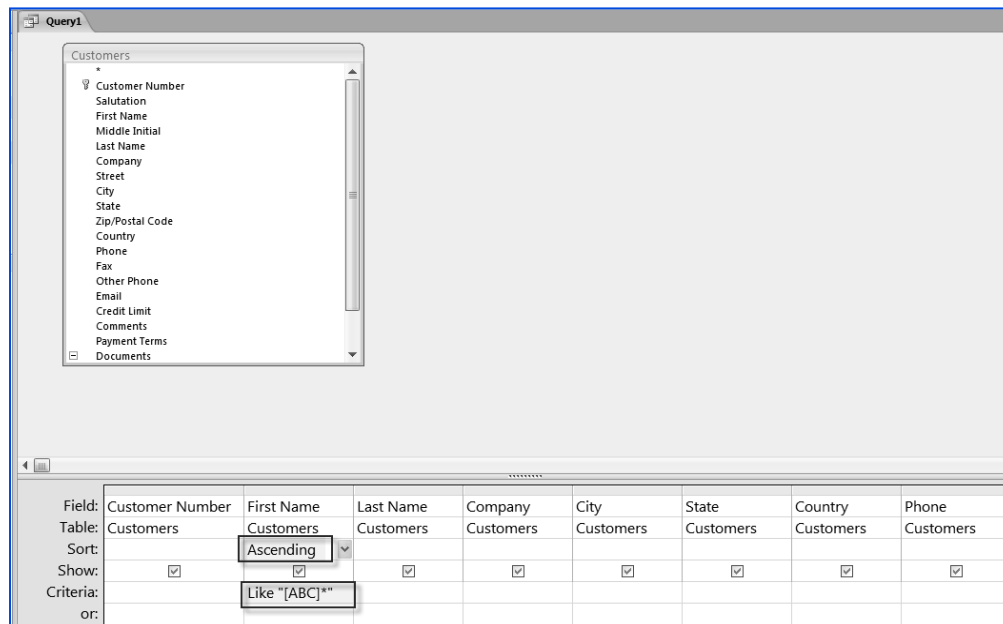




Fig. 3.3.14. Specify Query Criteria

5. Click  on the toolbar to save the query. Type the name of query as "Customers Contact List – ABC".
6. Click  in *Design ribbon* -> *Results* to view the results, as shown in Fig. 3.3.15.

Customer Number	First Name	Last Name	Company	City	State	Country	Phone
ALS-0034	Allen	Rochester	Al's All Terrain Vehicles	Old Lyme	CT	USA	800-555-7434
WES-0049	Allison	Wesley		Hartford	CA	USA	555-555-9923
TRU-0036	Anthony	Fasulo	Truckland USA	Truck Stop	CA	USA	800-555-4949
WAV-0028	April	Waves		Bristol	CT		860-555-2227
WET-0023	Barbara	Wetworth		Burlington	CT	USA	860-555-6647
MAR-0050	Bob	Marsala		West Haven	CT		860-555-0114
PLE-0040	Brian	Zaccardo		Unionville	CT	USA	800-555-9860
ENG-0033	Brittany	Englebert		Ellington	CT	USA	860-555-9974
BUC-0037	Buck	Starboard	Bucky's Boat-a-Rama	Dayville	CT	USA	800-555-4771
HAR-0003	Carl	Harrison		East Hartford	CT		860-555-4779
SCASH\$	Cash	Sale	Cash Sale	Bristol	CA		860-550-1440
CHU-0017	Charles	Motorman	Chuck's Trucks	Newington	CT	USA	800-555-8882
ATV-0027	Christine	Lyndsey	ATV Motor Sports	Manchester	CT	USA	800-555-9297
ZEE-0045	Christopher	Zurkowitz	Zee Brothers ATV Rental	Cobalt	CT	USA	800-555-8877

Fig. 3.3.15. Query Results

Many complex *Criteria Expressions* for a query can be created using the combination of operators and operands. Combining multiple criteria and different operators can help get the required data.

3.4 Using the Built-In Functions

Built-In Functions provide specialized operations to enhance the working of Access. We can perform mathematical, financial, comparative, and other operations using functions.



Some useful types of functions available in Access are:

- Mathematical
- Date/Time
- Financial
- SQL Aggregate
- Text

3.4.1 Using Text Functions

Text functions are used to perform various operations on strings, such as manipulating strings, concatenate the string, extracting a portion of string.

Some useful string functions are listed in Table 3.7.

FUNCTION NAME	EXPLANATION	EXAMPLE
Left()	Returns specified number of characters from left of the string	Left("Access",3) will return Acc
Right()	Returns specified number of characters from right of the string	Right("Access",3) will return ess
Mid()	Returns specified number of characters from the given position in string	Mid("Access",2,3) will return 3 characters from 2 positions, that is, cce
Len()	Returns the length of the given string	Len("Access") will return 6
Lcase()	Converts the text to lower case	Lcase("ACCESS") will return access
Ucase()	Converts the text to capital case	Ucase("access") will return ACCESS
Instr()	Returns the position of first occurrence of a string in another string	Instr("Operations","ra") will return 4
Trim()	Removes leading or trailing spaces in a text	Trim(" Acc ess ") will return "Acc ess"
Replace()	Converts a substring from the given string into specified string	Replace("Account Transactions","Account","Daily") returns Daily Transactions
Strcomp()	Compares two strings Returns 0 if strings are same. 1 if first string is greater the second. -1 If first string is less than the second.	Strcomp("Access","Access") returns 0 Strcomp("Access","Training") returns -1 as "Training" is greater than "Access"
StrReverse()	Returns the string in reverse order	StrReverse("access") returns "ssecca"

Table 3.7: Text Functions



3.4.2 Using Date and Time Functions

These functions are used to handle Date and Time data. This group contains various functions such as extracting a part of date or adding two dates.

Few of the important Date/Time functions, are shown in Table 3.8.

FUNCTION NAME	EXPLANATION	EXAMPLE
Now()	Returns current date and time	Now() Returns 07/18/2012 12:20:55
Date()	Returns current date	Date()_ Returns 07/18/2012
Time()	Returns current time	Time()_ Returns 12:30:15
DateDiff()	Returns difference two dates. The interval for difference can be in terms of Days ("d"), months("m"), Quarter ("q"), years("yyyy"), weeks ("ww")	DateDiff ("m",#7/18/2011#,#12/3/2011#) Returns 5 as the difference between two dates in terms of months is 5.
DateAdd()	Adds a specified interval to the given Date. Intervals in this can be used as same in DateDiff	DateAdd("q",1,#1/11/2012#) will return 4/11/2012 As a Quarter added to January returns April.
DatePart()	Extracts a portion of a date from the given date	DatePart("ww",#2/3/2012#) returns 6
Month()	Returns month in integer from the given date	Month(#12/1/2011#) returns 12
MonthName()	Returns name of the month, that is, given as an integer	MonthName(12) returns December
Year()	Returns year from a given date	Year(#2/2/2012#) returns 2012

Table 3.8: Date and Time Functions

3.4.3 Using Math Functions

Math functions are used for performing calculations on Numeric data. These functions provide us the property of performing various mathematical operations.



Some important mathematical functions are listed in Table 3.9.

FUNCTION NAME	EXPLANATION	EXAMPLE
Abs()	Returns the absolute value of a number	Abs (14) returns 14 Abs(-14) returns 14
Fix()	Returns the nearest integer for a negative number	Fix(-125.64) returns -125
Int()	Returns an integer for a specific value	Int(23.64) returns 23
Round()	Returns a number rounded to specified number of digits	Round(18.234,2) returns 18.23 Round(18.246) return 18.25
Rnd()	Returns any generated random number	Rnd() returns any Random no.
Sgn()	Returns an integer representing sign of a number - 1 for -ve number 1 for +ve number 0 for Zero	Sgn(-14) returns -1
Sqr()	Returns square root of a number	Sqr(16) returns 4
Log()	Returns logarithm of a number	

Table 3.9: Math Function

3.4.4 Using Financial Functions

Financial functions are used to perform many standard financial calculations, such as interest rates, annuity or loan payments, and depreciation.

Some extensively used financial functions are listed in Table 3.10.

FUNCTION NAME	EXPLANATION	EXAMPLE
DDB()	Returns the double-declining balance method of depreciation return based on the formula: $\text{Depreciation} / \text{period} = ((\text{cost} - \text{salvage}) * \text{factor}) / \text{life}$	DDB(cost, salvage, life, period[, factor]) If we calculate depreciation for Rs.5, 000 computer with a Rs.200 salvage value and an estimated useful life of three years for the first year. DDB(5000,200,3,1)
FV()	Returns the future value of an annuity based on periodic, fixed payment and fixed interest rate	FV(Rate, Payment Periods, Payment [, Present Value] [, Type]) If we calculate Future value for a rate of 8% for 10 installments depositing an amount of Rs. 200 monthly. FV will be calculated as: FV(0.08/12,10,-200)
PV()	Returns the present value of an annuity	PV (Rate, Payment Periods, Payment [,



	based on periodic, fixed payments to be paid in future and fixed interest rate	<i>Future Value</i> [, <i>Type</i>]) To calculate Present value of an annuity that will provide 5,000 a year for the next 20 years at a rate of .0825. We will use: PV(.08,5000,20)
SYD()	Returns the sum-of-years depreciation of an asset for a specific period	SYD(<i>Cost Of Asset</i> , <i>Salvage Value</i> , <i>Length Of Useful Life</i> , <i>Period</i>) To calculate the depreciation charges of a building that cost 365820 to build has a salvage value of 5390, and an estimated useful life of 30 years. We will use function SYD as: SYD(365820,5390,15,1)
PMT()	Returns the payment for an annuity based on periodic, fixed payment and fixed interest rate	To calculate a payment amount for a 6 percent loan of 360 months for 110000. The formula will be: PMT(.005, 360, -110000)
RATE()	Returns the interest rate per period	Rate (<i>nper</i> , <i>pmt</i> , <i>pv</i> [, <i>fv</i>] [, <i>type</i>]) To calculate interest rate on a Rs. 5,000 loan where monthly payments of Rs.250 are made for 2 years Rate(2*12,250,5000)

Table 3.10: Financial Functions**3.4.5 Problem Scenario**

The Operations Manager of Apex Ltd. received many complaints from customers about the orders not reaching them on time. He wants a report to be submitted for all the orders which were delayed (under normal cycle orders must be shipped within 7 days).

Solution

The required query will use the tables *Sales Order*, the criteria will be placed on *shipped date* using the *DateDiff* () function.

Steps for creating a query

1. Click *Create ribbon -> Queries -> Query Design* to open the *Query Design* window.
Select the *Sales Order* table from the *Show Table* window and click *Add*.
2. Select the columns *Sales Order Number*, *Sold to Customer*, *Sales Date*, *Ship Date*, *Shipped Via*. The *Query* window appears, as shown in Fig. 3.4.1.



Query1

Sales Order

- * Sales Order Number
- Sold to Customer
- Sales Date
- Ship Date
- Payment Terms
- Shipped via
- Tax
- Freight
- Other
- Create Invoice

Field:	Sales Order Number	Sold to Customer	Sales Date	Ship Date	Shipped via
Table:	Sales Order	Sales Order	Sales Order	Sales Order	Sales Order
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:					
or:					

Fig. 3.4.1. Select required column

Specify the criteria for *Shipped Date* as *DateDiff("d",[Sales Date],[Ship Date])>7*. The *DateDiff()* function returns difference between two dates, "d" forces it to return it in terms of days. The query looks like, as shown in Fig. 3.4.2.

Query1



Sales Order

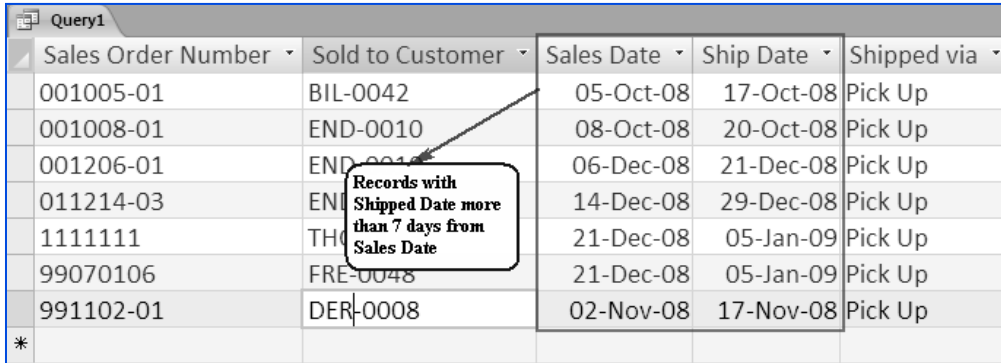
- * Sales Order Number
- Sold to Customer
- Sales Date
- Ship Date
- Payment Terms
- Shipped via
- Tax
- Freight
- Other
- Create Invoice

Field:	Sales Order Number	Sold to Customer	Sales Date	Ship Date	Shipped via
Table:	Sales Order	Sales Order	Sales Order	Sales Order	Sales Order
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				DateDiff("d",[Ship Date],[Sales Date])>7	
or:					

Fig. 3.4.2. Specify Query criteria using Functions



- Click  on the toolbar to save the query. Type the name of query as *Orders Delayed*.
- Click  in *Design ribbon* -> *Results* to view the results, as shown in Fig. 3.4.3.



Sales Order Number	Sold to Customer	Sales Date	Ship Date	Shipped via
001005-01	BIL-0042	05-Oct-08	17-Oct-08	Pick Up
001008-01	END-0010	08-Oct-08	20-Oct-08	Pick Up
001206-01	END-0010	06-Dec-08	21-Dec-08	Pick Up
011214-03	END-0010	14-Dec-08	29-Dec-08	Pick Up
11111111	THO-0010	21-Dec-08	05-Jan-09	Pick Up
99070106	FRE-0048	21-Dec-08	05-Jan-09	Pick Up
991102-01	DER-0008	02-Nov-08	17-Nov-08	Pick Up

Fig. 3.4.3. Query Results

3.5 Working with Expression Builder

The *Expression Builder* tool in Access helps build complex expressions. It contains easy access to access names and properties of columns of the tables. *Expression Builder* also contains a set of predefined functions in Access and also some prebuilt expression as to display page numbers.

The *Expression Builder* window is shown in Fig. 3.5.1.

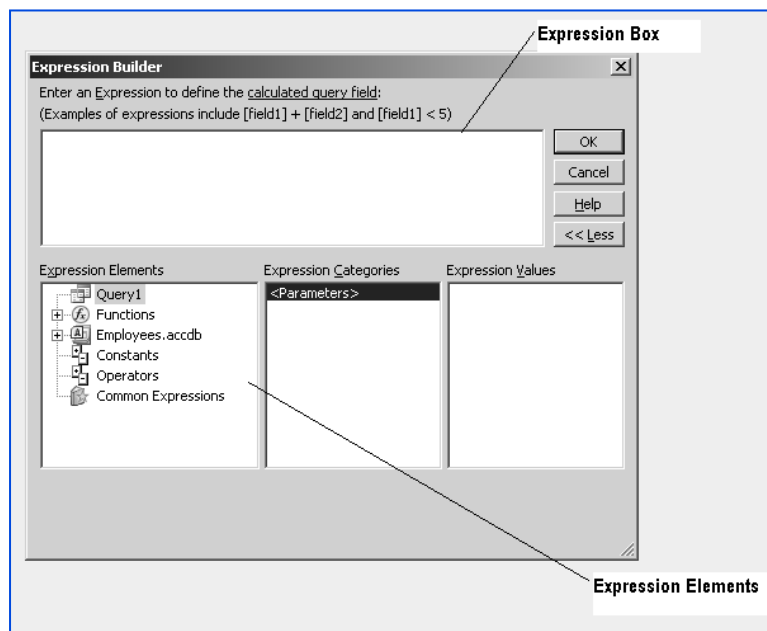


Fig. 3.5.1: Expression Builder Window



3.5.1 View of Expression Builder

Expression box - A text box in which expressions are written. Any value from the *Operators* button or *Expression Elements* can be pasted into *Expression Box*.

Operator buttons - Various operators are available in the *Operators Buttons* tab. We can just click any operator to get it in the *Expression Box* text box.

Expression elements – Expression element contains three tabs

- First one is for the objects in the database like *Tables*, *Queries*, *Forms*, or *Reports*.
- Second is for the sub elements of the objects selected in the *First* tab like fields of the table, containers in *Reports* and *Forms*.
- Third is for the properties of the element selected in second tab.

3.5.2 Complete view of all the three tabs in Expression Elements

The first tab contains functions, the second contains different types of functions, and the third contains all the functions in a particular type.

Click the *Paste* button to get any function in *Expression Box*, as shown in Fig. 3.5.2.

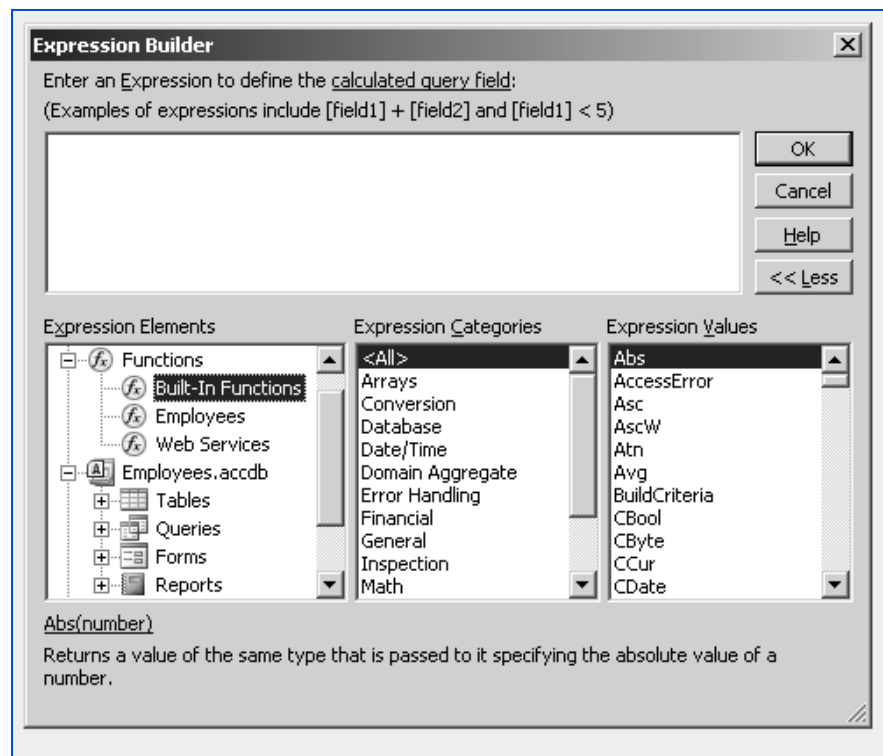


Fig. 3.5.2. Three tabs in Expression Elements



3.5.3 Problem Scenario

Consider the case scenario discussed in section 3.3.4 database Apex Inventory Shipment. The Marketing Manager of Apex Ltd., found that there were few orders which were prepared on time, but could not be sent because of customer details are not available. By mistake, a sales executive while typing has put a wrong customer number. *Customer Number* general format is XXX-0000, where X represents character and 0 represents any digit. The executive has inserted five digits instead of four. List the names of all such customers.

Solution

For this query, again the *Sales Order* table needs to be used. The criteria would be formed using the text function *Len ()*, length of *Customer Number* is normally 8 but would be 9 in this case. *Expression Builder* can be used to specify the criteria.

Steps for second creating query

1. Click *Create ribbon* -> *Queries* -> *Query Design* to open the *Query Design* window.
2. Select the *Sales Order* table from the *Show Table* window and click *Add*.
3. Select the *Sales Order Number*, *Sold to Customer*, *Sales Date*, *Ship Date*, *Shipped Via* columns.
4. Right-click on the *Criteria* tab of the *Sold to Customer* column and select *Build* from the drop-down, as shown in Fig. 3.5.3. The build will open the *Expression Builder* window.

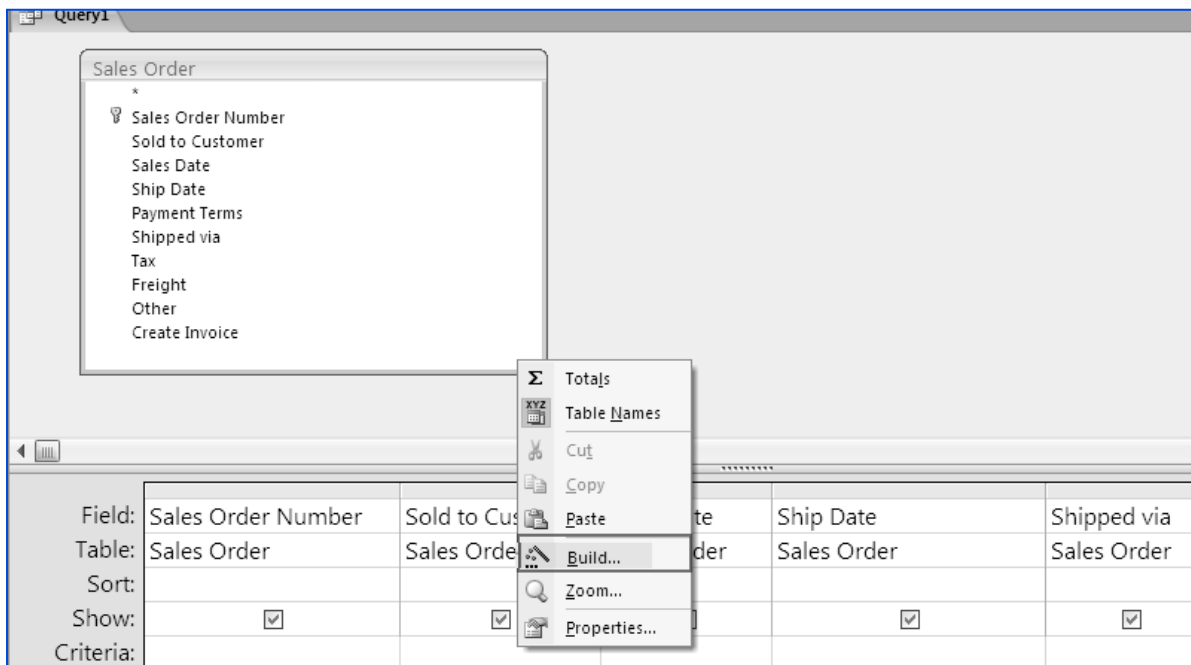


Fig. 3.5.3. Select build from drop down

5. The *Expression Builder* window appears, as shown in Fig. 3.5.4.

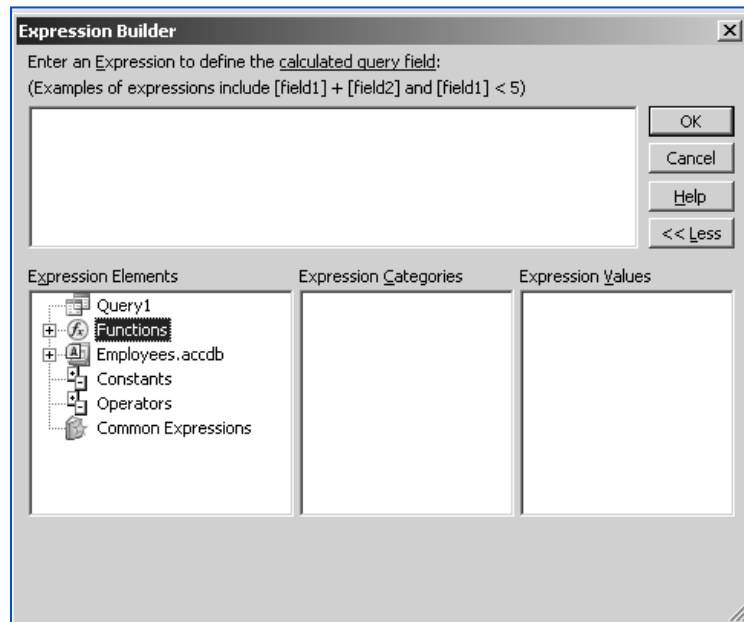


Fig. 3.5.4. Expression Builder window

6. The expression in the criteria should be *Len ([Sold to Customer]) > 8*. To include the length () function, select *Functions -> Built-In functions* from first tab, *Text* on the second tab, and *Len* on the third tab from *Expression Elements* in *Expression Builder*, as displayed in Fig. 3.5.5.

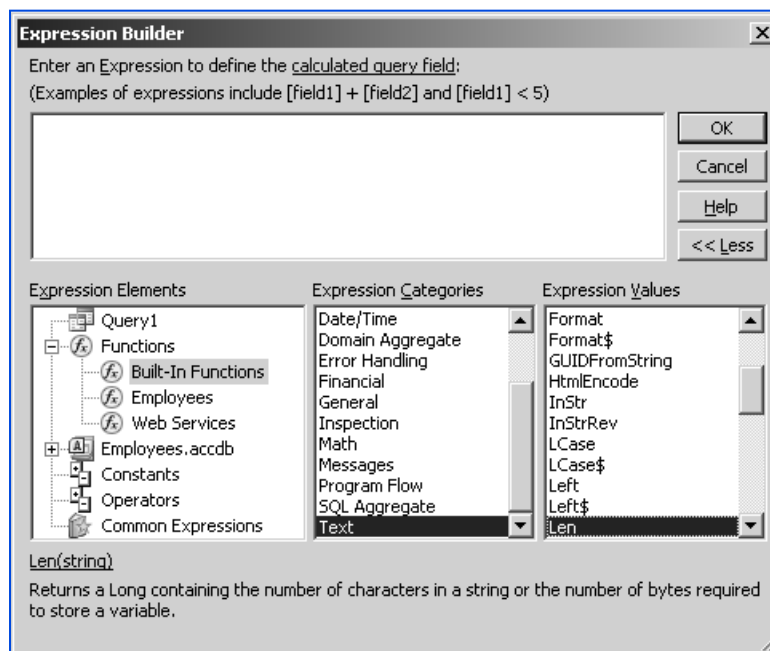


Fig. 3.5.5. Select Len function



7. Double Click the Len function to include expression in *Expression Box*, as shown as in Fig. 3.5.6.

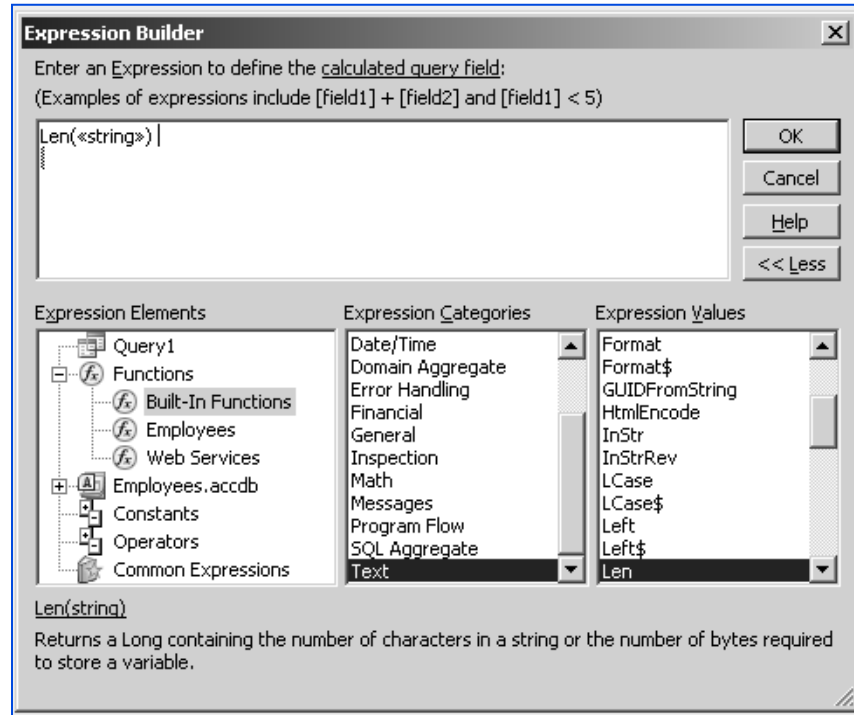


Fig. 3.5.6. Paste the expression

8. Now the string which is a part of the *Len ()* function must be replaced by field name. To do this select *Table -> Sales Order* from the first tab, *Sale to Customer* from the second tab in *Expression Elements* part of *Expression Builder*.
9. Select the *string* argument of the *Len ()* function and Double click to *Paste the argument in Len() function*. The column Name (*Sale to Customer*) will be pasted in place of *string*, the *Expression Builder* looks like as in Fig. 3.5.7.

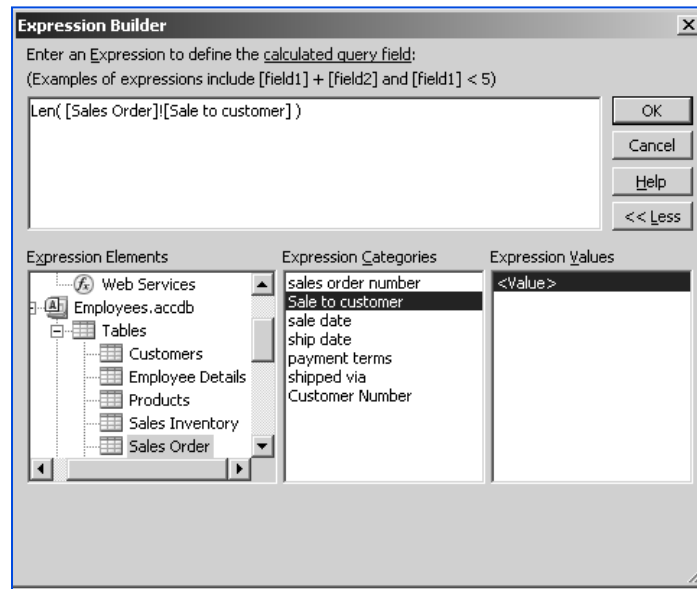


Fig. 3.5.7. Place the required column as function argument

10. Now click on > (Greater Than sign) from the *Operators* tab so that it gets pasted on *Expression Box* and write 3 after that so the *Expression Builder* window looks like as in Fig. 3.5.8.

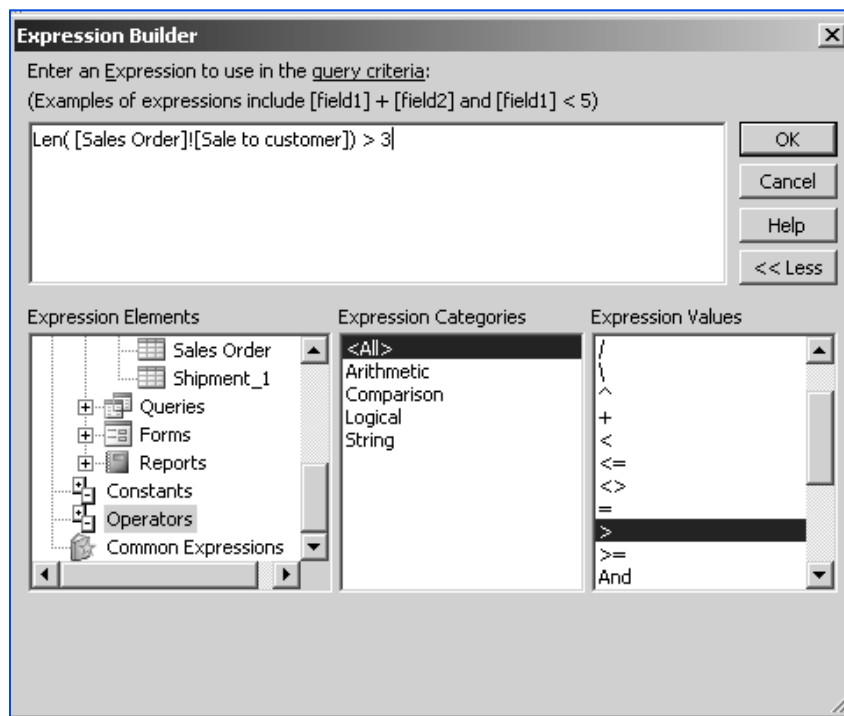


Fig. 3.5.8. The Complete expression



- Click OK to save the expression. Note the written expression appears in criteria of the *Sale to Customer* field, as shown in Fig. 3.5.9.

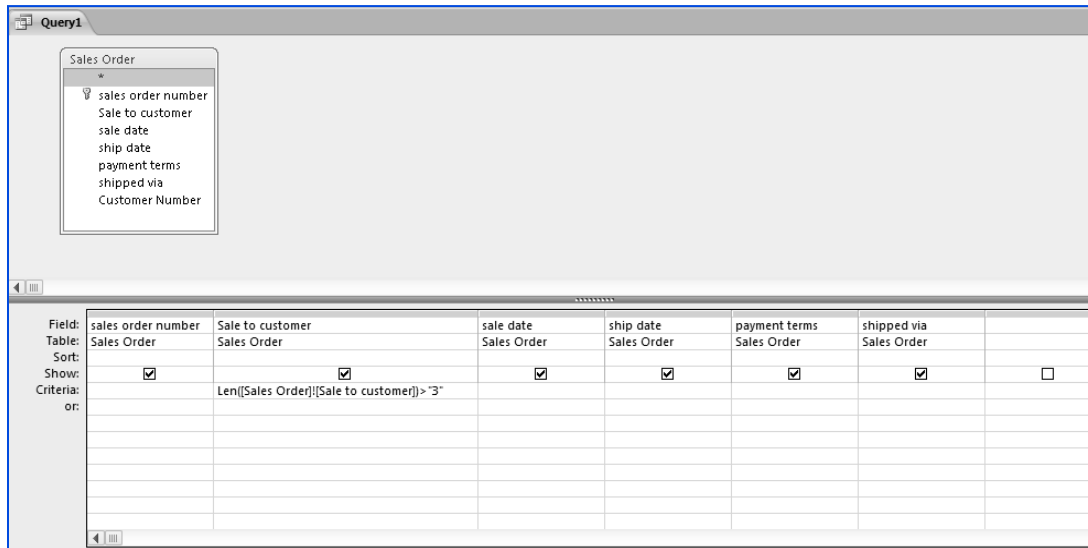




Fig. 3.5.9. Expression appears in Criteria

Click  on the toolbar to save the query. Type the name of query as "Sale to customer Criteria".

- Click  in *Design ribbon* -> *Results* to view the results, as shown in Fig. 3.5.10.

sales order	Sale to cust	sale date	ship date	payment ter	shipped via
103	Santosh	06-07-2012	09-07-2012	Pending	Road
104	Kapil	20-07-2012	22-07-2012	Pending	Road

Fig. 3.5.10. Query Results

The *Expression Builder* makes it easier to remember function names and also avoids typing error in the name of the columns. The operators' option can be used to place all the available operators in criteria expression.

3.6 Summary

This chapter focused on creation of criteria expressions in Access. The different components of the expression are – operators, operands, and functions. Operands can be considered as values used for performing operations. Operands can be further distinguished as literals, identifiers, and functions. Further, this chapter introduced different types of operators as – comparison, arithmetic, logical, and miscellaneous.

Functions are built in code to help us work better with expressions. There are different types of functions available in Access to work with different data types. Various functions available are - Text Function, Date and



Time Functions, Math Functions, and Financial Functions.

Expressions can be written directly or by using an interactive tool *Expression Builder* to create expression. *Expression Builder* has various tabs as *Expression Box*, *Operator Buttons*, and *Expression Elements*.

3.7 Lab Exercises

For *Apex Inventory Shipment* database of Apex Ltd. Provide a solution to the following problem scenarios:

1. A sales executive while inserting records in the Sales Order table by mistake inserted the Sales Date with a previous year. For instance, instead of 1/2/2012, he typed 1/2/2011. Write an Update query to add 1 year to all the dates which were written in previous year.
2. The Finance manager came to know that there had been a problem in receiving payments that were paid through Cheque or Electronic Card. Create a record set displaying all the invoices that were paid through Cheque, Master Card, or Visa Card.
3. For year-end review, the Vice President of the Company needs a report displaying a list of all the customers, and value and count of the orders placed by them.
(To solve the above query create a Group By query on Customer, Sales Order, and Sales Item Description. Calculate the value of orders as Sum of Quantity and Price).
4. Considering the query in question 3, a customer named James having Customer Number as END-0010 wishes to pay his entire amount in monthly installments. Company charges an interest rate of 5% for the part payments. Calculate the amount that James has to pay as a monthly installment. (Use the PMT function).
5. Display a list of all the orders which have not been shipped. (Check for orders with NULL Shipped Date).
6. A sales person was trying to fetch all the customers from India from city – New Delhi, but he found that the city has been typed in many different ways. For instance New Delhi was also written as Delhi, N Delhi, or Old Delhi. Find all the records from table Customers which have country as India and contain 'Delhi' in city name.
7. The Marketing Manager defined a standard format of creating Customer Code as XXX-0000 where XXX are first three letters of Customer's Company and 0000 is a four digit numeric code for customer. This format was not followed by some executives. Find all the customers for whom first three letters of the Customer Number does not match first three letters of their Company Name.
8. It was noticed that in the table Sales Item Description some values for Ship Qty are inserted as negative. Write a query to retrieve data having all the values of Ship Qty converted to positive and also the Price removing the decimal values. (Use math functions for the purpose).
9. Display a list of all the inventory items which are to be reordered. (Check all the Inventory which have Reorder Point greater than Inventory in Stock + Inventory on Order).
10. Considering the above query, retrieve a list of all the inventories which have not been ordered from past one month. (Make use of DateDiff and Date function)



Multiple Choice Questions

1. For the Apex Inventory Shipment database, a list of orders placed ten months ago or more from the Sales Order table needs to be created. What would be appropriate query criteria for the *Sales Date* field?
 - (a) `DateValue(DateAdd("yyyy",-3,[Sales Date]) > Today()`
 - (b) `>= 3 Months`
 - (c) `Between 3 And 5`
 - (d) `DateAdd("m",3,[Sales Date])<Date()`
2. Which record will be retrieved if the query criteria is `< #1/1/11#`?
 - (a) All values less or more than 1,195
 - (b) Value less than 95 characters
 - (c) Records with date before 2011
 - (d) All of above
3. The query criteria on *Shipped Date* for deleting all the records from the *Sales Order* table which were shipped before April 2011 or were never shipped would be _____?
 - (a) `">=#4/1/2011# OR IS NULL`
 - (b) `Month() = April`
 - (c) `IS NULL`
 - (d) None of the above
4. For the criteria `BETWEEN 1/1/2011 and 12/31/2011`, which rows will be displayed as result?
 - (a) Display records between the dates 1/2/2011 and 1/1/2012
 - (b) Display records between the dates 1/1/2011 and 12/31/2011
 - (c) Display records whose dates equaled 1/1/2011 or 12/31/2011
 - (d) All of the above
5. In the criteria expression `Total Amount Paid: [Tax] + [Freight] + [Other]`, which value is an *Identifier*.
 - (a) Total Amount Paid
 - (b) [Tax]
 - (c) +
 - (d) All of the above
6. A report is needed to be prepared, checking all the orders that are pending to be shipped within one week. The criteria expression in *Shipped Date* can be?



- (a) > Today()
 - (b) < DateAdd("d",7,"[Shipped Date])
 - (c) > Date() + 7
 - (d) = Now()
7. The tab in *Expression Builder* in which we write expressions is known as _____.
- (a) Expression Elements
 - (b) Operator Button
 - (c) Expression Box
 - (d) Expression Builder window
8. The criterion for the *Category* column in the *Inventory* table is IN ("Truck", "Boat", "Car"). This is equivalent to:
- (a) [Category] Like "Truck","Boat","Car"
 - (b) [Category] = "Truck","Boat","Car"
 - (c) [Category] = "Truck" AND [Category] = "Boat" AND [Category] = "Car"
 - (d) [Category] = "Truck" OR [Category] = "Boat" OR [Category] = "Car"
9. Among +, <>, MOD, AND, <= operator which operator has the highest priority.
- (a) +
 - (b) MOD
 - (c) AND
 - (d) <>
10. The criteria expression LIKE?a*.
- (a) Will match all text starting from A
 - (b) Will match all text ending from A
 - (c) Will match all text having second character as A
 - (d) Will match all text starting with a digit
11. Which criteria would be used to find the records where the mode of payment is not known from *Payments* table?
- (a) [How Paid] IS NULL
 - (b) [How Paid] = ""
 - (c) NOT IN [How Paid]
 - (d) None of the above



12. The criteria [Sales Date] > #1/1/2011# XOR [Payment Terms] = "Cheque" will return records only when ...
- (a) [Sales Date] is greater than 1-Jan-2011 And [Payment Terms] is "Cheque"
 - (b) Either [Sales Date] is greater than 1-Jan-2011 Or [Payment Terms] is "Cheque", but not both
 - (c) [Sales Date] is greater than 1-Jan-2011 Or [Payment Terms] is "Cheque"
 - (d) All of the above
13. Consider the query on the Inventory table:

Field:	Item Number	Category	Description	Quantity in Stock	Quantity on Order
Table:	Inventory	Inventory	Inventory	Inventory	Inventory
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				> 20	
or:					> 25

This query will return:

- (a) All records from Inventory table
 - (b) All records from Inventory table having Quantity in Stock greater than 20 AND Quantity on Order > 25.
 - (c) All records from Inventory table except having Quantity in Stock less than 20 and Quantity on Order > 25.
 - (d) All records from Inventory table having Quantity in Stock greater than 20 OR Quantity on Order > 25.
14. The Mid("Apex Limited",5,4) function will return
- (a) Apex
 - (b) Ted
 - (c) Limi
 - (d) Apex Limited
15. The SGN() function is a _____ type function:



- (a) Math
 - (b) Financial
 - (c) Text
 - (d) Date & Time
16. The expression to combine first three characters of Customer First Name and last four characters of Sales Order Number placed by customer will be:
- (a) [First Name] + [Sales Order Number]
 - (b) [First Name] & [Sales Order Number]
 - (c) Left([First Name],3) + Right([Sales Order Number],4)
 - (d) Left([First Name]) + Right([Sales Order Number])
17. The expression 3\4 will return
- (a) 0.75
 - (b) $\frac{3}{4}$
 - (c) 0
 - (d) None of the above
18. The Instr(4, "XXpXXpXXPXXP", "P") function will return
- (a) 3
 - (b) 6
 - (c) 9
 - (d) None
19. Which of the following is not a Date Time function?
- (a) Today()
 - (b) Date()
 - (c) Now()
 - (d) MonthName()
20. A query with compound criteria, where both the criteria are written on the same row of two different fields. This will be creating _____ compound criteria?
- (a) OR compound criteria
 - (b) AND compound criteria
 - (c) XOR compound criteria
 - (d) EQV compound criteria

CHAPTER

4

MACROS AND SWITCHBOARDS

LEARNING OBJECTIVES

- Simplifying Task with Macros
 - ☐ Creating a Macro
 - ☐ Attaching a Macro
 - ☐ Restricting Records Using a Condition
 - ☐ Validating Data Using a Macro
 - ☐ Automating Data Entry Using a Macro
- Managing Switchboards
 - ☐ Creating a Database Switchboard
 - ☐ Modifying a Database Switchboard
 - ☐ Setting the Startup Options

4.1 Introduction

A macro allows you to automate tasks and add functionality to your forms, reports, and controls. Access macros let you perform defined actions and add functionality to your forms and reports. Macros in Access can be thought of a graphical and a simpler way to do programming. Every macro has a list of actions and arguments defined for each action. Macros can be used independently or attached to a form, report, or control events. Arguments provided in a macro can restrict, validate, or automate data entry. Microsoft Access has added new features to macros to eliminate the need to writing VBA code.

Switchboards are forms available in Access to present data in the form so that users can focus on using the database as intended. A switchboard form presents the user with a limited number of choices for working with the application and makes the application easier to use. For example, a switchboard may give choice to open the tables, forms, and open or print reports.

4.2 Simplifying Task with Macros

In Access, *macros* can be considered as a simplified version of VBA programming. *Macros* are used to execute any task that can be initiated with the keyboard or the mouse. *Macros* are written by specifying a list of to perform and providing arguments for these actions. Access provides enables *macros* so that they can automate responses to many types of events (events can be change in the data, the opening or closing of a form or a report, or even a change of focus from one control to another) without forcing actually using a programming language.



4.2.1 Creating a Macro

In Access, *macros* can be created using the *Macro Design* window. This window can be opened by clicking *Create* → *Other* → *Macro*, as shown in Fig. 4.2.1

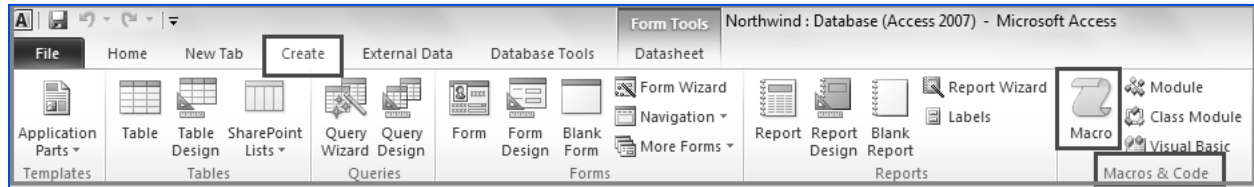


Fig. 4.2.1 Create New Macro

The *Macro Design* window is displayed in Fig. 4.2.2.

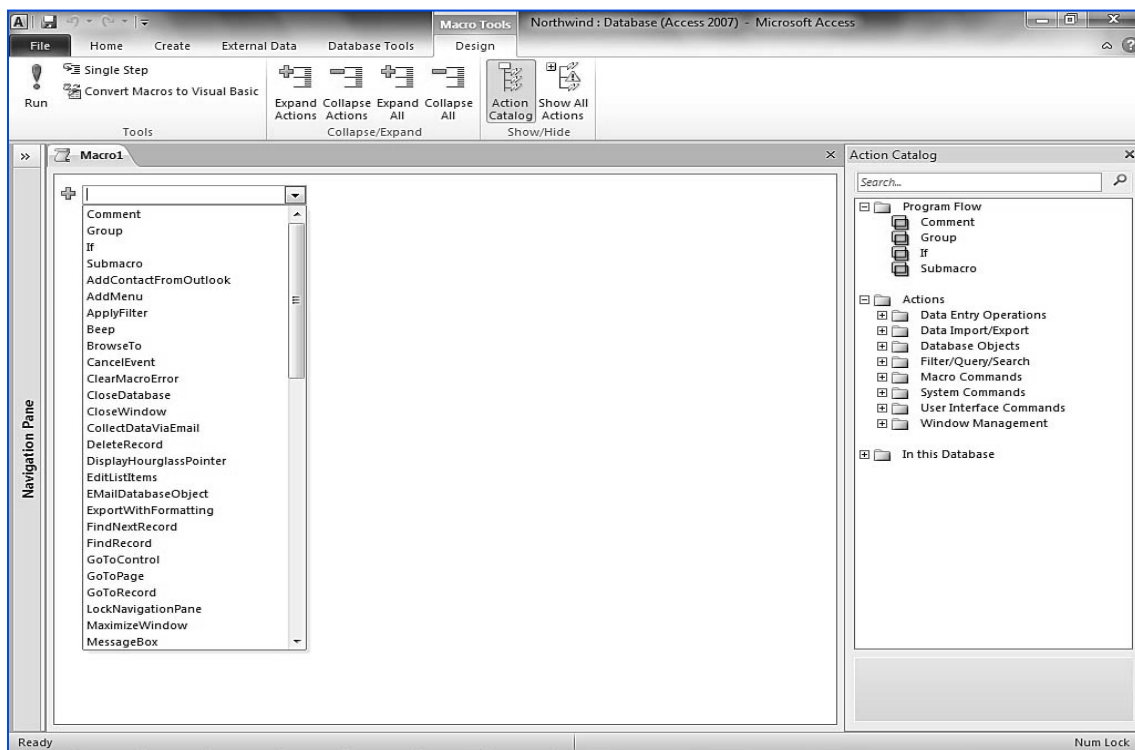


Fig. 4.2.2. Macro Designer Window

In the new Macro Designer for Access, the layout more closely resembles a text editor. Actions and conditional statements displayed in a familiar top-down format that is used by programmers. Arguments are displayed inline in a dialog box as shown in Figure.4.2.3



[-] If [Table1].[Salary]>75000 Then

SetField

Name Table1.Notes

Value = "Exceeds salary for the next paygrade."

[-] Else If [Table1].[Salary]<15000 Then

/* Check to ensure that the policy has not changed.

[-] SetField

Name Table1.Notes

Value = "Salary below range for this paygrade."

+ Add New Action

[-] Else

SetField

Name Table1.Notes

Value = "Salary within range."

End If

+ Add New Action

Fig. 4.2.3: Macro Designer Window

Adding a new action or conditional statement is simple. Either select it from the actions drop-down list, from a right-click menu, or select it from the **Action Catalog** pane as shown in Fig. 4.2.4 to the right side of the Macro Designer.

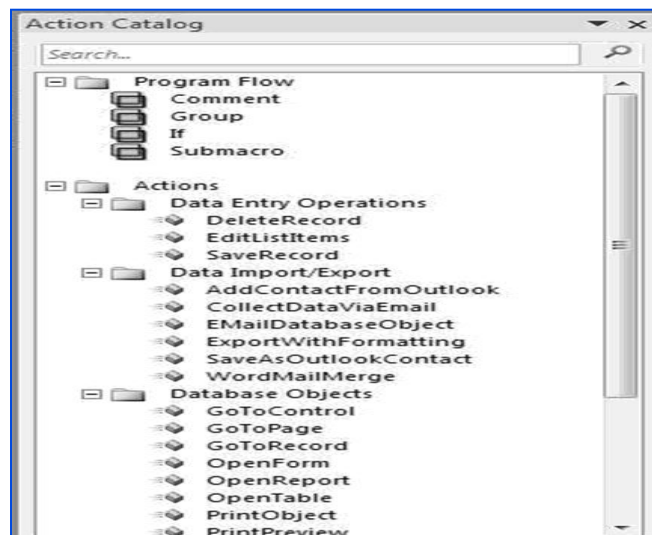


Fig. 4.2.4: Action Catalog



Actions Catalog: Actions are the basic building blocks of *macros*. MS Access provides a Action Catalog pane that contained large list of actions to be chosen, enabling a wide range of commands that can be performed. Some of the commonly used actions are: open a report, find a record, display a message box, or apply a filter to a form or report. A list of some commonly used actions in *macro* is displayed in Table 4.2.

Action	Description
ApplyFilter	Applies a filter or query to a table, form, or report.
CancelEvent	Cancels the event that caused the macro to run.
Close	Closes the specified window or the active window, if none is specified.
CopyObject	Copies the specified database object to a different Microsoft Access database or to the same database with a new name.
DeleteObject	Deletes the specified object or the object selected in the <i>Database</i> window, if no object is specified.
Echo	Hides or shows the results of a macro while it runs.
FindNext	Finds the next record that meets the criteria specified with the most recent <i>FindRecord</i> action or the <i>Find</i> dialog box. Use to move successively through records that meet the same criteria.
FindRecord	Finds the first or next record that meets the specified criteria. Records can be found in the active form or datasheet.
GoToControl	Selects the specified field on the active datasheet or form.
GoToPage	Selects the first control on the specified page of the active form.
GoToRecord	Makes the specified record the current record in a table, form, or query. Use to move to the first, last, next, or previous record.
Maximize	Maximizes the active window.
Minimize	Minimizes the active window.
MoveSize	Moves and/or changes the size of the active window.
MsgBox	Displays a message box containing a warning or informational message.
OpenForm	Opens a form in the <i>Form</i> view, <i>Design</i> view, <i>Print Preview</i> , or <i>Datasheet</i> view.
OpenModule	Opens the specified <i>Visual Basic</i> module in the <i>Design</i> view.
OpenQuery	Opens a query in the <i>Datasheet</i> view, <i>Design</i> view, or <i>Print Preview</i> .
OpenReport	Opens a report in the <i>Design</i> view or <i>Print Preview</i> or prints the report immediately.
OpenTable	Opens a table in the <i>Datasheet</i> view, <i>Design</i> view, or <i>Print Preview</i> .
OutputTo	Exports the specified database object to a Microsoft Excel file (.xls), rich-text file (.rtf), text file (.txt), or HTML file (.htm).
PrintOut	Prints the active database object. You can print datasheets, reports, forms, and modules.
Quit	Quits Microsoft Access.



Rename	Renames the specified object.
Requery	Forces a re-query of a specific control on the active database object.
Restore	Restores a maximized or minimized window to its previous size.
RunApp	Starts another program, such as Microsoft Excel or Word.
RunCode	Runs a Visual Basic Function procedure.
RunCommand	Runs a command from Microsoft Access's menus. For example, <i>File</i> → <i>Save</i> .
RunMacro	Runs a macro.
RunSQL	Runs the specified SQL statement for an action query.
Save	Saves the specified object or the active object, if none is specified.
SelectObject	Selects a specified database object. You can then run an action that applies to that object.
SendObject	Sends the specified database objects as an attachment in an e-mail.
SetValue	Sets the value for a control, field, or property on a form or report.
SetWarnings	Turns all system messages on or off. This has the same effect as clicking <i>OK</i> or <i>Yes</i> in each message box.
StopAllMacros	Stops all currently running macros.
StopMacro	Stops the currently running macro. Use to stop a macro when a certain condition is met.
TransferDatabase	Imports or exports data to or from the current database from or to another database.
TransferSpreadsheet	Imports data from a spreadsheet file into the current database or exports data from the current database into a spreadsheet file.
TransferText	Imports data from a text file into the current database or exports data from the current database into a text file.

Table 4.1: Macro Actions

4.2.1.1 Problem Scenario

Kanika Mathur, a sales executive in Apex Ltd. is required to send a detailed report of all the orders that have been placed today to the Sales Head every evening in a form of an Excel sheet, also the same sheet also has to be uploaded in a shared folder for delivery to check. She thought to automate the process of transferring records so as to save the efforts required.

Solution

As a solution to the above problem, create a *macro* that transfers the table Orders into Excel and stores it in a shared folder using the *TransferSpreadSheet* Action. Then, use *Send Object Action* to mail it to the Sales Head.

Steps for creating the macro

1. Open *Macro Designer*. Click *Create* → *Macro & Code* → *Macro*.



- Click **AddNew** Action drop-down box → Select **ExportWithFormatting**. Note that the **ExportWithFormatting** option will also be available in Action Catalog. The *Macro Designer* window appears, as shown in Fig. 4.2.5.

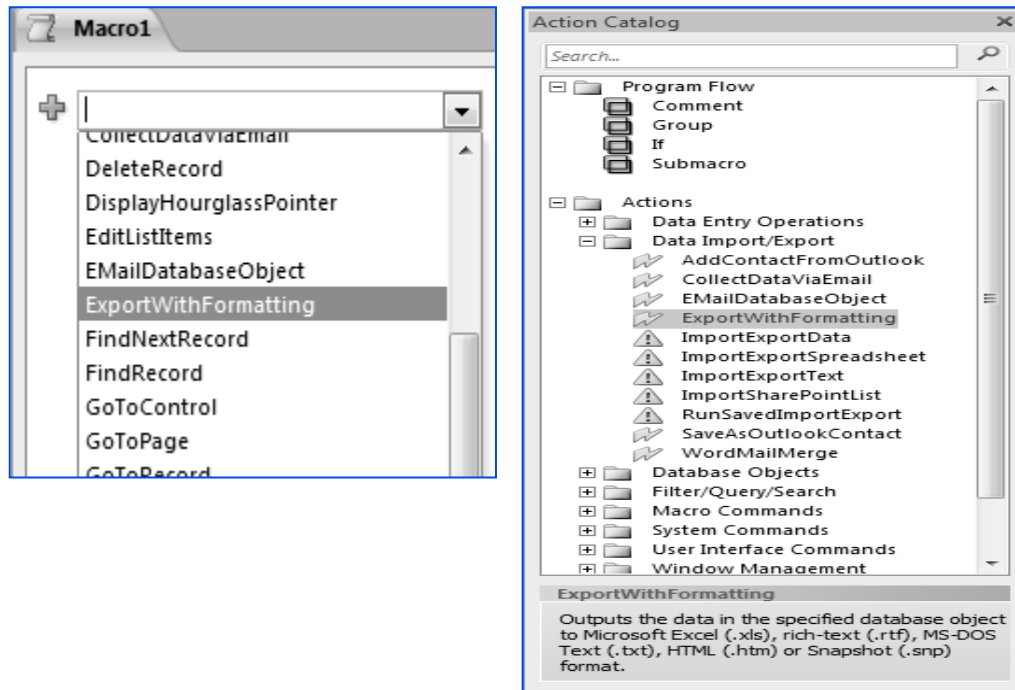


Fig. 4.2.5 : Select Export with Formatting Action

- When we select an action that needs more than one argument, it would appear, followed by a box for each argument as shown in Fig. 4.2.6.

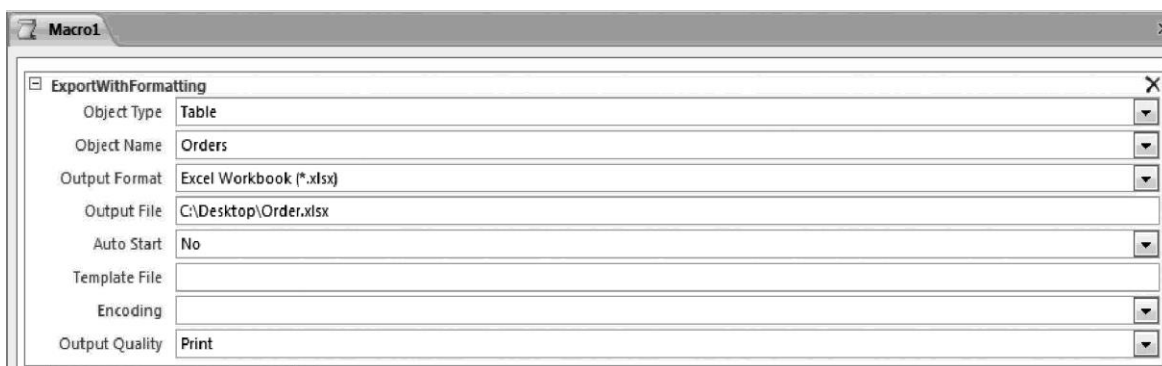


Fig. 4.2.6 : Box for each argument and type necessary values

Object Type	:	Table
Object Name	:	Orders
Output Format	:	Excel Workbook (*.xlsx)



Output File : C:\Desktop\Order.xlsx


NOTE: Output File Name should include the complete absolute path of the shared folder. *Macro Designer* appears, as shown in Fig. 4.2.6.

4. Select the next action in the *Query Designer* window as *EmailDatabaseObject* and specify *Action Arguments*, as shown below in Fig. 4.2.5:

5. *Fig. 4.4: Action SendObject*

Object Type : Table
Object Name : Orders
Output Format : Excel Workbook (*.xlsx)
To : SalesHead@Apex.com <email of Sales Head>
Cc :
Bcc :
Subject : <Subject line for the mail>
Message Text : <Message to be sent along with attachment>
Edit Message : No (Select Yes to edit message before sending)
Template File : <template file for output to be generated>

NOTE: The *EmailDatabaseObject* action can only be used if the Outlook is configured and is open. The *To*, *Cc*, *Bcc*, *Subject*, *Message Text* options can be set according to the requirement.

6. Click *Quick Access* → . The window prompts for the name of the *macro*, write the name of *macros* as *MailCurrentOrders* and click *OK*. Close the *Macro Design* window.
7. Double-click the *Macro Name* under the *Macro* option in the *All Access Objects* tab to execute it.

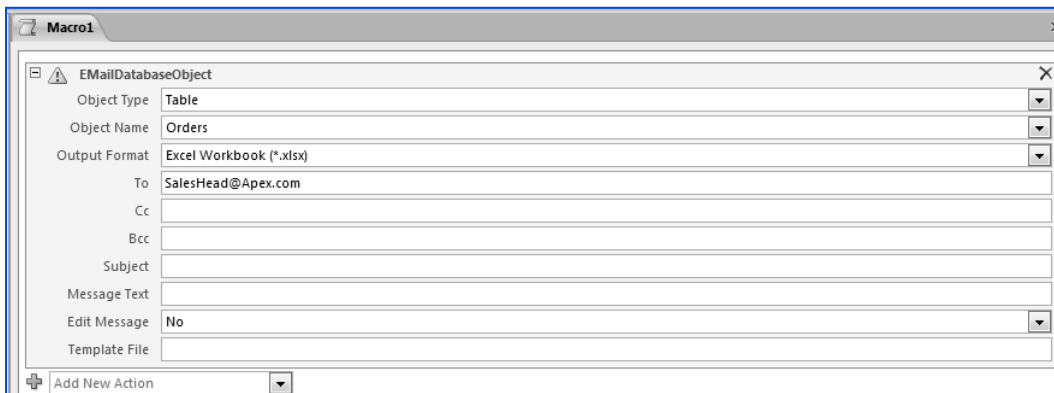


Fig. 4.2.7: EmailDatabaseObject Macro

All Macros are saved automatically in default name.



Macro Builder can use many actions in a single *macro* or create multiple *macros* in one *macro designer* by using *macro names*. *Macro* can also be assigned shortcut keys using the *AutoKeys* macro.

4.2.2 Attaching a Macro

A *macro* can be attached to an event of a control, a form, or a report. *Macros* are used to provide an added functionality to Access Objects. *Macros* can automate responses to many types of *events* without using a programming language. *Events* are the property of a form or a control. *Macros* are always attached to one event or another to perform some action. To view the events for a control, open its *Property* window and move to the *Events* tab as shown in Fig. 4.2.8. For example, if a button on a form is required to print a report, a *macro* which opens a report in print preview form can be attached to click event of the button. Access permits to create *macros* embedded to the control or attach an existing *macro* to events.

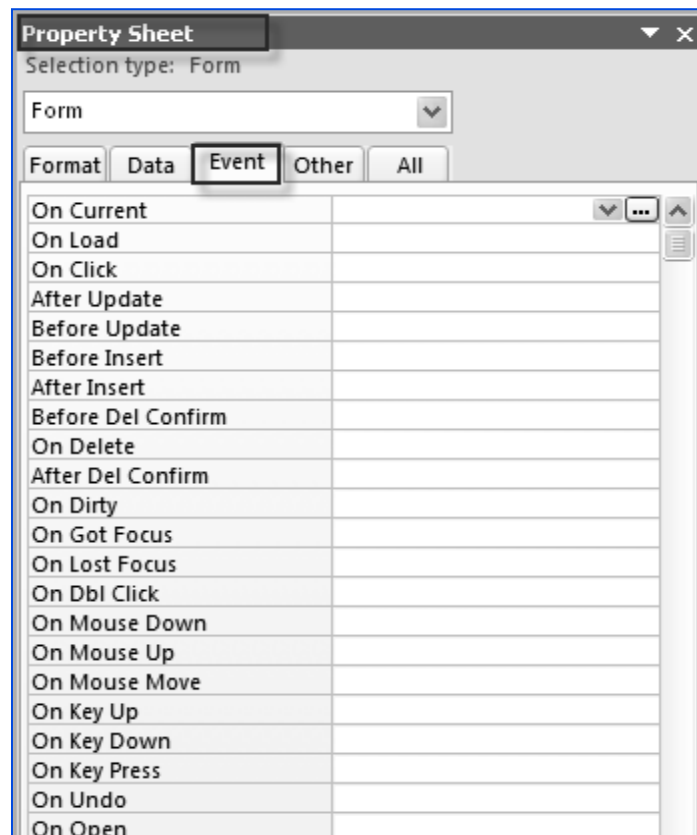


Fig. 4.2.8: Events in Form Properties



4.2.2.1 Problem Scenario

Consider the problem scenario discussed in section 4.2.1. Now the same functionality is required to be added to the *Orders* form. This means that the *Orders* form should have a button that enables the user to export and mail the table.

Solution

Consider the form *frmOrders* which is based on *Orders* table, as shown in Fig. 4.2.9.

The screenshot shows an Oracle APEX form titled 'Orders'. The form is displayed in a web browser window. The form contains the following fields and values:

Field	Value
Order ID	30
Employee	Anne Hellung-Larsen
Customer	Company AA
Order Date	15-01-2006
Payment Type	Check
Paid Date	15-01-2006
Notes	
Ship Name	Karen Toh

The bottom status bar of the form shows the following information:

- Record: 1 of 48
- No Filter
- Search

Fig. 4.2.9: Orders Form



Now, add a *button* on the form and attach a *macro* to the click event of the *button*. Macro is the same as created in section 4.2.9 and exports and mails the list.

1. Open the *Orders* form in the *Design* view. To do this, right-click the form and select *Design View* from the list.
2. To add a *button* to the form, select *Design -> Controls -> button* to be added and draw it on the form, as shown in Fig. 4.2.10. Cancel the *Command Button* wizard that appears.

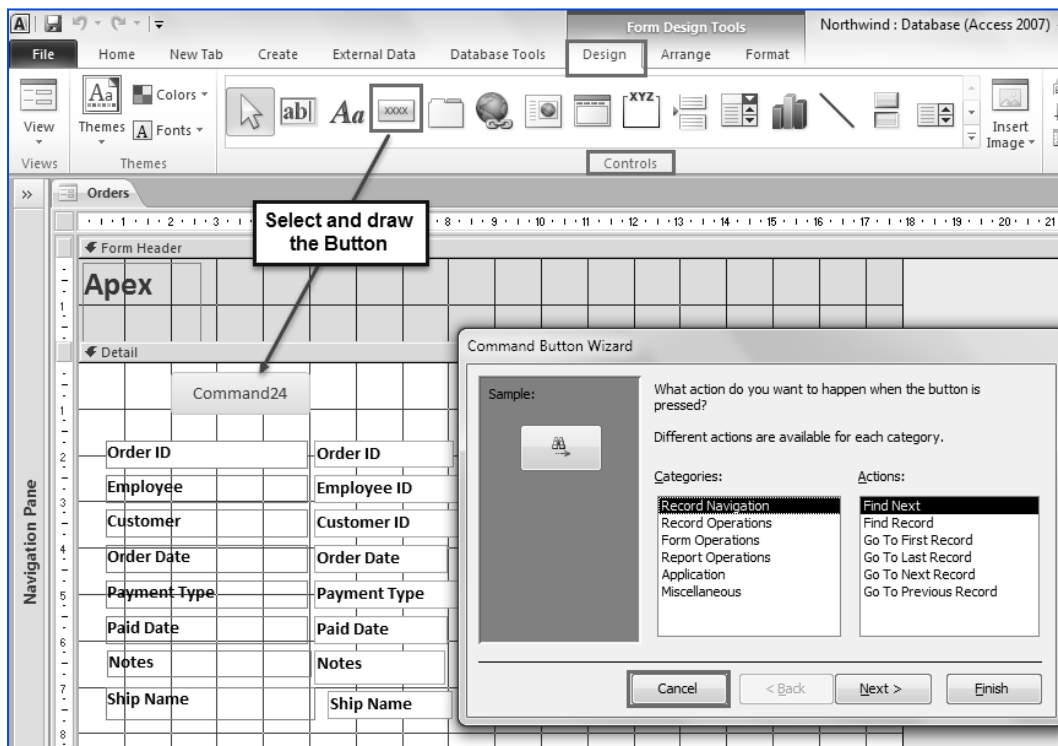


Fig. 4.2.10: Draw the button on the form

NOTE: The *Command Button* wizard may not appear if *Use Control -> Controls* in *Design* is not selected.

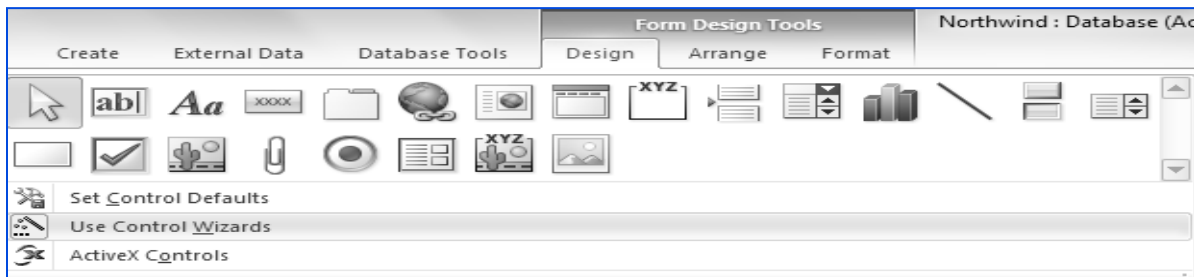


Fig. 4.2.11: Use Control Wizards option



- Open the control properties by selecting the *Command* button and press *F4*. Alternatively, select *Property Sheet* from *Design* -> *Tools*, as shown in Fig. 4.2.12.

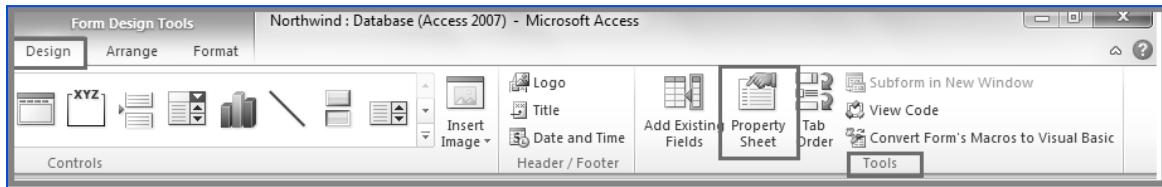


Fig. 4.2.12: Select Property Sheet

- The *Property* window appears as shown in Fig. 4.2.13.

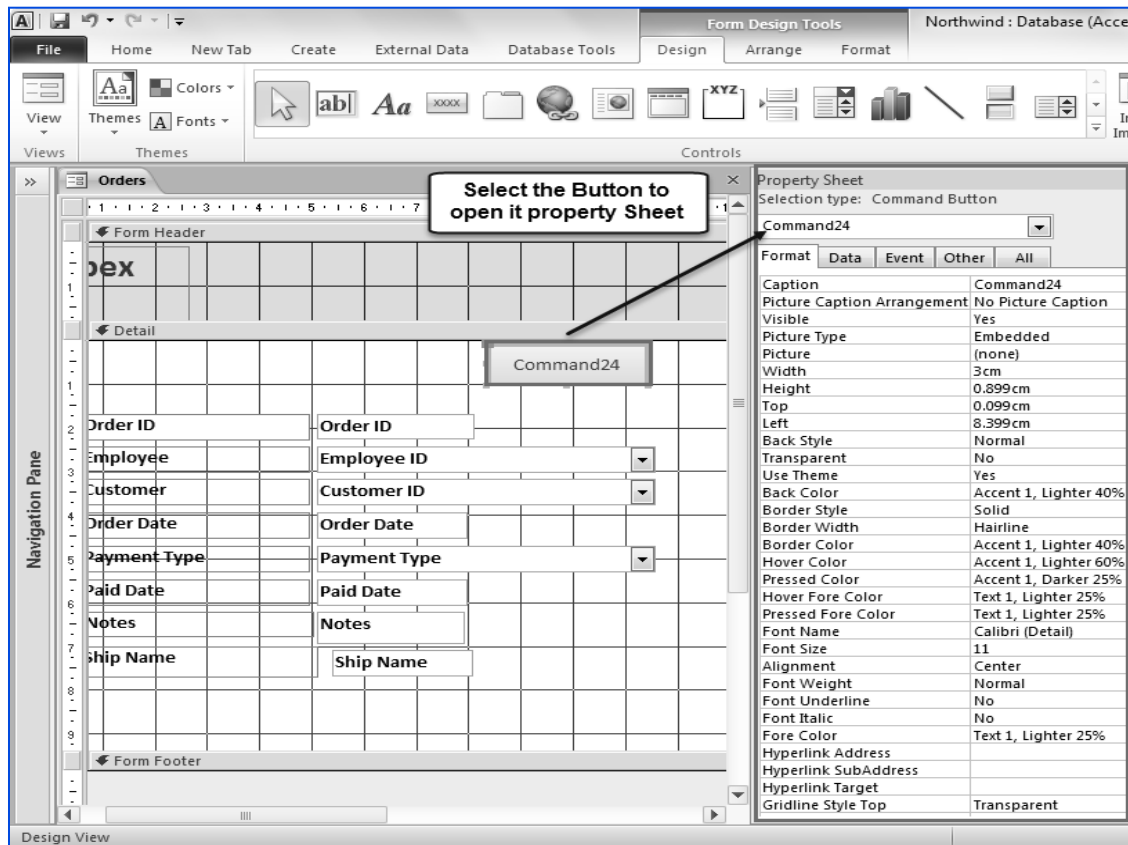



Fig. 4.2.13: Property Sheet for Button

- In the *Format* tab of *Property Sheet*, set the value of the *Caption* property to *Export And Mail* as shown in Fig. 4.2.14.



Fig. 4.2.14: Set Caption Property

6. In the *Event* tab of the *Property Sheet*, set the value of the *On Click* event. To do this, click  to open the list and select *MailCurrentOrders*, as shown in Fig. 4.2.15.

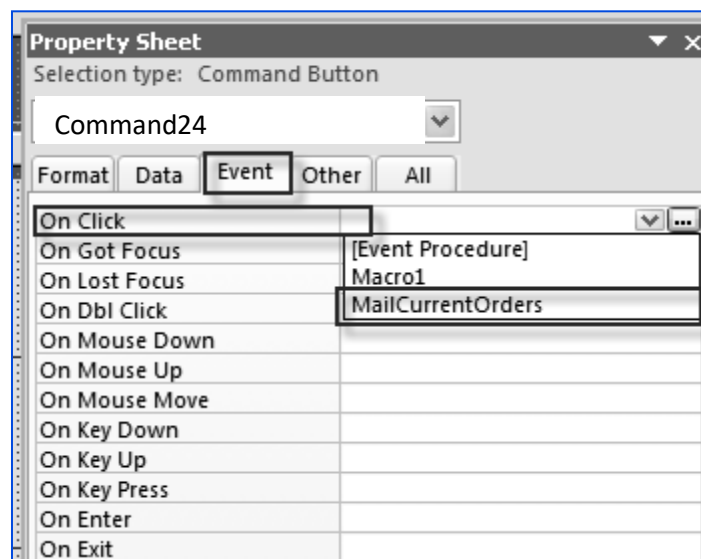



Fig. 4.2.15: Set the On Click event Property

NOTE: A *macro* embedded to the control can also be created, by clicking on  button and selecting *Macro Builder* from the *Choose Builder* window that appears, as shown in Fig. 4.2.16.

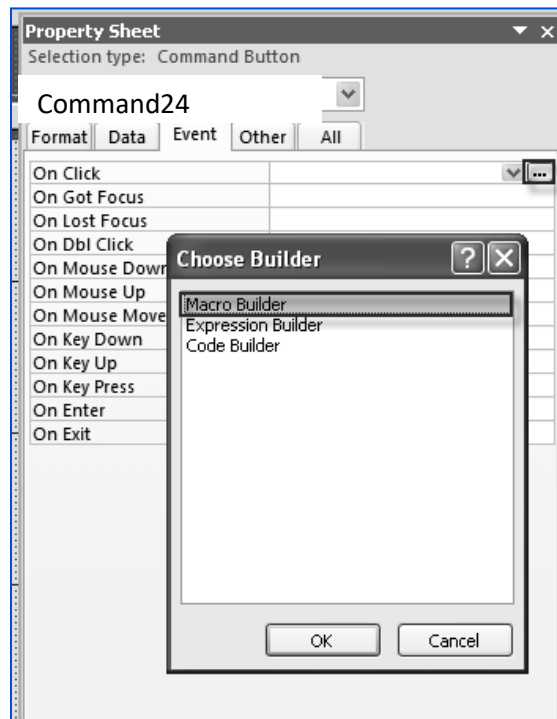


Fig. 4.2.16: Create an embedded Macro

7. The form appears as shown in Fig. 4.2.17; the *macro* will be executed on clicking the *Export And Mail* button.

Orders	
Apex	
Export And Mail	
Order ID	30
Employee	Anne Hellung-Larsen
Customer	Company AA
Order Date	15-01-2006
Payment Type	Check
Paid Date	15-01-2006
Notes	
Ship Name	Karen Toh

Fig. 4.2.17: Click Button to execute the Macro



Multiple *macros* can be created in a single *Macro Designer* window by giving each *macro* a different name and can be attached to an event of form or control by specifying their name.

4.2.3 Restricting Records using a Condition

A *macro condition* is an expression that enables a *macro* to perform certain tasks only if a specific situation exists. When a *condition* is used in a *macro*, the *macro* performs a defined set of tasks depending on whether the expression returns the True or False value. When the expression returns True, all the actions are performed. When the expression returns False, none of the actions are performed. Conditions can be entered in the *Conditions* column of the *Macro Builder* window. A single condition can control more than one action.

4.2.3.1 The Where Condition

The *Where* condition filters and selects records in reports or forms and their underlying tables or queries. This condition is applicable as an argument for the *macro* actions *OpenForm* and *OpenReport*. The *Where* condition is an *Action Argument* for *macro* actions such as *OpenForm* or *OpenReport*. For example, the *Where* condition specified for an *OpenForm* action can be used to compare and display matching records from two related forms.

4.2.3.2 Problem Scenario

In the *Database Apex Inventory Shipment*, as an enhancement to the *Orders* form created in Section 4.2.2, the Manager wishes to see the details of the Customer who has placed the order.

Solution

As a solution to the above requirement, a command button will be added to the form. On the click event of the command, a *macro* will be created that displays the *Customers* form restricted to the *Customer Number* for the order.

For the purpose of displaying the customer information the *frmCustomers* form is created based on the *Customers* table, as shown in Fig. 4.2.18.

Customers			
APEX			
ID	<input type="text"/>	Address	<input type="text" value="123 1st Street"/>
Company	<input type="text" value="Company A"/>	City	<input type="text" value="Seattle"/>
Last Name	<input type="text" value="Bedecs"/>	State/Province	<input type="text" value="WA"/>
First Name	<input type="text" value="Anna"/>	ZIP/Postal Code	<input type="text" value="99999"/>
E-mail Address	<input type="text"/>	Country/Region	<input type="text" value="USA"/>
Job Title	<input type="text" value="Owner"/>	Web Page	<input type="text"/>
Business Phone	<input type="text" value="(123)555-0100"/>	Notes	<input type="text"/>
Home Phone	<input type="text"/>	Attachments	<input type="text"/>

Fig. 4.2.18: Form *frmCustomers*



Steps for adding a button to frmOrders

1. Open the *frmOrders* form in *Design view*. To do this, right-click the *frmOrders* form under the *All Access Objects* tab and select *Design View* from the list. The form opens in *Design View*, as shown in Fig. 4.2.19.

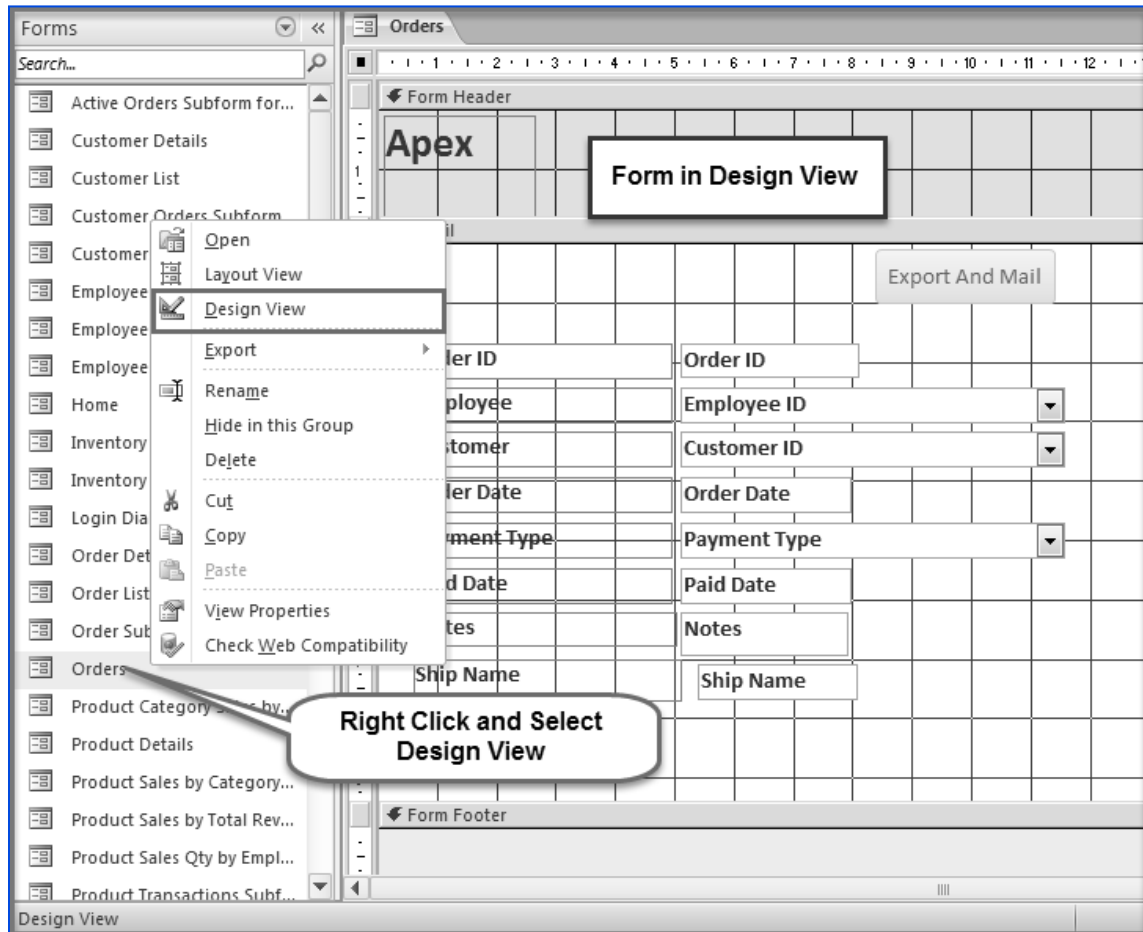


Fig. 4.2.19: Open form *frmOrders* in Design View

2. To add a button to the form, select the button from *Design -> Controls* and draw it on the form, as shown in Fig. 4.2.20. Cancel the *Command Button* wizard that appears.

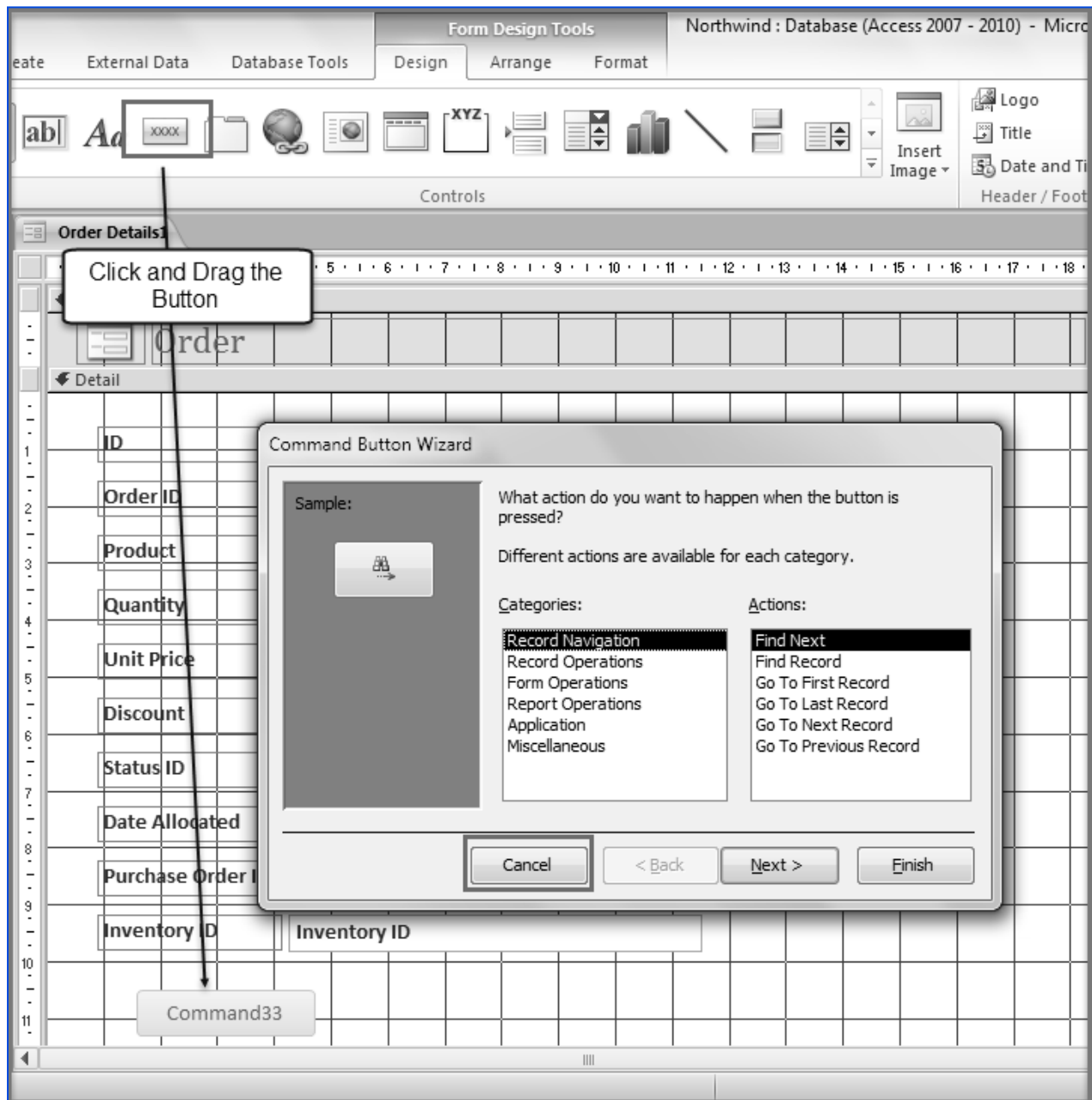


Fig. 4.2.20: Draw Command Button on Form

3. Open the control properties by selecting the *Command* button and pressing *F4*. Set the value of *Caption* property as *View Customer Details*, as shown in Fig. 4.2.21.

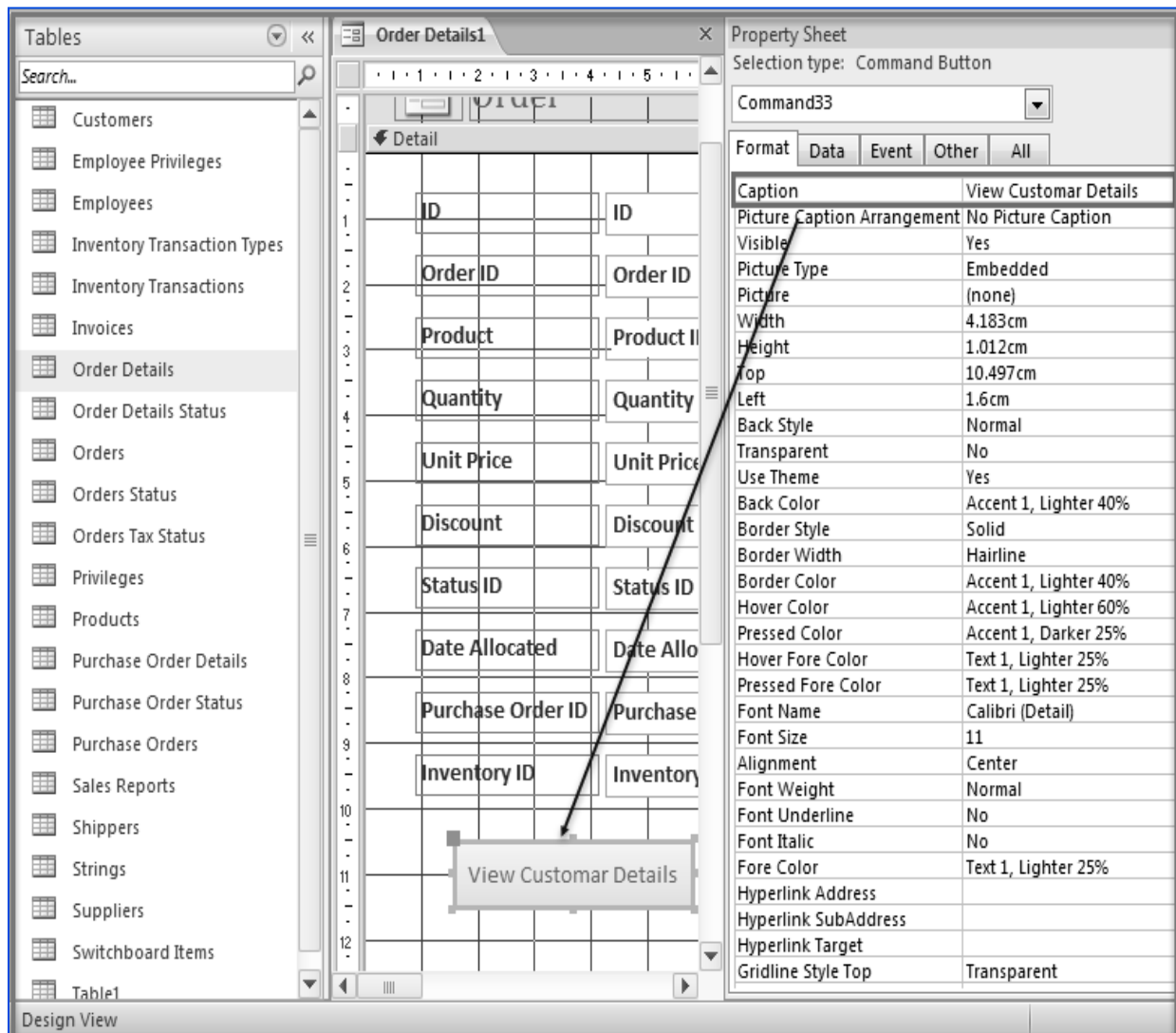



Fig. 4.2.21: Set Caption Property

Steps for embedding a macro to On Click event of the command button

4. In the *Event* tab of *Property Sheet*, set the value of the *On Click* event. To do this, click  next to the *On Click* property. The *Choose Builder* window appears, as shown in Fig. 4.2.22.

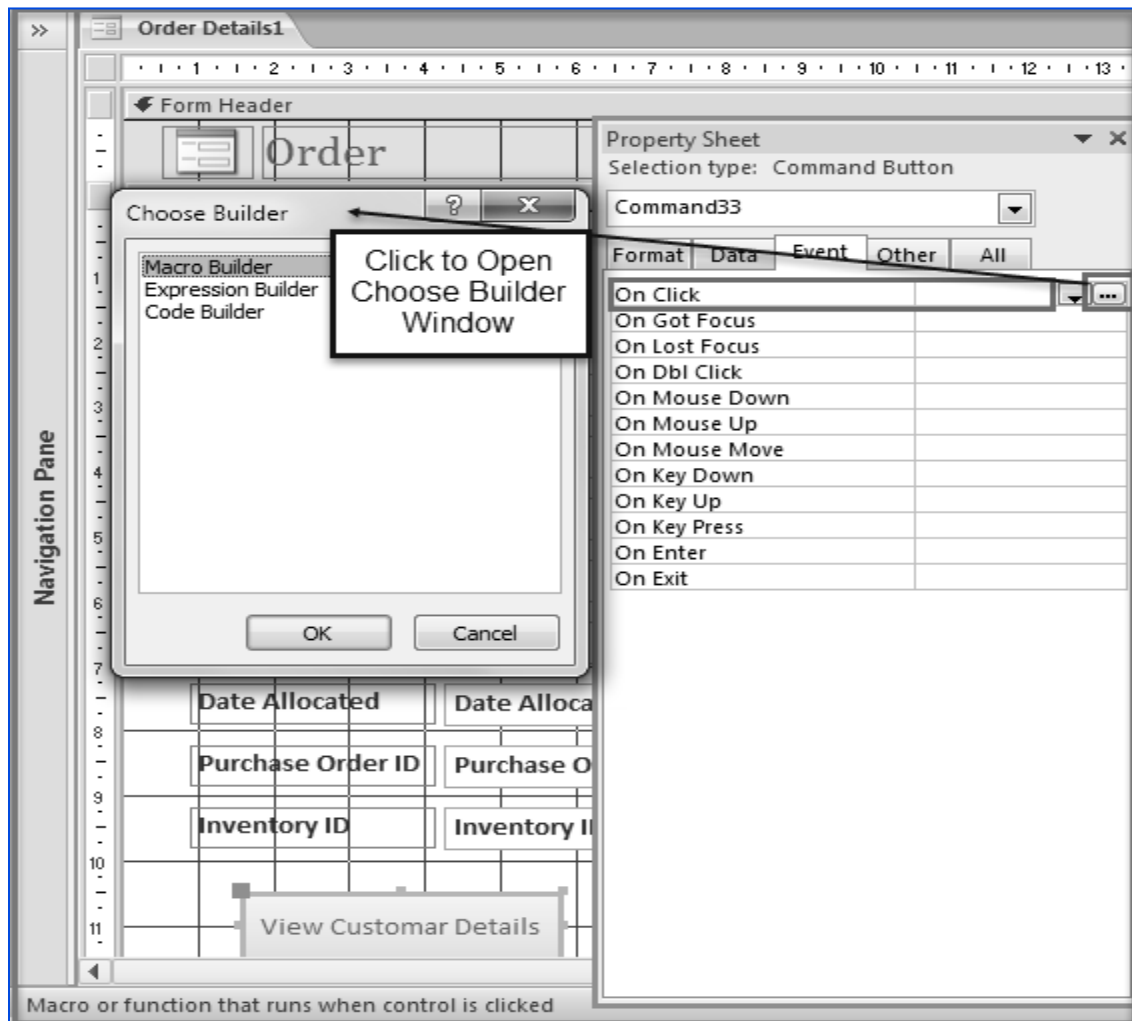


Fig. 4.2.22: Open the Choose Builder window

5. In the *Choose Builder* window, select *Macro Builder* from the list and click *OK*. The *Macro Designer* window appears, as shown in Fig. 4.2.23(A).

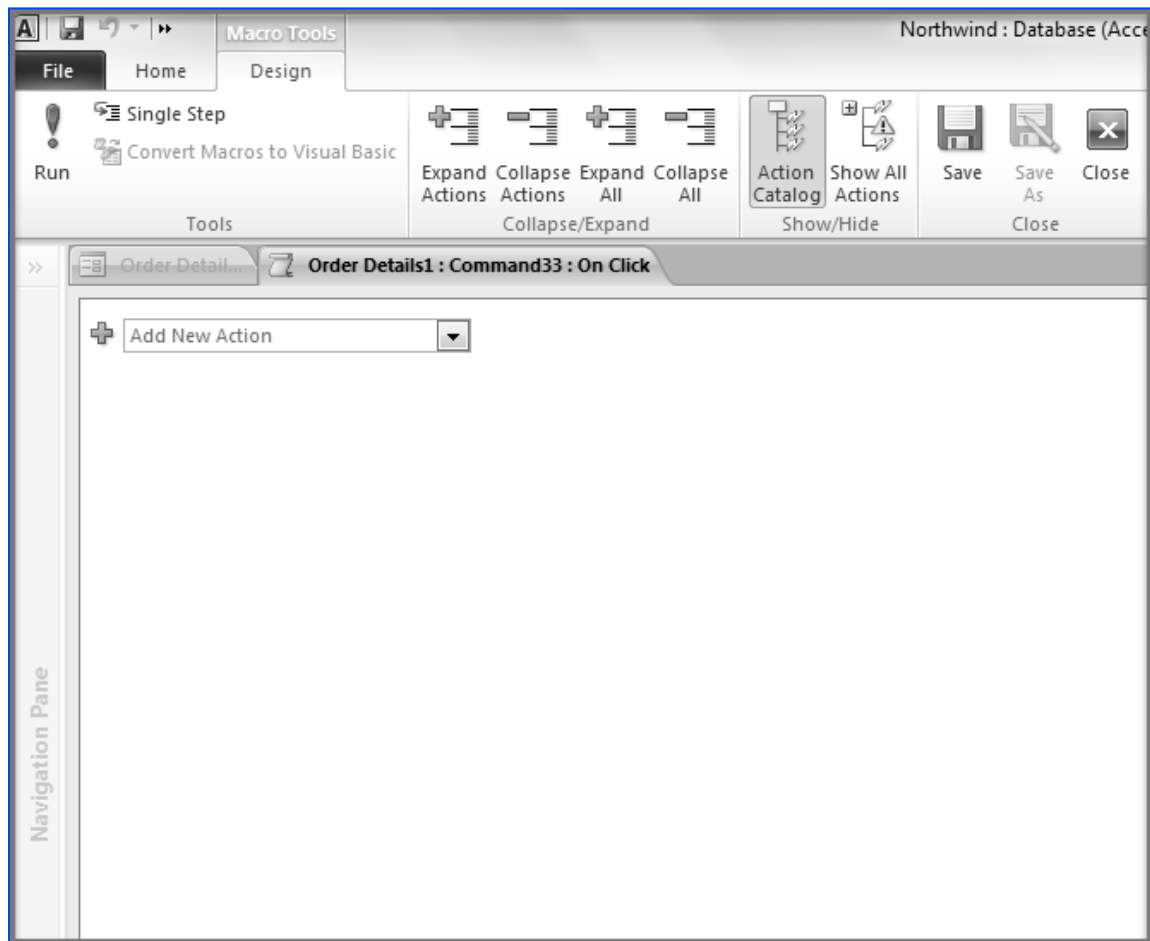


Fig. 4.2.23(A): Macro Designer window

6. In the Add New Actions Dropdown list, select the *OpenForm* Action from the list. Set the value of *Action arguments* as shown in Fig 4.2.23(B):

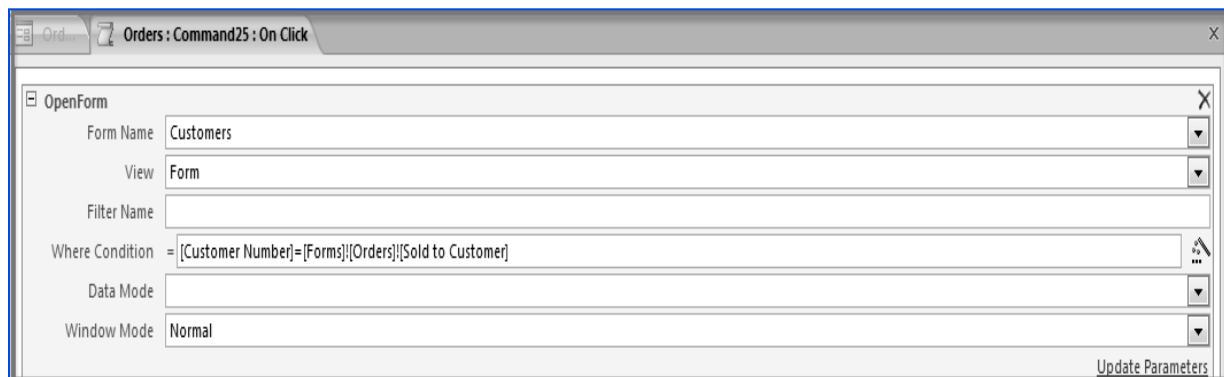


Fig 4.2.23(B): Fill the arguments of OpenForm Action



Form Name : Customers
 View : Form
 Filter Name :
 Where Condition : [Customer Number]=[Forms]![Orders]![Sold to Customer]
 Data Mode : Yes
 Window Mode :

7. Click Design -> Close -> Close, as shown in Fig. 4.2.24(A).

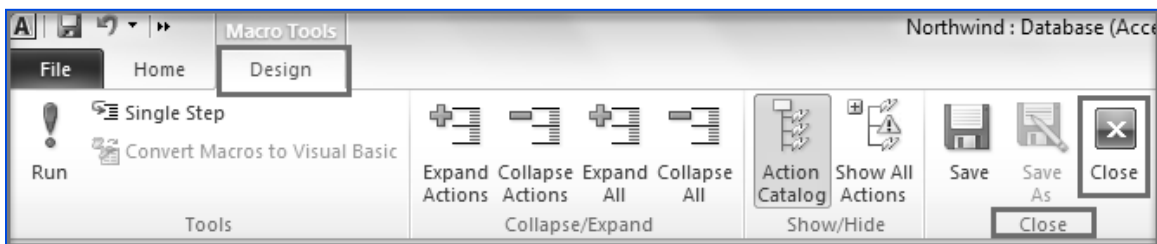


Fig. 4.2.24(A): Close the macro

8. A message box appears prompts to save the macro created, as shown in Fig. 4.2.25(B). Click Yes to save the macro.

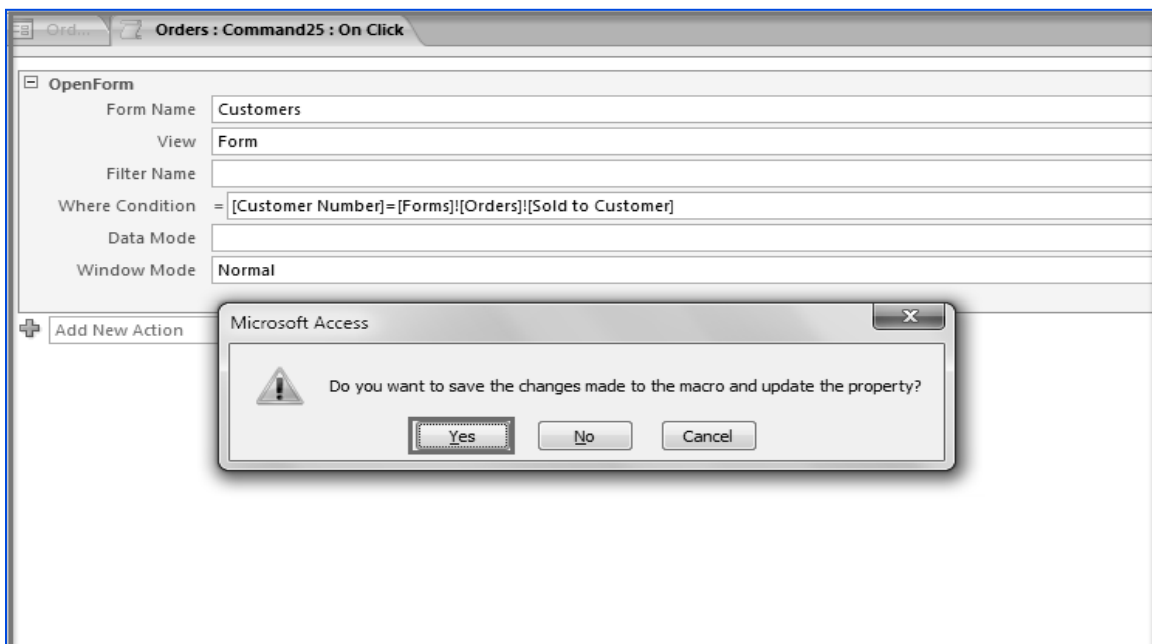


Fig. 4.2.25(B): Confirm to save the macro



9. The created macro gets embedded in the *Property* window and is shown in the *On Click* property. The *Property Sheet* appears, as shown in Fig. 4.2.26.

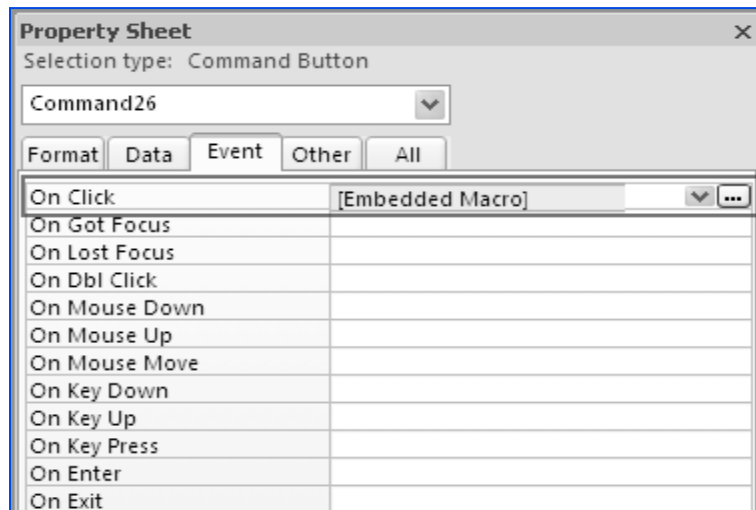


Fig. 4.2.26: Property Sheet

10. To check the *macro*, open the *frmOrders* form in *Form View* and click the *View Customer Details* button. This should display the *frmCustomers* form only with the record of current customer, as indicated in Fig. 4.2.27.

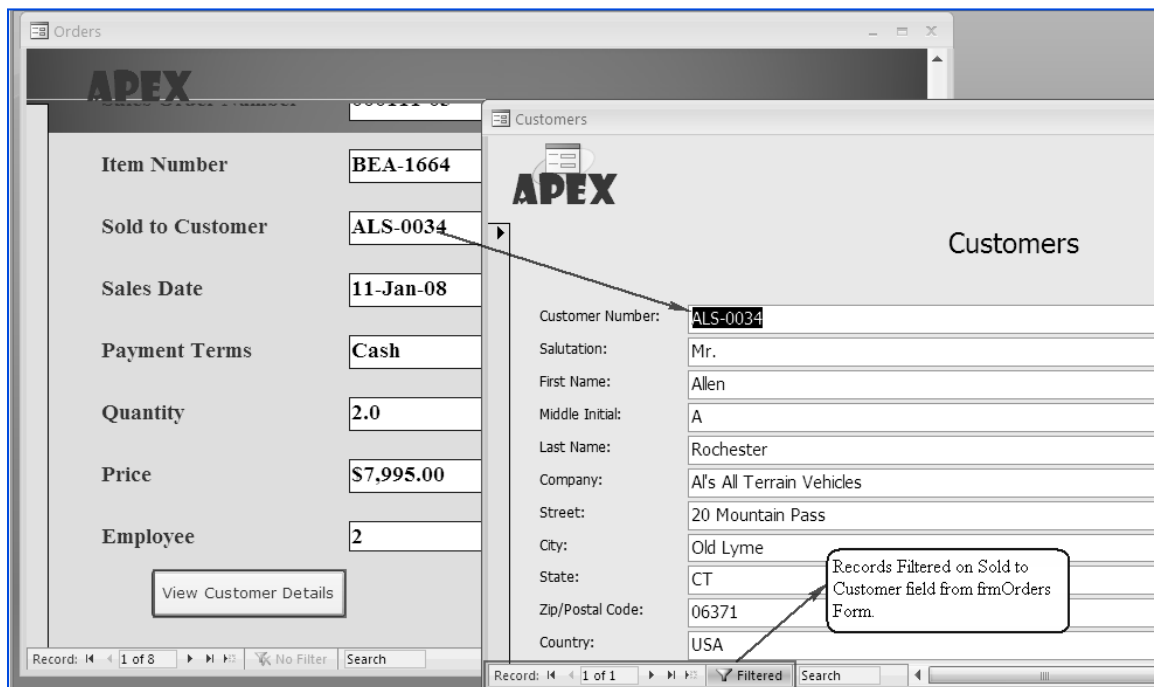


Fig. 4.2.27: Customer Records restricted by Orders form.



4.2.4. Validating Data using a Macro

Microsoft Access provides a variety of ways to control how data is entered in a database. For example, the data that a user can enter into a field can be limited to a range of values or to the format in which it must be entered. The validations can be defined at the table level by specifying table properties or the validation can be done at the form level. To validate data entry in a form, the properties of the controls may be used or alternatively all these validations can be defined using *macros*. *Macros* provide a good flexibility to place complex validation.

Macros are useful for validating records when:

- *Validation rule* is to be applied on multiple fields in the form or to same field in different forms.
- To display customized error messages for different types of errors in the field.
- Instead of *Validation Rule*, it must be just a warning message.
- The validation involves references to controls on other forms or contains a function.

Table 4.2 lists some control events on which macro can be attached for Data Validation.

Event Property	When the Macro Will Execute
Before Update	Before the entered data is updated.
After Update	After the entered data is updated.
Before Insert	After you type in a new record.
On Delete	In response to a deletion request, but before the record is deleted.

Table 4.2: Event Property

Table 4.3 lists some macro actions that can be used as a response to validation.

Action	Use Action To
Cancel Event	Prevents a user from posting a new record unless certain conditions are met.
GoToControl	Specifies where on the form the insertion point is to be placed.
MsgBox	Displays a custom message box.

Table 4.3: Macro Actions for Data Validation

4.2.4.1 Problem Scenario

Consider the *frmOrders* form created in Section 4.2.2. Rahul Sharma, the database developer in Apex Ltd. is asked to place a check on the *Item Number* field. It is to be ensured that *Item Number* should not be left blank.



Solution

To solve the above problem, a *macro* will be embedded on the Click event property of the *Save Command Button*. This *macro* will check if the *Item Number* is blank and will display a message accordingly.

Steps for Validating Item Number

1. Open the *frmOrders* form in *Design View*. To do this right-click the *frmOrders* form under the *All Access Objects* tab and select *Design View* from the list.
2. Add a button to the form by selecting the button from *Design -> Controls* and draw it on the form. Cancel the *Command Button* wizard that appears.
3. Open the control properties by selecting the *Command* button and pressing *F4*. Set the value of the *Caption* property as *Save*, as shown in Fig. 4.2.28.

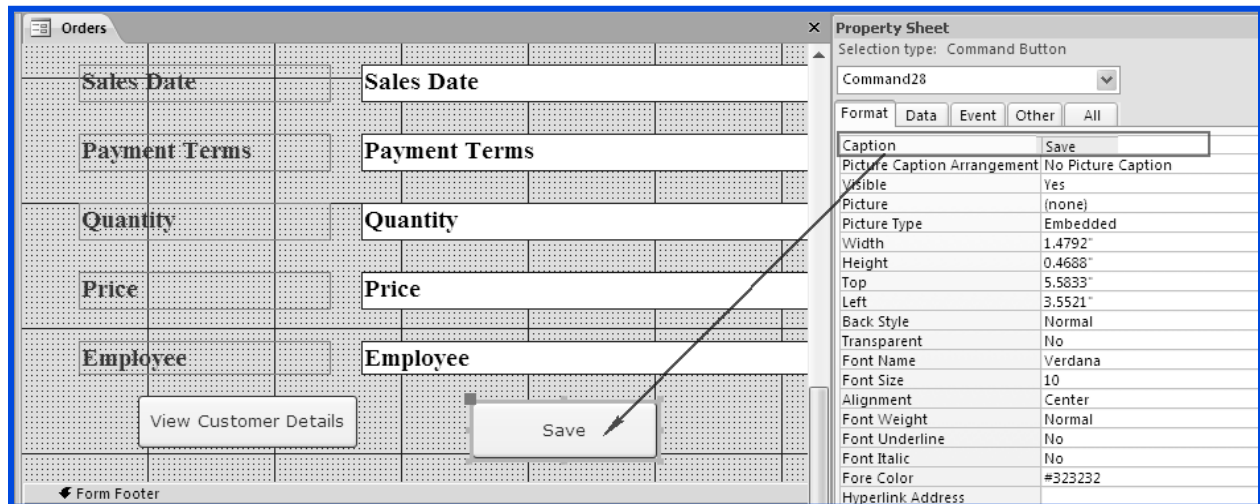



Fig. 4.2.28: Set the caption property as Save.

4. In the *Event* tab of *Property Sheet*, set the value of the *On Click* event. To do this, click  to the right side of the *On Click* property and open the *Choose Builder* window.
5. Select *Macro Builder* from the list in the *Choose Builder* window, as shown in Fig. 4.2.29. Click the *OK* button.

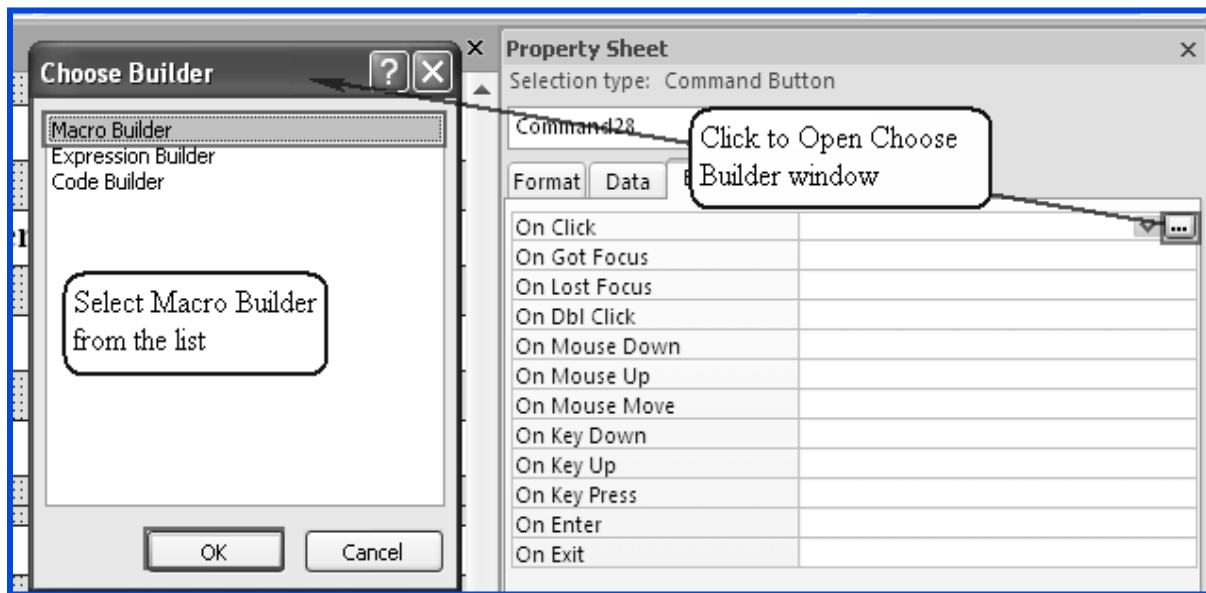


Fig. 4.2.29: Open Macro Builder

6. In the *Macro Designer* window that appears, add the conditions from selecting *If* from *Add New Action Menu* as displayed in Fig. 4.2.30.

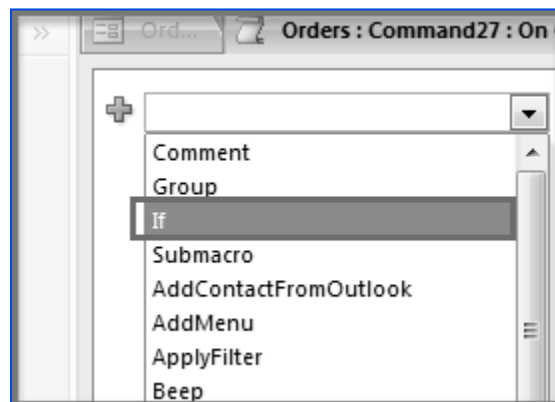


Fig. 4.2.30: Add Condition

7. In the *Condition Argument* textbox of the *Macro Designer* type the text *[Item Number] IS NULL*, this condition checks whether the *Item Number* value is blank.
8. In the *Add New Action* Dropdown, select the *CancelEvent* action from the list. The *Query Designer* window appears, as shown in Fig. 4.2.31.

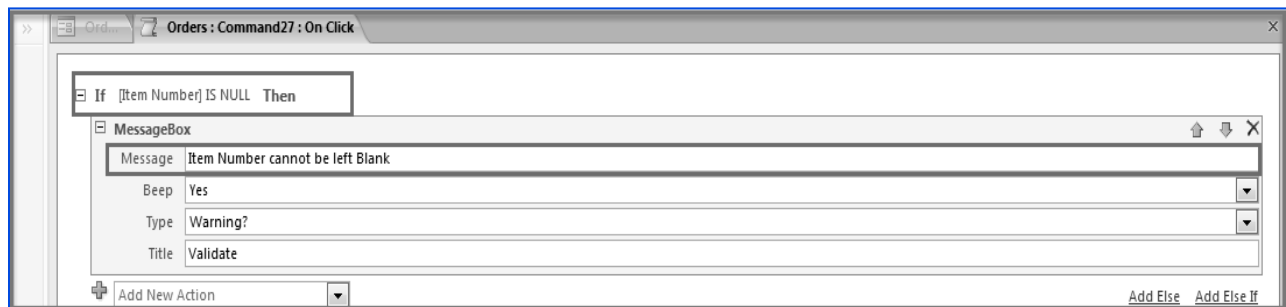


Fig. 4.2.32: Specify Condition & Action

9. In the next row, type ... in the *Condition* tab. In the *Action* tab, select *MsgBox* from the list and specify *Action Arguments* as:

Message : Item Number cannot be left Blank
Beep : Yes
Type : Warning?
Title : Validate

10. In the next row, type ... in the *Condition* tab. In the *Action* tab, select *GoToControl* from the list and specify *Action Arguments*:

Control Name : Item Number

The *Macro Designer* window appears, as shown in Fig. 4.2.33.

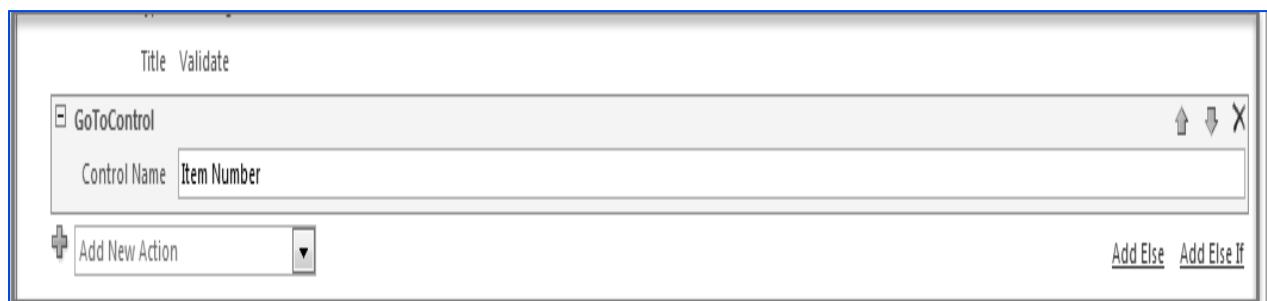


Fig. 4.2.33: Specify GoToControl Action

11. Click *Design* -> *Close* -> *Close*, as shown in Fig. 4.2.34.

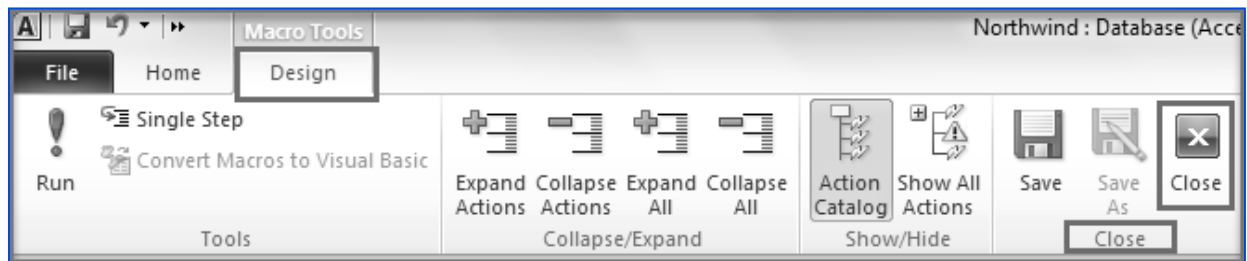


Fig. 4.2.35: Click Close to save and close the macro

12. A message box appears prompting to save the *macro* created, as displayed in Fig. 4.2.36. Click Yes to save the *macro*.

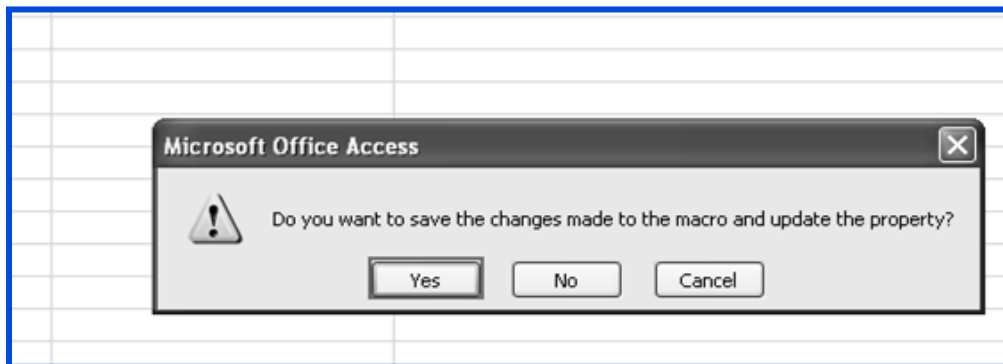


Fig. 4.2.36: Confirm to Save the macro

Note that the created *macro* gets embedded in the *Property* window and is shown in the *On Click* property. *Property Sheet* appears, as shown in Fig. 4.2.37.

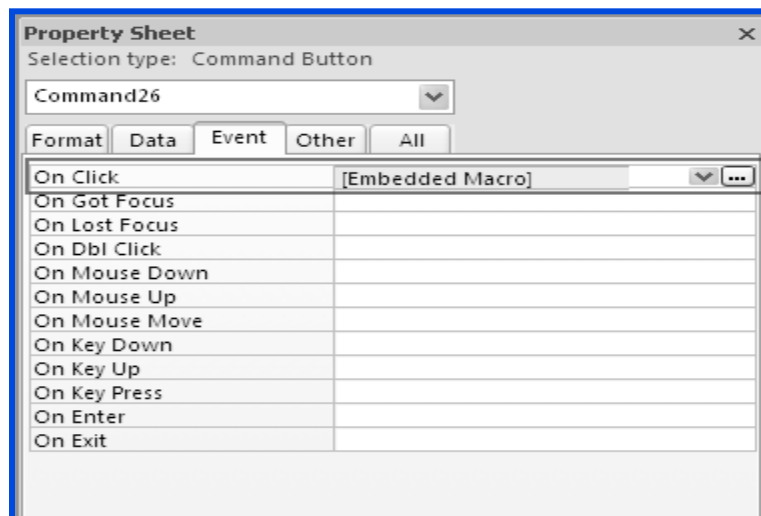


Fig. 4.2.37: Property Sheet



13. To check the *macro*, open the *frmOrders* form in *Form View* and enter a new record with the values, as shown in Fig. 4.2.38.

Fig. 4.2.38: Enter a New Record

14. Click the *Save* button to save the record. Since the *Item Number* field is left blank the *macro* gets executed and the message is displayed, as shown in Fig. 4.2.39.

Fig. 4.2.39: Macro Executes



Note that the multiple conditions and their post actions can be specified in the same *macro*; specifying the validation rule for other fields also.

4.2.5. Automating Data Entry Using a Macro

Macros can be used to avoid errors and save time during data entry by automating the data entry process. Instead of having users type in the same data over and over for each record with the possibility of invalid data being entered, a *macro* can automate data entry. Microsoft Access *Macros* can be used to speed up the process of data entry. While automating the entry of data, it can be ensured that the possibility of errors in database data is minimized, which can have an impact on the accuracy of the data available for reports and queries.

Macros can also be used for data entry where the value to be entered is dependent on value of other fields. For Example, a *macro* can be created to enter the total cost of an order if the unit price and quantity to be ordered of an item is provided.

Table 4.4 lists the common events that can be used for Automating Data Entry.

Event Property	When the Macro Will Be Executed
On Enter	Upon arriving on a control, but before the control has focus.
Before Update	Before the control data is updated.
After Update	After the changed control data is updated.
On Exit	Upon leaving a control, but before the focus is removed.

Table 4.4: Event for Automating Data Entry

Table 4.5 specifies macro action used for Automating Data Entry.

Action	Description
SetLocalVar	Enters a value automatically in a field. The field name and the value that needs to be entered in the field are mentioned as arguments. You need to enter the arguments in the Action Arguments pane for this action.
GoToControl	Specifies the field where the insertion point needs to be moved after a value.

Table 4.5: Macro Actions for Automating Data Entry

4.2.5.1 Problem Scenario

In the *frmOrders* form discussed in section 4.2.2, the Operational Manager wishes to see the total cost of the order, which would be computed as *Quantity ordered * price* of an Item.



Solution

A text box as *Total Order Cost* is added to the form, and a *macro* is created on the *Exit* event of price to compute the total cost of an order. This *macro* first checks the value of *Quantity* is not null and then computes Total Cost.

Steps for creating a macro to automate data entry

1. Open the *frmOrders* form in the *Design* view. Add a *TextBox* to a form, select the *TextBox* control from *Design* -> *Controls* and draw it on the form, as shown in Fig. 4.2.40.

Note that the *TextBox* also creates a label on the form so as the label to the *Text* value can be specified.

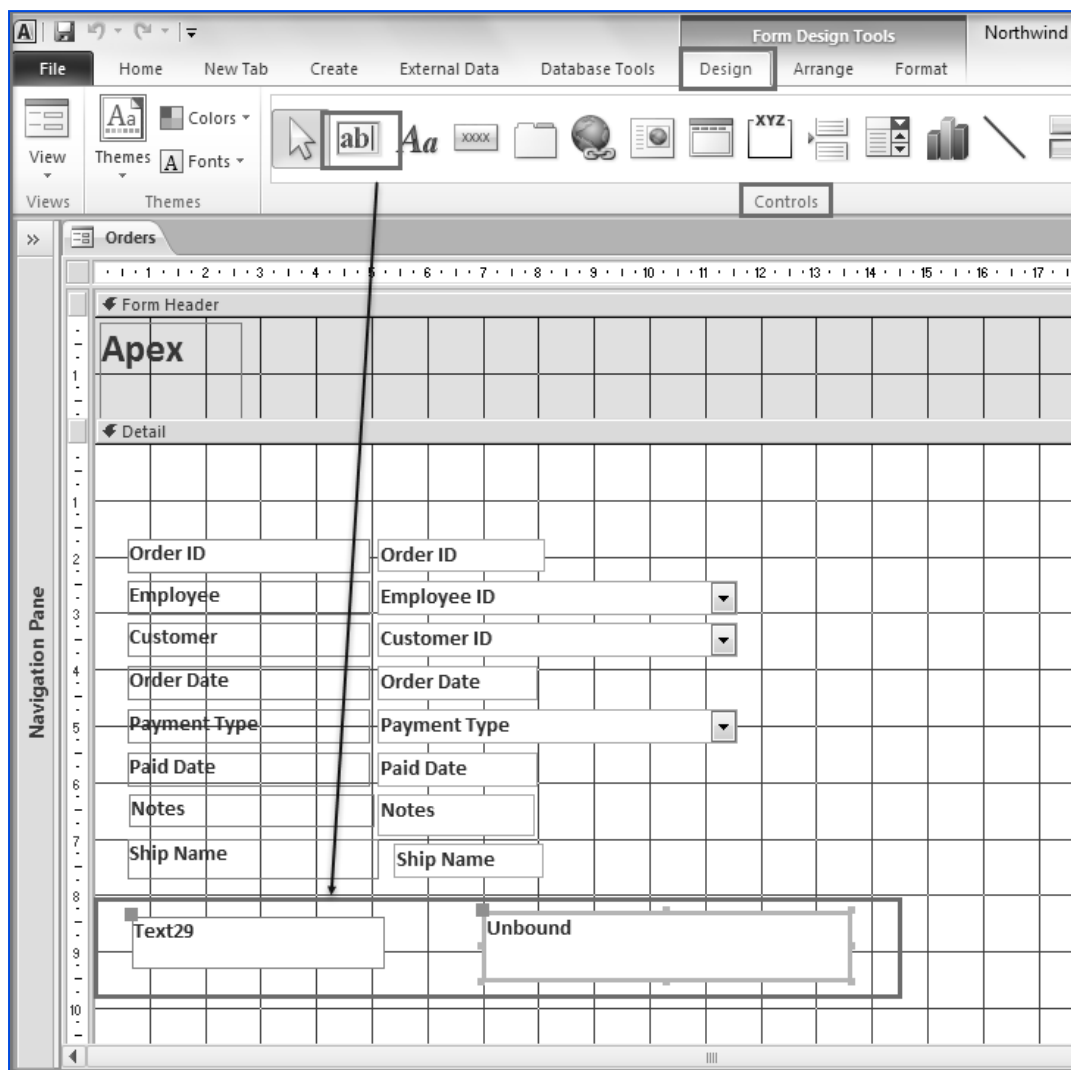


Fig. 4.2.40: Draw the TextBox on form



- Double-click the label and write the text *Total Cost*. Change the format of the label to match it with other controls. In this case, set the format as “Times New Roman, size 12, Bold”. The *Form Design* window appears, as shown in Fig. 4.2.41.

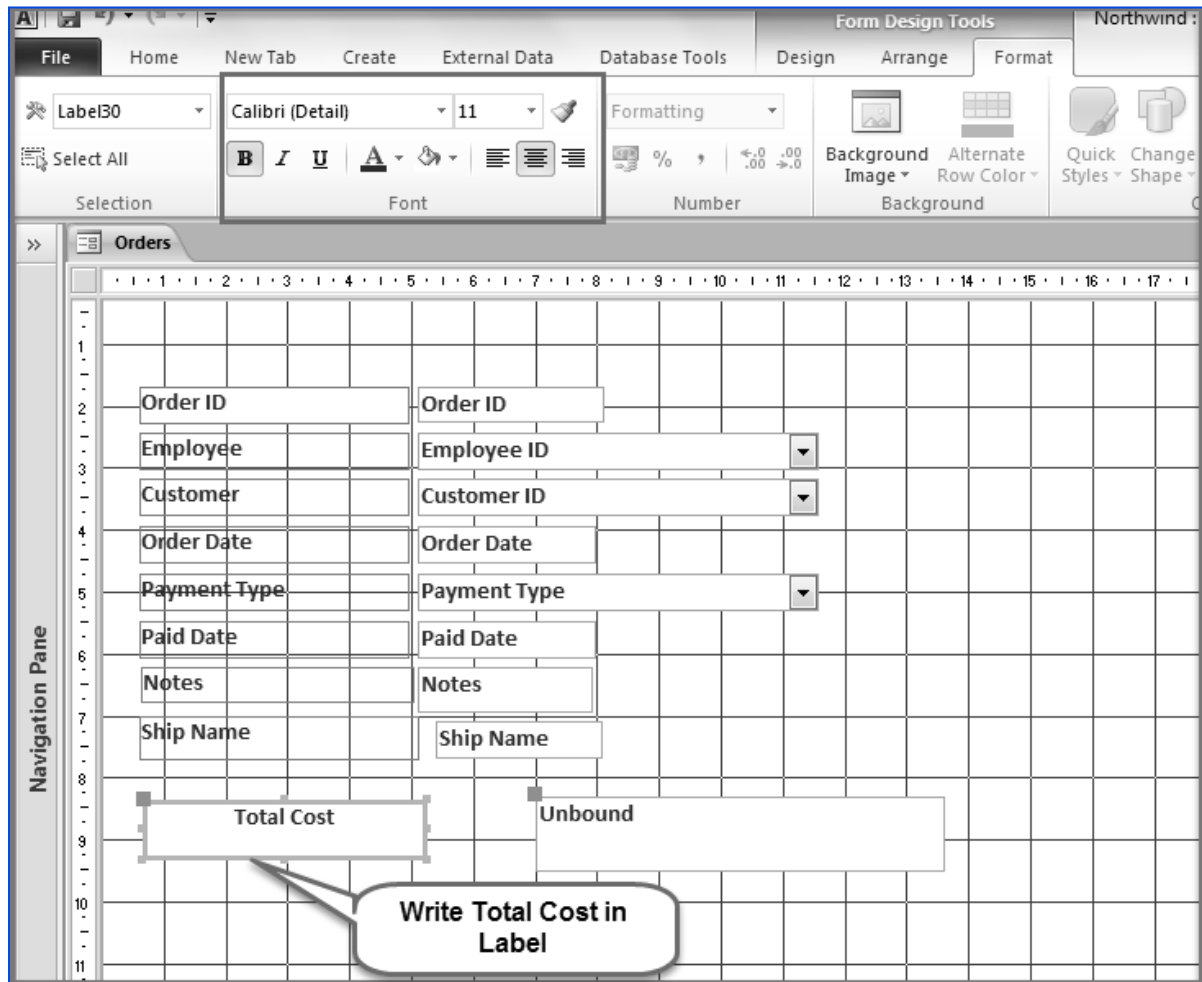


Fig. 4.2.41: Specify the text as Total Cost

- Open the control properties by selecting *TextBox* and pressing *F4*. In the *All* tab of *Property Sheet*, set the value of the *Name* property as “Total Cost”, as shown in Fig. 4.2.42.

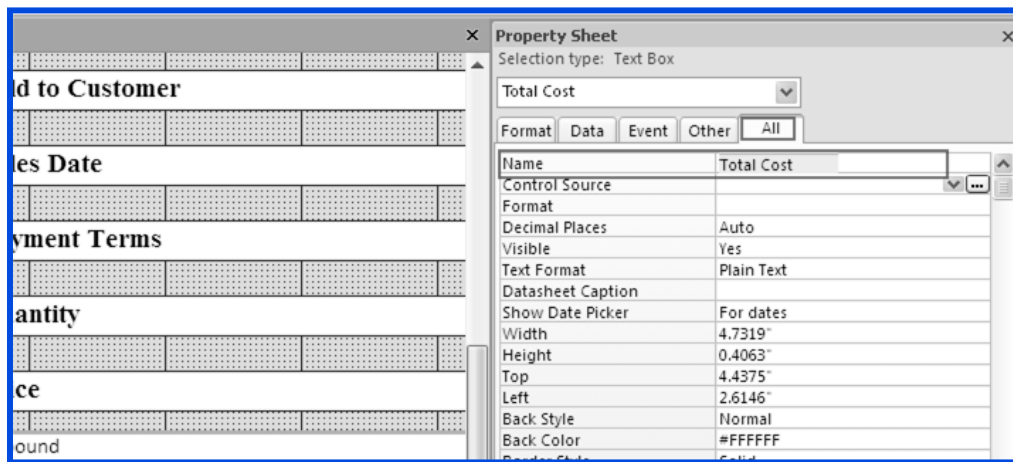



Fig. 4.2.42: Set the Name property

4. In the *Event* tab of *Property Sheet*, set the value of the *On Click* event. To do this, click  to the right side of the *On Click* property and open the *Choose Builder* window.
5. Select *Macro Builder* from the list in the *Choose Builder* window, as shown in Fig. 4.2.43. Click the *OK* button.

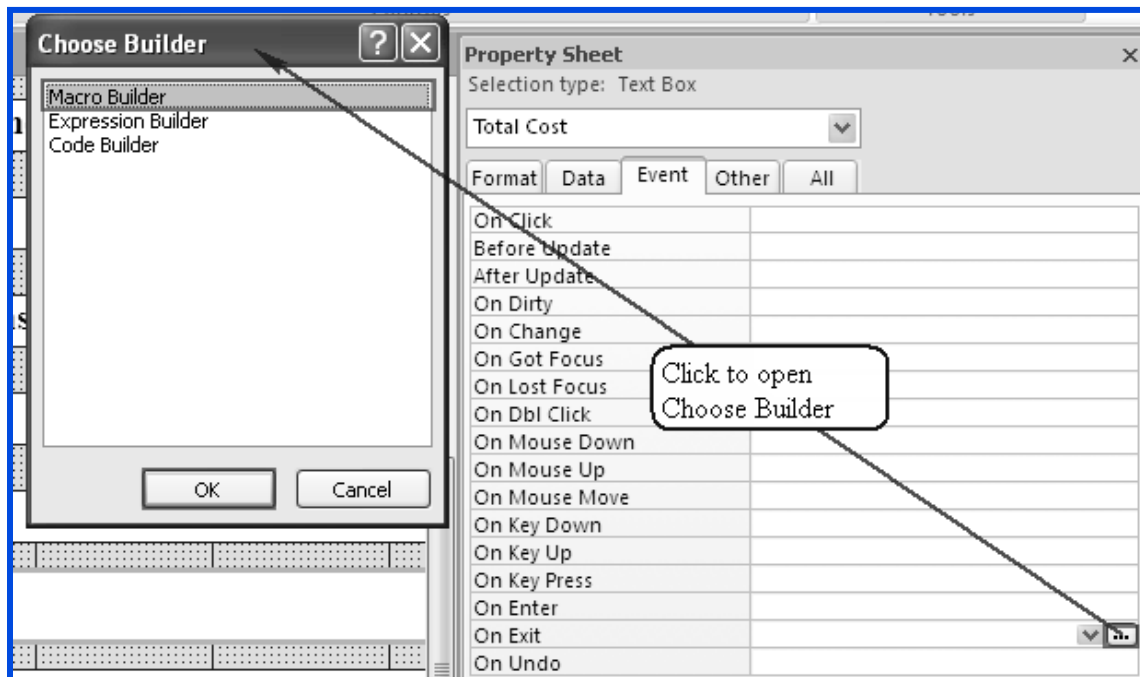


Fig. 4.2.43: Open Macro Builder

6. In the *Macro Designer* window, add the *Conditions* tab by selecting *Condition* from *Design* -> *Show/Hide*.



7. In the *Condition* tab of the *Macro Designer* type the text *[Quantity] Is Not Null*, this condition checks if the *Quantity* value is blank.
8. In the *Action* drop down, select the *SetLocalVar* action from the list. Set the value of *Action arguments* as:
 Name : Name of the local Vatriable
 Expression : *[Quantity] * [Price]*

The Query Designer window appears, as shown in Fig. 4.2.44.

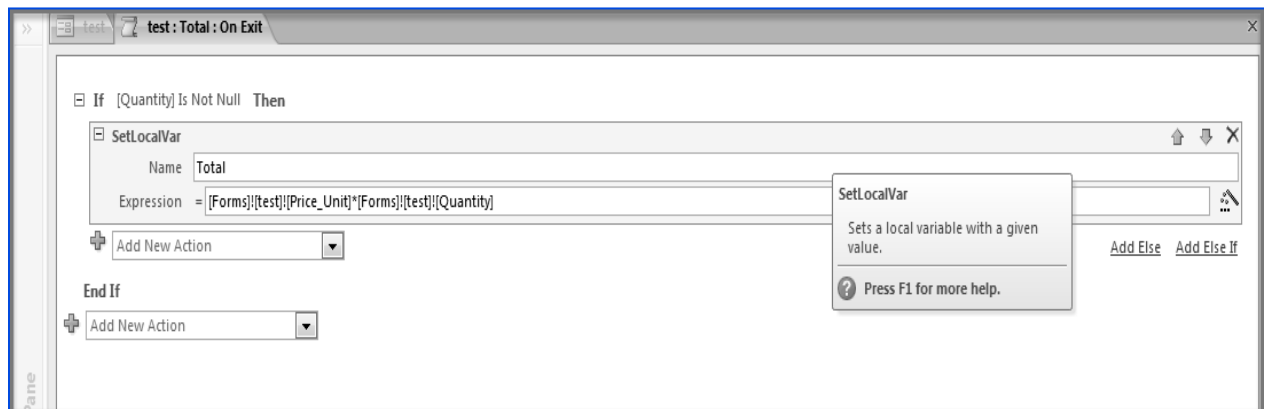


Fig. 4.2.44: The Macro Designer window

9. Click *Design -> Close -> Close* to save and close the *macro*. A *message box* appears prompting to save the *macro* created, as displayed in Fig. 4.2.36. Click *Yes* to save the *macro*.

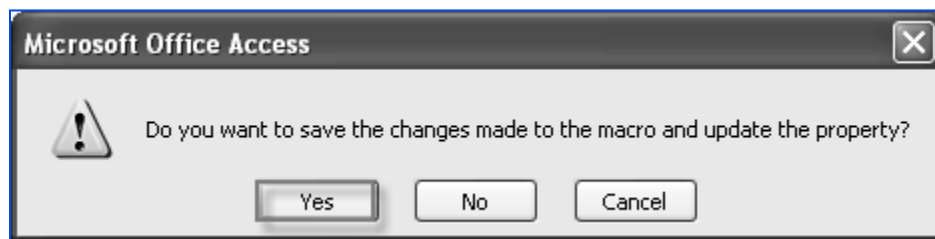


Fig. 4.2.45: Click Yes to save the macro

10. The created *macro* gets embedded in the *On Exit* event property of the *Price TextBox* control. *Property Sheet* appears, as shown in Fig. 4.2.46.

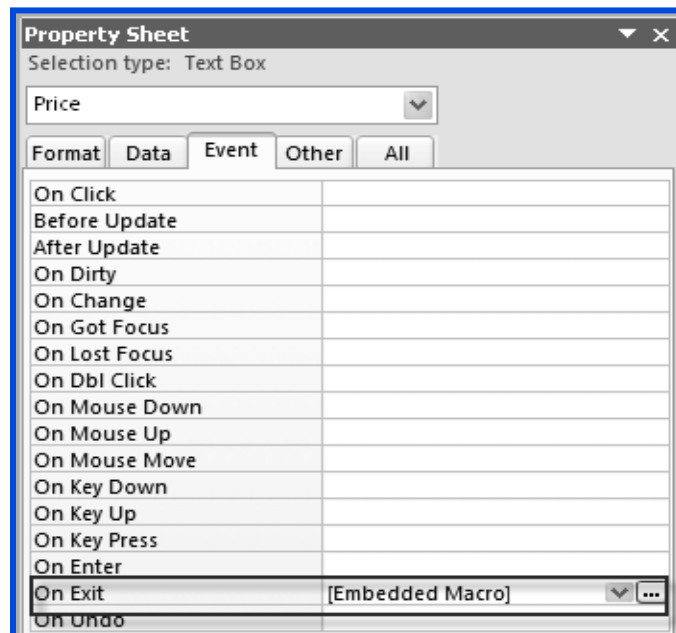


Fig. 4.2.46: Property Sheet

11. Open the *frmOrders* form in *Form View* and enter a new record with the values, as shown in Fig. 4.2.47.

Orders

APEX

Orders

Sales Order Number	000801-02
Sold to Customer	ATV-0027
Sales Date	8/1/2008
Item Number	ART-8009
Payment Terms	Lease
Quantity	2.0
Price	\$7,650.00
Total Cost	
Employee	

Export And Mail View Customer Details Save

Fig. 4.2.47 : Insert a new record in *frmOrders*



12. As you enter the value for price and move to the next textbox, the *On Exit* event of the *Price* control gets executed and the total cost is calculated, as shown as Fig. 4.2.48.

Orders	
Sales Order Number	000801-02
Sold to Customer	ATV-0027
Sales Date	8/1/2008
Item Number	ART-8009
Payment Terms	Lease
Quantity	2.0
Price	\$7,650.00
Total Cost	15300
Employee	

Export And Mail View Customer Details Save

Fig. 4.2.48: Automated Data Entry for Total Cost

4.3 Managing Switchboards

A *switchboard* is a Microsoft Office Access form that facilitates navigation in Access and access to different parts of an application. It functions as an interface between the user and the application. A *switchboard* is similar to the *Ribbon* of the Access application. It provides users with direct access to the specific functions of the application and acts as an interface between the user and the application.

Switchboard contains command buttons that execute specified actions. These buttons can be programmed to open *forms*, *reports*, *queries*. Each button on the *switchboard* triggers some action within the database or leads to another *switchboard* form. *Switchboard* forms are an invaluable way to keep users focused on using the database as intended.

A *switchboard* form presents the user with a limited number of choices for working with the application and makes the application easier and user specific to use. The user's login information can determine which of a



number of switchboard forms to use. For instance, a manager with a higher level of privileges may be given a form with more options than a clerical worker would be given.

4.3.1. Creating a Database Switchboard

The *Switchboard Manager* is a dialog box that allows creating a *switchboard* for an Access database. It lists the *switchboards* currently available in a database and provides an option to create new ones. In each *switchboard*, command buttons can be added, deleted, or edited. The command buttons can be configured for accessing *forms*, *reports*, *macros*, or *functions* in the database. *Switchboard Manager* only allows a maximum of eight command buttons on a *switchboard*. The operations that the command button on *switchboard* can perform are listed in Table 4.6.

Command	Action performed
Go to Switchboard	Opens a secondary switchboard.
Open Form in Add Mode	Opens a form in a mode that only allows new records to be added.
Open form in Edit Mode	Opens a form in a mode that allows any record to be added or edited.
Open Report	Opens a report in Print Preview.
Design Application	Opens the Switchboard Manager.
Exit Application	Closes the current database.
Run Macro	Runs a macro.
Run Code	Runs a Visual Basic function.

Table 4.6: Different Commands that Switchboard can perform

When a *switchboard* is created with *Switchboard Manager*, Access creates the *Switchboard Items* table that describes what the display text and action performed by the buttons on the *Switchboard* form.

4.3.1.1 Problem Scenario

Employees of Apex Ltd. need to keep updating the company database frequently for various reasons. However, employees are confused over the interface that appears when the application is started. The application developer wishes to resolve this confusion by providing a clear and concise environment in which users can reduce the amount of time spent figuring out how to obtain the information they are looking for.

Solution

To resolve the problem of navigation in the database, a *Switchboard* form that contains buttons to open the *Customers* and *Inventory* tables and the *frmOrders* form needs to be created.

Since *switchboard* is not capable of opening the tables directly through the *Command* button, so we have created *macros* to open the *Customers* and *Inventory* tables named as *MacroCust* and *MacroInvent* respectively. The structure of *macros* is displayed in Fig. 4.3.1.

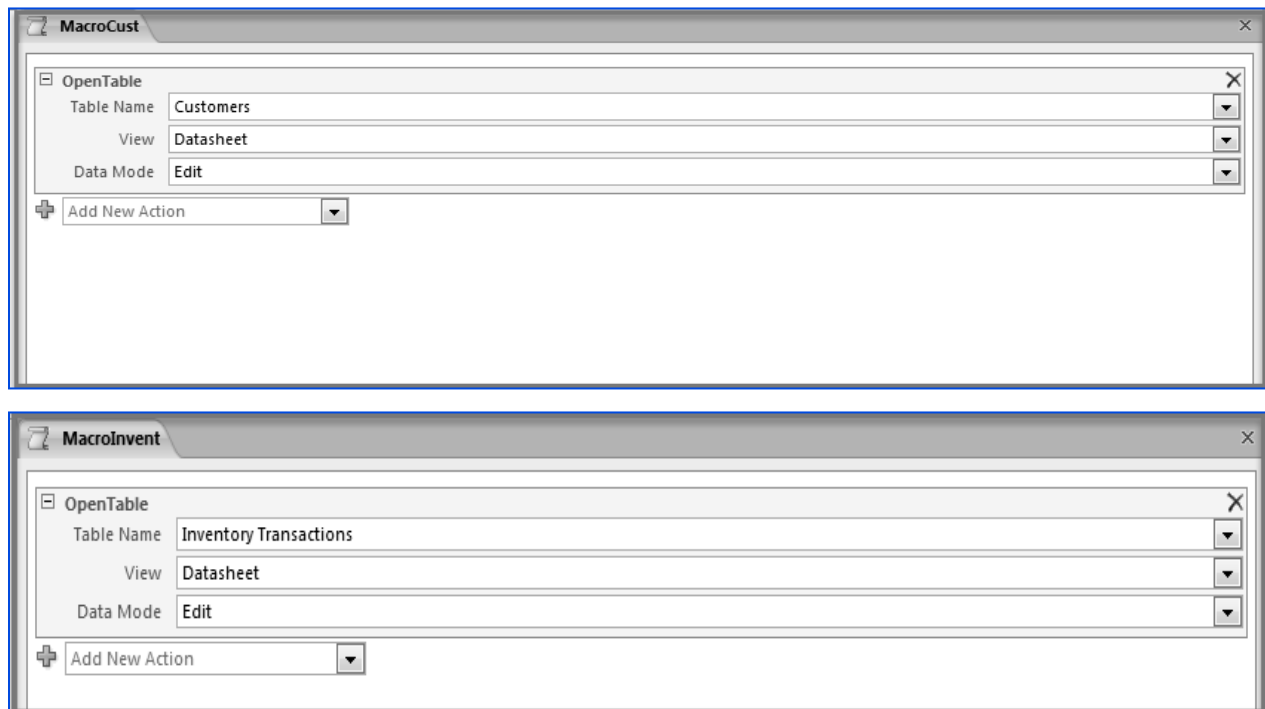


Fig. 4.3.1: Macro to open Customers and Inventory table

NOTE: Notice that both the *MacroCust* and *MacroInvent* macros are created in the same *Macro Designer* window using the *Macro Name* property.

Steps for Adding Switchboard in Access

The Switchboard Manager is still available in Access, but it's not included in the Database Utilities Ribbon as in Access 2007 and 2003. You have to launch it as doing the following steps as shown in Fig.4.3.2:

- Step 1: First click the **File** tab and **Options** button, then we will get into Access Options window;
- Step 2: Click the **Quick Access Toolbar** at left bar;
- Step 3: In the Choose commands from drop down box, select the **Commands Not in the Ribbon** item;
- Step 4: Select the **Switchboard Manager** item in the command list box;
- Step 4: Click the **Add** button;
- Step 6: At last click the **Ok** button at the bottom.

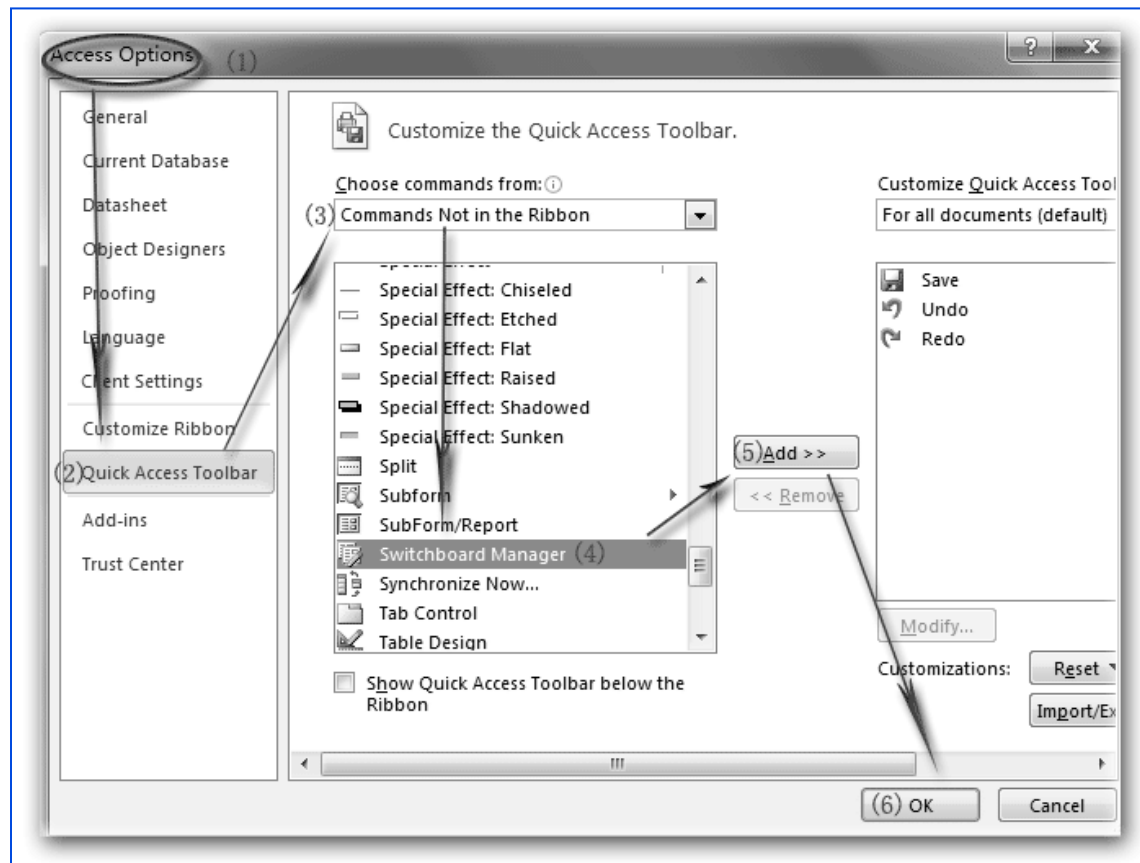


Fig. 4.3.2: Open Switchboard Manager in MS Access

Steps for creating Switchboard in Access:

On the *New* tab, in the Ribbon, click *Switchboard Manager*, as shown in Fig. 4.3.3.

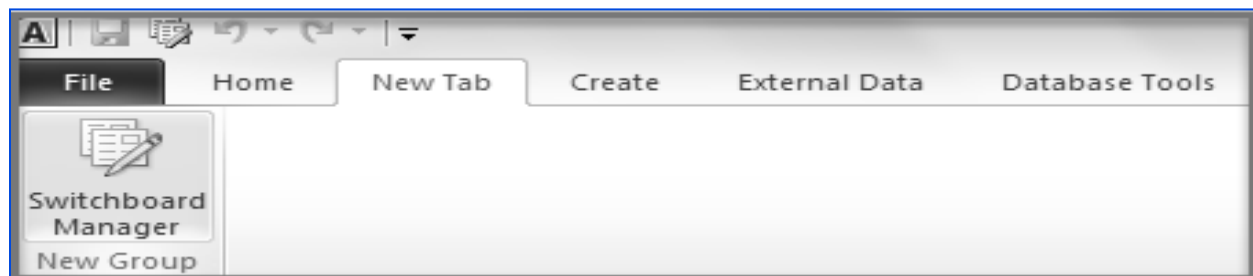


Fig. 4.3.3: Switchboard Manager

NOTE: If the database does not contain any *switchboard*, a message box as indicated in Fig. 4.3.4 appears confirming to create a new *Switchboard*.

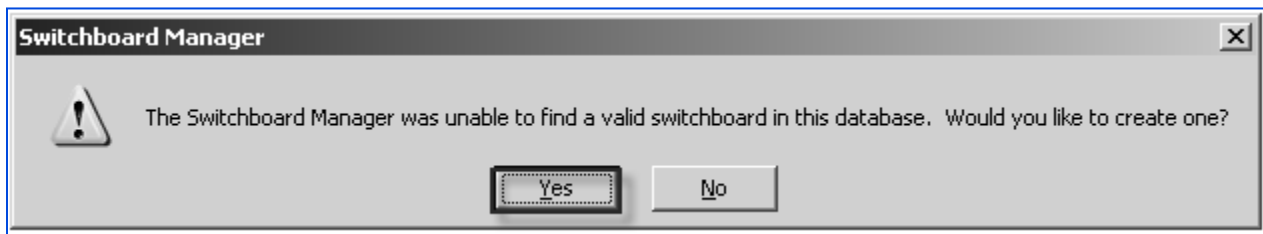


Fig. 4.3.4: Confirming New Switchboard

1. The *Switchboard Manager* Dialog box appears. Click *New* to create a *Switchboard*. *Switchboard Manager* is displayed as in Fig. 4.3.5.

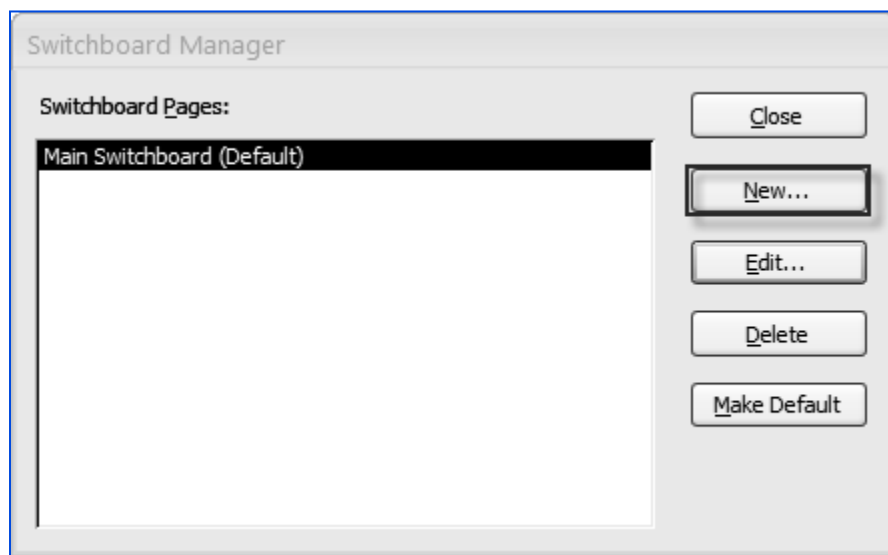


Fig. 4.3.5: Switchboard Manager Dialog box

NOTE: Instead of creating a new *Switchboard*, the default created *switchboard* can also be used.

2. In the *Create New* dialog box, in the *Switchboard Page Name* text box, enter *User Switchboard* and then click *OK* to create a *sub-switchboard* with that name, as shown in Fig. 4.3.6.

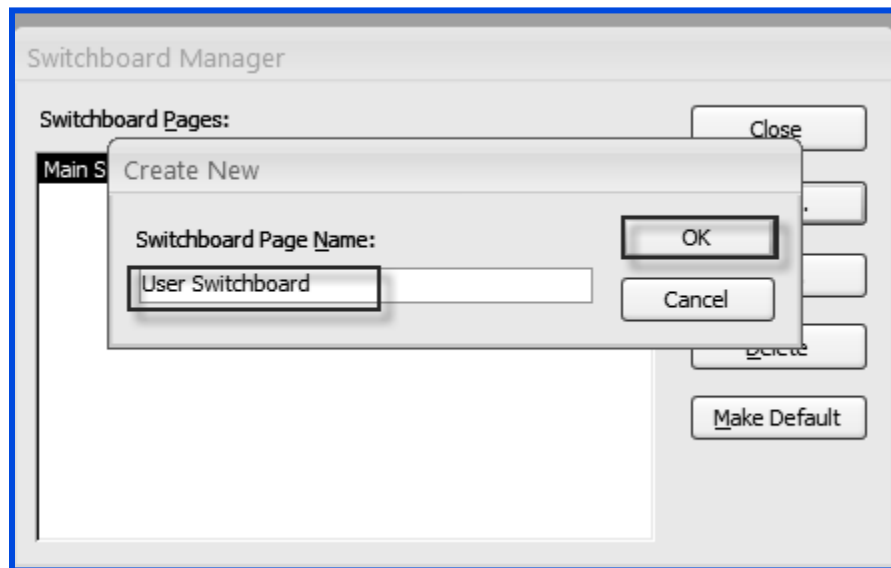


Fig. 4.3.6: Create New Dialog Box

3. In the *Switchboard Manager* dialog box, in the *Switchboard Pages* section, verify that *User Switchboard* is selected and click *Edit*, as displayed in Fig. 4.3.7.

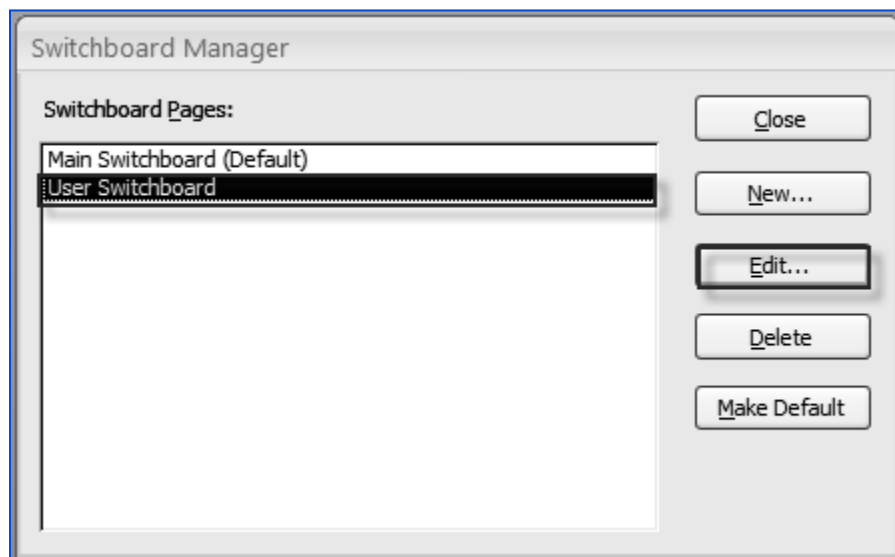


Fig. 4.3.7: Edit the switchboard to add buttons

4. In the *Edit Switchboard Page* dialog box, click *New* to add buttons to *Switchboard*. The *Edit Switchboard Item* dialog box appears, as shown in Fig. 4.3.8.

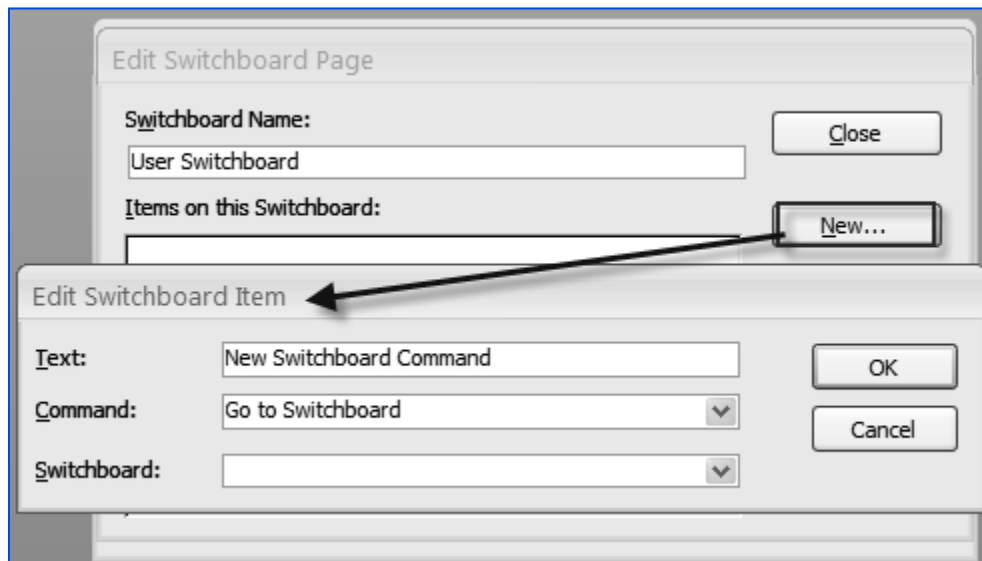


Fig. 4.3.8: Create a New Button

5. In the *Edit Switchboard Item* dialog box, in the *Text* field, type *Customers* as name of the button.
6. From the *Command* list, select *Run Macro*.
7. From the *Form* list, select *MacroOpenTable.MacroCust* and click *OK*. The *Edit Switchboard* window appears, as shown in Fig. 4.3.9.

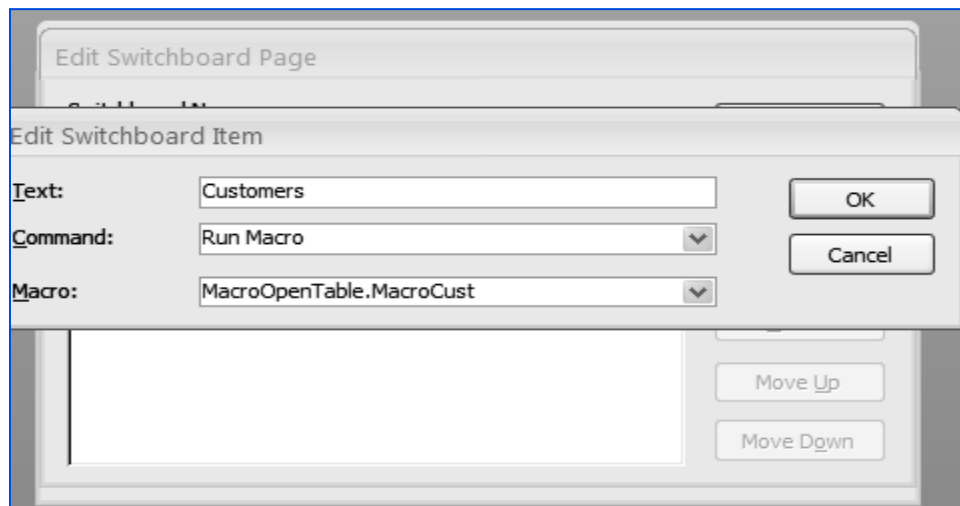


Fig. 4.3.9: Provide details of the button

8. Click *OK* to close the *Edit Switchboard* window, the created button appears in *Items on the Switchboard* tab, as shown in Fig. 4.3.10.

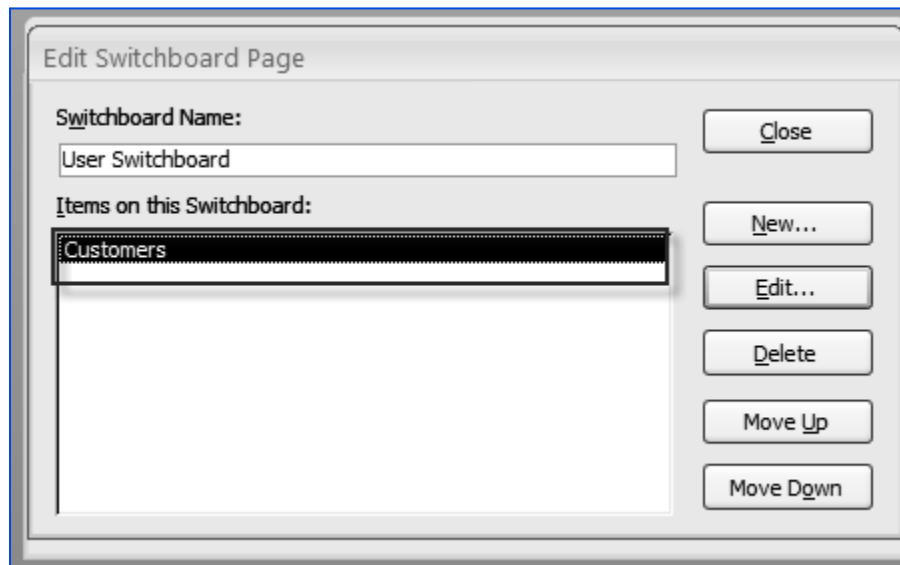


Fig. 4.3.10: Customers Button

9. Repeat steps 4 - 8 to add another button to the form which opens the *Inventory* table. The final *Edit Switchboard* window appears, as shown in Fig. 4.3.11.

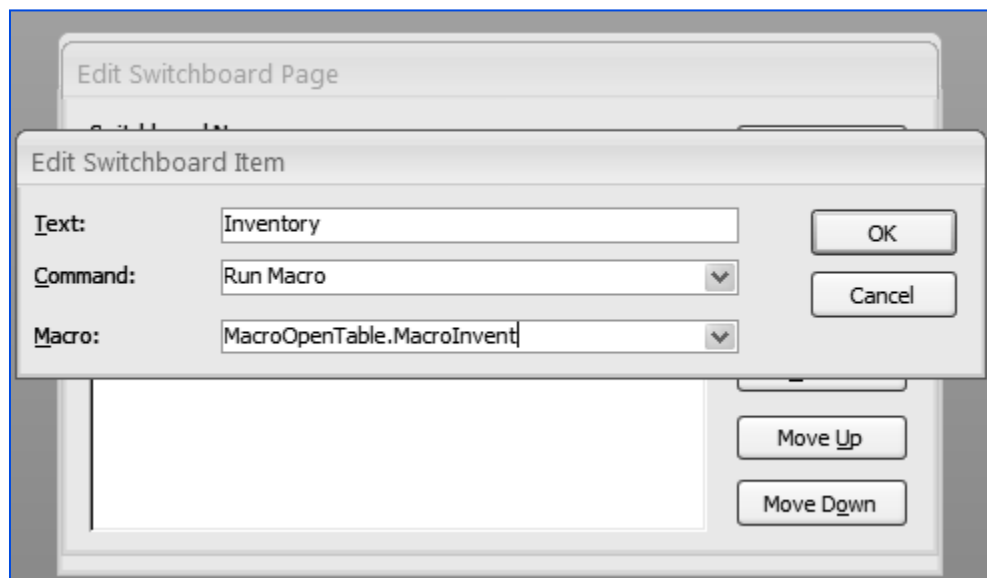


Fig. 4.3.11: Create Button Inventory

Steps to add frmOrders form to the Switchboard

10. In the *Edit Switchboard Page* dialog box, click *New* to add buttons to *Switchboard*. The *Edit Switchboard Item* dialog box appears.



11. In the *Edit Switchboard Item* dialog box, in the *Text* field, type *Orders* as name of the button. From the *Command* list, select *Open Form in Add Mode*.
12. From the *Form* list, select *frmOrders* and click *OK*. The *Edit Switchboard* window appears, as shown in Fig. 4.3.12.

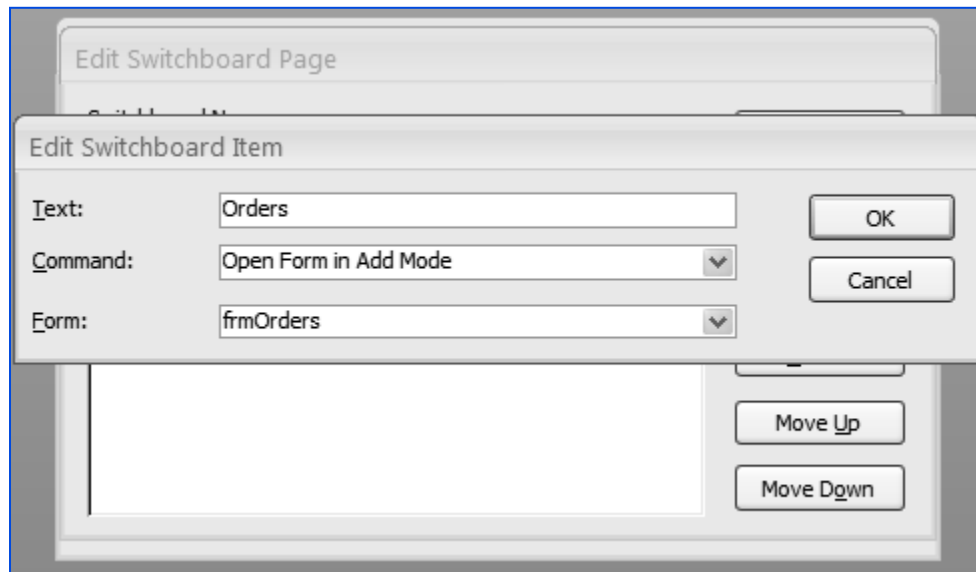


Fig. 4.3.12: Create Orders Button

13. The final *Edit Switchboard* window appears, as shown in Fig. 4.3.13. Click *Close* to close the *Edit Switchboard* window.

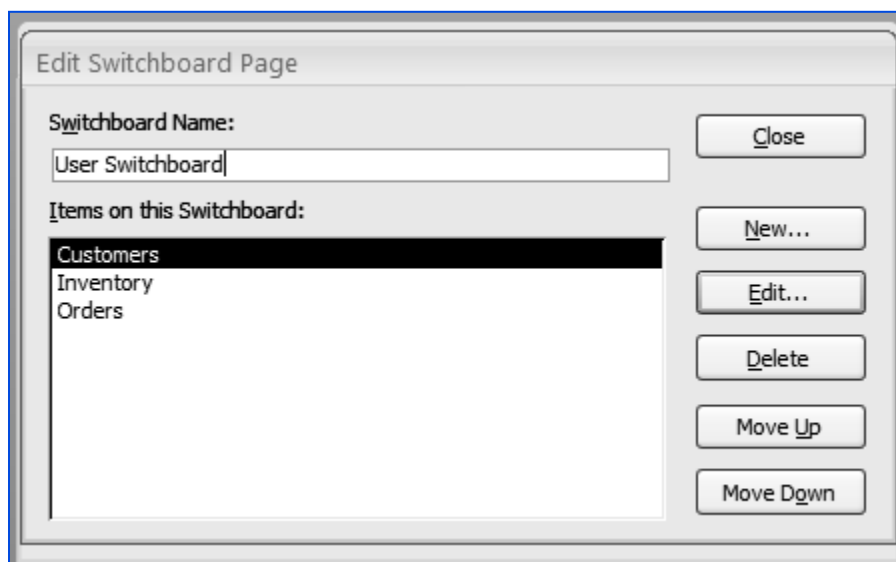


Fig. 4.3.13: Final Edit Switchboard window



14. The *Switchboard Manager* window appears. Select *User Switchboard* and click the *Make Default* button. This option will set the *User Switchboard* as default switchboard. The *Switchboard Manager* window appears, as shown in Fig. 4.3.14.

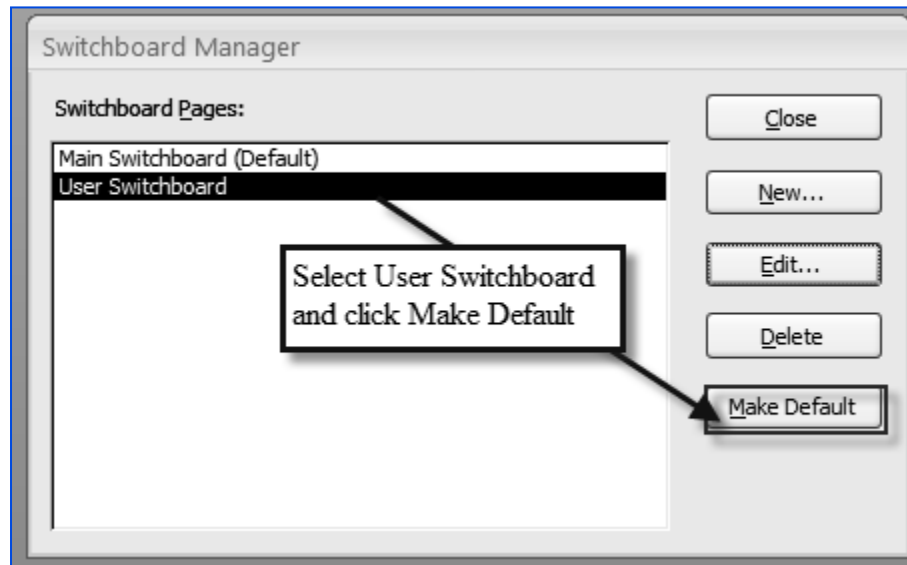


Fig. 4.3.14: Make User Switchboard as Default Switchboard

NOTE: Notice that *Switchboard Manager* has created a new table *Switchboard Items* and a new form *Switchboard*.

15. To test the switchboard created, double-click *Switchboard* under *All Access Objects* -> *Forms* to launch the *User Switchboard* window. The *switchboard form* appears, as shown in Fig. 4.3.15

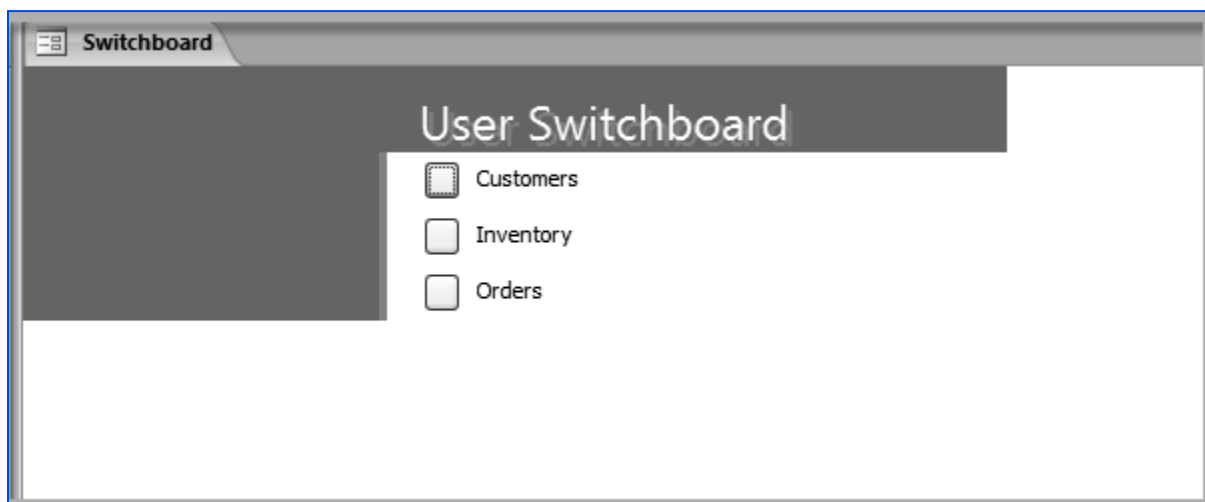


Fig. 4.3.15: User Switchboard



4.3.2 Modify a Database Switchboard

A switchboard created using *Switchboard Manager* can display only the default settings for the elements on the switchboard. *Switchboards* can be made more handy and effective by modifying the properties of a *switchboard*. Access provides different features to customize a *switchboard*.

A *Database Switchboard* can be modified in the *Design* view using the *Property Sheet* pane. The VB Editor can also be used for making switchboard modifications. *Switchboard* can be modified by changing its design, moving controls, adding text, modifying text properties, adding graphics, and changing the control properties. To add or delete buttons to *Switchboard*, the *Edit* option in *Switchboard Manager* is used.

4.3.2.1 Problem Scenario

The developer noticed that the *switchboard* created in section 4.3.15 is not giving a professional look. He wishes to add the *company logo* to the *switchboard*. In addition, he wants to add a new *button* to the *switchboard* which will help the user to create an excel copy of data and mail it to the manager.

Solution

To add a company logo to the *switchboard*, modify the *switchboard* in the *Design* view. To add a new button to the *switchboard*, use the *Edit* option in *Switchboard Manager*. Create a *command button* to execute the macro *MailCurrentOrders* created in section 4.2.1.

Steps for adding a company logo to Switchboard

1. Right-click the *switchboard* under *All Access Objects* -> *Forms* and select the *Design* view from the list to open the switchboard in the *Design* view. The *switchboard* appears, as shown in Fig. 4.3.16.

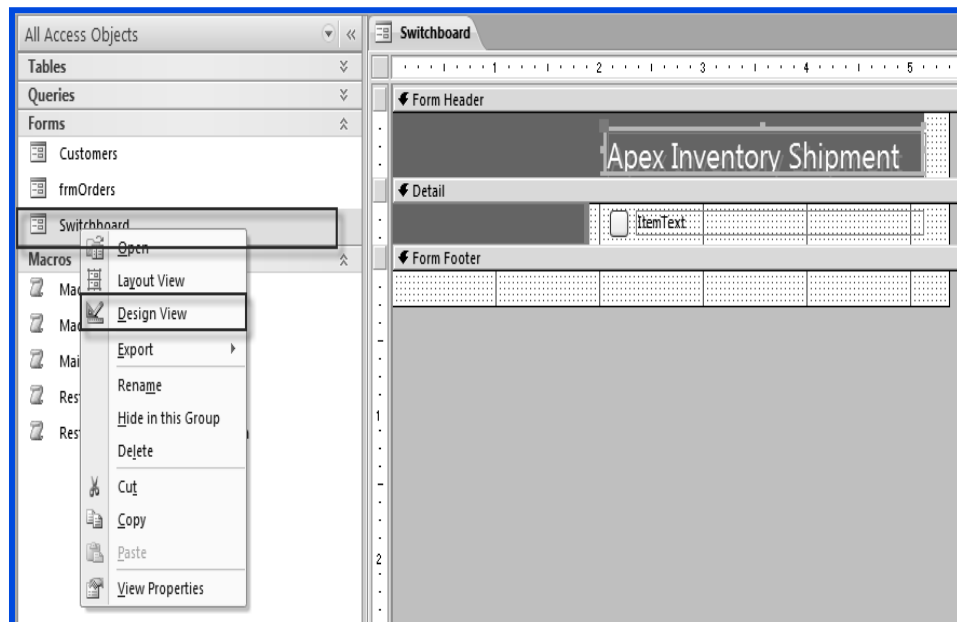


Fig. 4.3.16: Open Switchboard in Design View



2. Click *Design* -> *Controls* -> *logo* button and browse to the *logo image*, as shown in Fig. 4.3.17.

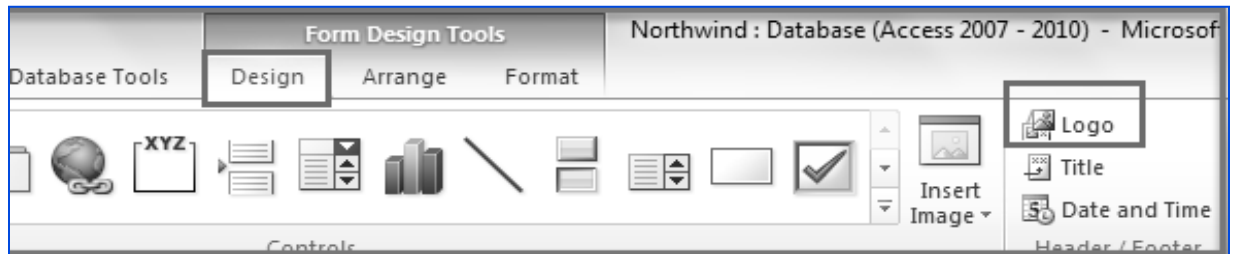


Fig. 4.3.17: Form Design Tools View

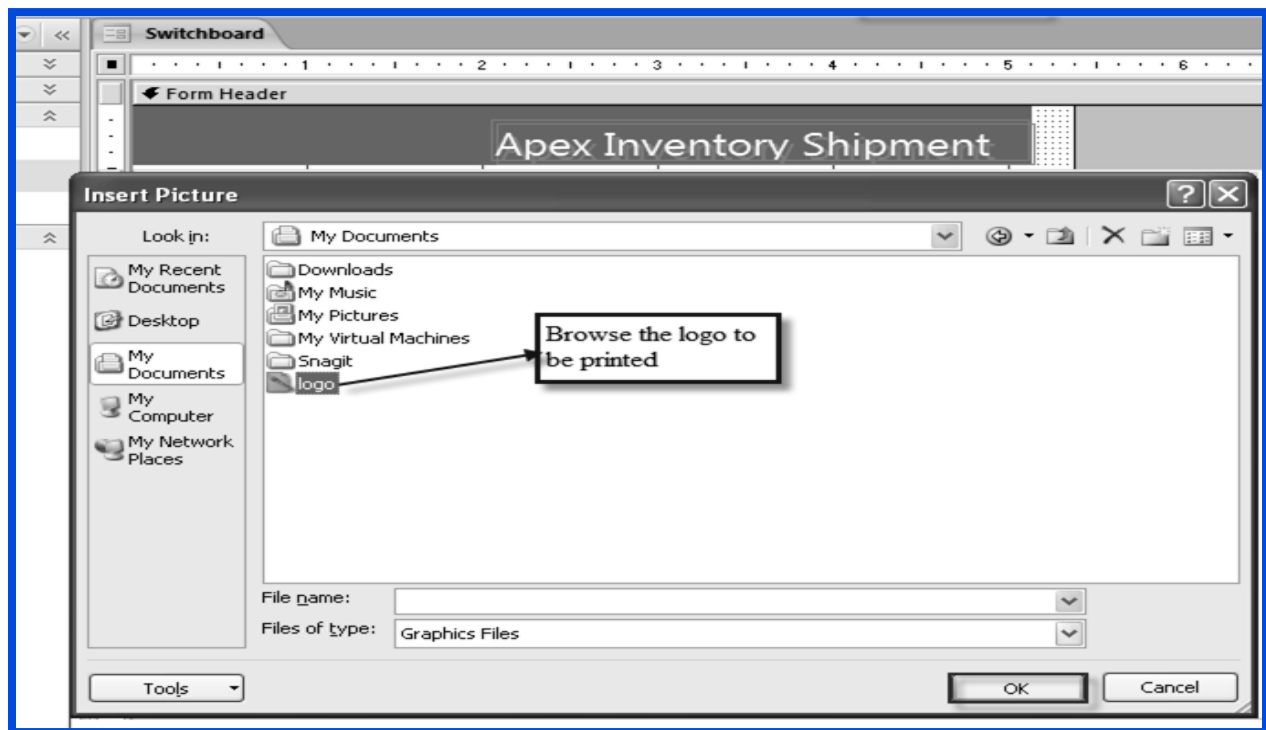


Fig. 4.3.18: Print the desired logo

3. The *logo* appears in the *Switchboard* form, as displayed in Fig. 4.3.19.

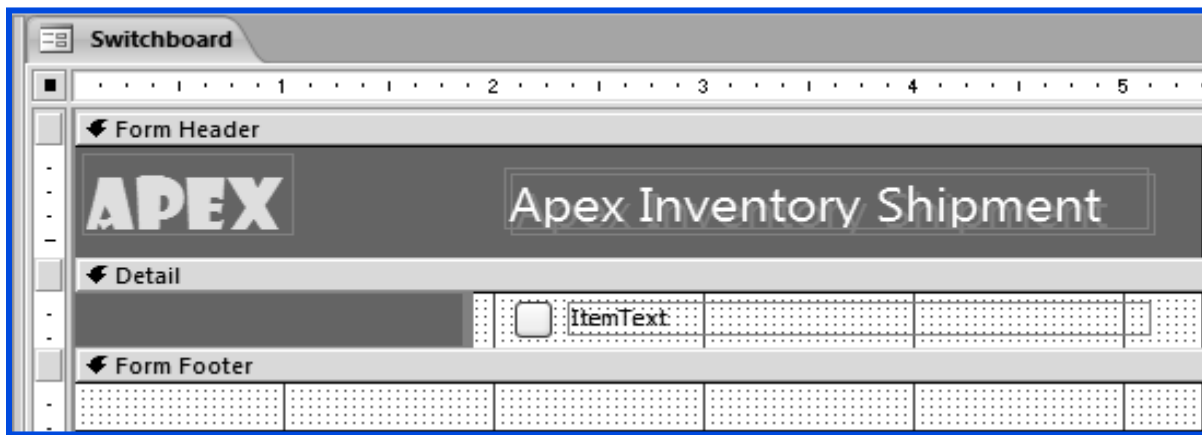


Fig. 4.3.19: The Switchboard form with logo.

Steps to customize the text in Label

1. Select the *Apex Inventory Shipment* label and press *F4* to open the *Property* window.
2. Set the value of caption property as *Inventory Shipment Data*. The *Caption* property is visible under the *Format* tab. The *Property* window appears, as shown in Fig. 4.3.20.

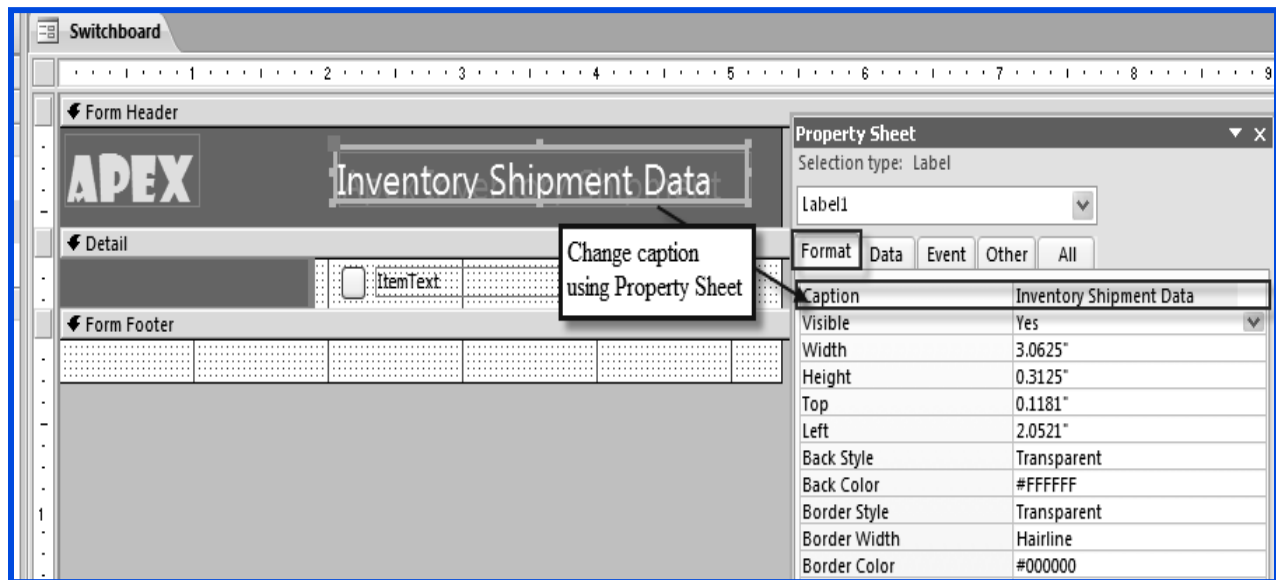


Fig. 4.3.21: Change Caption of the label

3. Save the *Switchboard* form and open it in the *Form* view to view the changes made. The *Switchboard* form appears, as shown in Fig. 4.3.22.

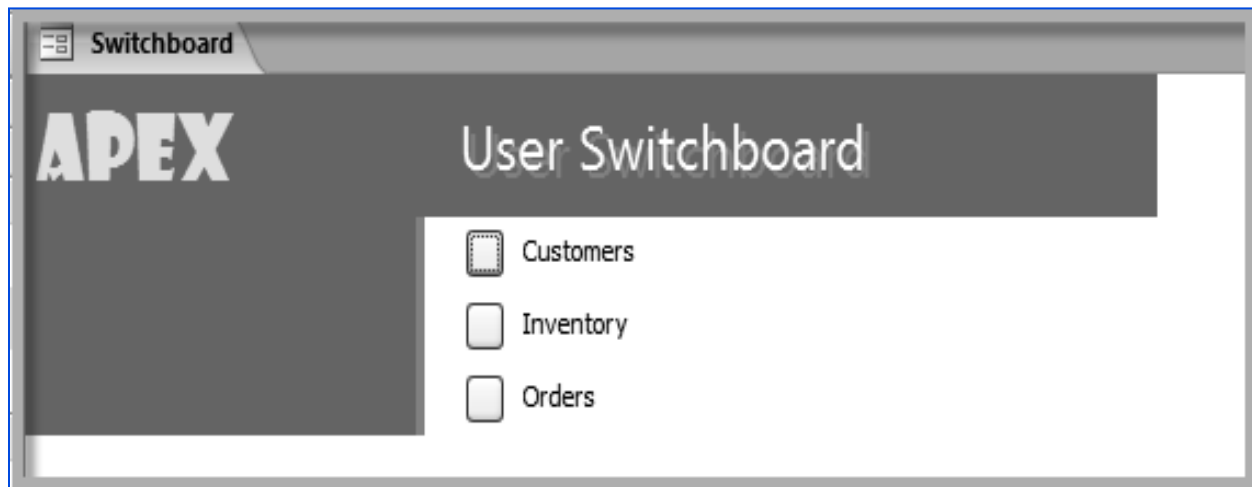


Fig. 4.3.22: Switchboard Form

Steps for adding a new button to the Switchboard Form

4. On the *New Tab* or where the *Switchboard Manager* in your tab, *New Tab*, click *Switchboard Manager*.
5. The *Switchboard Manager* Dialog box appears. Select *User Switchboard* and click *Edit* to edit the switchboard, as shown in Fig. 4.3.23.

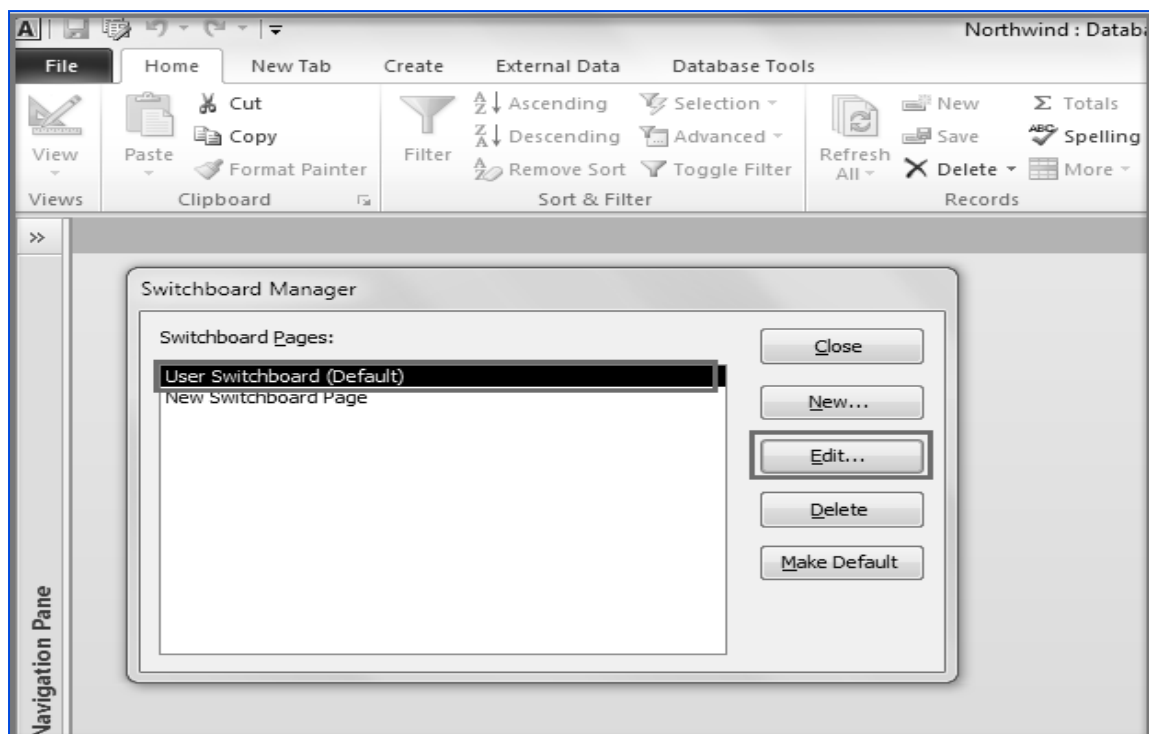


Fig. 4.3.23: Edit the Switchboard User Switchboard



6. *Edit Switchboard Page* appears. Click *New* to create a *button*, as shown in Fig. 4.3.24.

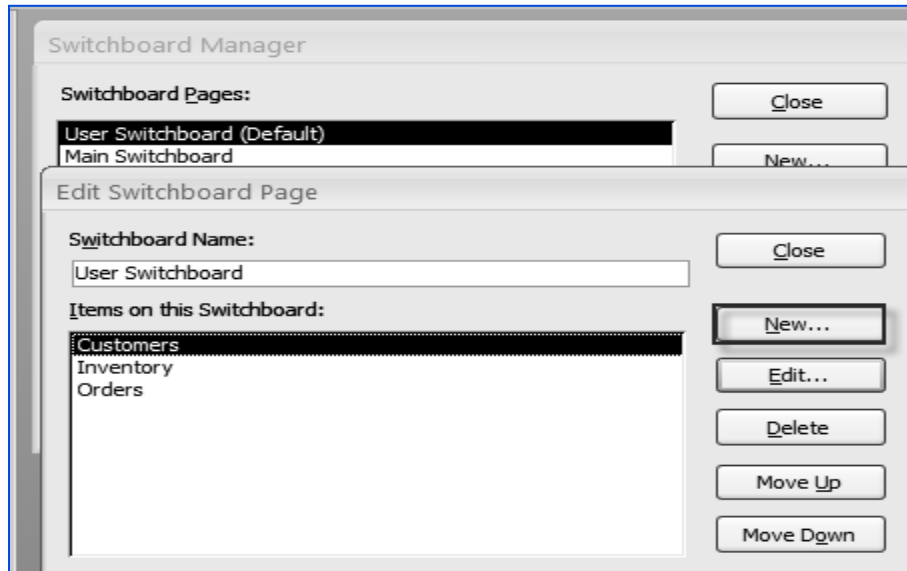


Fig. 4.3.24: Create a new button

7. In the *Edit Switchboard Item* dialog box that appears as a result, in the *Text* field, enter *Mail and Create Excel copy*.
8. From the *Command* list, select *Run Macro*.
9. From the *Form* list, select *MailCurrentOrders* and click *OK*. The *Edit Switchboard* window appears, as shown in Fig. 4.3.25.

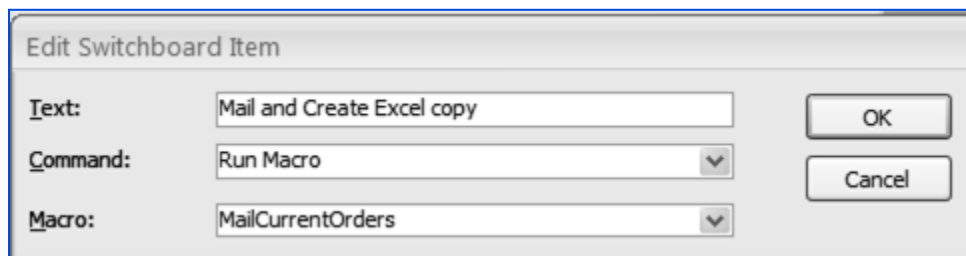


Fig. 4.3.25: Add a button to run macro MailCurrentOrders

10. Click *OK* to close the *Edit Switchboard* window, the button appears in *Items* on the *Switchboard* tab, as shown in Fig. 4.3.26.

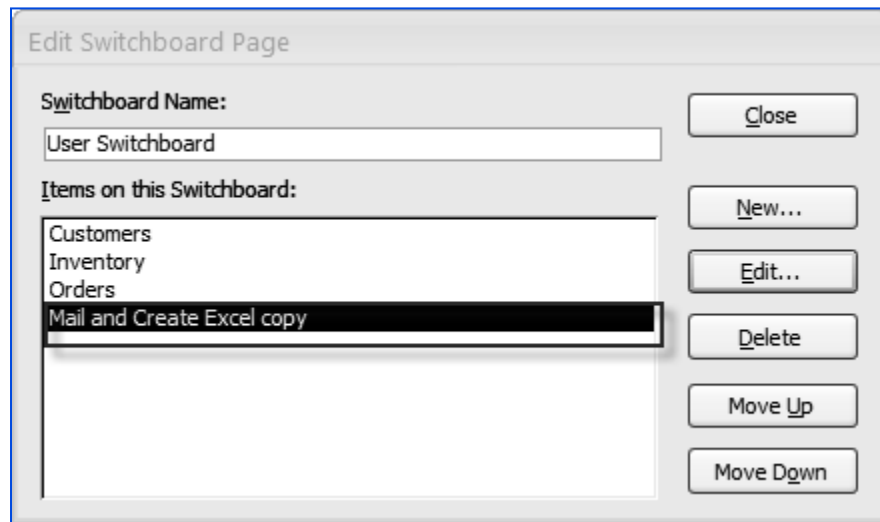


Fig. 4.3.26: Button appears in Edit Switchboard window

11. Close the *Edit Switchboard* window and the *Switchboard Manager* window.
12. To test the *switchboard* created, double-click *Switchboard* under *All Access Objects* -> *Forms* to launch the *User Switchboard* window. The *switchboard* form appears, as shown in Fig. 4.3.27.

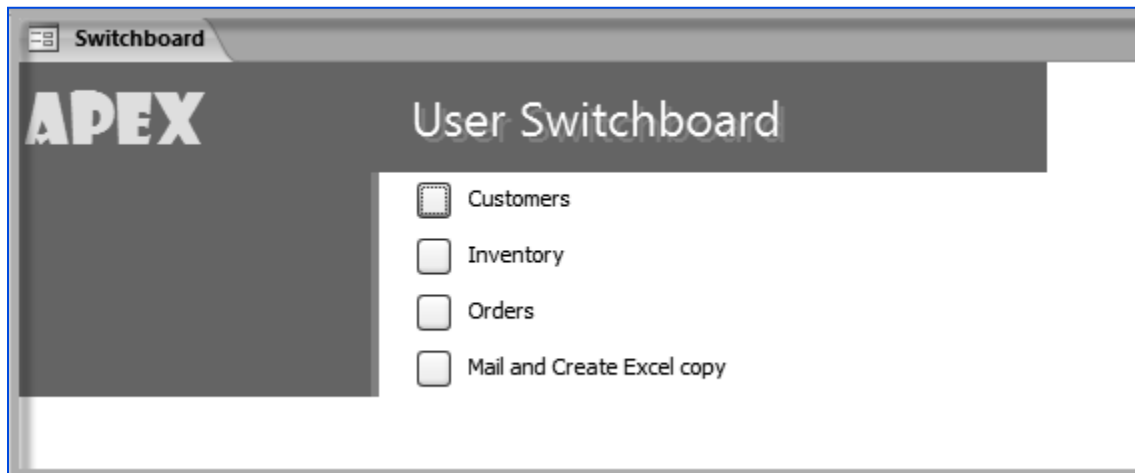


Fig. 4.3.27: Switchboard Form

4.3.3 Setting the Startup Options

Since most database users do not require direct access to the entire application, the *switchboard* can be used as a means to direct the user only to the objects specific to their job role. To make a *switchboard* appear while opening the database so as to make the application more convenient set the startup option of the database. Displaying the *switchboard* at *startup* helps to implement a level of security by hiding the key elements of the interface from the user. This allows users to access the database objects relevant to their tasks.



4.3.3.1 Problem Scenario

The Country Head of Apex Ltd., desired that the database *Apex Inventory Shipment* should be more users friendly. This means that users should not waste time navigating through various objects. The application should guide the user provide only the required functionality.

Solution

The *Switchboard* form has already made the application user friendly, with a difference that user needs to open the application search switchboard among the forms and then execute it. This is time-consuming a long process and user may be confused with various options and forms available. To avoid this, set the *switchboard form* at the *Startup option* so that as and when the user opens the application the *Switchboard* form should appear and user may select the required task from it.

Steps to set the switchboard form at startup

1. Open the *Apex Inventory Shipment* database and click **File**.
2. Select *Access Options* from the list, as shown in Fig. 4.3.28.

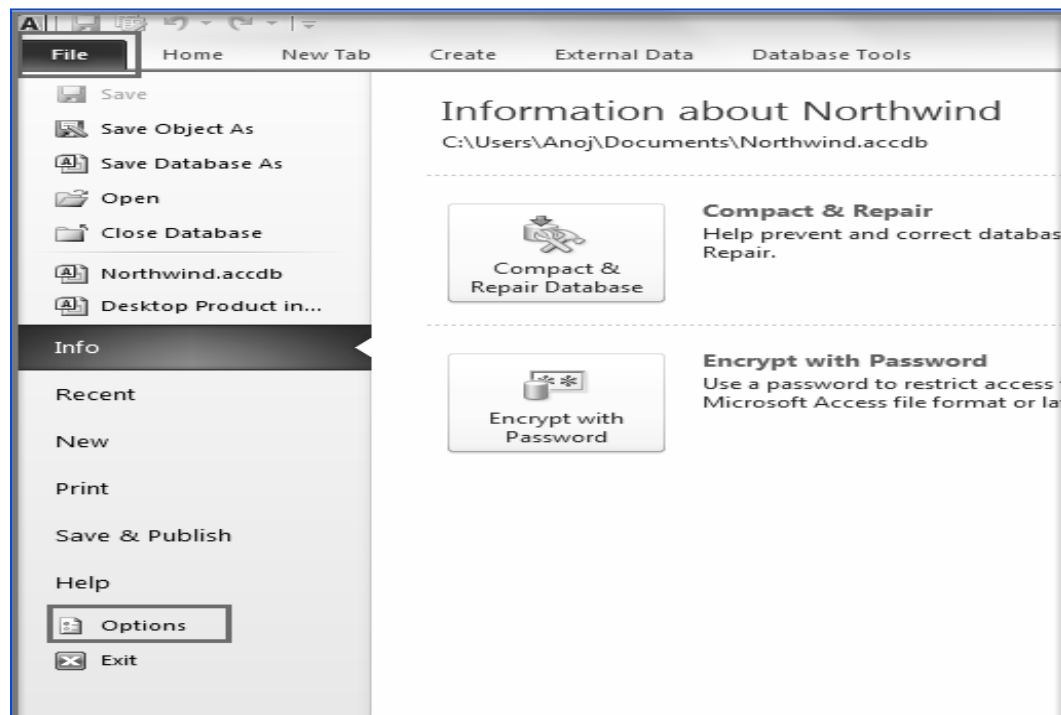


Fig. 4.3.28: Open Access Options

3. The *Access Options* window appears select *Current Database* from the left tab, as shown in Fig. 4.3.29.

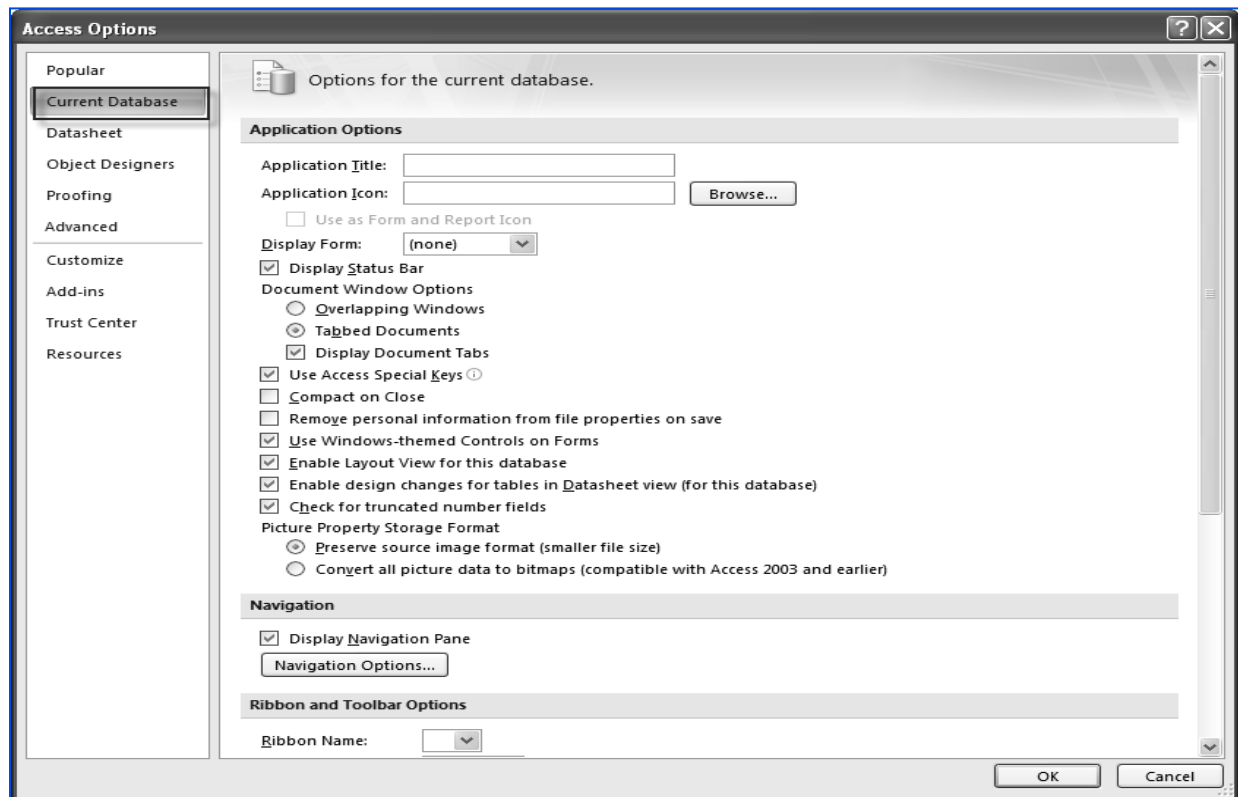



Fig. 4.3.29: Select Current Database

4. Go to *Application Options*, click  in the *Display form* and select *Switchboard* from the list that appears, as shown in Fig. 4.3.30.

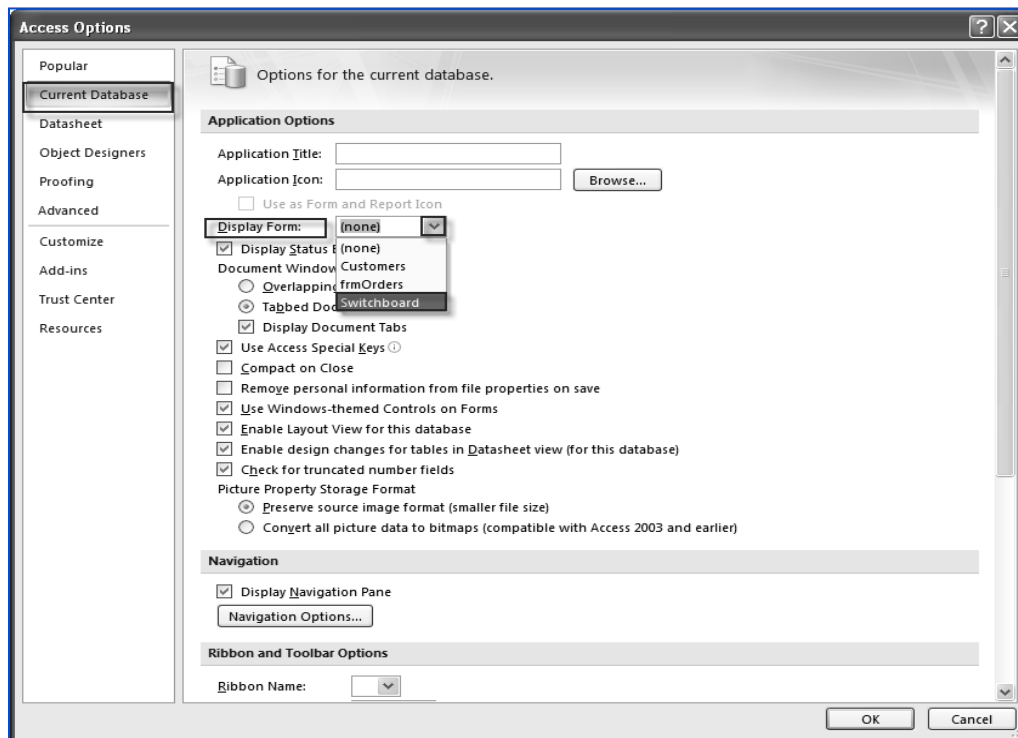


Fig. 4.3.30. Select Switchboard for Display Form option

5. Click OK to close the window.
6. To test the *startup option*, close and reopen the database. The *Switchboard* form should display automatically.

NOTE: Other than *switchboard*, any other form can also be set as a *database startup option*. So it helps to create a *login form* or a *switchboard form* and launch it at the startup of database.

4.4 Summary

Macros can be created from simple to complex with one or multiple actions. Macro can be executed as a separate object or can be attached to an event property of form, controls, or reports. The attached macros are executed when the event occurs. Macro can also be useful in restricting the number of records to retrieve using the *Where* clause available with certain actions. Using macro names, can help one macro object hold many macros. Conditions can also be specified with macros to validate the data entry. Macros can also be embedded with the control so that it is stored in the control and moves around with the control.

Switchboards can help to navigate between the various database objects easily and manage data more effectively. The switchboard is essentially a steering wheel for users to find their way through the functions and forms that are available in the application. The switchboard is used as a navigation form, using buttons to display other forms. Switchboards are created using *Switchboard Manager*. A *Switchboard Manager* creates a



switchboard form and a switchboard items table automatically. Switchboards can be set as database startup options so they should be displayed as the database is opened and can guide the user through proper options.

4.5 Lab Exercises

Consider the *Apex Inventory Shipment* database of Apex Ltd. Provide a solution to below problems.

1. The executive from California has sent the details of all the Orders received today as an Excel 2007 (.xlsx) file named Orders_CA. Create a macro to convert the file to Access table and append the records to the Orders table.
(NOTE: To append the records, create a query and execute it through macros.)
2. The executive in the Operations department are using the frmOrders form to view the orders placed. They want a functionality that the orders should be displayed only for the given period and the date should be accepted each time when they open the form. Create a macro to fulfill the requirement. (Use the Where clause)
3. The operations manager is facing a problem in checking whether the Items ordered are available or not. He wishes to have a button on frmOrders which should display the details of the Items requested in Order. Create a button on frmOrders and attach a macro to get desired functionality.
4. A form was created to track Inventory, as shown in the Fig. below. Attach a macro to the *Calculate* button that should make an auto entry to the field Order and Available. The order field should be set to *Yes* if sum of Quantity in Stock and Quantity on Order is less than Reorder Point. The Available Point should be set to *Yes* if the sum of Quantity in Stock and Quantity on Order is greater than Quantity ordered in Orders table.

Item Details		Item Availability	
Item Number	Item Number	Quantity in Stock	Quantity in Stock
Class	Class	Quantity on Order	Quantity on Order
Category	Category	Reorder Point	Reorder Point
Sub Category	Sub Category	Reorder Quantity	Reorder Quantity
Description	Description	Order	Unbound
Manufacturer	Manufacturer	Available	Unbound
Cost	Cost		

CALCULATE

Inventory Form



5. Consider the Inventory form created in previous example, create a macro to ensure that Category and Sub Category of an Item should not be left blank and Quantity on Order should not be less than Reorder Quantity. Display customized message if the validation is not followed.
6. The operations manager wishes to have the application customized for the users of Operations department. The operations manager asked the developer to create a switchboard form that should contain the link to open Inventory table, also it should display the Sales Orders along with their Invoices. Create a switchboard for the purpose.
7. Modify the above created switchboard so as when users selects inventory option another switchboard must be opened. This switchboard gives user option to display the entire Inventory, Inventory from a particular category and Items for which Quantity in Stock is more than 100.
8. Set the Switchboard created in Question No. 6 to the startup option of database so that it opens automatically as user opens the database.
9. Add a button to the *Inventory* form created in Question 4. The button should display all the orders from Sales Order Description table that were placed for the particular item. The item must be the item that is displayed currently in the form. (Attach a macro to the button for the purpose).
10. Edit the switchboard in Question No. 7. Add a button to the switchboard that should open the Inventory form.

UNIT-4
ADVANCED ERP CONCEPTS

CHAPTER

1

Simplifying Advanced Transactions in Tally

Tally provides with exceptional capabilities that simplifies the way to manage all the critical aspects of business such as interest calculations, handling forex transactions, bill of materials, manufacturing process, job work and many more, all these business requirements can be easily maintained using Tally. Let us now understand business benefit of each feature in detail.

1.1 Interest Calculation

LEARNING OBJECTIVES

- Understanding of simple & compound interest
- Maintaining interest calculation in Tally
- Calculating interest based on simple interest
- Calculating interest based on compound interest
- Bringing the interest amount in the books of accounts
- Viewing of interest calculation reports

1.1.1 Introduction

Interest is a legitimate return on money invested and chargeable in the business world on loans and on delayed payments. Interest can be calculated based on simple interest or compound interest.

- **Simple Interest:** Simple Interest is a quick method of calculating the interest charged. It will be fixed throughout the period.
- **Compound Interest:** Compound Interest is the interest on interest.

Business Scenario

Emerald-Shine Makers started a company with a capital of ₹ 5,00,000, in April 2019. Company is into manufacturing and trading business, they manufacture and trade the stock items such as DDL Laptops and other electronic gadgets like DLL smart phones, Cameras, electronic cookers etc.

Emerald-Shine Makers transacts business on cash and credit basis, To have a control on debts and faster closure of credit transactions, It is advised by an auditor to fix the credit period for all the customers, which in turn helps raising fund and liquidity on time. If a customer doesn't make a payment within the credit period, then the customer must make a payment along with the interest.

Activity: Create a company with the following details:



Company Name: **Emerald-Shine Makers**

Address: No. 198, 6th Cross, Vinayakanagar, Bengaluru -560078

Financial year beginning from: 01-04-2019

1.1.2 Activating Interest Calculations

To activate the Interest Calculation feature,

1. Go to **Gateway of Tally > Press F11: Features > F1: Accounts>**Set the option **Activate interest calculation?** and **Use advanced parameters?** to **Yes** and save the screen

1.1.3 Calculating Simple Interest

In Tally, we can calculate simple interest on Outstanding Balance and on outstanding bills/invoices/ transactions.

Activity:

- Create the ledger **SBI Bank** under **Bank Accounts** and **Proprietors Capital** under **Capital Account**.
- Record a journal entry for introducing capital of ₹5,00,000 to business as shown in table 1.1.1, to record click **F12: Configure** from Journal and enable the option **Allow cash accounts in journal vouchers?**

Particulars	L.F	Dr.	Cr.
SBI Bank _____ Dr.		5,00,000	
To, Proprietors Capital A/c			5,00,000
(Being cash invested by the proprietor)			

Table 1.1.1

Illustration 1: Configuration of interest in advance parameters and recording of sales transaction

Date	Particulars			
01-04-2019	Voucher: Purchase			
	Purchased the following stock item on credit from Mufti Solutions with 30 days of credit period and the supplier invoice number is PUR/001. If the payment is not made within 30 days, then from thereafter the rate of interest is 10% per 30 day a Month.			
	Name of Stock Item	Quantity	Rate/Nos.	Amount
	DDL Laptops	10 Nos	₹ 15,000	₹ 1,50,000

Table 1.1.2

To record the transaction in the books of accounts follow the steps:



Step 1: Creation of Accounting Masters

1. Go to **Gateway of Tally>Accounts Info> Ledgers >Create> Mufti Solutions** under **Sundry Creditors>** Enable **Maintain balance bill- by-bill?** and **Activate interest calculation?** >Fill in the Interest Parameters screen as shown in the figure 1.1.1

The **Interest Parameters** screen appears as shown in the figure 1.1.1:

Interest Parameters	
Calculate Interest Transaction-by-Transaction	? Yes
Override Parameters for each Transaction	? Yes
Override advanced parameters	? Yes
Include transaction date for interest calculation:	
For amounts added	? No
For amounts deducted	? No
Interest Appl From	
Rate : 10 % per 30-Day Month on All Balances	Date of Applicability
Applicability : Past Due Date by 0 days Calculate From : Due Date of Invoice/Ref	Date specified during entry
Rounding : # Not Applicable	Due Date of Invoice/Ref
Rate : % per on	Eff. Date of Transaction

Figure 1.1.1 Interest Parameters Screen

Note:

- In the **Interest Parameters** screen, set **Calculate Interest Transaction-by-Transaction** to **Yes**. This option should be disabled when we don't require to calculate interest for all transactions based on the parameters defined in the master
- Set the option **Override parameters for each Transaction** to **Yes**, by enabling this option, the interest amount, interest style and interest balances defined in the ledger master can be over- ridden during voucher entry
- Set the option **Override advance parameter** to **Yes**, in order to override the advance interest parameter like applicability, calculate from option, while recording the transaction
- Specify the Rate as **10%** for a **30-Day Month** on **all balances**
- **Interest Balances:** This parameter will allow us to choose the calculation of interest either on **Debit Balances** or on **Credit Balances**. We can choose to include both for interest calculation by selecting **All Balances**.
- Select **Applicability** as **Past Due Date**
- **Applicability:** This parameter allows us to choose the period of interest calculation. On selecting **Always**, interest will be calculated as on voucher date of entry. If **Past Due Date** is selected, then the interest calculation will happen after credit days.
- **Calculate From:** This parameter allows us to define floating rates of interest by defining different rates of interest for different periods. For example, from 10 to 15 days from voucher entry the rate of interest can be 5% and from 16 to 20 days the rate of interest can be 6%. There are four different ways of providing floating rates, by **Date of Applicability**, by **Date Specified During Entry**, **Due Date of**



Invoice/Ref, or by **Effective Date of transaction**. For example: If calculate from is selected as **Due date of invoice/Ref**, then the interest will get calculated after due date or credit days, in this case select **Due date of invoice/Ref**.

- **Rounding:** We can choose to apply either upward, normal or downward rounding as required. In this case we have selected **Not Applicable**.
2. Press **Enter** and save the party ledger creation screen

Purchase Ledger

Purchase A/c	
Against the Field Name	Action to be Performed
Name	Enter as Purchase A/c
Under	Select as Purchase Accounts
Inventory values are affected?	Set to Yes
Activate interest calculation?	Set to No

Table 1.1.3

Step 2: Creation of Inventory Master

Stock Item

Go to **Gateway of Tally > Inventory Info. > Stock Items > Create**

DDL Laptops	
Against the Field Name	Action to be Performed
Name	Enter as DDL Laptops
Under	Select as Primary
Units	Nos (Bring the cursor in the unit's field and press Alt+C to create it)

Table 1.1.4

Step 3: Recording Purchase Transaction

1. To record the purchase transaction, go to **Gateway of Tally > Accounting Vouchers > F9: Purchase > F2: Date > 01-04-2019**, enter the Supplier invoice no as **PUR/001** > Date appears automatically, select **Party A/c name** as **Mufti Solutions**, **Purchase ledger** as **Purchase A/c** > Under **Name of Item** > Select **DDL Laptops** and enter the Quantity as **10Nos**, Rate as **₹ 15,000**.
2. In the **Bill-wise Detail** screen enter the **Type of Ref.** as **New Ref.** and in the name column, enter as **PUR/001**. Enter the **Due Date, or Credit Days** as **30 days**, and the amount will be captured automatically
3. Press Enter, **Interest Parameters** screen appears as we have enabled to override the interest parameters in party ledger



The **Interest Parameter** screen appears as shown in the figure 1.1.2:

Interest Parameters	
Rate : 10 % per 30-Day Month	on All Balances
Applicability : Past Due Date by 0 days	
From: Due Date of Invoice/Ref	Date: 1-May-2019 To:
Rounding : # Not Applicable	

Figure 1.1.2 Interest Parameters Screen-Sales Voucher

- In the **Interest Parameters** screen the details are captured from the ledger master. We can make changes even here.
- Press **Ctrl+A** to accept **Interest Parameters** screen.

The Completed **Purchase Voucher** appears as shown in the figure 1.1.3

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M
Purchase	No. 1			1-Apr-2019
Supplier invoice no.:	PUR/001	Date :	1-Apr-2019	Monday
Party A/c name :	Mufti Solutions			
Current balance :				
Purchase ledger :	Purchase A/c			
Name of Item	Quantity	Rate per	Amount	
DDL Laptops	10 Nos	15,000.00 Nos	1,50,000.00	

Figure 1.1.3 Purchase Voucher Creation Screen

- Accept the entry.

Note: If we did not make payment on or before **01-05-2019** (Within credit period), then interest will calculate from **02-05-2019**.

Consider Emerald-Shine Makers delayed in making the payment to Mufti Solutions.

1.1.4 To Bring the Calculated Interest in the Books of Accounts

We have set the interest parameters for ledger accounts. The calculated interest amounts must be recorded using debit notes and credit notes with voucher classes to bring the interest amount in the books of accounts. Debit notes are used for interest receivable and credit notes for interest payable.

In Tally, interest is calculated on simple or compound basis and hence separate classes should be used for them.

**Illustration 2: Checking of Interest payable amount and bringing the same in the books of accounts**

Date	Particulars
31-05-2019	Voucher: Credit Note Emerald-Shine Makers bought interest payable amount in the books of accounts.

Table 1.1.5

Let us find out the interest payable amount to **Mufti Solutions** as on **31-05-2019** and bring the interest amount in the books of accounts.

Step 1: Checking of Ledger Interest Report in Tally

To view interest calculated on **Mufti Solutions**,

- Go to **Gateway of Tally > Display > Statements of Accounts > Interest Calculations > Ledger > Select Mufti Solutions**, Change the period from 01-04-2019 to 31-05-2019>Click **ALT+F1** for **Detailed** view

The **Ledger Interest** screen appears as shown in the figure 1.1.4

Ledger Interest		Emerald-Shine Makers		Ctrl + M	
Ledger : Mufti Solutions				1-Apr-2019 to 31-May-2019	
Date	Ref. No.		Opening Amount	Pending Amount	Interest
1-Apr-2019	PUR/001				
1,50,000.00 Cr	2-May-2019	31-May-2019 30 days 10 %	15,000.00 Cr		
			1,50,000.00 Cr	1,50,000.00 Cr	15,000.00 Cr

Figure 1.1.4 Ledger Interest Screen

Note: In the Ledger Interest report, we can see that the interest is calculated on ₹ 1,50,000 i.e. from 2.05.2019 to 31.05.2019 for 30 days at 10%

Let us now create voucher class for simple interest calculation.

Voucher class for both simple and compound interest can be created from the same credit note voucher type alteration screen in Tally.

Step 1: Creating Voucher Class

- Go to **Gateway of Tally > Accounts Info. > Voucher Types > Alter > Credit Note**
- Press **Ctrl+End** button to place the cursor in **Name of Class** field>Type **Simple Interest** and press **Enter**> Enable the option **Use Class for Interest Accounting?** to calculate the interest in simple interest formula

The **Voucher Type Class** screen appears as shown in the figure 1.1.5:

Class: Simple Interest	
Use Class for Interest Accounting	? Yes
Amounts to be treated as Compound Interest	? No

Figure 1.1.5 Voucher Type Class Screen



Note: In case if the interest to be calculated based on Compound Interest Formula, then the below option **Amounts to be treated as Compound Interest?** need to be enabled by creating a new voucher class for **Compound Interest**.

- Accept the voucher type and return to the **Gateway of Tally**

Step 2: Creation of Interest Ledgers

Interest Paid and Received ledgers are required to create for bringing the interest amount in the books of accounts.

Interest Paid	
Against the Field Name	Action to be Performed
Name	Enter as Interest Paid
Under	Select Indirect Expenses
Activate Interest Calculation?	Set to No

Table 1.1.6

Activity: Create **Interest Received** ledger under **Indirect Incomes**

Step 3: Recording credit note for bringing the interest amount in the books of accounts.

- Go to **Gateway of Tally** > press **F11: Features** > **F1: Accounts** and enable the option **Use debit and credit notes** and save **Accounting Features** screen.
- Go to **Gateway of Tally** > **Accounting Vouchers** > **Ctrl+F8: Credit Note** > select the class > **Simple Interest** > Press **F2: Date**: 31-05-2019, enter **Original invoice no** and **Original invoice Dt**.
- Credit** the party ledger, **Mufti Solutions**, to get the **Interest Details for** screen which contains the list of interest bills as shown in figure 1.1.6

The **Interest Details** screen appears as shown in the figure 1.1.6:

Interest Details for : Mufti Solutions					
Name	List of Interest Bills				
	Name	Int.From	Int.Days	Balance	Interest
	PUR/001	14-May-2019	30 days	1,50,000.00 Cr	15,000.00 Cr

Figure 1.1.6 Interest Details screen

- Select the Bill, then select as end of list and press enter, **Party Details** screen appears accept the screen, Interest amount will get calculated automatically, press enter to get the bill wise details screen



5. Select **New Ref**, enter the name as **Interest P1**

The **Bill-wise Details** screen appears as shown in the figure 1.1.7:

Bill-wise Details for : Mufti Solutions Upto: ₹ 15,000.00 Cr				
Type of Ref	Name	Due Date, or Credit Days (wef: 31-May-2019)	Amount	Dr/ Cr
New Ref	Interest P1		15,000.00	Cr

Figure 1.1.7 Bill-wise Details screen

6. Next, we will get the **Interest Parameter** screen, accept it as it is
7. **Debit** the **Interest Paid** ledger.

The **Credit Note Voucher** appears as shown in the figure 1.1.8:

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M
Credit Note	No. 1	Voucher class: Simple Interest		31-May-2019 Friday
Original invoice no.: PUR/001		Original Invoice Dt.: 1-Apr-2019		
Particulars			Debit	Credit
Cr Mufti Solutions Cur Bal: 1,65,000.00 Cr				15,000.00
New Ref Interest P1 15,000.00 Cr				
Dr Interest Paid Cur Bal: 15,000.00 Dr			15,000.00	

Figure 1.1.8 Booking Interest through Credit Note Voucher Class

8. Accept the entry.

Step 4: Check the outstanding report of Mufti Solutions

1. Go to **Gateway of Tally > Display > Statements of Accounts > Outstandings > Ledger > select Mufti Solutions**

The **Outstandings Report** appears as shown in the figure 1.1.9:

Ledger Outstandings		Emerald-Shine Makers		Ctrl + M
Ledger : Mufti Solutions		1-Apr-2019 to 31-May-2019		
Date	Ref. No.	Opening Amount	Pending Amount	Due on Overdue by days
1-Apr-2019	PUR/001	1,50,000.00 Cr	1,50,000.00 Cr	1-May-2019 30
31-May-2019	Interest P1	15,000.00 Cr	15,000.00 Cr	31-May-2019 0

Figure 1.1.9 Ledger Outstandings Report Screen

Observation: The report displays the outstanding amount to Mufti Solutions and interest payable as per the date and reference no. Being goods purchased on credit and interest payable for delay in payment to Mufti Solutions is ₹ 1,65,000.

Illustration 3: Recording of payment voucher along with interest amount



Date	Particulars
31-05-2019	Voucher: Payment Emerald-Shine Makers made a payment of ₹ 1,65,000 to Mufti Solutions with interest through SBI Bank

Table 1.1.7

To record the transaction in the books of accounts follow the steps:

1. Go to **Gateway of Tally > Accounting Vouchers > press F5: Payment > Select SBI Bank in Account field Under Particulars select party ledger Mufti Solutions, Bill-wise Details screen appears, fill in the details as shown in figure 1.1.10, and save the entry.**

The **Bill wise Details** screen appears as shown in the figure 1.1.10:

Bill-wise Details for : Mufti Solutions				
Type of Ref	Name	Due Date, or Credit Days (wef: 31-May-2019)	Amount	Dr/ Cr
Agst Ref	PUR/001	30 Days (1-May-2019)	1,50,000.00	Dr
Agst Ref	Interest P1		15,000.00	Dr

Figure 1.1.10 Bill wise Details Screen.

The **Payment Voucher** appears as shown in the figure 1.1.11:

Accounting Voucher Creation		Emerald-Shine Makers	Ctrl + M
Payment	No. 1		31-May-2019 Friday
Account : SBI Bank			
Cur Bal: 3,35,000.00 Dr			
Particulars		Amount	
Mufti Solutions		1,65,000.00	
Cur Bal: 0.00 Dr			
Agst Ref: PUR/001	30 Days	1,50,000.00	Dr
(1-May-2019)			
Agst Ref: Interest P1		15,000.00	Dr

Figure 1.1.11 Payment Voucher Screen

Note: Once after recording the payment entry check the Mufti Solutions ledger interest report, we will not get the interest details because there is no pending bill from Mufti Solutions.

1.1.5 Calculating Compound Interest

Emerald-Shine Makers sold DDL Laptops to Blue Ray Solutions and calculates interest based on compound interest formula, In Tally we can also calculate interest in compound interest formula.



Illustration 4: Calculating interest based on compound interest formula.

Date	Particulars			
01-05-2019	Voucher: Sales Emerald-Shine Makers made a credit sale with reference number SAL/001 to Blue Ray Solutions and allowed 30 days credit period. If the payment is not made within 30 days, then from thereafter the rate of interest is 8% per 30-day a month			
	Name of Stock Item	Quantity	Rate/Nos.	Amount
	DDL Laptops	10 Nos	₹20,000	₹ 2,00,000

Table 1.1.8

To record the transaction in the books of accounts follow the steps:

Step 1: Creation of Accounting Masters

Activity:

1. Create **Blue Ray Solutions** under **Sundry Debtors**, enable **Activate interest calculation?** option and set the interest parameter. (Make sure to enter **Interest Rate** as **8%** and **Interest Style** as **30-Day a Month**)
2. Create ledger as **Sales A/c** under **Sales Accounts** (do not activate interest calculation to this ledger)

Step 2: Recording of Sales Transaction

1. To record sales transaction, go to **Gateway of Tally>Accounting Vouchers> F8: Sales > Date: 1-5-2019** enter Reference no: as **SAL/001**, select Party A/c name as **Blue Ray Solutions**, Sales Ledger as **Sales A/c**, under **Name of Item** field select **DDL Laptops** enter the Quantity as **10 Nos**, Rate as **₹ 20,000**
2. In the **Bill-wise Detail** screen select the **Type of Ref.** as **New Ref.** and in the name column, enter as **SAL/001**. Enter the **Due Date, or Credit Days** as **30 days**, and the amount will be captured automatically
3. Press Enter, **Interest Parameters** screen appears, press **Ctrl+A** to accept **Interest Parameters** screen

The Completed **Sales Voucher** appears as shown in the figure 1.1.12

Name of Item	Quantity	Rate per	Amount
DDL Laptops	10 Nos	20,000.00 Nos	2,00,000.00

Figure 1.1.12 Sales Voucher Creation Screen

4. Accept the entry.



Note: Once after recording the sales entry if the receipt is not made within the credit days, then Blue Ray Solutions needs to pay the total amount along with the interest amount.

Blue Ray Solution delayed in making the payment within the credit days and now they are liable to pay interest to Emerald-Shine Makers

Step 3: Recording debit note to bring the calculated interest amount in the books of accounts

- Let us first check the interest receivable amount as on 30-06-2019, Go to **Gateway of Tally > Display > Statements of Accounts > Interest Calculations > select Interest Receivable > press F2: Period** and enter as 01-05-2019 to 30-06-2019, press enter to drill down on Current Assets and Sundry Debtors

The **Interest Receivable** report appears as shown in the figure 1.1.13:

Interest Receivable		Emerald-Shine Makers		Ctrl + M	
Particulars		Sundry Debtors		Emerald-Shine Makers	
		1-May-2019 to 30-Jun-2019		Interest Calculation	
		Closing Balance		Interest	
Blue Ray Solutions		2,00,000.00 Dr		16,000.00 Dr	

Figure 1.1.13 Interest Receivable Report

Observation: In Figure 1.1.13 you can observe that the interest receivable amount is displaying as ₹ 16,000.

Activity: Alter the debit note voucher and configure the following details:

- Under **Name of Class** – Enter as **Compound Interest**
 - Enable the following options in **Voucher Type Class** screen
 - Use Class for Interest Accounting?
 - Amounts to be treated as Compound Interest?
- Next step is to bring the details of interest receivable amount in the books of accounts.
 - Go to **Gateway of Tally > Accounting Vouchers > press F9: Debit Note>** In Class field, select **Compound Interest>** Press **F2: Date** 30-06-2019 enter **Original invoice no** and **Dt.**
 - Debit the party ledger, **Blue Ray Solutions**, to get the **Interest Details** screen which contains the list of interest bills, select the bill with number **SAL/001** (Bill wise details will not appear for compound interest amount separately, as the amounts are auto debited to the selected bills)
 - Press enter, **Party Details** screen appears accept the screen,
 - Credit **Interest Received** Ledger interest amount will get calculated automatically, press enter and save the entry.

Once after recording the debit note the amount will reflect in the books of accounts, to check go to **Balance Sheet report > press Enter on Current Assets**

The **Group Summary** report appears as shown in the figure 1.1.14:



Group Summary		Emerald-Shine Makers		Ctrl + M	
Particulars		Current Assets			
		Emerald-Shine Makers			
		1-Apr-2019 to 30-Jun-2019			
		Closing Balance			
		Debit	Credit		
Closing Stock					
Sundry Debtors			2,16,000.00		
Bank Accounts			3,35,000.00		

Figure 1.1.14 Group Summary Report

We can observe that the interest receivable amount is reflecting in the books of accounts.

Check the interest receivable report for the period **01-07-2019** to **31-07-2019**

- Go to **Gateway of Tally > Display > Statements of Accounts > Interest Calculations > Interest Receivable**> press **F2: Period** and enter **01-07-2019** to **31-07-2019**> press **Enter** on **Current Assets** and **Sundry Debtors**

The **Interest Receivable** report appears as shown in the figure 1.1.15:

Interest Receivable		Emerald-Shine Makers		Ctrl + M	
Particulars		Sundry Debtors			
		Emerald-Shine Makers			
		1-Jul-2019 to 31-Jul-2019			
		Interest Calculation			
		Closing Balance	Interest		
Blue Ray Solutions		2,16,000.00 Dr	17,856.00 Dr		

Figure 1.1.15 Interest Receivable Report

Observation: Observe the Closing Balance Column, the amount is displaying as ₹ 2, 16,000, this amount is inclusive of interest amount of the previous period i.e., ₹ 16,000 is the interest amount which is added in the total transaction value of ₹2,00,000

Activity: Recording the receipt voucher along with interest amount

Date	Particulars
30-06-2019	Voucher: Receipt Emerald-Shine Makers received a payment of ₹ 2,16,000 from Blue Ray Solutions with interest to SBI Bank A/c.

Table 1.1.9

1.1.6 Interest Calculation Reports

To check the interest calculation report, follow the steps,

Go to **Gateway of Tally > Display > Statements of Accounts > Interest Calculation**

Interest Receivable Report: It displays the details of interest receivable by the Company.

Interest Payable Report: It displays the details of interest payable by the company to its supplier or vendor.

Ledger: It displays the interest calculated based on the ledgers (Payable or receivables)



Group: It displays the list of all accounts and sub-groups belonging to the selected group and displays the current balance in each account or sub-group and the total interest. The Cr in the interest amount should not be confused to mean an Income. It only means that it is payable and is a liability.

Conclusion

In this chapter we have activated interest calculation feature and calculated interest automatically in Tally. We have also learnt to calculate interest in simple and compound method with different styles such as 30- Day Month, 365-Day Year etc.

1.2 Multi-Currency

LEARNING OBJECTIVES

- Create and maintain multi currencies
- Adjust forex gain/loss
- Viewing of financial reports in base and foreign currencies

1.2.1 Introduction

Due to the globalisation of business, many organisations have found the necessity to work with more than one currency. In this case, transactions are also recorded in currencies other than the home currency.

At times you need to record the transaction in the foreign currency itself when you maintain the balance of the concerned account in foreign currency.

Multi-currency feature in Tally allows you to:

- Record transactions with different currencies by allowing you to specify and change the currency rate of exchange
- Maintain the balance of the specified account in a foreign currency
- The home currency, in which the books of accounts are maintained will be addressed as 'Base currency'. Base currency is specified during company creation.

Business Scenario

Emerald-Shine Makers are also engaged in exporting and importing of DLL Camera's to foreign countries. Company exports DLL Camera's to Power Electronics (US), Since the transactions are between more than one country, it is required to maintain multiple currencies and record the transactions. Let us now see how Emerald-Shine Makers maintain these requirements in Tally.



Activity:

Date	Particulars			
01-07-2019	Voucher: Purchase Purchased the following items from Best Electronics with Supplier invoice no PUR/002			
	Name of Item	Quantity	Rate	Amount
	DLL Cameras	30 Nos	₹ 10,000/Nos	₹ 3,00,000

Table 1.2.1

- Create **Best Electronics** ledger under **Sundry Creditors**.
- Create stock item as **DLL Cameras** with **Units** as **Nos**.

1.2.2 Enabling Multi-Currency

To enable multicurrency feature in Tally

1. Go to **Gateway of Tally > press F11: Features > F1: Accounts>Set Enable multi-currency?** to **Yes>accept Accounting Features** screen

1.2.3 Creating Foreign Currency

To create a Foreign Currency,

1. Go to **Gateway of Tally > Accounts Info. > Currencies > Create>** Create the currency as shown in figure 1.2.1

The **Currency Creation** screen appears as shown in the figure 1.2.1:

Currency Creation	
Symbol	: \$
Formal name	: US Dollar
Number of decimal places	: 2
Show amount in millions	? No
Suffix symbol to amount	? No
Add space between amount and symbol	? No
Word representing amount after decimal	: cent
No. of decimal places for amount in words	: 2

Figure 1.2.1 Currency Creation Screen

2. Enter the **Symbol** as **\$**. (Short cut key is Shift+4)



3. Enter the name of the currency in **Formal Name** as **US Dollar**
4. Enter the number of decimal places for the currency in **Number of decimal places**
5. Tally has two formats for displaying amount, viz., in millions. 1000000 (one followed by six zeroes) in millions format would appear as 1,000,000
6. Select the required parameter in **Show Amounts in Millions** field. If you select **No**, the amounts will not appear in million, i.e., it will appear as 10,00,000
7. Set **Suffix symbol to amount** to **Yes** for the symbol to appear after the amount. Set it to No, for the symbol to be prefixed to the amount
8. **Add space between amounts and symbol?** to **Yes** to apply a space between amount and symbol
9. Enter the **Word representing amount after decimal**.
10. Enter the **No. of decimal places for amounts in words**. This number should be equal to or lesser than the number specified in Number of Decimal Places field
11. Press **Enter** to Save the screen

1.2.4 Altering Currencies and Defining of Rates of Exchange

You can modify or delete a currency master using the Alter option. You can also set Rates of Exchange for specific dates while altering a currency.

To alter a Currency,

1. Go to **Gateway of Tally > Accounts Info. > Currencies > Alter** > Select **\$**
2. In the **Currency Alteration** screen that appears, enter the Rate of exchange for Standard, Selling and Buying rates as per figure 1.2.2

The **Currency Alteration** screen appears as shown in figure 1.2.2:

Standard			Selling			Buying		
Date	Specified Rate		Date	Last Voucher Rate	Specified Rate	Date	Last Voucher Rate	Specified Rate
1-Jul-2019	₹ 68/\$		1-Jul-2019		₹ 69/\$	1-Jul-2019		₹ 67/\$

Figure 1.2.2 Currency Alteration Screen

Understanding Exchange Rates

Standard Rate of Exchange is the rate at which a foreign currency is traded in the market.

Selling Rate is the rate at which the bank buys currency from a customer. This rate is used while invoicing or receiving money.



Buying Rate is the rate at which the bank sells the currency. This rate is used when purchasing or paying money in terms of a foreign currency.

1.2.5 Voucher Entry using Foreign Currency (On the basis of Realization)

A realization foreign transaction is nothing but a transaction which is realized. For Example, the forex gain/loss occurs from the difference in exchange rates defined at the time of sales and receipt voucher.

Illustration 1: Recording sales voucher with dollar currency and corresponding receipt transaction.

Date	Particulars			
01-07-2019	Voucher: Sales			
	Exported the following goods to Power Electronics (US) at the exchange rate of ₹ 69/\$ with Reference number SAL/002 .			
	Name of Item	Quantity	Rate	Amount
	DLL Cameras	10 Nos	\$200/Nos	\$ 20,000
05-07-2019	Voucher: Receipt			
	Power Electronics made full payment against the sales reference no. SAL/002 . There was an increase in exchange rate and the rate was ₹ 70/\$.			

Table 1.2.2

To record the transaction in the books of accounts follow the steps:

Step 1: Creation of Accounting Masters

1. Create **Power Electronics** ledger under **Sundry Debtors**, select the currency as ₹, enable the option **Maintain balances bill-by-bill?** and save the ledger.
2. Create **Sales - Export** ledger under **Sales Accounts**, select the currency as ₹

Step 2: Record Sales Transaction for Exports

1. Go to **Gateway of Tally > Accounting Vouchers> F8: Sales>** press **F2: Date>01-07-2019**
2. Enter **Reference no: SAL/002>** select **Power Electronics** under **Party A/c name >** select **Sales ledger** as **>Sales – Export>** select **Name of Item >as DLL Cameras >**Enter the Quantity as **10 Nos**. **Rate as \$ 200**, on entering the rate in foreign currency, the **Forex Rate of Exchange** screen appears as shown in figure 1.2.3

Note: In the **Forex Rate of Exchange** screen we can enter the exchange rate while recording the entry.

The **Forex Rate of Exchange** appears as shown in the figure 1.2.3:

Rate in Forex	Rate of Exchange	Rate in ₹
\$200.00/Nos @	₹ 69/\$	₹ 13,800.00/Nos

Figure 1.2.3 Forex Rate of Exchange Screen



- The selling rate specified earlier in figure 1.2.2 is captured here by default, press enter to accept, **Bill wise Details** screen appears, select New Ref, enter the name as **SAL/002** and accept the screen as it is.

The completed **Sales Voucher Creation** appear as shown in the figure 1.2.4:

Accounting Voucher Creation		Emerald Shine Makers		Ctrl + M
Sales	No. 2			1 Jul 2019 Monday
Reference no.: SAL/002				
Party A/c name	Power Electronics			
Current balance				
Sales ledger	Sales - Export			
Name of Item	Quantity	Rate per	Amount	
DLL Cameras	10 Nos	\$200.00 Nos	\$2,000.00	
End of List				
Narration:			10 Nos \$2,000.00 @ ₹ 69/\$ = ₹ 1,38,000.00	

Figure 1.2.4 Completed Sales Voucher Screen

Observation: we can observe the calculation of the sale value is in base currency and the same base currency value will get updated in the financial reports.

Note: While you are billing for foreign currency ensure to provide the currency, symbol followed by rate in **Rate** field. Any rate without symbol will be considered as base currency.

- Press **Ctrl+A** to accept the voucher

Step 3: Recording of Receipt Voucher

- Go to **Gateway of Tally > Accounting Vouchers > F6: Receipt > F2: Date: 05-07-2019 >** select **SBI Bank** ledger in **Account Field >** Under **Particulars >** Select **Power Electronics >** Select **Agst Ref >** Select the Bill from Pending Bills
- By default, the **Rate of exchange** field sets the previous exchange rate i.e. ₹ 69/\$, Change the **Rate of Exchange** to ₹ 70/\$, save the screen and accept the entry.

The **Forex Rate of Exchange** screen appears enter the details as shown in figure 1.2.5:

Forex Amount	Rate of Exchange	Value in ₹
\$2,000.00	@ ₹ 70/\$	₹ 1,40,000.00

Figure 1.2.5 Forex Rate of Exchange Screen

Observation: During the sale of material, the total cost was ₹ 1,38,000. However, due to an increase in the rate of exchange, the total value has increased to ₹ 1,40,000. Hence, this difference in amount will be reflected as the **Unadjusted Forex Gain/Loss**.

Let us view the **Unadjusted Forex Gain/Loss** details in **Balance Sheet** report.

- Go to **Gateway of Tally > Balance Sheet >** Unadjusted forex gain/loss of ₹ 2,000 appears under the Liabilities side.



The **Balance Sheet** report with unadjusted forex gain/loss details appears as shown in figure 1.2.6

Balance Sheet			
Emerald-Shine Makers		Ctrl + M	
Liabilities		Assets	
as at 5-Jul-2019		as at 5-Jul-2019	
Capital Account	5,00,000.00	Current Assets	8,91,000.00
Loans (Liability)			
Current Liabilities	3,00,000.00		
Profit & Loss A/c	89,000.00		
Opening Balance			
Current Period	89,000.00		
Unadjusted Forex Gain/Loss	2,000.00		

Figure 1.2.6 Balance Sheet showing Unadjusted Forex Gain/Loss

Ledger Outstanding Report

We can also check the forex gain/loss details from ledger outstandings report

- Go to **Gateway of Tally > Display > Statements of Accounts > Outstandings> Ledger > select – Power Electronics > click Alt+F1: Detailed**

The **Ledger Outstanding** report appears as shown in figure 1.2.7

Ledger Outstandings			
Emerald-Shine Makers		Ctrl + M	
Ledger : Power Electronics		1-Apr-2019 to 5-Jul-2019	
Date	Ref. No.	Opening Amount	Pending Amount Due on Overdue by days
1-Jul-2019	SAL/002		
1-Jul-2019 Sales	2	1,38,000.00 Dr	1-Jul-2019 4
10 Nos DLL Cameras		\$200.00/Nos	
5-Jul-2019 Receipt	2	1,40,000.00 Cr	
5-Jul-2019 Forex Gain/Loss		2,000.00 Dr	

Figure 1.2.7 Ledger Outstanding Report with Forex Gain or Loss Details

1.2.6 Adjusting Forex Gain/Loss

A Journal entry must be made at the end of the accounting period for writing-off the gain/loss to the Profit & Loss account.

Illustration 2: Recording of journal voucher in order to write-off the forex gain/loss to the profit/loss account

Date	Particulars
31-07-2019	Voucher: Journal Written-off the unadjusted forex gain/loss of ₹2,000, which was reflecting in balance sheet.

Table 1.2.3

Step 1: Creation of Accounting Masters

- Create **Forex Gain/Loss** ledger under **Indirect Incomes>** Select Currency as ₹

Step 2: Creation of Journal Voucher Class

- Go to **Gateway of Tally > Accounts Info. > Voucher Types >Alter>Journal>** In the field **Name of Class**, type **Forex Gain/Loss** and follow the steps in figure 1.2.8



The **Forex Voucher Type Class** screen appears as shown in figure 1.2.8:

Class: Forex Gain/Loss	
Use Class for Forex Gain/Loss Adjustments ? Yes	
Forex Gain/Loss Ledger Account to use :	
Ledger Name	
Forex Gain/Loss	

Figure 1.2.8 Voucher Class Creation Screen

- Accept the voucher type alteration screen.

Step 3: Recording of Journal Voucher

- Go to **Gateway of Tally > Accounting Vouchers > press F7: Journal**>Select **Forex Gain/Loss** as the voucher class > **F2: Date: 31-07-2019**> In **Account** field the **Forex Gain/Loss** ledger will be selected by default> Under **Particulars** select **Power Electronics > Bill-wise Details** screen appears, select the particular bill

The **Bill-wise Details** screen appears as shown in the figure 1.2.9:

Bill-wise Details for : Power Electronics				
Name	Due Date, or Credit Days	Amount	Dr/ Cr	
Pending Bills				
Name	Date	Balance		Unadjusted
SAL/002	1-Jul-2019	\$0.00 Cr @ ₹ 68/\$ = ₹ 0.00 Cr		2,000.00 Dr

Figure 1.2.9 Adjusting Forex Gain or Loss

- Accept the **Bill-wise Details** screen and save the entry.

After **Forex adjustment**, check the **Balance Sheet** report

Observation: Now that the forex adjustment has been completed, the **Balance Sheet** doesn't show any unadjusted forex gain/loss. The amount of ₹ 2,000 will be transferred to **Profit & Loss A/c** under indirect income head.

To check Profit & Loss Account report, go to **Gateway of Tally > Profit & Loss A/c**, check that the amount of ₹ 2,000 will appear in **Indirect Income** head> Press enter to view Group summary

The **Group Summary** from **Profit & Loss A/c** appears as shown in figure 1.2.10:



Group Summary		Emerald-Shine Makers		Ctrl + M	
Particulars		Indirect Incomes			
		Emerald-Shine Makers			
		1-Apr-2019 to 31-Jul-2019			
		Closing Balance			
		Debit	Credit		
Forex Gain/Loss				2,000.00	
Interest Received				16,000.00	

Figure 1.2.10 Group Summary

1.2.7 Voucher Entry using Foreign Currency (On the basis of Un-Realized Transactions)

An unrealised foreign transaction is nothing but a transaction which is not realized i.e., purchase or sales is done but payments are not made/received.

During sales and purchase transactions, the rate of exchange prevailing to the day is considered for recording transactions. As purchase and sales are done on different dates, there are chances of variation in the rate of exchange. The variable rate of exchange amount is reflected/called as Unadjusted Forex Gain/Loss.

Emerald-Shine Makers received multiple orders from Power Electronics.

Activity:

Illustration 3: Recording of sales transactions with different rate of exchange

Date	Particulars			
1-08-2019	Voucher: Sales			
	Exported the following goods to Power Electronics at an exchange rate of ₹ 70/\$ with reference number SAL/003 by selecting Sales-Export ledger.			
	Name of Item	Quantity	Rate	Amount
	DLL Cameras	5 Nos	\$200/Nos	\$ 1,000
10-08-2019	Voucher: Sales			
	Exported the following goods to Power Electronics at an exchange rate of ₹ 71/\$ with reference number SAL/004			
	Name of Item	Quantity	Rate	Amount
	DLL Cameras	5 Nos	\$200/Nos	\$ 1,000

Table 1.2.4

Hint: While recording the sales transaction change the Rate of Exchange as per the illustrations.

After recording the entry let us check the balance sheet values in base currency and dollar currency.

1.2.8 Reports

Balance Sheet

In Tally, we can view the financial reports such as **Balance Sheet**, **Profit and Loss A/c** and **Trail Balance** in multicurrency.



To view balance sheet in base currency and dollar currency

1. Go to **Gateway of Tally > Balance Sheet>F2: Period** and enter the required period>Press **Alt+C: New Column**, to add column> Enter the details as shown in the figure 1.2.11:

The **Select Column Details** screen appears as shown in the figure 1.2.11:

Column Details	
From (blank for beginning) :	1-4-2019
To (blank for end) :	31-3-2020
Currency :	\$ @ ₹ 68/\$
Method of stock valuation:	Default
Type of value to show :	Actuals

Figure 1.2.11 Select Column Details Screen

The **Balance Sheet** screen appears as shown in figure 1.2.12:

Balance Sheet	Emerald-Shine Makers		Ctrl + M
	Emerald-Shine Makers (in INR) as at 31-Mar-2020	Emerald-Shine Makers (in US Dollar @ ₹ 68/\$) as at 31-Mar-2020	
Sources of Funds:			
Capital Account	5,00,000.00	\$7,352.94	
Loans (Liability)			
Current Liabilities	3,00,000.00	\$4,411.76	
Profit & Loss A/c	1,32,000.00	\$1,941.18	
Opening Balance			
Current Period	1,32,000.00	\$1,941.18	
Total	9,32,000.00	\$13,705.88	
Application of Funds:			
Current Assets	9,27,000.00	\$13,632.35	
Unadjusted Forex Gain/Loss	5,000.00	\$73.53	
Total	9,32,000.00	\$13,705.88	

Figure 1.2.12 Balance Sheet in Multi Currency

Note: Check the Unadjusted Forex Gain/Loss reflecting under current assets account head. This is appearing because of the variation in the forex exchange rate.

Activity:

1. Similarly, let us check the **Profit & Loss account** report in base and dollar currency.
2. Check the **Balance Sheet** and adjust the **Forex Gain/Loss** by passing a **Journal entry** using the voucher class created earlier, for the month of August- select both the bills with the bill name **SAL/003** and **SAL/004**.

Ledger Vouchers

In Tally we can check the forex transactions details from the ledger voucher reports.

To view only the forex related transactions,



1. Go to **Gateway of Tally > Display > Account Books > Ledger > Power Electronics > Enter> Press F12: Configure > Enable > Show Forex details also and Show Forex Transactions only to Yes**

The **Configuration** screen appears as shown in the figure 1.2.13:

Show Forex details also	? Yes
Show Forex Transactions only	? Yes

Figure 1.2.13 Configuration to see Forex Transactions only

2. Change the period to **01-07-2019 to 31-08-2019**

The **Ledger Vouchers** report appears as shown in the figure 1.2.14:

Ledger Vouchers		Emerald-Shine Makers		Ctrl + M	
Ledger: Power Electronics				1-Jul-2019 to 31-Aug-2019	
Date	Particulars	Vch Type	Vch No.	Debit	Credit
1-7-2019	Sales - Export ₹ 1,38,000.00 @ ₹ 69/\$	Sales	2	\$2,000.00	
5-7-2019	SBI Bank ₹ 1,40,000.00 @ ₹ 70/\$	Receipt	2		\$2,000.00
1-8-2019	Sales - Export ₹ 70,000.00 @ ₹ 70/\$	Sales	3	\$1,000.00	
10-8-2019	Sales - Export ₹ 71,000.00 @ ₹ 71/\$	Sales	4	\$1,000.00	

Figure 1.2.14 Ledger Vouchers with Forex

To view the details of date-wise selling and buying rate of exchange,

1. Go to **Gateway of Tally >Accounts Info>Currencies>Alter>Select \$**

The **Currency Alteration** screen with **Date-wise selling and buying rate of exchange** report appears as shown in the figure 1.2.15:

Rates of Exchange						
Standard		Selling			Buying	
Date	Specified Rate	Date	Last Voucher Rate	Specified Rate	Date	Last Voucher Rate
1-Jul-2019	₹ 68/\$	1-Jul-2019	₹ 69/\$	₹ 69/\$	1-Jul-2019	₹ 67/\$
		5-Jul-2019	₹ 70/\$			
		1-Aug-2019	₹ 70/\$			
		10-Aug-2019	₹ 71/\$			

Figure 1.2.15 Date-wise selling and buying rate of exchange

Conclusion

In this chapter, we have learned to create multiple currencies and define the different forex exchange rate and recorded realized and unrealized forex transactions, we have also learned to generate the balance sheet in base currency as well as in foreign currency.



1.3 Bill of Materials and Manufacturing Process

LEARNING OBJECTIVES

- Understanding of Bill of Materials
- Creation of manufacturing journal voucher
- Accounting of manufacturing entry in Tally
- Recording stock journal voucher
- Checking of reports like cost estimation and transfer analysis

1.3.1 Introduction

Inventory is an asset that is intended to be sold or consumed to produce finished products in the ordinary course of business.

In accounting, inventory is typically broken down into three stages, which are:

Raw materials: Includes materials intended to be consumed to produce finished goods.

Work-in-process: Includes items that are in the midst of the production process, and which are not yet in a state ready for sale to customers.

Finished goods: Includes goods ready for sale to customers. May be termed merchandise in a retail environment where items are bought from suppliers in a state ready for sale.

Manufacturing Processes is the process of conversion of raw materials/components into finished goods. A Bill of Materials is a list of constituent items along with quantity details that can be allotted for the manufacture of a certain product, by-product or likewise. This facilitates immediate reduction in stock of the item automatically and it saves time by automatically allocating the components while recording Manufacturing entry. This process of listing the items that make up another item is made possible in Tally by enabling the Bill of Materials feature.

Business Scenario

Emerald-Shine Makers received an order for DLL MacBook, the company should now start the manufacturing and assembling of DDL MacBook for this the company maintains Bill of Materials and records manufacturing journals using the BoM.

1.3.2 Activating of Bill of Materials

To activate Bill of Materials,

1. Go to **Gateway of Tally > F12: Configure > Accts/Inventory Info>Set Enable component list details (Bill of Materials)?** to **Yes**

Note: The same option can be enabled in stock item by pressing **F12: Configure**

1.3.3 Auto Listing of Components Using Bill of Materials

Bill of Materials (BoM) is created only for those items that are being assembled in-house. Therefore, you



need to specify a BoM at the time of creating a Stock Item or while altering the stock item. For trading items, you do not need a BoM.

After activating Bill of Materials, we can define components while creating finished good.

Illustration 1: Listing of Components using Bill of Materials in Finished goods.

The following is the list of components which will be used to manufacture 1 unit of DDL MacBook

List of Components	Units used for manufacturing 1 DDL MacBook
Display Screen	1 Nos
Hard Disk Drive	1 Nos
Internal Battery	1 Nos
Keyboard	1 Nos

Table 1.3.1

To define the list of components using Bill of Materials in Tally, follow the procedure:

1. Creation of Inventory Masters

Stock Groups

To create from **Gateway of Tally > Inventory Info > Stock Groups > Create**

Against the Field	Action to be Performed
Name	Enter as Raw Materials
Under	Select as Primary
Should quantities of items be added?	Set to Yes

Table 1.3.2

Activity: Similarly create the stock group by name *Finished Goods* under *Primary* and set yes to “Should quantities of items to be added”

Stock Item – Raw Material/Components

To create from **Gateway of Tally > Inventory Info > Stock Items > Under Multi Stock Items > Select Create > Select Raw Materials**, then create all the stock items at one go as shown in table 1.3.1 under **Raw Materials**

Stock Item - Finished Goods

Let us create the stock item **DDL MacBook**

1. To create from **Gateway of Tally > Inventory Info > Stock Items > Create>DDL MacBook** In Under field, select group as **Finished Goods>Select Units as Nos** Enable the option **Set components (BOM)**, the **BoM List** screen appears> Enter the **Name of BOM as DDL Silver MacBook>** press **Enter** **Stock Item components (BoM)** screen appears where we can define the details of components.



2. Enter the **Unit of manufacture** as 1 >Press **F12: Configure** and set the option **Define Type of Components for BoM** to **Yes**, you will get the **Type of Item** column to select the component type

Note: In some of the manufacturing processes along with the Finished Goods, Co-Products or By-Products or Scrap may be produced. We can define the **Stock Item Type** by enabling the option **Define Type of Components for BoM**

3. Enter the components name one by one as shown in the figure 1.3.1

The **Stock Item Components (BoM)** screen of **DDL MacBook** appears as shown in the figure 1.3.1:

BoM Name		: DDL Silver MacBook
Components of		: DDL MacBook
Unit of manufacture		: 1 Nos
Item	Type of Item	Quantity Rate (%)
Display Screen	Component	1 Nos
Hard Disk Drive	Component	1 Nos
Internal Battery	Component	1 Nos
Keyboard	Component	1 Nos

Figure 1.3.1 Stock Item Components (BoM)

4. After listing all the components as shown in the figure 1.3.1, select **End of List** and save the **Stock Item Creation** screen as it is.

The purpose of creating a bill of material is to enable the auto consumption of the materials in the ratio specified when the product is manufactured. Tally allows us to use a Manufacturing Journal to enter the goods manufactured with the bill of materials.

Note: Tally supports multiple BoM creation and copying of one BoM details to another. **Ctrl+C: Copy BoM** option will be highlighted, if more than one BoM is created.

1.3.4 Accounting of Manufacturing Process

Manufacturing Journal is the place where the manufactured inventory is accounted and recorded since it is not a default voucher type, new voucher type must be created in Tally, for accounting manufacturing process.

**Illustration 2: Record purchase of raw materials and manufacturing the finished product.**

Date	Particulars			
1-09-2019	Purchase the following components from Comfort Traders on credit and store it in Jayanagar Storehouse with reference number PUR/003			
	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)
	Display Screen	100	₹ 10,000/Nos.	₹ 10,00,000
	Hard Disk Drive	100	₹ 8,000/Nos.	₹ 8,00,000
	Internal Battery	100	₹ 5,000/Nos.	₹ 5,00,000
	Keyboard	100	₹ 2,000/Nos.	₹ 2,00,000

Table 1.3.3

To record the transaction, first ensure that the required ledgers are created.

Step 1: Activation and Creation of Godown

1. Go to **Gateway of Tally > Press F11: Features > F2: Inventory > Set the option Maintain multiple Godowns to Yes**, and save the **Inventory Features** screen
2. Go to **Gateway of Tally > Inventory Info. > Godowns > Create > Enter the Name as Jayanagar Storehouse** and save the **Godown**.

Step 2: Creation of Manufacturing Journal Voucher Type

To create a new Manufacturing Journal voucher type, follow the steps:

1. Go to **Gateway of Tally > Accounts Info. > Voucher Types > Create > Enter the name as Manufacturing Journal > Under Stock Journal** (by doing this the manufacturing journal voucher type will inherit the properties of predefined stock journal voucher type) > Set **Use as Manufacturing Journal** to **Yes** and save the voucher type.

Activity:

1. Create the ledger **Comfort Traders** under **Sundry Creditors**
2. Record the purchase transaction of **Illustration 2**, by selecting the godown as **Jayanagar Storehouse**.

Observation: Once after recording the transaction go to **Gateway of Tally > Stock Summary > Press Enter on Raw Materials**, we will get the details of purchased stock.

The **Stock Summary** with **Raw Materials** appears as shown in the figure 1.3.2:



Stock Summary		Emerald-Shine Makers		Ctrl + M	
Particulars		Raw Materials		Closing Balance	
		Emerald-Shine Makers		1-Apr-2019 to 1-Sep-2019	
		Quantity	Rate	Value	
Display Screen		100 Nos	10,000.00	10,00,000.00	
Hard Disk Drive		100 Nos	8,000.00	8,00,000.00	
Internal Battery		100 Nos	5,000.00	5,00,000.00	
Keyboard		100 Nos	2,000.00	2,00,000.00	

Figure 1.3.2 Stock Summary with Raw Materials

Illustration 3: Recording of manufacturing journal for converting raw materials in to finished goods

Date	Particulars
02-09-2019	<p>As per the order received for 50 Quantity of DLL MacBook, manufactured 50 Quantity of DLL MacBook.</p> <p>While Manufacturing following expenses/cost were incurred.</p> <ul style="list-style-type: none"> • Labour Charges – ₹ 10,000 • Packing Charges – ₹ 8,000

Table 1.3.4

Activity: Create **Labour Charges** and **Packing Charges** ledgers under **Direct Expenses** Group

Recording of Manufacturing Journal Voucher

1. Go to **Gateway of Tally > Inventory Vouchers > Press ALT+F7 > Select Manufacturing Journal > Press F2: Date: 02-09-2019**
2. In the **Name of product** field select **DDL MacBook** (Finished Goods)
3. The **Name of BOM & Components** (Consumption) details will get captured automatically, if required one can change the **Name of BOM** by pressing Backspace
4. In **Godown** field select **Jayanagar Storehouse**, this is location where a finished goods will be stored after manufacturing > In **Qty** field enter the quantity to be manufactured. (50 Nos) Once after providing the quantity details the **Quantity, Rate** and **Amount** will get captured automatically for component.
5. Under **Components (Consumption)** column enter the godown details as **Jayanagar Storehouse** (As we have stored the raw materials in Jayanagar Storehouse)> Under **Co-Product/By-Product/Scrap** select **End of List** (While manufacturing if scrap or co-products or by-products are produced then need to select the same under this field)
6. Under **Type of Additional Cost** select the expenses incurred while manufacturing like Labour Charges and Packing Charges as **₹ 10,000** and **₹ 8,000** and save the entry.

The Completed **Manufacturing Journal Voucher** appears as shown in the figure 1.3.3:



Inventory Voucher Creation				Emerald-Shine Makers				Ctrl + M			
Manufacturing Journal No. 1								2-Sep-2019 Monday			
Manufacture of Materials											
Name of product: DDL MacBook				Name of BOM: DDL Silver MacBook Godown: Jayanagar Storehouse Qty: 50 Nos							
				% of Cost allocation 100 %							
Components (Consumption)					Co-Product/By-Product/Scrap						
Name of Item	Godown	Quantity	Rate	Amount	Name of Item	Godown	% of Cost allocation	Quantity	Rate	Amount	
Display Screen	Jayanagar Storehouse	50 Nos	10,000.00/Nos	5,00,000.00	I End of List						
Hard Disk Drive	Jayanagar Storehouse	50 Nos	8,000.00/Nos	4,00,000.00							
Internal Battery	Jayanagar Storehouse	50 Nos	5,000.00/Nos	2,50,000.00							
Keyboard	Jayanagar Storehouse	50 Nos	2,000.00/Nos	1,00,000.00							
					Cost of components:						12,50,000.00
					Type of Additional Cost		Percentage				
					Labour Charges				10,000.00		
					Packing Charges				8,000.00		
					Total Addl. Cost						18,000.00
					Effective Cost						12,68,000.00
					Allocation to Primary Item						12,68,000.00
					Effective rate of primary item						25,360.00/Nos
200 Nos					12,50,000.00						
Narration:											

Figure 1.3.3 Manufacturing Journal Voucher Screen

Observation: Once the **labour Charge** and **Packing charge** is added the effective rate of primary item increases to ₹ 25,360/Nos. In this price the labour charge and packing charge is added.

Activity: Once after recording the manufacturing journal entry, go to **Gateway of Tally > Stock Summary**, here you will get the finished goods quantity as 50. This is the quantity which we have manufactured.

Note: To view the items with zero balance, click **F12: Configure** and enable show all items (inc. zero balance)

The Stock Summary with Finished goods appears as shown in the figure 1.3.4:

Stock Summary Emerald-Shine Makers Ctrl + M			
Particulars		Emerald-Shine Makers	
		1-Apr-2019 to 2-Sep-2019	
		Closing Balance	
		Quantity	Rate
Finished Goods		50 Nos	25,360.00
Raw Materials		200 Nos	6,250.00
DDL Laptops			
DDL Cameras		10 Nos	10,000.00
			1,00,000.00

Figure 1.3.4 Stock Summary with Finished goods

Activity:

Date	Particulars			
11-09-2019	Sold the following stock items to Pruthvi Traders on credit from Jayanagar Storehouse with reference number SAL/005			
	Name of the stock item	Quantity	Rate per (₹)	Amount (₹)
	DDL MacBook	10	₹ 30,000/Nos.	₹ 3,00,000
	Hint: Create Pruthvi Traders under Sundry Debtors .			

Table 1.3.5



1.3.5 Transferring of Goods from Storehouse to Main Location

Emerald-Shine Makers transferred 20 Qty of DDL MacBook from Jayanagar Storehouse to Main Location as they are expecting sales in Head office.

Stock Journal voucher is used to transfer the goods from one location to another.

Illustration 4: Recording Stock Journal voucher to transfer materials from one location to another

Date	Particulars
11-09-2019	Transferred 20 Quantity of DDL MacBook from Jayanagar Storehouse to Main Location

Table 1.3.6

To transfer the goods from one location to another, follow the steps:

1. Go to **Gateway of Tally > Inventory Vouchers > Press Alt+F7 > Select Stock Journal>** Under **Source (Consumption)** field select **DDL MacBook > Select Godown as Jayanagar Storehouse**, Enter **Quantity as 20** and the **Rate** and **Amount** will get captured automatically
2. In **Destination (Production)** field select **DDL MacBook > Select Godown as Main Location**, Enter **Quantity as 20** and the **Rate** and **Amount** will get captured automatically> save the entry

The Completed **Stock Journal Voucher** appears as shown in the figure 1.3.5:

Inventory Voucher Creation				Emerald-Shine Makers				Ctrl + M			
Stock Journal No. 1								11-Sep-2015 Wednesday			
Transfer of Materials											
Source (Consumption)				Destination (Production)							
Name of Item	Quantity	Godown	Rate	Amount	Name of Item	Quantity	Godown	Rate	Amount		
DDL MacBook		Jayanagar Storehouse			DDL MacBook		Main Location				
		20 Nos	25,360.00/Nos	5,07,200.00			20 Nos	25,360.00/Nos	5,07,200.00		

Figure 1.3.5 Stock Journal Voucher Screen – Destination (Production)

1.3.6 Copying the components of a BOM to Another Bill of Material of a Stock Item

Emerald-Shine Makers received an order for customization of DDL MacBook with external speakers, company wants to manufacture the next set of production with additional Raw material external speakers. Tally helps in simplifying the manufacturing process by copying the components of BOM from one to another BOM.

Let us check how this copy of BOM works in Tally:

Activity: Create the stock item as **Speakers** under the Stock group **Raw Materials**

1. To copy from **Gateway of Tally>Inventory Info>Stock Items>Alter>Select DDL MacBook>Enable the option Alter components (BOM)?**, the **BoM List** screen appears>Press Lower Arrow key to create additional BOM , Enter the **Name of BOM as DDL MacBook(Speaker)>** press **Enter** **Stock Item components (BoM)** screen appears
2. Click **Ctrl+C: Copy BoM**, **Copy BoM Details** screen appears, Select **Stock Item as DDL MacBook** and **Component of BoM as DDL Silver MacBook**, the components get copied from other BOM



3. Enter the **Unit of manufacture** as **1** > and add the additional components along with godown, in this case it is **Speakers**.

Note: As we have created new BOM for the stock item **DDL MacBook**, on selecting New BOM while recording Manufacturing Journal the changes gets updated.

1.3.7 Reports

Once after recording the transactions like purchase, manufacturing journal, sales and stock journal let us check the how these transactions are reflected instantly on reports like Stock Journal Register, Transfer Analysis, Godown Summary and Cost estimation.

1.3.7.1 Stock Transfers

Stock Transfers/Stock Journal Register displays the list of all the Stock Journal Vouchers used in Tally to make stock adjustments.

Transactions recorded in manufacturing journal voucher will reflect the details in Stock journal register.

To view stock transfer register, go to **Gateway of Tally > Display > Inventory Books> Stock Transfers>** Enter on September month

The **Voucher Register** screen with Stock journal and Manufacturing journal appears as shown in the figure 1.3.6:

Voucher Register					
List of All Stock Journal Vouchers					
1-Sep-2019 to 30-Sep-2019					
Date	Particulars	Vch Type	Vch No.	Inwards Quantity	Outwards Quantity
2-9-2019	DDL MacBook	Manufacturing Journal	1	50 Nos	
11-9-2019	DDL Laptops	Stock Journal	1	50 Nos	

Figure 1.3.6 Stock Journal Voucher Register

1.3.7.2 Transfer Analysis

When using different Stock Journals types to record different transactions, **Transfer Analysis** gives the movement details for each type of **Stock Journal**.

This report displays information about the Items which are transacted in the Stock Journal Voucher. Generally, in the Stock Journal Voucher, Movement of Goods, Manufacture of Goods or Inter-Godown Transfer is recorded.

To view the **Stock Transfer analysis** for any Stock Journal Voucher Type:

From **Gateway of Tally> Display > Inventory Books > Movement Analysis >Transfer Analysis > Select Manufacturing Journal**, from the **List of Voucher Type**.

The **Transfer Analysis Report** is displayed as shown in the figure 1.3.7:



Transfer Analysis			Emerald-Shine Makers						Ctrl + M		
Particulars			Manufacturing Journal Emerald-Shine Makers 1-Apr-2019 to 11-Sep-2019								
			Goods In (Production)			Goods Out (Consumption)					
			Quantity	Eff. Rate	Value	Quantity	Eff. Rate	Value			
DDL MacBook			50 Nos	25,360.00	12,68,000.00						
Display Screen						50 Nos	10,000.00	5,00,000.00			
Hard Disk Drive						50 Nos	8,000.00	4,00,000.00			
Internal Battery						50 Nos	5,000.00	2,50,000.00			
Keyboard						50 Nos	2,000.00	1,00,000.00			

Figure 1.3.7 Transfer Analysis Report

Activity: Similarly check the other reports falling under the Movement Analysis Report.

1.3.7.3 Cost Estimation

Cost Estimation is a statement that gives the value of the cost incurred in the manufacturing of finished goods. To view the cost estimation of a finished product, select the relevant Stock Group which will display the stock consumption details and cost thereof for each of the stock items falling under that Group.

Cost estimation helps in fixing the selling price of the final product after charging appropriate overheads and allowing certain margin for profits. It also helps in drawing conclusions regarding the cost of production and in determining the necessity to introduce cost reduction techniques in order to improve the manufacturing process.

To view **Cost Estimation** report, follow the steps:

Go to **Gateway of Tally > Display > Statements of Inventory > Cost Estimation > Select Finished Goods (Stock Group)**

The **Item Estimates** report appears as shown in the figure 1.3.8:

Item Estimates			Emerald-Shine Makers			Ctrl + M		
Items Under : Finished Goods						as at 11-Sep-2019		
BoM Type : Default								
Particulars			Qty		Cost	Amount		
DDL MacBook			1 Nos	25,000.00	Nos	25,000.00		
Display Screen			1 Nos	10,000.00	Nos	10,000.00		
Hard Disk Drive			1 Nos	8,000.00	Nos	8,000.00		
Internal Battery			1 Nos	5,000.00	Nos	5,000.00		
Keyboard			1 Nos	2,000.00	Nos	2,000.00		

Figure 1.3.8 Item Estimates Report

Note:

- From the report of figure 1.3.8, press **F6: Component-wise** to view **Components-wise Item Estimates** details.
- Press **F5: Show All BOM** to view the details all BOM created in Tally.

Conclusion

In this chapter, we have learnt about manufacturing process and how the same is handled with ease in Tally, with the use of Bill of Materials. We have seen how BoM automates the allocation of components while recording manufacturing journal voucher and, we have seen how additional cost incurred while manufacturing can be added to the cost of finished goods.



1.4 Job Work with Sub-Contracting

LEARNING OBJECTIVES

- Handling of job work order processes
- Recording the consumption of materials
- Identifying and ascertaining of additional cost involved in job works
- Ascertaining stock lying in third parties godown(s) and third-party stock lying in our godown(s)
- Generating job work in order & job work out order reports
- Compare and analyse various job work transactions

1.4.1 Introduction

Job Work refers to the process of placing orders to job workers for manufacturing certain semi-finished or finished goods.

Job Work also involves tracking of dispatched raw materials, received raw materials, and analysing the variance quantity for the effective execution of manufacturing process at the job work location. During **Job Work Order processing**, it is critical to identify, estimate and accumulate the additional cost involved at every job level.

Business Scenario

Emerald-Shine Makers also undertakes manufacturing as well as outsource the manufacturing of electronic cookers to job workers with the required specifications, they want to maintain their books of accounts using Job Work related transactions and reports in Tally.

1.4.2 Enabling Job Order Processing

To enable job order processing in Tally,

1. Go to **Gateway of Tally > F11: Features > F2: Inventory > Set the option Enable job order processing?** to **Yes**

Note: On enabling **Enable job order processing option**, the options **Maintain multiple Godowns** and **Use material In and out vouchers** option will be set to **Yes** automatically

In this case we have already enabled Maintain multiple Godowns

The **Inventory Features** sub screen appears as shown in the figure 1.4.1



Company: **Emerald-Shine Makers**

Inventory Features

General		Invoicing	
Integrate accounts and inventory	? Yes	Enable invoicing	? Yes
Enable zero-valued transactions	? No	Record purchases in invoice mode	? Yes
Storage and Classification		Use debit and credit notes	? Yes
Maintain multiple Locations	? Yes	Record credit notes in invoice mode	? No
Maintain stock categories	? No	Record debit notes in invoice mode	? No
Maintain batch-wise details	? No	Use separate discount column in invoices	? No
Set expiry dates for batches	? No	Purchase Management	
Use separate actual and billed quantity columns	? No	Track additional costs of purchases	? No
Order Processing		Sales Management	
Enable purchase order processing	? No	Use multiple price levels	? No
Enable sales order processing	? No	Other Features	
Enable job order processing	? Yes	Use tracking numbers (enables delivery and receipt notes)	? No
(Enables the options 'Maintain multiple godowns' and 'Use material in and out vouchers')		Use rejection inward and outward notes	? No
		Use material in and out vouchers	? Yes
		Use cost tracking for stock item	? No

Figure 1.4.1 Inventory Features Screen

1.4.3 Voucher Type Set Up

Voucher Type Set up for Job Work Out Order needs to be configured for the voucher types,

- **Material In:** It is used to record the material transfer in.
- **Material Out:** It is used to record the material transfer out.

However, for the purpose of recording transactions for Job Work (Job Work Out), Material In and Material Out voucher types are required to be configured in the following ways:

Step 1: Altering Material In Voucher Type.

Go to **Gateway of Tally > Inventory Info. > Voucher Types > Alter>** Select **Material In** voucher type> Set **Use for job work** to **Yes>** Set **Use for Job Work In** to **No>**Set **Allow consumption** to **Yes** and save the voucher type.

Step 2: Altering Material Out Voucher Type

Go to **Gateway of Tally > Inventory Info. > Voucher Types > Alter>**Select **Material Out** voucher type> Set **Use for job work** to **Yes>** Set **Use for Job Work In** to **No** and save the voucher type.

Voucher Type Set up for Job Work In Order,

For Job Work In process, new voucher types have to be created for Material In and Material Out.

Step 1: Create a new voucher type as Material In (Raw Materials).

Go to **Gateway of Tally > Accounts/Inventory Info. > Voucher Types > Create>** create as **Material In (Raw Materials)>** Select type of voucher> as **Material In**, Set the option **Use for job work** and **Use for Job Work In** to **Yes>** Set **Allow consumptions** to **No** and save the voucher type.



Step 2: Create a new voucher type as Material Out (Finished Goods).

Go to **Gateway of Tally > Accounts/Inventory Info. > Voucher Types > Create> Material Out (Finished Goods)>** under **Material Out** >Set the option **Use for job work** and **Use for Job Work In** to **Yes** and save the voucher type.

1.4.4 Job Order Processing

As discussed earlier, the job work order processing involves placing of orders to job worker(s) or undertaking orders from clients (principal) for the manufacture of a specified item(s). Further, it allows tracking the additional costs, materials transfers and materials consumption during the manufacturing process at job work locations.

In Tally, the job order processing comprises of the following processes:

- Job Work Out Order
- Job Work In Order

Job Work Out Order: Job work out order process takes place when a company places or outsources its part of work to the third party called as Job Worker.

Business Scenario

Emerald-Shine Makers has placed a job work out order for manufacturing electronic cookers to Madan Manufacturing Co. The raw materials for manufacturing electronic cookers are purchased by Emerald-Shine Makers. and are transferred to Madan Manufacturing Co.

Date	Particulars			
1-10-2019	Voucher: Purchase			
	Purchase the following components from Global Corporation and the goods were stored in Component Godown with reference number PUR/004			
	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)
	Aluminium Supplies	5,000	20/kg.	1,00,000
	Bakelite Handle Knob	2,000	10/Nos.	20,000
	Rubber Gaskets	2,000	5/Nos.	10,000
	Micro Switch	1,000	100/Nos.	1,00,000

Table 1.4.1



Date	Particulars																		
5-10-2019	<p>Voucher: Job Work Out Order</p> <p>Emerald-Shine Makers placed a job work out order with Madan Manufacturing Co., for manufacturing of the following stock items with order number 1/MMC</p> <table><tr><th>Name of the Stock Item</th><th>Quantity</th><th>Rate per (₹)</th><th>Amount (₹)</th></tr><tr><td>Electronic Cooker</td><td>100</td><td>1,200</td><td>1,20,000</td></tr></table> <p>To manufacture 1 Nos. of electronic cooker, the following components are consumed.</p> <table><tr><th>Name of Stock Item</th><th>Quantity Consumed</th></tr><tr><td>Aluminium Supplies</td><td>5 Kgs</td></tr><tr><td>Bakelite Handle Knob</td><td>2 Nos</td></tr><tr><td>Rubber Gaskets</td><td>2 Nos</td></tr><tr><td>Micro Switch</td><td>1 Nos</td></tr></table> <p>The stock is maintained in separate Godown for job work purpose. The raw materials are stored in Component Godown and the finished goods are stored in Finished Goods Godown.</p>	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)	Electronic Cooker	100	1,200	1,20,000	Name of Stock Item	Quantity Consumed	Aluminium Supplies	5 Kgs	Bakelite Handle Knob	2 Nos	Rubber Gaskets	2 Nos	Micro Switch	1 Nos
Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)																
Electronic Cooker	100	1,200	1,20,000																
Name of Stock Item	Quantity Consumed																		
Aluminium Supplies	5 Kgs																		
Bakelite Handle Knob	2 Nos																		
Rubber Gaskets	2 Nos																		
Micro Switch	1 Nos																		

Table 1.4.2

Date	Particulars			
05-10-2019	Voucher: Material Out			
	Emerald-Shine Makers transferred the following components to Madan Manufacturing. Co. , for manufacturing electronic cookers with reference number MO1 . A separate Job Worker Godown was maintained to track the job work activities.			
	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)
	Aluminium Supplies	500	20/kg.	10,000
	Bakelite Handle Knob	200	10/Nos.	2,000
	Rubber Gaskets	200	5/Nos.	1,000
	Micro Switch	100	100/Nos.	10,000

Table 1.4.3

Date	Particulars			
15-10-2019	Voucher: Material In			
	Emerald-Shine Makers received the following finished goods from Madan Manufacturing Co with reference number MI1 . The goods are stored in Finished Goods Godown .			
	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)
	Electronic Cooker	100	1,200	1,20,000

Table 1.4.4



Date	Particulars
17-10-2019	Voucher: Purchase Voucher Emerald-Shine Makers booked the job work charges payable to Madan Manufacturing Co. and on the same day made a payment of ₹ 1,30,000 towards job work charges with reference number JWC/005 .

Table 1.4.5

Date	Particulars
17-10-2019	Voucher: Payment Voucher Made a payment of ₹ 1,30,000 to Madan Manufacturing Co. towards job work charges.

Table 1.4.6

To record the transaction in the books of accounts follow the steps:

Step 1: Creation of Accounting Masters

Activity:

1. Create **Madan Manufacturing Co.** under **Sundry Creditors**
2. **Global Corporation** under **Sundry Creditors**

Step 2: Creation of Inventory Masters

Activity:

1. Create the Godowns as per Table 1.4.7

Godown Name	Under	Our stock with third party	Third party stock with us
Component Godown	Primary	No	No
Finished Goods Godown	Primary	No	No
Job Worker Godown (Madan Manufacturing Co.)	Primary	Yes	No

Table 1.4.7

Note: Job Worker Godown is created to keep track of the stock item lying in the job worker godown. When the option Our stock with third party is set to Yes, then the Third party stock with us option will be automatically skipped.

2. Create the **Stock Group** as **Finished Product (E.C)** (for electronic cookers) and **Components** enable the option **Should quantities of items be added** in both the stock group.
3. Create Units as **Kgs**.
4. Create the stock items (Components) as per Table 1.4.8 from **Multiple Stock Item Creation** screen.



Name of Stock Item	Stock Group	Unit of Measure
Aluminium Supplies	Components	Kgs
Bakelite Handle Knob	Components	Nos
Rubber Gaskets	Components	Nos
Micro Switch	Components	Nos

Table 1.4.8

5. Create the stock item Finished Product **Electronic Cooker** as per Table 1.4.9

Name of Stock Item	Stock Group	Unit of Measure	Set Components (BOM)
Electronic Cooker	Finished Product (E.C)	Nos.	Yes

Table 1.4.9

Once after enabling the option **Set Components (BOM)**, BOM list appears. Provide BOM name as **Standard** and enter **Unit of Manufacture** as **1** and fill in the Stock Item Components screen as shown in figure 1.4.2 and save the stock item creation screen.

BoM Name		:	Standard	
Components of		:	Electronic Cooker	
Unit of manufacture		:	1 Nos	
Item	Godown	Type of Item	Quantity	Rate (%)
Aluminium Supplies	Component Godown	Component	5 Kgs	
Bakelite Handle Knob	Component Godown	Component	2 Nos	
Rubber Gaskets	Component Godown	Component	2 Nos	
Micro Switch	Component Godown	Component	1 Nos	

Figure 1.4.2 Stock Item Components BoM Screen

Step 3: Record Purchase of Raw Materials

Activity: Record the **Purchase Voucher** as per Table 1.4.1 by selecting the godown as **Component godown**.

Once after recording the purchase entry, go to **Gateway of Tally > Stock Summary >** press **Enter** on **Components >** Press **Alt+F1: Detailed** to view the components in component godown.

Step 4: Record Job Work Out Order Voucher

1. Go to **Gateway of Tally > Order Vouchers>** Press **Alt+J** for **Job Work Out Order>**Press **F2: Date** and enter as **05-10-2019**

2. In **Party A/c Name** field, select **Madan Manufacturing Co.** (The job worker ledger on whom the job workout order is raised)



3. In **Party Details** screen, specify **Dispatch Details**, **Process Instruction**. i.e. **Duration of Process** and **Nature of Processing** to be carried out as shown in figure 1.4.3

<u>Despatch Details</u>	
Despatched through	: Truck
Destination	: MG Road
Mode/Terms of Payment: Cheque	
<u>Process Instruction</u>	
Duration of Process	: 15 Days
Nature of Processing	: Manufacturing of Electronic Cooker
<u>Party Details</u>	
Sub Contractor	: Madan Manufacturing Co.
Address	: MG Road Andhra Pradesh
State	: Andhra Pradesh
Sales Tax No.	:
CST Number	:

Figure 1.4.3 Party Details Screen

4. Save the **Party Details** screen>In **Order no.** field, enter the job work out order number as **1/MMC**> Under **Name of Item** field select the finished Product i.e., **Electronic Cooker** (finished goods to be manufactured by the job worker) press Enter to view **Stock Item Allocations** screen

- **Set Track Components to Yes** – This option is enabled if the principal manufacturer wants to track the raw materials used in the manufacturing of finished goods retain the setting as **Yes**
- In the **Due on** field specify the date on which the delivery of finished goods is due. (In this case **Emerald-Shine Makers** has accepted the manufacturing duration of 15 days. Hence the 100 Nos of electronic cooker will be due on 20-10-2019.)
- In the **Godown** field select the **Finished Goods Godown** where the finished goods will be stored on receipt of the same from the job worker
- In **Quantity** field, specify the quantity of finished goods to be received from the job worker. (Specify **100 Nos** as the quantity and press enter from quantity field to view the **Components Allocation for** screen)
- In **Components Allocation for** screen under Fill Components using: the BOM created for the finished goods which will be displayed by default.

The completed **Components Allocation** screen appears as shown in the figure 1.4.4:

Figure 1.4.4 Components Allocation Screen

- Press **Enter** to save the **Components Allocation** screen
- Enter the rate and amount in the **Stock Item Allocation** screen as shown in figure 1.4.4

Godown	Quantity	Rate	per	Amount
<i>Due on 20-Oct-2019</i>				
Finished Goods Godown	100 Nos	1,200.00	Nos	1,20,000.00

7. Accept the screen.

Order Voucher Creation		Emerald-Shine Makers		Ctrl + M X	
Job Work Out Order No. 1				5-Oct-2019 Saturday	
Party A/c name : Madan Manufacturing Co.				Order no. : 1/MMC	
Current balance :					
Name of Item		Quantity	Rate	per	Amount
Electronic Cooker		100 Nos	1,200.00	Nos	1,20,000.00
					1,20,000.00

ADVANCED INFORMATION TECHNOLOGY



8. Press **Ctrl+A** to accept

Once after recording the job work out voucher the transaction will get updated in Job Work Out Reports, to check go to **Gateway of Tally > Display > Job Work Out Reports > Select Order Outstandings > Orders>** press **ALT+ F1: Detailed**

The **Job Orders Summary** report appears as shown in the figure 1.4.7:

Job Orders Summary		Emerald-Shine Makers		Ctrl + M	
Particulars		Emerald-Shine Makers			
		1-Apr-2019 to 5-Oct-2019			
		Orders			
		Ordered Quantity	Balance Quantity		
Job Work Orders Outstanding :					
Electronic Cooker		100 Nos	100 Nos		
Madan Manufacturing Co.		100 Nos	100 Nos		

Figure 1.4.7 Job Orders Summary Screen

Observation: In Job Order Summary, we are getting the details of job work out ordered quantity details along with the balance quantity.

Press **Alt+C: Components**, from Job **Orders Summary** screen to get the **Components Order Summary** details.

Observation: In Components Order Summary report we will get the details of the components which are pending to be issued to the job worker.

Step 5: Issue of Raw Materials to Job Worker

1. Go to **Gateway of Tally > Inventory Vouchers >** press **Ctrl+J** for **Material Out>**under the list of voucher types, select the default **Material Out** voucher type> **F2: Date:** 05-10-2019 and provide reference no as **MO 1**
2. In **Party A/c Name** field, select **Madan Manufacturing Co.** (The Job Worker ledger for whom the Job Work out order is raised)
3. Press **Enter** to view **Order Details** and **Party Details** screen>under **Order Details**, in **Order no(s)** field select **1/MMC** dated **05-10-2019** with Order Type – **Component Issue Order** as the job order from the list of orders (towards which the raw materials are transferred), in **Date & Time of Issue** field, by default the voucher date and system time will be displayed, accept **Party Details** screen.
4. In **Destination Godown** field, select **Job Worker Godown** as the godown to where the stock is transferred (**Our Stock with third party** option need to be enabled in the godown)>Under **Name of Item**, the stock items will be auto-filled based on the job order selected

The completed **Material Out** voucher appears as shown in the figure 1.4.8:



Inventory Voucher Creation		Emerald-Shine Makers		Ctrl + M
Material Out	No. 1			5-Oct-2019
Reference no.:	MO1			Saturday
Party A/c name :	Madan Manufacturing Co.			
Current balance :				
Destination Godown :	Job Worker Godown			
Name of Item	Quantity	Rate per	Amount	
Aluminium Supplies	500 Kgs	20.00 Kgs	10,000.00	
Bakelite Handle Knob	200 Nos	10.00 Nos	2,000.00	
Rubber Gaskets	200 Nos	5.00 Nos	1,000.00	
Micro Switch	100 Nos	100.00 Nos	10,000.00	
			23,000.00	

Figure 1.4.8 Material Out Voucher

5. Accept the Entry.

Activity:

- Once after recording the material out entry, go to **Gateway of Tally > Display > Job Work Out Reports > Order Outstandings > Components**, you can observe that the report is blank because the raw materials are supplied to the job worker for manufacturing the finished goods. In order to view the cleared job orders, press **F12: Configure** and set the option **Show Cleared Job Orders** to **Yes**.
- Go to **Gateway of Tally > Stock Summary** > press **Ctrl+G: Godown Type** and select the **Type of Values** as **Our stock with third party** > Select **Components Group** you will get list of stock items. observe that once after recording material out voucher the same stock is available in different godowns with different quantities.

Step 6: Receipt of Finished Goods

- Go to **Gateway of Tally > Inventory Vouchers** > Press **Ctrl+W** for **Material In** > select the default **Material In** voucher type > Press **F2: Date** and change the date to **15-10-2019** and enter reference no as **MI 1** > In **Party A/c Name** field, select **Madan Manufacturing Co.** (The Job Worker ledger from whom the Finished Goods are received)
- Press **Enter** to view **Order Details** and **Party Details** screen > In **Order Details**, under order no(s) field select **1/MMC** dated **5-10-2019** with **Order Type – Material Receipt Order** as the job order from the list of orders (towards which the finished goods are received)

Note: Party's Document Details captures the details automatically based on the details provided in Job Work Out Order.

- In **Consumption Godown** field, select **Job Worker Godown** as the Godown from where the components/raw materials are consumed > In **Name of Item**, the stock item electronic cooker will be auto filled based on the Job Order selected
- Press **Enter** to view the **Stock Item Allocations** screen, set the following details in Item Allocation for sub screen
 - Set the option **Consider as Primary Item** to **Yes** (If you want to track the cost of raw materials consumed to the primary item. Here the cost of raw materials consumed in this voucher is tracked against Electronic Cooker)



- In **BoM Name** field select **Standard** and press **Enter**
- The **Order No.**, **Godown**, **Quantity**, **Rate** and amount of the item will be displayed. Accept the default details

The completed **Material In** voucher appears as shown in the figure 1.4.9:

Inventory Voucher Creation		Emerald-Shine Makers		Ctrl + M
Material In No. 1				15-Oct-2019
Reference no.: MI1				Tuesday
Party A/c name : Madan Manufacturing Co.				
Current balance :				
Consumption Godown : Job Worker Godown				
Name of Item	Quantity	Rate per	Amount	
Electronic Cooker	100 Nos	1,200.00 Nos	1,20,000.00	
I End of List				
Enter consumption details ? Yes (Auto)				
Narration:				100 Nos 1,20,000.00

Figure 1.4.9 Material In voucher

Note: The option **Enter consumption details** by default will be set to **Yes (Auto)** and it indicates that the consumption of raw materials to manufacture the finished goods in Auto Consumption (Cursor will skip this field).

5. Accept the screen

Activity: Check the **Job Work Out Order** outstanding report, the report will be blank because once after receiving the total finished goods from job worker, the same will be cleared from the **Order Outstanding** report.

Step 7: Booking of Job Work Charges

Activity: Create the **Job Work Charges** ledger under **Direct Expenses** group.

1. Go to **Gateway of Tally > Accounting Vouchers > press F9: Purchase**
2. Press **F2: Date** to change the date to 17-10-2017
3. Press **Alt+I: Accounting Invoice**, if the voucher is in item invoice mode.

Note: If the voucher is in voucher mode, then press **Ctrl+V: As Invoice** and then press **Alt+I: Accounting Invoice**

4. Enter the **Supplier Invoice no.** as **JWC/005**, Date appears automatically.
5. In **Party A/c name** field select **Madan Manufacturing Co.**
6. Under Particulars select **Job Work Charges** ledger and enter the amount as ₹ 1,30,000
7. Select the **Type of Ref.** as **New Ref.** with the same value and press **Enter** and accept the screen.

The completed **Purchase Voucher** appears as shown in the figure 1.4.10:



Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M
Purchase	No. 5			17-Oct-2019 Thursday
Supplier Invoice no.:	JWC/005	Date :	17-Oct-2019	
Party A/c name :	Madan Manufacturing Co.			
Current balance :				
Particulars	Rate	per	Amount	
Job Work Charges			1,30,000.00	

Figure 1.4.10 Purchase Voucher

8. Press **Ctrl+A** to accept

Once after recording the Purchase voucher, the entry will be automatically updated in **Profit and Loss Account** and **Balance Sheet**.

Step 8: Record Payment to Job Worker against Purchase Consideration

- Go to **Gateway of Tally > Accounting Vouchers > press F5: Payment>** Under **Account** field, select **SBI Bank>** Under **Particulars**, select Madan Manufacturing Co. (Job worker)
- In the **Bill wise Details** screen, select **Agst Ref** and Track the bill with bill number **JWC/005** and save the entry.

Once after recording the payment entry the Job work out order process is completed.

1.4.5 Job Work Out Reports

In Tally, Job work out reports gives the details of following information:

- Order Outstandings
- Job Work Registers
- Stock
- Job Work Analysis

To view the **Job Work Out Order Reports**, Go to **Gateway of Tally > Display > Job Work Out Reports**

The **Job Work Out Reports Menu** appears as shown in the figure 1.4.11:

Job Work Out Reports
Order Outstandings
Job Work Registers
Stock
Job Work Analysis
Quit

Figure 1.4.11 Job Work Out Report



In the previous section we have learnt about the **Order Outstanding** report and checked the details of order pending to be received from job worker and components which were pending to be sent from our end (company).

Now let us check the capability of other job work out reports available in Tally

Job Work Registers

To view the **Job Work Registers**, Go to **Gateway of Tally > Display > Job Work Out Reports > Job Work Registers**

The **Job Work Registers Menu** appears as shown in the figure 1.4.12:

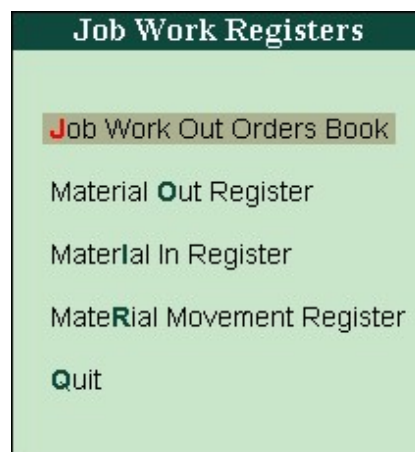


Figure 1.4.12 Job Work Registers Menu

They are four types of reports under Job work registers:

- Job Work Out Orders Books
- Material Out Register
- Material In Register
- Material Movement Register

Job Work Out Orders Books: This report displays all the job work out order vouchers recorded in the books.

Observation: In **Voucher Register** report we are getting the details of list of all the job work out order vouchers recorded for the particular month. We can check the report for any period by using the key **Alt+F2: Period**.

Material Out register: This report displays all the material out vouchers recorded to account the transfer of material to the job workers location.

Observation: In the **Material Out Register**, we will get the details of material out voucher using which raw materials are sent to job worker for manufacturing processes.



Material In Register: displays all the material in vouchers recorded to account the receipt of finished goods from the job worker location.

Observation: In Material In Register, we will get the details of finished goods receipt details, which was recorded using material in voucher in Tally.

Material Movement Register: It displays the details of movement of material (raw materials and finished goods)

Observation: Material Movement Register, displays the details of overall movement of finished goods and raw materials.

This completes the explanation of Job work register reports available in Tally, next let us check the stock and job work analysis reports.

Stock: It display the details of stock lying with the job workers and provides the ageing analysis of stock lying with the job worker.

From Stock Menu we can check the following two reports

- **With Job Worker:** This report displays the details of stock lying with the job worker. To view the stock With Job Worker report, go to **Gateway of Tally > Display > Job Work Out Reports > Stock > With Job Worker > press F5** (To get the party wise detail)
- **Ageing Analysis:** It displays the details of period (i.e. for how many days) has the stock been lying with the job worker

To view the **Stock Ageing Analysis** report, go to **Gateway of Tally > Display > Job Work Out Reports > Stock > Ageing Analysis > select Primary** from the **List of Stock Groups** for which the ageing analysis report is to be viewed.

Job Work Analysis Report: It report gives the information of any variance in the issue of raw materials (issued more) and receipt of finished goods/scrap/by-products/co-products. These reports can be used to analyse reasons for variances.

In **Job Work Analysis Menu**, we are getting the following two report:

- **Issue Variance:** It displays the details of variance in the raw material/components issued against the ordered quantity of the Job Work Out Order. The report also displays the variance quantity and the percentage of variance.

To view the Stock Issue Variance report, go to **Gateway of Tally > Display > Job Work Out Reports > Job Work Analysis > Issue Variance > press Alt+F1** for detailed view.

- **Receipt Variance:** It displays the details of variance in the finished goods/scrap/co-product/by-product received against the ordered quantity of the Job Work Out Order.

Activity: Go to **Gateway of Tally > Display > Job Work Out Reports > Job Work Analysis > Receipt Variance**.

Observation: As there is no variance the report will show blank.



1.4.6 Job Work In Order Processing

Job work in order process will take place when a company receives a job work from the third party. In this case Emerald-Shine Makers, will act as a Job Worker. In this section we will see the different types of transactions involved in Job Work In Order Processing.

Job Work In Order process in Tally allows the job worker to record receipt of Job Order from the principal company.

Job Work In Order in Tally allows:

- Raising an order for material (finished goods) to be dispatched after the completion of the job process
- Defining the BOM for the finished goods during voucher entry
- Flexibility to capture information on material required to be received from the principal company

Business Scenario

To understand Job Work In Order processing, let us consider that Emerald-Shine Makers has received a Job Work In Order for manufacturing Electronic Cookers from Sunshine Industries. The raw materials for manufacturing the electronic cookers are received by Emerald-Shine Makers from Sunshine Industries.

Illustration 2: Handling job work in order processing in Tally

Date	Particulars																		
20-10-2019	<p>Voucher: Job Work In Order</p> <p>Emerald-Shine Makers Received a Job Work In Order from Sunshine Industries for manufacturing the following goods with order no 1/SI</p> <table><tr><th>Name of the Stock Item</th><th>Quantity</th><th>Rate per (₹)</th><th>Amount (₹)</th></tr><tr><td>Electronic Cooker</td><td>50</td><td>1,200</td><td>60,000</td></tr></table> <p>To manufacture 1 Nos. of electronic cooker, the following components are consumed.</p> <table><tr><th>Name of Stock Item</th><th>Quantity Consumed</th></tr><tr><td>Aluminium Supplies</td><td>5 Kgs</td></tr><tr><td>Bakelite Handle Knob</td><td>2 Nos</td></tr><tr><td>Rubber Gaskets</td><td>2 Nos</td></tr><tr><td>Micro Switch</td><td>1 Nos</td></tr></table> <p>The stock is maintained in separate godown for job work purpose. The raw materials and the finished goods are stored in Sunshine Godown i.e. Third Party godown.</p>	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)	Electronic Cooker	50	1,200	60,000	Name of Stock Item	Quantity Consumed	Aluminium Supplies	5 Kgs	Bakelite Handle Knob	2 Nos	Rubber Gaskets	2 Nos	Micro Switch	1 Nos
Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)																
Electronic Cooker	50	1,200	60,000																
Name of Stock Item	Quantity Consumed																		
Aluminium Supplies	5 Kgs																		
Bakelite Handle Knob	2 Nos																		
Rubber Gaskets	2 Nos																		
Micro Switch	1 Nos																		

Table 1.4.10



Date	Particulars			
22-10-2019	Voucher: Material In			
	Emerald-Shine Makers received the following components from Sunshine Industries for manufacturing electronic cookers with reference number SI/1 . A separate Job Worker Godown is maintained to track the job work activities			
	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)
	Aluminium Supplies	250	20/kg.	5,000
	Bakelite Handle Knob	100	10/Nos.	1,000
	Rubber Gaskets	100	5/Nos.	500
	Micro Switch	50	100/Nos.	5,000

Table 1.4.11

Date	Particulars
22-10-2019	Voucher: Manufacturing Journal Emerald-Shine Makers manufactured 50 electronic cookers using the raw materials received from Sunshine Industries that are stored in Sunshine Godown .

Table 1.4.12

Date	Particulars			
26-10-2019	Voucher: Material Out			
	Emerald-Shine Makers delivered the following finished goods to Sunshine Industries with reference number MO/SI1 . The goods are stored in Sunshine Godown .			
	Name of the Stock Item	Quantity	Rate per (₹)	Amount (₹)
	Electronic Cooker	50	1,200	60,000

Table 1.4.13

Date	Particulars
27-10-2019	Voucher: Sales Voucher Emerald-Shine Makers Booked the income of ₹ 60,000 in the sales invoice from Sunshine Industries for the job work rendered with reference number JWC/006 .

Table 1.4.14

Date	Particulars
27-10-2019	Voucher: Receipt Voucher Received ₹ 60,000 from Sunshine Industries for the job work rendered.

Table 1.4.15



To record the transaction in the books of accounts follow the steps given:

Step 1: Creation of Accounting Masters

Activity:

1. Create **Sunshine Industries** under **Sundry Debtors**

Step 2: Creation of Inventory Masters

Godown Name	Under	Our stock with third party	Third party stock with us
Sunshine Godown	Primary	No	Yes

Table 1.4.16

Step 3: Recording Job Work In Order

Activity: Record **Job Work In Order** as shown in the **Table 1.4.10**, (Provide despatch details as per your requirement) with job work order number as **1/SI** select the godown as **Sunshine Godown** in **Stock item Allocations screen** as well as in **Component Allocations screen**.

Note: While recording Job Work In Order, the finished good quantity will appear as negative stock, this is because currently we do not have stock balance in Sunshine Godown.

After recording the **Job Work In Order voucher**, the entry will be automatically updated in **Job Work In Reports**.

To check, go to **Gateway of Tally > Display > Job Work In Reports> Order Outstanding > Orders > press Alt+F1: Detailed**

Step 4: Recording Material In Voucher

Activity: Record Material In Voucher by selecting **Material In (Raw Materials)** as shown in the **Table 1.4.11**, with reference number as **SI/1**, track the Job work In order.

Hint: In **Source Godown** field, select **Not Applicable** as the components are being received from the principal manufacturer. Store the materials received in **Sunshine Godown**(Third Party Godown).

Once after receiving the components from the third party the stock balance will not impact our books of accounts.

To check the details of third party stock with us,

1. Go to **Gateway of Tally > Stock Summary > press Ctrl+G: Godown Type**
2. Under **Type of Values** select **Third party stock with us**

Step 5: Manufacturing of Finished Goods

Activity: Record the Manufacturing Journal entry as shown in the figure 1.4.13



Inventory Voucher Creation				Emerald-Shine Makers				Ctrl + M			
Manufacturing Journal No. 2								22-Oct-2019 Tuesday			
Name of product: Electronic Cooker				Name of BOM: Standard				Godown: Sunshine Godown Qty: 50 Nos			
% of Cost allocation 100 %											
Components (Consumption)					Co-Product/By-Product/Scrap						
Name of Item	Godown	Quantity	Rate	Amount	Name of Item	Godown	% of Cost allocation	Quantity	Rate	Amount	
Aluminium Supplies	Sunshine Godown	250 Kgs	20.00/Kgs	5,000.00	End of List						
Bakelite Handle Knob	Sunshine Godown	100 Nos	10.00/Nos	1,000.00							
Rubber Gaskets	Sunshine Godown	100 Nos	5.00/Nos	500.00							
Micro Switch	Sunshine Godown	50 Nos	100.00/Nos	5,000.00							
					Cost of components: 11,500.00 Type of Additional Cost Percentage End of List Total Addl. Cost : Effective Cost : 11,500.00 Allocation to Primary Item : 11,500.00 Effective rate of primary item : 230.00/Nos						
				11,500.00							
Narration:											

Figure 1.4.13 Manufacturing Journal Voucher

Note: Change the Godown to Sunshine Godown manually for all components as shown in the figure 1.4.13

Activity: Check third party stock with us details

- Go to **Gateway of Tally > Stock Summary > press Ctrl+G: Godown Type**
- Under **Type of Values** select **Third party stock with us**
- The report will display the stock balance of electronic cooker stock item, because the components are consumed, and it is converted into finished goods.

Once the finished goods are manufactured, next step is to dispatch the goods to the third party (Sunshine Industries)

Step 6: Dispatching Finished Goods to Manufacturer (Sunshine Industries)

Activity: Record **Material Out entry** as per table 1.4.13 by selecting the voucher type **Material Out (Finished Goods)** with **Reference No MO/SI** (Track the Material Dispatch Order number).

Hint: In **Destination Godown** field, select as **Not Applicable** as the stock is being transferred to the Principal Manufacturer

Step 7: Booking of Income Details (Job Work Charge)

Book the Income as shown in figure 1.4.14

Activity: Create a ledger Job Work Charges Income under Direct Incomes.

The completed **Sales Voucher** appears as shown in the figure 1.4.14:

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M	
Sales No. 6				27-Oct-2019 Sunday	
Reference no.: JWC006					
Party A/c name : Sunshine Industries					
Current balance :					
Particulars		Rate per	Amount		
Job Work Charges Income			60,000.00		

Figure 1.4.14 Sales Voucher



Step 8: Recording receipt from Sunshine Industries against the Job Work Rendered

Record the Receipt entry as shown in the figure 1.4.15

The **Receipt Voucher** screen appears as shown in the figure 1.4.15:

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M	
Receipt No. 3				27-Oct-2019 Sunday	
Account : SBI Bank Cur Bal: 6,21,000.00 Dr					
Particulars				Amount	
Sunshine Industries Cur Bal: 0.00 Cr Agst Ref JWC006				60,000.00	
60,000.00 Cr					

Figure 1.4.15 Receipt Voucher

1.4.7 Job Work In Order Reports

In Tally, job work in reports gives the details of following information:

- Order Outstanding
- Job work register
- Stock
- Job Work Analysis

Activity: Check all the Job Work In Reports and understand the behaviour of the reports.

Conclusion

In this chapter, we have learnt about different types of job work processing like job work out order processing and job work in order processing and, we have checked how the reports are generated instantly once the transactions are accounted in Tally.

The management can easily track the inflow and outflow of components and finished goods which aids in decision making for a company.

1.5 Price Levels and Price Lists

LEARNING OBJECTIVES

- Create and maintain price levels and price lists
- Use price lists while passing invoice

1.5.1 Introduction

A Price List refers to a list of items maintained by an organisation along with their price details. It is generally used by organisations which deals in multiple products.

Price Lists are maintained in various structures for different types of buyers (customers), viz., Wholesalers,



Dealers, Retailers, etc. It is structured based on the classification of buyers and is referred at the time of making sales. Whenever the sales price changes (on the basis of time), the changes are reflected in the Price List also. In case of bulk sales, discounts can also be given to the buyers.

Tally permits you to create any number of Price lists & Price levels, based on the Stock Group and Stock Category to match the required structure.

Business Scenario

Emerald-Shine Makers manufactures and trades DLL Smartphones and they sell the goods to wholesalers and retailers at different prices to each level of customers, company wants to fix the price of the products for different kinds of buyers based on time period and size of order also, the discount rate varies based on the size of the order. These requirements can be easily maintained using pricelist feature of Tally

Let us now see how Tally handles such a situation through the Price List feature.

1.5.2 Activating Price Lists and Defining of Price Levels

We can define the classification of buyers like wholesalers, retailers etc. in the Price Level and prices of the stock item can be defined in the Price List.

Illustration 1: Defining price levels for different buyers

Pass the following transaction in the books of Emerald-Shine Makers

Date	Particulars
01-11-2019	Emerald-Shine Makers wants to define price levels for its buyer Classification like: <ul style="list-style-type: none"> • Wholesale Price Level • Retail Price Level

Table 1.5.1

To maintain the price levels in the books of accounts, first ensure that the required configurations are made in Tally

Follow the steps to create the Price Levels (Classification of Buyers) in Tally.

Activation of Price List, and Defining the Price level:

1. Go to **Gateway of Tally > Click>F11: Features> F2: Inventory**
2. Set the option **Use multiple price levels** to **Yes**. (This option will be accessible only if the feature **Enable invoicing** is set to **Yes**.)
3. Press enter and the **Company Price Levels** screen will appear.
4. Define the price levels as:
 - Retail Price Level-1
 - Wholesale Price Level-1



The **Price Levels Screen** appears as shown in the figure 1.5.1:

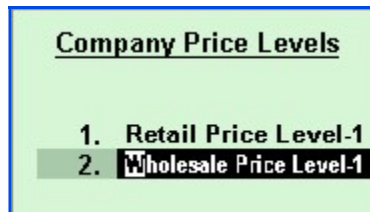


Figure 1.5.1 Company Price Levels Screen

5. Accept the screen and save the **Inventory Features**.

1.5.3 Creation of Price List

In this section, we will learn how to define price list for different stock items.

Illustration 2: Defining price list for different stock items of the company in Tally

Emerald-Shine Makers for the Month of November-2019					
Wholesale Price Level-1					
Stock Group	Name of the Stock Item	Number of Quantities		Rate	Discount Rate
		From	Less than		
Mobile Phones	DLL - GEN_1 Basic Phone		10	5000	--
		10	20	5000	1%
		20	above	5000	5%
Mobile Phones	DLL - GEN_4 Smart Phone		10	10,000	1%
		10	20	10,000	5%
		20	above	9,500	5%
Mobile Phones	DLL - GEN_5 Smart Phone		10	15,000	1%
		10	20	14,000	--
		20	above	14,000	5%

Table 1.5.2 Wholesale Price Level-1 Price List



Retail Price Level-1 for the month of November					
Stock Group	Name of the Stock Item	Quantities		Rate	Discount Rate
		From:	Less than		
Mobile Phones	DLL - GEN_1 Basic Phone		5	6,000	--
		5	10	6,000	5%
		10	15	5,500	1%
		15	above	5,500	5%
Mobile Phones	DLL - GEN_4 Smart Phone		5	12,000	1%
		5	10	12,000	5%
		10	15	11,500	--
		15	above	11,500	10%
Mobile Phones	DLL - GEN_5 Smart Phone		5	16,000	1%
		5	10	16,000	5%
		10	15	15,500	5%
		15	above	15,000	10%

Table 1.5.3 Retail Price Level-1 Price List

To maintain the price levels in the books of accounts, first ensure that the required masters are created.

Step 1: Creation of Inventory Masters

Activity:

1. Create Stock Group as Mobile Phones
2. Create Stock Items as shown in the table 1.5.4

DLL - GEN_1 Basic Phone	
Against the Field	Action to be Performed
Name	Enter as DLL - GEN_1 Basic Phone
Under	Select Mobile Phones
Units	Select Nos
Note: Minimum one stock item must be created in Tally to enable the Price List option.	

Table 1.5.4



Activity: Similarly, create two items listed under the stock group **Mobile Phones**

- DLL - GEN_4 Smart Phone
- DLL - GEN_5 Smart Phone

Step 2: Creation of Price List

Price List

To create price list, follow the steps:

1. Go to **Gateway of Tally > Inventory Info. > Price List**
2. In **Stock Group Name**, select **Mobile Phones** from **List of Stock Groups**
3. Select **Wholesale Price Level-1** in **Price Level** and specify **Applicable From** date **01-11-2019**
4. Under **Particulars**, select the applicable stock items, refer the Table 1.5.2 **Wholesale Price Level-1** Price List and fill the details

Price List					
Under Group : Mobile Phones					
Price Level : Wholesale Price Level-1 Applicable From: 1-Nov-2019					
S.No.	Particulars	Quantities		Rate	Disc. % (if any)
		From:	Less than		
1.	DLL - GEN_1 Basic Phone		10 Nos	5,000.00/Nos	
		10 Nos	20 Nos	5,000.00/Nos	1 %
		20 Nos		5,000.00/Nos	5 %
2.	DLL - GEN_4 Smart Phone		10 Nos	10,000.00/Nos	1 %
		10 Nos	20 Nos	10,000.00/Nos	5 %
		20 Nos		9,500.00/Nos	5 %
3.	DLL - GEN_5 Smart Phone		10 Nos	15,000.00/Nos	1 %
		10 Nos	20 Nos	14,000.00/Nos	
		20 Nos		14,000.00/Nos	5 %

Figure 1.5.2 Defining Wholesale Price Level-1 Price List details

5. Accept the screen

Activity:

- Similarly, create the price list for **Retail Price Level-1** as on **01-11-2019**, refer Table 1.5.3 **Retail Price Level-1**.



- Additionally, enable the feature **Use separate discount column in invoices** from **Gateway of Tally > F11: Features > F2: Inventory** (This is enabled to record the transaction with discount details)

1.5.4 Using Price List

The following illustrations will demonstrate how price lists can be used in a sales invoice.

Illustration 3: Recording Sale Voucher

Date	Particulars			
1-11-2019	Voucher: Purchase the following stock item from Mani Electronics with Supplier invoice no as PUR/006			
	Name of Stock Item	Quantity	Rate per (₹)	Amount (₹)
	DLL - GEN_1 Basic Phone	50 Nos	4,500/ Nos	2,25,000
	DLL - GEN_4 Smart Phone	50 Nos	8,500/ Nos	4,25,000
05-11-2019	DLL - GEN_5 Smart Phone	50 Nos	13,000/ Nos	6,50,000
	Voucher: Sales			
	Emerald-Shine Makers sold the following mobile phones to Magnum Stores at Wholesale Price Level-1 price with reference number SAL/007 .			
	Name of Stock Item	Quantity	Rate per (₹)	Discount
	DLL - GEN_1 Basic Phone	15 Nos	5,000/ Nos	1%
				Amount (₹)
				74,250

Table 1.5.5

To record the transactions of table 1.5.5, in the books of accounts, first ensure that the required masters are created in Tally.

Step 1: Recording Purchase Invoice

Activity: Create **Mani Electronics** under **Sundry Creditors** and record the purchase transaction in item invoice mode.

Hint: Select the godown as **Main Location**, for item invoice mode click **ALT+I: Item Invoice**.

Step 2: Recording Sales Invoice

Activity: Create **Magnum Stores** ledger under **Sundry Debtors**, select **Price level applicable** as **Wholesale Price Level-1**

1. Go to **Gateway of Tally > Accounting Vouchers > F8: Sales** > Press **F2: Date** and change the date to 05-11-2019 > Enter the **Reference no.:** **SAL/007** > select party as **Magnum Stores**, Price level appears automatically
2. Select **Sales A/c** in **Sales ledger field**.
3. Select the stock item **DLL - GEN_1 Basic Phone**, Godown as **Main Location** and enter quantity as **15 Nos**.



4. **Rate** and **Discount** automatically appear as ₹ 5,000 and 1% respectively
(As the required price level is selected in the ledger master of Magnum Stores)

The **Sales Voucher** appears as shown in the figure 1.5.3

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M	
Sales	No. 7	5-Nov-2019 Tuesday			
Reference no.: SAL/007					
Party A/c name :	Magnum Stores	Price level :	Wholesale Price Level-1		
Current balance :					
Sales ledger :	Sales A/c				
Name of Item	Quantity	Rate	per	Disc %	Amount
DLL - GEN_1 Basic Phone	15 Nos	5,000.00	Nos	1 %	74,250.00
					74,250.00

Figure 1.5.3 Sales Invoice Screen

5. Save the entry.

Observation:

- In the sales invoice as shown in figure 1.5.3, we can observe how the rate and discount appeared automatically, this is because we have defined the price list details for all the stock items.
- Tally provides you the flexibility to select items with and without the Price List in the same invoice.

Activity: Record the following transaction

Date	Particulars													
06-11-2016	Sold the following stock item to Variety Infocom at Retail Price with Reference number SAL/008													
	Hint: Create the party Variety Infocom and select the pricing level as Retail Price Level-1													
	<table><tr><th>Name of Stock Item</th><th>Quantity</th><th>Rate per (₹)</th><th>Discount</th><th>Amount (₹)</th></tr><tr><td>DLL - GEN 1 Basic Phone</td><td>10 Nos</td><td>5.500/Nos</td><td>1%</td><td>54.450</td></tr></table>					Name of Stock Item	Quantity	Rate per (₹)	Discount	Amount (₹)	DLL - GEN 1 Basic Phone	10 Nos	5.500/Nos	1%
Name of Stock Item	Quantity	Rate per (₹)	Discount	Amount (₹)										
DLL - GEN 1 Basic Phone	10 Nos	5.500/Nos	1%	54.450										

Table 1.5.6

1.5.5 Revise Price List

The price of stock items varies from time to time, the price may increase or decrease based on the market condition, then as per the latest prices of stock items. The price list defined in Tally can be revised.

Illustration 4: Revising of price list in Tally

10-11-2019	Revise Price List
	Emerald-Shine Makers wants to revise the Wholesale Price Level-1 price list as the rate of stock items are increased by ₹ 100.00 and the discount rate is fixed.

Table 1.5.7



To Revise the Price List, follow the steps:

1. Go to **Gate way of Tally > Inventory Info. > Price List**
2. Press **Alt+R: Revise Price**
3. Enter the **Stock Group Name** as **Mobile Phones**
4. Select the **Price level** as **Wholesale Price Level-1**
5. Enter the **Applicable From Date** as **10-11-2019**
6. Enter the details as shown in the figure 1.5.4:

The **Price List** screen appears as shown in the figure 1.5.4:

Revise Price	
Stock Group Name	: Mobile Phones
Price Level	: Wholesale Price Level-1
Applicable From	: 10-Nov-2019
Revise Price	: Increase By Amount 100 ₹
Revise Discount	:

Figure 1.5.4 Revision of Price List Screen

7. In the **Revise Price** field select **Increase by amount** (Because the price is increased by ₹100)> Enter the **Amount** as **₹ 100**

Note: If the price is decreased, select decrease by amount or percentage, if the prices are increased, then select Increase by amount, if no variation in the price, select as **Not applicable** (Not applicable can be selected when there is a change in the discount rate only)

8. In the **Revise Discount** field select as **Not Applicable**> **Revise Price updated Message** appears
9. Press Enter from the **Price List** screen, you will get the Price List with revised rates save the screen

The **Price List with Revised Price** screen appears as shown in the figure 1.5.5

Price List Emerald-Shine Makers Ctrl + M									
Under Group : Mobile Phones									
Price Level : Wholesale Price Level-1 Applicable From: 10-Nov-2019									
S.No.	Particulars	Quantities		Rate	Disc. % (if any)	As on : 1-Nov-2019		Cost Price	
		From:	Less than			Rate	Disc. %		
1.	DLL - GEN_1 Basic Phone								
		10 Nos	10 Nos	5,100.00/Nos	1 %	5,000.00/Nos	1 %	4,500.00/Nos	
		20 Nos	20 Nos	5,100.00/Nos	5 %	5,000.00/Nos	5 %		
2.	DLL - GEN_4 Smart Phone								
		10 Nos	10 Nos	10,100.00/Nos	1 %	10,000.00/Nos	1 %	8,500.00/Nos	
		20 Nos	20 Nos	10,100.00/Nos	5 %	10,000.00/Nos	5 %		
				9,600.00/Nos	5 %	9,500.00/Nos	5 %		
3.	DLL - GEN_5 Smart Phone								
		10 Nos	10 Nos	15,100.00/Nos	1 %	15,000.00/Nos	1 %	13,000.00/Nos	
		20 Nos	20 Nos	14,100.00/Nos	5 %	14,000.00/Nos	5 %		

Figure 1.5.5 Price List with Revised Price Screen



Observation: On the left-hand side in the under-rate column, you are getting the revise price of all the stock items (It is increased by ₹ 100)

After revising the price for stock items let us record the sales transaction with revised price list in Tally

Illustration 5: Recording sales voucher with revised price list in Tally

Date	Particulars				
15-11-2018	Voucher: Sales				
	Sold the following phones to Magnum Stores at Wholesale PL-1 price with Reference no: SAL/009				
	Name of Stock Item	Quantity	Rate per (₹)	Discount	Amount (₹)
	DLL - GEN_1 Basic Phone	20 Nos	5,100/Nos	5%	96,900

Table 1.5.8

Record the sales invoice as shown in figure 1.5.6 and observe the prices as per the revised price list.

The **Sales Voucher** screen appears as shown in the figure 1.5.6

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M		
Sales No. 9				15-Nov-2019		
Reference no.: SAL/009				Friday		
Party A/c name : Magnum Stores				Price level : Wholesale Price Level-1		
Current balance : 74,250.00 Dr						
Sales ledger : Sales A/c						
Name of Item		Quantity	Rate	per	Disc %	Amount
DLL - GEN_1 Basic Phone		20 Nos	5,100.00	Nos	5 %	96,900.00

Figure 1.5.6 Sales Invoice with Revised Price

Activity: Go to **Gateway of Tally > Display > Statements of inventory > Stock query > select DLL-GEN_1 Basic Phone > Press F7**, to view the price list details and then press **F10: Show Latest Price**, to get the latest price list.

Conclusion

In this chapter, we have learnt how to define the different types of price levels for an organisation using Tally application. Apart from different price levels, we have learnt how price list for multiple stock items are defined from the single screen and how these details reflect while recording sales transactions.

1.6 Tally Audit

LEARNING OBJECTIVES

- Enable Tally Audit
- View Tally Audit Monthly Register
- View Voucher type wise, Master wise and User wise audit statistics details



1.6.1 Introduction

Audit is an important function of any business organisation; it denotes that the business has true and fair transactions during the year. Tally has an in-built feature: **Tally Audit**, which enables the auditor to perform an audit or track changes that affect the integrity of a transaction. Changes made to **Date, Ledger Masters and Amounts** in the voucher are reflected in the Tally Audit Listings.

Business Scenario

Due to Increase in the volume of business transactions, Emerald-Shine Makers has appointed an accountant and two data entry operators; the accounting ledger and inventory masters will be created by the accountant and the day-to-day transactions will be recorded in Tally by the data entry operators.

Their roles are:

Data Operator 1 - To record Purchase and Payment Transactions in Tally

Data Operator 2 - To record Sales and Receipt Transactions in Tally

Emerald-Shine Makers wants to track the day to day activities of the business transactions such as masters and entry creations, to facilitate these requirements Emerald- Shine Makers decided to use Tally Audit feature.

1.6.2 Enabling Tally Audit Feature

Tally audit feature can be enabled in company creation or alteration screen, since we have already created the company let us enable the Tally audit feature in the company alteration screen.

To enable Tally Audit Features, follow the steps:

1. Go to **Gateway of Tally > press Alt+F3: Comp Info > Alter**
2. In the **Company Alteration screen**, set **Use security control** to **Yes**
3. Enter the administrator's name in **Name of Administrator** field as **admin**
4. Enter the **password as admin9999**
 - Tally displays the strength of the password entered depending on the combination - Alphabets, Numbers & Special Characters.
 - Repeat the password for the purpose of confirmation.
5. Set the option **Use Tally Audit Features** to **Yes**

The **Security Control** in the company alteration screen appears as shown in figure 1.6.1:



Security Control

Use security control

? Yes

(Enable security to avail TSS features)

Name of administrator

:

admin

Password

:

Repeat password

:

(Password strength: Fair)

Use Tally Audit features

? Yes

Disallow opening in Educational Mode?

No

Figure 1.6.1 Security Control in Company Alteration screen

6. On saving the company alteration screen, it will ask for **Reload Company**, Click **Yes>** and enter the **"Name of User"** and **"Password"**, company gets re-loaded

Note: Use Tally audit features will be available in company creation/alteration screen, only if the option **"Security Control is enabled"**.

1.6.3 Create User Level Security

To create User Level Security, follow the steps:

Step 1: Creating Security Levels for Data Operator 1

1. Go to **Gateway of Tally > Alt+F3: Company Info. > Security Control>** Select **Types of Security**, The Default **List of Security Levels** such as **Data Entry**, **Tally.Net User** and **Tally.Net Auditor** appears, press Lower arrow key to enter the name as **Data Operator 1**

2. Select **Data Entry** in **Use Basic Facilities of** field

Note: By Selecting **Use Basic Facilities of as Data entry**, the newly created security level will inherit the facilities of Data entry, which are pre-defined in Tally.

3. Enter disallow and allow the facilities as shown in figure 1.6.2 and save the screen.



Security Levels		Emerald-Shine M	
Name of security level	: Data Operator 1		
Use Basic Facilities of	: Data Entry		
Days allowed for Back Dated vouchers	: 0		
Cut-off date for Back Dated vouchers	:		
Set/Alter rules for Print Before Save	? No		
(also applicable for Export/E-Mail/Upload)			
Allow company to connect	? Yes		
Use Tally.NET Authentication	? No		
Disallow the following Facilities (others will be allowed)		Allow the following Facilities (to re-enable disallowed facilities)	
Full Access	Sales	Full Access	Purchase
Full Access	Receipt	Full Access	Payment

Figure 1.6.2 Security Level Screen

Activity: Similarly, create the following security levels for Data Operator 2

- Activities which are Disallowed: Purchase and Payment
- Activities which are Allowed: Sales and Receipt

The completed **Security Level** screen appears as shown in the figure 1.6.3:

Security Levels
Security Levels for Company
Name: Emerald-Shine Makers
<u>List of Security Levels</u>
Data Entry
Tally.NET User
Tally.NET Auditor
Data Operator 1
Data Operator 2

Figure 1.6.3 Completed Security Level Screen

Step 2 Creation of Users and Assigning Password for Each User

1. Go to **Gateway of Tally > Alt+F3: Company Info. > Security Control>Users and Passwords**
2. Select the newly created Security Level, enter the **Username** enter the required **Password** for the Users.

Activity:

1. Provide the username as **DO1** and password as **DO1** for Data Operator 1
2. Similarly provide username as **DO2** and password as **DO2** for Data Operator 2

The **Users for Company** screen appears as shown in the figure 1.6.4:



List of Users for Company					
Name: Emerald-Shine Makers					
Security Level	Username	Password (if any)	Allow Remote Access	Allow Local TDL Files	Allow SMS Access
Data Operator 1	D01	****	No	No	No
Data Operator 2	D02	****	No	No	No

Figure 1.6.4 Users for Company Screen

1.6.4 Creating of master's by Administrator and Recording of Transactions by the Users

In this section we will learn to login to the same company with different users and perform the day to day activities in Tally

Illustration 1: Recording of transaction with different user levels

Record the following transaction from user ID DO1				
Date	Particulars			
01-12-2019	Voucher: Purchase			
	Purchased the following stock items from Brahma Traders with reference number PUR/007			
	Name of Stock Item	Quantity	Rate (₹)	Amount
	DDL Laptops	10	15,000	1,50,000
05-12-2019	Voucher: Payment			
	Made payment of ₹ 1,50,000 to Brahma Traders through SBI Bank			
Record the following transaction from User ID DO2				
Date	Particulars			
06-12-2019	Voucher: Sales			
	Sold the following stock items to Mital Traders			
	Name of Stock Item	Quantity	Rate	Amount
	DDL Laptops	5	20,000	1,00,000
06-12-2019	Voucher: Receipt			
	Received ₹ 1,00,000 from Mital Traders			

Table: 1.6.1

Create the required Masters and record the given transactions using the respective I.Ds

Step 1: Creation of Accounting Masters

Masters need to be created in Admin login as we have not provided the permissions to create masters for the user ID's

Activity: Create Brahma Traders under Sundry Creditors and Mital Traders under Sundry Debtors.



Step 2: logout the Company from the Administration level.

Go to **Gateway of Tally>Alt+F3>Shut Company**

1.6.5 Login from User ID

To login the company from user ID, follow the steps given below

Step 1: Login to Emerald-Shine Makers using User ID i.e., DO 1 and password as shown in the figure 1.6.5

Company : Emerald-Shine Makers	
Name of User	: DO1
Password (if any)	: <input type="password"/>

Figure 1.6.5 Company Login Screen

Step 2: Recording Purchase Transaction

1. Go to **Gateway of Tally > Accounting Vouchers > F9: Purchase> F2: Date -01-12-2019>** Enter **Supplier invoice no. as PUR/007** and the **Date** will be captured automatically
2. In the **Party A/c name** field select as **Brahma Traders>** select **Purchase** ledger
3. Select the **Name of Stock Item** as **DDL Laptops**, **Godown** as **Main Location**
4. Enter the **Quantity** as **10 Nos**, **Rate** as **₹ 15,000** and the amount will be captured automatically
5. Accept the **Bill-wise details** screen,

The **Purchase Invoice** screen appears as shown in figure 1.6.6:

Accounting Voucher Creation		Emerald-Shine Makers		Ctrl + M	
Purchase	No. 7			1-Dec-2019	
Supplier invoice no.:	PUR/007	Date :	1-Dec-2019	Sunday	
Party A/c name :	Brahma Traders				
Current balance :					
Purchase ledger :	Purchase A/c				
Name of Item	Quantity	Rate	per	Disc %	Amount
DDL Laptops	10 Nos	15,000.00	Nos		1,50,000.00

Figure 1.6.6 Purchase Voucher Screen

Activity:

- Record the following transaction from User ID DO1

Date	Particulars
05-12-2019	Voucher: Payment Made payment of ₹ 1,50,000 to Brahma Traders through SBI Bank

Table: 1.6.2

- Record the following transaction from User ID DO2



Hint: Log out from the company and login as DO2

Date	Particulars			
06-12-2019	Voucher: Sales			
	Sold the following stock items to Mital Traders with reference number SAL/010 (Price list is not applicable)			
	Hint: Select Main Location Godown for making sales.			
	Name of Stock Item	Quantity	Rate (₹)	Amount
	DDL Laptops	5	20,000	1,00,000
06-12-2019	Voucher: Receipt			
	Received a cheque of ₹ 1,00,000 from Mital Traders			

Table: 1.6.3

1.6.6 Audit Listing for Voucher Types

To display the Tally Audit statistics for voucher types,

1. Close/Shut the company which is opened with user I.D
2. Open the company with Admin I.D to check the report.
2. Go to **Gateway of Tally > Display > Statements of Accounts > Tally Audit>Select Voucher Type**, to get the audit statistics details

The **Audit Statistics** with voucher types appears as shown in figure 1.6.7:

Audit Statistics Emerald-Shine Makers Ctrl + M		
Voucher Type-wise	1-Apr-2019 to 6-Dec-2019	
Type of Vouchers	Entered	Altered
Credit Note		1
Debit Note		1
Journal		3
Payment		3
Purchase		7
Receipt		4
Sales		10

Figure 1.6.7 Audit Statistics

To view voucher types with no entries,

1. Press **F12: Configure** from the figure 1.6.7,
2. Set **Show Voucher Type having no entries** to **Yes** and accept it

Note: To view **Parent Voucher Types wise** entered or altered transactions, Press **F12** from figure 1.6.7 and Set **Sort by default voucher** to **Yes** to display the list of voucher types based on the alphabetical order of parent voucher types

Activity: Press **F12** from the figure 1.6.7 and set the option **Show Cancelled and Deleted Count Separately?** to **Yes**, to display the **Modified, Cancelled and Deleted** voucher's count separately in columnar format



1.6.7 Voucher Auditing

Tally Audit feature is a quick auditing of vouchers and masters from the administrator of the company. After recording the transactions, the administrator will audit/check the vouchers and masters. After the vouchers are audited, any changes made in the audited vouchers will be recorded in Tally.

Other than the voucher auditing feature, Tally also provides a powerful tool to perform the statutory audit of Tally data by auditors.

This feature can be accessed from **Gateway of Tally > Audit and Compliance**, only if security control feature is enabled for the company.

The Audit and Compliance tool consists of 4 menus which are used in conducting statutory audit such as

1. Audit Documentation
2. Audit and Analysis
3. Audit Journals
4. Financial Statements

Let us now understand the voucher auditing feature which is quick auditing of vouchers and masters by administrator of the company.

To audit Voucher,

1. Go to **Gateway of Tally > Display > Statements of Accounts > Tally Audit > Voucher Types**
2. Click **F5: Show All Vch** or Press **F5** for displaying the vouchers of the Company for auditing.

The **Tally Audit Listing** appears as shown in the figure 1.6.8

Tally Audit Listing		Emerald-Shine Makers		Ctrl + M	
List of Entered/Altered All Vouchers				1-Apr-2019 to 31-Dec-2019	
Date	Particulars	Vch Type	Vch No.	Debit Amount	Credit Amount
1-4-2019	SBI Bank	Journal	1	5,00,000.00	
1-4-2019	Mufi Solutions	Purchase	1		1,50,000.00
1-5-2019	Blue Ray Solutions	Sales	1	2,00,000.00	
31-5-2019	Mufi Solutions	Payment	1	1,65,000.00	
31-5-2019	Mufi Solutions	Credit Note	1		15,000.00
30-6-2019	Blue Ray Solutions	Receipt	1		2,16,000.00
30-6-2019	Blue Ray Solutions	Debit Note	1	16,000.00	
1-7-2019	Power Electronics	Sales	2	1,38,000.00	
1-7-2019	Best Electronics	Purchase	2		3,00,000.00
5-7-2019	Power Electronics	Receipt	2		1,40,000.00
31-7-2019	Power Electronics	Journal	2	2,000.00	
1-8-2019	Power Electronics	Sales	3	70,000.00	
10-8-2019	Power Electronics	Sales	4	71,000.00	
31-8-2019	Power Electronics	Journal	3		5,000.00
1-9-2019	Comfort Traders	Purchase	3		25,00,000.00
11-9-2019	Pruthvi Traders	Sales	5	3,00,000.00	
1-10-2019	Global Corporation	Purchase	4		2,30,000.00
17-10-2019	Madan Manufacturing Co.	Payment	2	1,30,000.00	
17-10-2019	Madan Manufacturing Co.	Purchase	5		1,30,000.00
27-10-2019	Sunshine Industries	Receipt	3		60,000.00
27-10-2019	Sunshine Industries	Sales	6	60,000.00	
1-11-2019	Mani Electronics	Purchase	6		13,00,000.00
5-11-2019	Magnum Stores	Sales	7	74,250.00	
6-11-2019	Variety Infocom	Sales	8	54,450.00	
15-11-2019	Magnum Stores	Sales	9	96,900.00	
1-12-2019	Brahma Traders	Purchase	7		1,50,000.00
5-12-2019	Brahma Traders	Payment	3	1,50,000.00	
6-12-2019	Mital Traders	Receipt	4		1,00,000.00
6-12-2019	Mital Traders	Sales	10	1,00,000.00	

Figure 1.6.8 Tally Audit listing



3. On verification of the transactions, click **F7: Accept One** to accept each transaction one by one or click **F7: Accept All** to accept all the transactions. Once accepted, the transactions will be removed from the Tally Audit Listing Details.

Alternatively, the administrator can take a hard copy of the Tally Audit Listing, verify the transactions manually and accept them.

Business Scenario

Data Operator 2 altered the receipt entry which is recorded as on 06-12-2019 and changed the date to 07-12-2019.

Activity: Open the company with DO2 user I.D and change the date, once after the changes are made, open the company with administrator I.D and check the following altered details.

To view the name of the person who has entered or altered a voucher,

1. Go to **Gateway of Tally > Display > Statements of Accounts > Tally Audit > Voucher Types > F5**
2. Press **F12: Configure** from **Tally Audit Listing** screen
3. Set **Show Entered/Altered By** to **Yes**

The **F12 Configuration** screen appears as shown in figure 1.6.9:

<u>Configuration</u>	
Format	: Condensed
Show narrations	? No
Show bill wise details	? No
Show Cost Centre Details also	? No
Show inventory details	? No
Show additional description of Stock Item ?	No
Show Bank Details also	? No
Show Additional Details	? No
Show Entered/Altered By	? Yes
Appearance of Stock Item Names	: Name Only
Appearance of Names	: Name Only
Sorting Method	: Default

Figure 1.6.9 Configuration Screen

4. Accept the screen

The **Tally Audit Listing** screen appears as shown in figure 1.6.10:



Tally Audit Listing		Emerald-Shine Makers		Ctrl + M	
List of Entered/Altered All Vouchers				1-Apr-2019 to 31-Dec-2019	
Date	Particulars	Vch Type	Vch No.	Debit Amount	Credit Amount
7-12-2019	Mital Traders	Receipt	4		1,00,000.00
Entered By: DO2					
Altered By: DO2 on 8-Jan-2020					

Figure 1.6.10 Tally Audit Listing with Entered or Altered Details

Note: Change the period, if multiple vouchers are selected for auditing.

To sort deleted, modified, or cancelled voucher,

Press **F12: Configure** from the **Tally Audit Listing** screen and select the required **User Action** from the list

Configuration		List of User Actions
Select User Action	: [All Items	[All Items
Format	: Condensed	Altered
Show narrations	? No	Cancelled
Show bill wise details	? No	Deleted
Show Cost Centre Details also	? No	Entered
Show inventory details	? No	Modified
Show additional description of Stock Item	? No	
Show Bank Details also	? No	
Show Additional Details	? No	
Show Entered/Altered By	? Yes	
Appearance of Stock Item Names	: Name Only	
Appearance of Names	: Name Only	
Sorting Method	: Default	

Figure 1.6.11 Configurations screen

- **Altered:** This option allows you to view and audit all the audited Altered vouchers consisting of all Modified, Cancelled and Deleted vouchers.
- **Cancelled:** This option allows you to view and audit only the audited Cancelled vouchers.
- **Deleted:** This option allows you to view and audit only the audited Deleted vouchers.
- **Entered:** This option allows you to view and audit only the audited entered Vouchers
- **Modified:** This option allows you to view and audit only the Modified vouchers where Date, Amount, Ledger Masters are being altered in the audited Modified vouchers.

1.6.8 Tally Audit Statistics for Masters

Tally Audit Statistics for Master displays the details of Accounting Master with Entered and Altered details.



To view Audit Statistics for Masters,

Go to **Gateway of Tally > Display > Statements of Accounts > Tally Audit > Masters**

The **Audit Statistics – Master- Wise** screen appears as shown in figure 1.6.12:

Audit Statistics		
Emerald-Shine Makers		
Ctrl + M		
Master-wise		
1-Apr-2019 to 7-Dec-2019		
Name	Entered	Altered
Accounting Masters		
Ledgers	27	

Figure 1.6.12 User Statistics Screen

Tally Audit Listing

On drilling down from the **Master-wise** report, the **Tally Audit Listing** for the **List of Entered/Altered Ledgers** appears as shown in figure 1.6.13:

Tally Audit Listing		
Emerald-Shine Makers		
Ctrl + M		
List of Entered/Altered Ledgers		
Id	Name	Opening Balance
30	Profit & Loss A/c	
31	Cash	
161	SBI Bank	
162	Proprietors Capital	
163	Mufi Solutions	
164	Purchase A/c	
167	Interest Paid	
168	Interest Received	
169	Blue Ray Solutions	
170	Sales A/c	
172	Best Electronics	
174	Power Electronics	
175	Sales - Export	
176	Forex Gain/Loss	
186	Comfort Traders	
187	Labour Charges	
188	Packing Charges	
189	Pruthvi Traders	
193	Madan Manufacturing Co.	
194	Global Corporation	
206	Job Work Charges	
207	Sunshine Industries	
213	Mani Electronics	
214	Magnum Stores	
215	Variety Infocom	
216	Brahma Traders	
217	Mital Traders	

Figure 1.6.13 Master-Wise Audit Statistics Report

1.6.9 Audit Listing for Users

Audit Listing for Users contain the details of User Type and user wise Modified, Cancelled and deleted count

To view **Tally audit statistics for Users**,

1. Go to **Gateway of Tally > Display > Statements of Accounts > Tally Audit > Users**
2. Press **F12** and enable the options **Show users having no entries** and **Show Cancelled and Deleted Count Separately**

The **Audit Statistics User-Wise** screen appears as shown in figure 1.6.14:



Audit Statistics		Emerald-Shine Makers			Ctrl + M
User Wise		1-Apr-2019 to 7-Dec-2019			
Name	User Type	Entered	Altered		
			Modified	Cancelled	Deleted
admin	Administrator	27			
D01	Data Operator 1				
D02	Data Operator 2		1		
Total		27	1	0	0

Figure 1.6.14 Audit Listing for Users

Along with username, user type is also shown. The total count of entered & modified voucher for a user includes the count of masters and vouchers.

Conclusion

In this chapter we have learnt to configure tally audit feature and understood the role of security control feature in Tally. We have also learnt to configure security levels for different users and assign the rights to them. Tracking of audited transactions i.e., if any changes are done after auditing the voucher in Tally, then the same can be checked in Tally Audit report.

CHAPTER

2

TSS Features and Capabilities

Tally Software Services (TSS) is a set of capabilities that helps to add value to Tally. With TSS feature capabilities, we can have a central consolidation of all branch office data over secure servers, access the company data remotely, instant support from within Tally etc. are the additional features of TSS.

2.1 Remote Access

LEARNING OBJECTIVES

- Configuration of Tally Software Services
- Creation of Tally.NET users and specifying security levels
- Accessing data from a remote location

Tally.NET is a framework which works in the background and provides a broad range of services using the internet.

Using Tally.NET, a user can access a company's data from a remote location using the Tally installed at that location to record the transactions remotely and viewing of reports. Similarly, a practicing-chartered accountant working with Tally auditor's license can look over the client's Tally data remotely from his office.

At the client's place, the administrator must create remote users with the permission to access or audit data from a remote location and assign controls based on their security level for the required company only. The remote user accessing the company data acts as a client to Tally.NET.

2.1.1 Overview of Tally.Net Features

TSS provides the following list of useful features:

- Connect companies from Tally
- Create and maintain remote users
- Synchronization of data (via Tally.NET)
- Use online help and support capability from within Tally or the browser

Business Scenario

Emerald-Shine Makers has expanded the business and started a branch office in Delhi location, due to this proprietor of the company had to frequently visit Delhi branch for business meetings, during business meetings the proprietor wanted to access the Tally data and view his books of accounts as well record the entries for expenses incurred.



Also in few cases due to busy schedule the auditor of the company Emerald-Shine Makers were unable to visit the company for auditing the data, due to which auditor suggested to use the remote access feature of Tally, by doing this the company data could be accessed remotely by the proprietor, auditor and staffs if the required access is provided.

2.1.2 Configuring TSS Features

Let us load the company Emerald-Shine Makers, after loading follow the steps.

Note: Security control feature should be enabled in the company to access the data remotely. (We have already enabled security control for this company)

1. Go to **Gateway of Tally > F11: Features**

The **Company Features** screen appears as shown in the figure 2.1.1:



Figure 2.1.1 Company Feature Screen

2. Select **TSS Features** or click **F4: TSS**, to view the **TSS Features** screen
3. In the **Connection Details** section
 - **Connect name:** The user can enter a connect name for the company to be connected as per his requirements or retain the company name mentioned in the company master.
 - **Name of contact person:** Specify the name of the contact person.
 - **Contact number:** Specify the contact number.
4. In the **Configuration for Remote Access** section
 - **Allow company to connect:** Set this option to **Yes** to establish a connection with the Tally. NET server.



- **Connect company on loading:** Set this option to **Yes**, when the user requires the company to be connected to Tally.NET server on loading the **data**, in this case let it remain **No**.

5. In **SMS Access Details** section

- **Enable SMS access:** Set this option to **Yes** if accessing company's data via SMS is required, in this case let it remain **No**.
- **Company name for SMS:** Enter the company's name to be used for SMS query

The completed **TSS Feature** screen appears as shown in the figure 2.1.2:

Company: **Emerald-Shine Makers**

TSS Features

Connection Details

Connect name : **Emerald-Shine Makers**

Name of contact person : **Prakash**

Contact number : [blurred]

Configuration for Remote Access

Allow company to connect ? **Yes**

Connect company on loading ? **No**

SMS Access Details

Enable SMS access ? **No**

Company name for SMS ?

Figure 2.1.2 Setting up TSS Features Screen

2.1.3 Creating Tally.NET User

After configuring TSS Feature in Tally, let us create the Tally.NET Users and allow them to access the data remotely.

Administrator will have the rights to create the users, once after creating the Tally.NET Users, the user will be able to work on the company data remotely based on the rights assigned to the user.

To create a Tally.NET User,

1. Go to **Gateway of Tally** > click **K: Control Centre** or press **Ctrl+K**
2. The **Tally.NET User** login screen will appear. Enter the Account ID in **Your Tally.NET ID** field and password in **Your Tally.NET Password** field. The password is the same which is sent by e-mail to the email address provided while activating Tally

The **Tally.NET User Login** screen appears as follows:



Login as Tally.NET User

Your Tally.NET ID : s[redacted]@tallysolutions.com

Your Tally.NET Password : [redacted]

Press F5 if you have forgotten your Tally.NET password. You will receive an e-mail with a link to reset your password.

Figure 2.1.3 Remote Tally.NET User Login Screen

3. Press enter **Control Centre** screen appears as shown in figure 2.1.4:

The **Control Centre** screen appears as shown in figure 2.1.4:

Control Centre Emerald-Shine Makers Ctrl + M

Account ID : s[redacted]@tallysolutions.com

L : Licensing and Configuration

- L : License Management**
- D : TDL Management**
TDL management for one or more locations/sites.

J : Jobs and Recruitment
Search for people, publish your requirements, set online examinations to test knowledge of candidates.

E : Employee Assessment
Assess the knowledge and competency of employees.

A : Profile Management
Set and check details about the account.

U : User Management
Manage security and other aspects of all users including Tally.NET remote users.

C : Change Account Administrator
Change the account administrator.

N : Manage Data Sessions
Session-wise details of other users logged into this account.

Figure 2.1.4 Control Centre Screen

4. Select **User Management** and press enter
5. In **User Management** screen
 - Select **Owner** from the **List of Security Level**
 - Enter the **required Email ID** in **Tally.NET ID** field.
 - Set **Tally.Net User** to **Yes**

The **User Management** screen appears as shown in the figure 2.1.5:



User Management		Emerald-Shine Makers		
		<u>User Management</u>		
		Account ID : s[redacted]@tallysolutions.com		
S.No.	Security Level	Tally.NET ID	Tally.NET User	Status
1	Owner	s[redacted].l@tallysolutions.com	Yes	Active

Figure 2.1.5 User Management Screen

Note: In case of single user license one user (1 e mail id) can be configured for remote access, and for multiuser license 10 active Tally.Net user can be configured.

6. Accept the screen and come to **Gateway of Tally** by logging out from control centre.

Note: The Tally.NET users created here receive their password through e-mail provided as Tally.Net ID mentioned here and it must be valid e-mail IDs.

2.1.4 Creating Security Controls for Tally.NET User

By default, the Tally.NET User's security levels is set as Data Entry, thereby having restricted access only to the company data. However, the administrator can change the access controls of Tally.NET User based on the requirement. Any user created under these Security Levels requires Tally.NET authentication to access data.

To create security controls for a Tally.NET User,

1. Go to **Gateway of Tally > Alt+F3 > Security Control**
2. Select **Types of Security**
3. The **Security Levels for company** appears as shown in figure 2.1.6:

The **Security Levels** screen appears as shown in the figure 2.1.6:

Security Levels	
<u>Security Levels for Company</u>	
Name: Emerald-Shine Makers	
<u>List of Security Levels</u>	
Data Entry	
Tally.NET User	
Tally.NET Auditor	
Data Operator 1	
Data Operator 2	

Figure 2.1.6 Security Levels Screen



4. Select **Tally.NET User**
5. In the **Security Levels for Tally.NET User** screen
 - By default, **Tally.NET User** appears in **Name of security level** field
 - **Use Basic Facilities of** field, Data Entry is pre-set by default, administrator can change this based on the requirement
 - **Days allowed for Back Dated vouchers** is set as 0 by default
 - **Cut-off date for Back Dated vouchers** is kept blank
 - Set the option **Set/Alter rules for Print Before Save** to **No**
 - **Allow company to connect**, set it to **Yes**, by enabling this option, we are allowing security level to connect the company for remote access using Tally.NET Server
 - By default, **Use Tally.NET Authentication** is set to **Yes**. The user classified under this security level can login remotely with Tally.NET User capabilities
6. In **Disallow the following Facilities**
 - Select the required access control from the **Type of Access**
 - Select the required **List of Reports/Facility** to be disallowed based on the access control
7. In **Allow the following Facilities**
 - Select the required **List of Reports/ Facility** and select **End of List** from the **Type of Access**

The **Security Levels** screen appears as shown in the figure 2.1.7:

Security Levels		Emerald-Shine M	
Name of security level	: Tally.NET User		
Use Basic Facilities of	: Data Entry		
Days allowed for Back Dated vouchers	: 0		
Cut-off date for Back Dated vouchers	:		
Set/Alter rules for Print Before Save	? No (also applicable for Export/E-Mail/Upload)		
Allow company to connect	? Yes		
Use Tally.NET Authentication	? Yes		
Disallow the following Facilities (others will be allowed)		Allow the following Facilities (to re-enable disallowed facilities)	
Full Access	Accounts Masters	Full Access	Accounting Vouchers
Full Access	Balance Sheet	Full Access	Inventory Vouchers
		Full Access	Day Book
		Full Access	Inventory Masters

Figure 2.1.7 Security Levels Defining Rights



- Press **Ctrl+A** twice to save the access controls for Tally.NET User

2.1.5 Authorizing Tally.NET User

Based on business requirements, the administrator can authorize users under Tally.NET User.

Go to **Gateway of Tally > F3: Company Info. > Security Control > Users and Passwords**

In the **Users for Company** screen, follow the steps:

- Under **Security Level** field, press lower arrow key and select **Tally.NET User** from **Security Level** below **Data Operator 2**
- In **Username** field type the required **Email ID** which was assign as Tally.Net ID
- By default, the **Password (if any)** field is blank and cannot be provided for Tally.NET User
- Set Allow Remote Access** to **Yes** if the Tally.NET User requires to access it remotely
- Allow Local TDL Files** is set to **No**, if the admin does not want the additional TDLs to be executed remotely for the selected remote user
- Set **Yes** to **Allow SMS Access** if required

The complete **Users for Company** screen appear as follows

List of Users for Company					
Name: Emerald-Shine Makers					
Security Level	Username	Password (if any)	Allow Remote Access	Allow Local TDL Files	Allow SMS Access
Data Operator 1	DO1	*	No	No	No
Data Operator 2	DO2	*	No	No	No
Tally.NET User	s...@tallysolutions.com		Yes	No	No

Figure 2.1.8 List of Users of Company

- Accept the screen

2.1.6 Connect Company on Tally.NET

In order to connect a company to Tally.NET Server for remote access,

- Click **F4: Connect** or press **F4** from Gateway of Tally
- A message will be displayed indicating that the company is connected successfully in the calculator pane:

The **Gateway of Tally** screen with Tally.NET User connection details appears as shown in the figure 2.9:

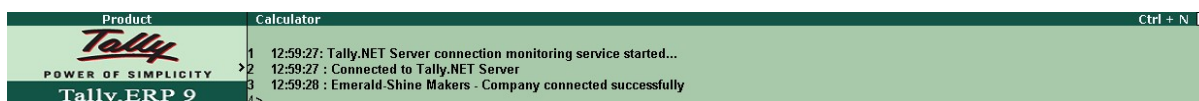


Figure 2.1.9 Connection Successful Notification



2.1.7 Remote Login

The users classified under Tally.NET User can access data from a remote location by providing the remote user Login ID and Password while Tally is running in Licensed or Educational mode.

1. Open **Tally** from the remote location.
2. In the **Company Info** menu, select **Login as Remote User**

The **Company Info Menu** screen appears as shown in the figure 2.1.10:



Figure 2.1.10 Company Info Screen

3. Provide the configured Email-ID in **Your Tally.NET ID** field and **Password** in **Your Tally.NET Password** field

The **Tally.NET User Login** screen with remote login appears as shown in the figure 2.1.11:



Figure 2.1.11 Login as Remote Tally.NET User

On successful authentication, a remote session is created on Tally.NET which remains valid till the user logs out. A unique identification number is assigned to the remote session created. The remote user can work on only one company at a time.

In **List of Remote Companies** screen, select the required company from the List of Companies to connect.

The **List of Remote Companies** screen appears as shown in figure 2.1.12:



List of Remote Companies						
Company Name	Account ID	Serial Number	Contact Person	Contact Number	SMS Cmp Name	SMS Suffix
Online Companies						
Emerald-Shine Makers	sumithra.k@tallysolutions.com	782842473	Prakash	9035912866		

Figure 2.1.12 List of Remote Companies Screen

Once after selecting the required company from the list of remote companies then the following screen will appear.

The **Gateway of Tally** screen appears as shown in the figure 2.1.13:

The screenshot shows the 'Gateway of Tally' window. On the left, it displays the 'Current Period' as 1.4.2019 to 31.3.2020 and the 'Current Date' as Saturday, 7 Dec, 2019. Below this, the 'Remote Company' section shows 'Name of Company' as Emerald-Shine Makers and 'Date of Last Entry' as 7-Dec-2019. At the bottom, the 'Remote User Details' section lists: 'My Remote ID' as sumithra.k@tallysolutions.com, 'My Remote Login Time' as 08-Jan-2020 03:36:26 PM, and 'My last login time and duration' as 08-Jan-2020 02:54:10 PM. On the right, there is a menu with categories: Masters (Inventory Info), Transactions (Accounting Vouchers, Inventory Vouchers, Order Vouchers), Utilities (Import Data, Banking), Audit (Audit & Compliance), and Reports (Display, Multi Account Printing, Quit).

Figure 2.1.13 Remote login Gateway of Tally Screen

Note: It is mandatory to enable Security Control for the company to avail TSS Features in Tally. We can logout the remotely connected company from **Company Info** screen by clicking on the option **Remote User Logout**.

2.2. Data Synchronization

When a business has more than one office, we might need to consolidate the data from all the branches in one place, every day or every week based on our preference. With Tally's Data Synchronization feature this requirement can be easily met. Synchronization can be done over Tally.NET or a private network and can be initiated by either the server or the client.

Data Synchronization in Tally

1. **Online Synchronization:** In this type of synchronisation, the client and the server companies are connected live through Tally.NET Server, or a private network.
 - Sync using Tally.NET Server
 - Sync through Private Network (also referred as Direct/IP Sync)



2. **On demand Synchronization:** In this type of synchronization, the client and the server companies need not be online at the same time. Data is synchronized using Tally.NET Server.

Business Scenario

Emerald-Shine Makers have its head office at Bengaluru and branch office at Delhi. The Head office needs to communicate with the branch office to know the status of the branch transactions and update those transactions in the Head Office. This can be done by Data Synchronization. Let us Consider the Head Office Emerald-Shine Makers as the Server and the Branch Office Emerald-Shine Makers Delhi as the Client.

Activity: Create the following company for the financial year 2019-20 and enable security control feature.

- Emerald-Shine Makers Delhi Branch
Location: Delhi
Enable the option Use security control?

Step 1: Configuration of Synchronisation using Tally.Net Server.

Load the company Emerald-Shine Makers,

1. Go to **Gateway of Tally > F12: Configure > Advanced Configuration**.
2. In the Advanced Configuration screen, under **Client/Server Configuration** section,
 - Set the option **Tally is acting as** to **Server** to run Tally as Synchronization Server
 - Specify the required port number (e.g. 9000) in the Port field
3. Select **Connection Configuration** section:
 - Set the duration in seconds for **Connection Timeout (in seconds)** field. The server disconnects when it does not receive any response from the client within the specified duration, let us not set **Connection Timeout**.
 - Set the option **Connect to Tally.NET Servers running on Non-HTTP port** to **Yes**, to avoid frequent disconnection from TSS or when receiving the error 16004 - frequently
 - Set the option **Use absolute URL for HTTP Actions** to **Yes**, this will enable the proxy server to communicate the complete URL, by default this option is set to No
4. Select **Log Configuration** section:
 - Set the option **Enable Sync Logging (SockReq.log)** to **Yes**, to generate a Log file which contains information about the synchronised vouchers. This file resides in the folder where Tally is installed
 - Set the option **Truncate previous log before Syncing** to **Yes**, to overwrite the contents of the current log file generated earlier
 - Set the option **Enable HTTP Log (tallyhttp.log)** to **Yes**, to login all SOAP and HTTP Post request/response in the login file residing in the default Tally folder
 - Set the option **Enable detailed Log (tally.imp)** to **Yes**, to generate tally.imp log file containing



details of the operation

- Tab down to **Tally.Net Server Proxy Configuration** section: (in case you are using proxy server for internet connection)
- Set **Use proxy for connecting to Tally.NET Server** to **Yes**, if internet is connected through the proxy server, In this case let it be No.
- Enter the required **URL/IP Address** and the port number in the **Specify URL/IP address** and port for proxy server field
- Set **Authentication proxy server** to **Yes** to verify the username and password.
 - Enter the required username in the Username field
 - Enter the password in the Password field

The completed **Advanced Configuration** screen appears as shown in figure 2.2.1:

↑ ... 6 more

Connect to Tally.NET Server running on non HTTP port	: Yes
<i>Set the above option to 'Yes' in case of following problems:</i>	
(1) Frequently getting disconnected from Tally.NET Server	
(2) Error 16004 : Invalid Nonce	
Use absolute URL for HTTP actions	? Yes

Log Configuration

Enable Sync Logging (SockReq.log)	? Yes
Truncate previous log before Syncing	? Yes
Enable HTTP log (tallyhttp.log)	? Yes
Enable detailed log (tally.imp)	? Yes

Tally.Server 9 Configuration

Restrict memory usage for low memory environment	? No
<i>(This may result in slower operations.)</i>	
Use additional memory for faster reporting	? No

Tally.NET Server Proxy Configuration

Use proxy for connecting to Tally.NET server	? No
--	-------------

Gateway Proxy Configuration

Use proxy server for connecting to gateway	? No
--	-------------

Accept ?
Yes or No



Figure 2.2.1 Configuring Tally as Server

Note:

1. Tally will prompt you to restart for the changes to have effect, click **Yes** and restart.
2. **Company Login** screen appears, enter **Name of User** and **Password** to login.

Tally will restart, and in the information panel, we will be able to view configuration as server, as shown in figure 2.2.2:

Configuration	Ctrl + Alt + F
Gateway	LTE-SUML01:9999
Server	9000

Figure 2.2.2 Information Panel of Server

Step 2: Configure Tally.NET Features on Server

1. Go to **Gateway of Tally > F11: Features > F4: TSS**

Note: We have already configured Tally.Net Features for the company Emerald-Shine Makers during remote access process.

The completed **TSS Feature** screen of server appears as shown in figure 2.2.3:

Company: **Emerald-Shine Makers**

TSS Features

Connection Details

Connect name : **Emerald-Shine Makers**

Name of contact person : **Prakash**

Contact number : **9876543210**

Configuration for Remote Access

Allow company to connect ? **Yes**

Connect company on loading ? **No**

SMS Access Details

Enable SMS access ? **Yes**

Company name for SMS ? **ESM**

Figure 2.2.3 TSS Features screen

Step 3: Connect Server Company to Tally.NET

During the **Data Synchronization** it is essential that the Server Company be connected to Tally.NET server. To



connect the server company to Tally.NET, follow the steps:

1. Go to **Gateway of Tally > click F4: Connect** or Press **F4**
2. Select the required Company to be connected for Synchronization using TSS from the List of Companies

On successfully connecting to Tally.NET server, the connection status displayed in the calculator panel is as shown in figure 2.2.4:

```
Calculator Ctrl + N
1 17:09:32: Tally.NET Server connection monitoring service started...
2 17:09:34 : Connected to Tally.NET Server
3 17:09:35 : Emerald-Shine Makers - Company connected successfully
4 >
```

Figure 2.2.4 Calculator Panel of Server

Step 4: Configure Client for Synchronisation

To configure the client company for synchronization, follow the steps:

1. Load the company Emerald-Shine Makers Delhi Branch in the client location

Configure the client company for synchronization as shown in the figure 2.2.5

<u>Client/Server Configuration</u>	
Tally.ERP 9 is acting as	: Client
Enable ODBC server	? Yes
Port	: 9000
<u>Connection Configuration</u>	
Connection timeout (in seconds)	:
Connect to Tally.NET Server running on non HTTP port	: Yes
<i>Set the above option to 'Yes' in case of following problems:</i>	
<i>(1) Frequently getting disconnected from Tally.NET Server</i>	
<i>(2) Error 16004 : Invalid Nonce</i>	
Use absolute URL for HTTP actions	? No
<u>Log Configuration</u>	
Enable HTTP log (tallyhttp.log)	? Yes
Enable detailed log (tally.imp)	? Yes
<u>Tally.Server 9 Configuration</u>	
Restrict memory usage for low memory environment <i>(This may result in slower operations.)</i>	? Yes
Use additional memory for faster reporting	? No
<u>Tally.NET Server Proxy Configuration</u>	
Use proxy for connecting to Tally.NET server	? No

11 more ... ↓



Figure 2.2.5 Configuring Tally as Client

2. Press **Enter** to save setting for Synchronization (Client), for the changes made.

Note:

1. Tally will prompt you to restart for the changes to have effect, click **Yes** and restart.
2. **Company Login** screen appears, enter **Name of User** and **Password** to login.

Tally will restart, and in the information panel, we will be able to view configuration as Client, as shown in figure 2.2.6:

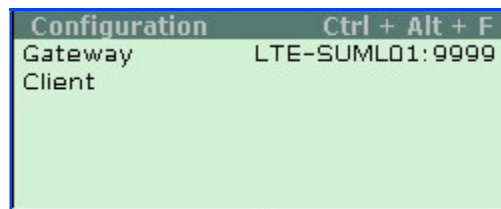


Figure 2.2.6 Information Panel of Client

Step 5: Creating a Synch Rule on Client

To set the client rule for master,

1. Go to **Gateway of Tally > Import of Data > Synchronization > Client Rules > Create**, create the client rule as follows

The **Client Rule Creation** screen appears as shown in figure 2.2.7:

Client Rule Creation	
Rule Type	: Master
Rule name	: Master Rule 1
Use On-demand sync	? No
(Client and server need not be connected at the same time)	
Sync via Tally.NET Server	? Yes
Server account ID	: s...@tallysolutions.com
Company name on server	: Emerald-Shine Makers
Direction of sync	: Send Data
Set/alter advanced configurations	? Yes

Figure 2.2.7 Advance configuration screen

Note: On enabling the option **Use On-demand sync?** we can synchronize the data across multiple points,



send or receive data from a central location without the need of being in an always connected mode.

2. Enable **Set/alter advanced configurations?** to change advanced configurations for sync rule in client company. The advanced configurations are separately set for **Receive Data** and **Send Data** options

Advanced Configuration for Send Data

Set the **Advanced Configuration** screen as shown in figure 2.2.8:

Advanced Configuration	
General	
Synchronise altered masters	? Yes
Multi Currency Configuration	
Send base currency symbol along with amounts	? No

Figure 2.2.8 Advance configuration screen

Creation of Client Rule for Transaction

1. Go to **Gateway of Tally > Import of Data > Synchronization > Client Rules > Create**

Set the **Client Rule Creation** screen as shown in figure 2.2.9:

Client Rule Creation	
Rule Type	: Transaction
Rule name	: Transaction Rule 1
Use On-demand sync (Client and server need not be connected at the same time)	? No
Sync via Tally.NET Server	? Yes
Server account ID	: s...@tallysolutions.com
Company name on server	: Emerald-Shine Makers
Direction of sync	: Both
Set/alter advanced configurations	? No

Figure 2.2.9 Client Rule Creation screen

2. On Selecting the **Direction of sync** as **Both**, **Synchronization Types** screen appears as shown in the figure 2.2.10 accept it as it is.



Voucher Types Allow/Disallow List			
Send Data		Receive Data	
Allow the following Voucher Types	Disallow the following Voucher Types	Allow the following Voucher Types	Disallow the following Voucher Types
All Voucher Types	End of List	All Voucher Types	End of List

Figure 2.2.10 Synchronization Types

3. Enable Set/alter advanced configurations? option

The **Advanced Configuration** screen for both (receive & send) appears as shown in figure 2.2.11:

Advanced Configuration			
Send configuration		Receive configuration	
General		General	
Synchronise altered transactions	? Yes	Ignore received master, if already present	? No
Synchronise after save (This option will synchronise vouchers after saving)	? No	Ignore altered voucher type masters	? Yes
Exclude masters while sending	? No	Ignore voucher type numbering	? No
Enable sync for deleted transaction	? Yes	Opening Balances	
Multi Currency Configuration		Overwrite opening balances (Enabling it will overwrite the opening balances)	? Yes
Send base currency symbol along with amounts	? No	For ledger	? Yes
		For stock item	? Yes
		Combine Opening BRS (Combines opening BRS of server and client)	? Yes
		Multi Currency Configuration	
		Accept non-base currency transactions	? No

Figure 2.2.11 Advance configuration screen

4. Accept the screen and client rule.

Activity: Record the following transactions in the books of Emerald-Shine Makers Delhi Branch.

Date	Particulars
10-12-2019	Voucher: Receipt Received ₹ 2,00,000 from a Hari Traders vide cheque no 000009 and deposited the same in SBI Bank (Advance Reference with reference number Adv-R-001)
15-12-2019	Voucher: Payment Made payment of ₹ 90,000 to Deepak Suppliers vide SBI Bank cheque no.000002. (Advance Reference with reference number Adv-P-001)

Table: 2.2.1



Hint: Create the masters such as **Hari Traders**, **Deepak Suppliers** and **SBI Bank** in **Delhi Branch** to record the transaction.

Sending Sync Rule

After creating a sync rule, you must perform synchronization to send the rule to Tally.NET Server. To send sync rule,

1. Go to **Gateway of Tally > F4: Connect**
2. From **Gateway of Tally** select **Import of Data > Synchronization**
 - Select **Synchronise All** to send all rules
 - Select **Synchronise Selected** to send selected rule
3. Press Enter to start synchronization to send the rule

Note: We can alter the Sync Rule created in Tally, by following the steps:

- Go to **Gateway of Tally > Import of Data > Synchronization > Client Rules/Server Rules > Alter**
- Select the rule from the **List of Rules**
- Alter the details, and Accept the screen
- Access the Rule Info. for masters and transactions by pressing **Alter** on the right button bar

Step 6: Activating Synch Rule on Server

Follow the steps in the server location, **Emerald-Shine Makers**

Go to **Gateway of Tally > Import of Data > Synchronisation > Server Rules > Activate**

The **Select Item** screen appears as shown in figure 2.2.12:

List of Rules			
Client Company GUID	Client Company Name	Rule Type	Rule Name
22fcfb70-d1a9-48c6-a2e0-9dc454af7dc2	Emerald-Shine Makers Delhi Branch	Transaction	Transaction Rule 1
22fcfb70-d1a9-48c6-a2e0-9dc454af7dc2(Master)	Emerald-Shine Makers Delhi Branch	Master	Master Rule 1

Figure 2.2.12 Selection of rule screen

4. Select the Master rule from the List of Rules

The Rule Type tells you if the rule you are selecting is a masters or transactions rule.

Activating Master Rule

The **Server Rule Alteration** screen appears as shown in figure 2.2.13:



Server Rule Alteration	
Rule Type	: Master
Rule name	: Master Rule 1
On-demand sync	? No
Direction of sync	: Receive Data
Deactivate when client rule changes	? Yes
Set/alter advanced configurations	? No
Activate rule	? Yes_

Figure 2.2.13 Activation of Rule

Note: Set **Set/alter advanced configurations?** to **Yes** to change the advanced configuration. You can specify advanced configurations for send masters or receive masters.

Activating Transaction Rule

The **Server Rule Alteration** screen appears as shown in figure 2.2.14:

Server Rule Alteration	
Rule Type	: Transaction
Rule name	: Transaction Rule 1
On-demand sync	? No
Direction of sync	: Both
Deactivate when client rule changes	? Yes
Set/alter advanced configurations	? No
Activate rule	? Yes_

Figure 2.2.14 Activation of transaction rule

Note: Enable **Set/alter advanced configurations?** to **Yes** and to change the advanced configuration. You can specify advanced configurations for receive data, send data or both.

Step 7: Synchronisation of Data

This step must be followed in client and server location, where the transfer of data is required.

1. Go to **Gateway of Tally > Import of Data > Synchronization**
 - Select **Synchronise All** to synchronise data for all the client rules created



- Select **Synchronise Selected** to synchronise data for selected rule

2. Press **Enter** to start data synchronization

After data synchronisation, a message appears in the server system's calculator pane, as shown in figure 2.2.15:

```
Calculator                                     Ctrl + N x
4 18:29:18 : Connected to Tally.NET Server
5 18:29:18 : Emerald-Shine Makers - Company connected successfully
6 18:29:29 : Synchronizing with Company "Emerald-Shine Makers Delhi Branch" for rule "Master Rule 1"
7 18:29:32 : Synchronizing with Company "Emerald-Shine Makers Delhi Branch" for rule "Transaction Rule 1"
8>
```

Figure 2.2.15 Data Synchronisation Message

Alternatively, you can synchronise data on the Gateway of Tally using the following buttons:

- **Q**: Synchronise: Press **Alt + O** to synchronise data for all sync rules
- **Y**: Sync Selected: Press **Alt + Y** to synchronise selected sync rules

The **Synchronise All** option is used to perform synchronisation, and to send and accept the sync rule created by the client.

Observation: Once after synchronising the data in client and server location, open the server company, here it is **Emerald-Shine Makers**, and go to daybook report enter the full period and check the transactions. The transactions which were recorded in the client (**Emerald-Shine Makers Delhi Branch**) are transferred to server company i.e., **Emerald- Shine Makers**.

Conclusion

In this chapter we have learnt to access the data remotely using Remote Access feature and synchronized the data between branch to head office using Synchronization feature of Tally.

CHAPTER

3

E-Filing

Electronic filing is the process of filing tax returns for TDS, TCS, GST, IT etc. using internet and tax preparation software that has been approved by the tax authority.

3.1 Tax Deducted at Source

LEARNING OBJECTIVES

- Deducting TDS on Rent on Machinery, Purchase of Software and Commission and Brokerage expenses
- Rectification of errors in TDS reports
- Generating TDS Challan
- Generating TDS return
- Filing e-return

3.1.1 Introduction

TDS stands for **Tax Deducted at Source**. The concept of TDS was introduced in the Income Tax Act, 1961, with the objective of deducting the tax on an income, at the source of the income. It is one of the methods of collecting Income Tax, which ensures regular flow of revenue to the Government.

3.1.2 Setting up TDS in Tally

The TDS module in Tally is integrated with financial accounts and takes care of all the TDS and e-TDS requirements of your business, right from voucher entry to report generation. Tally completely automates your TDS management - accurately computes tax to be deducted at source, the TDS payable amount, and generates TDS payment challans, TDS Certificates, Statutory Returns, and other related MIS reports.

Its e-TDS features further assist you to file your mandatory tax returns in electronic format as specified by the Income Tax Department. It helps in minimizing error-prone entry of information, incorrect remittances and provides accounting for interest and penalties (if any) for smooth and effective functioning of your business.

As per section 194J (Notification 21/2012), tax is applicable on a software product when it is purchased directly from a producer (first level of purchase), and not applicable (exempt) when it is purchased from a dealer (subsequent purchase). Exempt purchase must be reported separately in TDS returns Form 26Q.

In this section we will learn to record the purchase of software transactions in Tally

Business Scenario

Comfort Enterprises started a company with a capital of ₹ 10,00,000, in April 2019. The company is into



timber manufacturing. They have branches in 3 locations Delhi, Mumbai, and Chennai. They have taken a logging machinery on rental basis for business purpose. The amount of rent is ₹ 3,00,000 which is above the exemption limit. Hence, they must deduct TDS on rental expenses, let us now see how **Comfort Enterprises** maintains its books of accounts in Tally.

Activity:

- Create the following company in Tally:
 Company Name: **Comfort Enterprises**
 Address: No: 16/56, Raheja Building, Bangalore 560031
 State: Karnataka
 Financial Year: 01-04-2019 to 31-03-2020
- Create the ledger **Kotak Bank** under **Bank Accounts** and **Proprietors Capital** under **Capital Account**.
- Record a Journal entry or Receipt entry for introducing capital of ₹ 10,00,000 to business as shown in table 3.1.1

Particulars	L.F	Dr.	Cr.
Kotak Bank _____ Dr.		10,00,000	
To, Proprietors Capital A/c			10,00,000
(Being cash invested by the proprietor)			

Table 3.1.1

3.1.2.1 Activating TDS for the Company

To activate TDS feature for Comfort Enterprises, follow the steps:

- Go to **Gateway of Tally > F11: Features > F3: Statutory >** set the options **Tax Deducted at Source (TDS)** and **Set/alter TDS details** to **Yes**
- On enabling **Set/alter TDS details**, TDS Deductor Details screen appears, fill in the **Company TDS Deductor Details**.

Illustration 1: Booking of rental expenses on equipment's, which attracts TDS

30-07-2019	Voucher: Journal Comfort Enterprises booked rental expenses of ₹ 3,00,000, on Machinery against Quick Agency . Since the Rent on Machinery expenses is ₹ 3, 00,000 TDS must be deducted while booking the expense
30-07-2019	Voucher: Payment Made a payment of remaining amount of ₹ 2,94,000 to Quick Agency vide cheque number 000001 dated 30-07-2019.

Table 3.1.2

Let us now record the transactions in Tally.

The applicable Income Tax rates for payment of **Rent on Plant & Machinery** to **Company Resident - Deductee Type** is 2%.

Step 1: Creation of TDS Nature of Payments,

- Go to **Gateway of Tally > Accounts Info. > Statutory Info. > TDS Nature of Pymts > Create > Enter the Name** or Press **Ctrl+C: Helper** and select the Nature of Payment as **Rent of Plant, Machinery Or Equipment**> enter the **Rate** as 2% and **Threshold/exemption limit** as ₹ 2,40,000 accept the **TDS Nature of Payment Creation** screen.

Step 2: Creation of Account Group and Enabling TDS at Group Level

Accounting Master Creation

Account Group- Rent Expenses (Machinery)

- Go to **Gateway of Tally > Accounts Info. > Groups > Create**> enter the name as **Rent Expenses (Machinery)**>under **Indirect Expenses**> enable **Set/Alter TDS details** > select **Nature of Payment** as **Rent of Plant, Machinery Or Equipment** and accept **Group Creation** screen.

Step 3: Creation of Accounting Masters

To book the expense in the books of **Comfort Enterprises**, first ensure that the required ledgers are created in Tally.

Rent on Machinery

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create** > create **Rent on Machinery** under **Rent Expenses (Machinery)** > select **Is TDS applicable** as **Applicable** and select **Nature of Payment** as **Undefined** (as we have already defined the Nature of Payment in Accounting Group)save the ledger.

Quick Agency

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create** > create **Quick Agency** under **Sundry Creditors** > set **Is TDS Deductible** to **Yes**, select **Deductee type** as **Company- Resident**, set **Deduct TDS in Same Voucher** to **Yes**, select **Nature of Payments** enter **PAN/IT No.** and save the ledger.

TDS on Rent of Machinery

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create** > create **TDS on Rent of Machinery** under **Duties and Taxes** > select **Type of duty/tax** as **TDS** select **Nature of payment** as **Rent of Plant, Machinery Or Equipment** and save the ledger.

Step 4: Recording Journal Voucher to book Expenses and Deduct TDS

- Go to **Gateway of Tally > Accounting Vouchers > F7: Journal**
- Click **F2: Date** to set the date to **30-7-2019**
- Debit the **Rent on Machinery** expense ledger
- Enter **3,00,000** in the **amount field**



5. Credit **Quick Agencies**, you will get the **Bill-wise Details screen**, enter the following details:
 - Select **Type of Ref** as **New Ref**
 - **Name** – Let it be as it is i.e., **2**
 - Due Date - Do not enter any details
 - **Amount** – Amount ₹ **3,00,000** will get captured automatically
 - Press **Enter**. The amount after TDS deduction will appear in the **Amount** field automatically
 - Again, select **Type of Ref** as **New Ref**
 - **Name** – Let it be as it is i.e., **2**
 - Due Date - Do not enter any details
 - **Amount** – Amount ₹ **6,000** will get captured automatically
6. Credit the ledger **TDS on Rent of Machinery** (Tax ledger).
7. The **TDS amount ₹ 6,000** will capture automatically.
8. Press **Enter**
9. Enter **Narration**, in the **Narration field**

The **Journal Voucher Screen** appears as shown in the figure 3.1.1:

Accounting Voucher Creation		Comfort Enterprises		Ctrl + M
Journal No. 2				30-Jul-2019 Tuesday
Particulars		Debit	Credit	
Dr Rent on Machinery		3,00,000.00		
Cur Bal: 3,00,000.00 Dr				
Cr Quick Agency			2,94,000.00	
Cur Bal: 2,94,000.00 Cr				
New Ref 2		3,00,000.00		
New Ref 2		6,000.00		
Cr TDS on Rent of Machinery			6,000.00	
Cur Bal: 6,000.00 Cr				

Figure 3.1.1 Journal Voucher Screen

10. Press **Enter** to accept the entry.

Step 5: Making Payment to Party

To record a Payment Voucher, follow the steps:

1. Go to **Gateway of Tally > Accounting Vouchers > F5: Payment** > date appears as **30-07-2019** > select **Kotak Bank** in **Account** field, under **Particulars** field, select **Quick Agency**, **Bill-wise Details** screen appears, select **Agst Ref** and track the bill with **Name 2** and press entry amount appears automatically.

The completed **Payment Voucher Creation screen** appears as shown in Figure 3.1.2:

Accounting Voucher Creation		Comfort Enterprises	Ctrl + M
Payment	No. 1		30-Jul-2019 Tuesday
Account : Kotak Bank Cur Bal: 7,06,000.00 Dr			
Particulars		Amount	
Quick Agency Cur Bal: 0.00 Dr Agst Ref 1	2,94,000.00 Dr	2,94,000.00	

Figure 3.1.2 Payment Voucher Screen

2. Accept the Entry.

After recording the transaction, the entry will be automatically updated in the **Balance Sheet** and **Profit & Loss Account**.

Observation: Go to **Gateway of Tally > Display > Account Books > Ledger > Select TDS on Rent of Machinery**. You should get the amount as ₹ 6,000 (This amount is payable to the government).

Business Scenario

Comfort Shelters has purchased software to its branches, to maintain the books of accounts. The company deducted TDS on the same and made a payment to the government.

Let us now see how this is handled in Tally.

Illustration 2: Recording of purchase of software transaction which attracts TDS

Date	Particulars
01-08-2019	Voucher: Purchase Comfort Shelters purchased the software directly from producer Sky High Solutions at ₹ 50,000 and TDS @ 10% is deducted.
05-08-2019	Voucher: Payment Made a payment of remaining amount of ₹ 45,000 to Quick Agency vide cheque number 000003 dated 31-08-2019.

Table 3.1.3

To record the transaction in the books of accounts, follow the steps:

Step 1: Creation of TDS Nature of Payment

Go to **Gateway of Tally > Accounts Info. > Statutory Info. > TDS Nature of Pymts > Create** > enter the **Name** or Press **Ctrl+C** and select the Nature of Payment as **Payment \Royalty on Acquisition of Software U/s 194J** > enter the **Rate** as 10% and **Threshold/exemption limit** as ₹ 30,000 accept the **TDS Nature of Payment Creation** screen.

Step 2: Creation of Accounting Masters

To record the purchase vouchers in the books of **Comfort Enterprises**, first ensure that the required ledgers are created in Tally.



Purchase of Software

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create > create Purchase of Software** under **Fixed Assets>** select **Is TDS Deductable?** as **Yes**, enable the option **Treat as TDS Expenses?** and select **Nature of Payment** as **Payment\Royalty on Acquisition of Software U/s 194J** and save the ledger.

Sky High Solutions

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create > create Sky High Solutions** under **Sundry Creditors >** set **Is TDS Deductable** to **Yes**, select **Deductee type** as **Company- Resident**, set **Deduct TDS in Same Voucher** to **Yes**, select **Nature of Payment** enter **PAN/IT No.** and save the ledger.

TDS on Software

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create > create TDS on Software** under **Duties and Taxes >** select **Type of duty/tax** as **TDS** select **Nature of payment** as **Payment/Royalty on Acquisition of Software U/s 194J** and save the ledger.

Step 3: Recording of Purchase Transaction

- Go to **Gateway of Tally > Accounting Vouchers > F9: Purchase**
- Press **F2: Date** and change the date to **01-08-2019**
- The purchase voucher will be in **Item Invoice Mode**, press **Alt+I**, to change it to **Account Invoice** mode
- Enter the **Supplier invoice no. as SS/1** and **Date** captures the **Invoice Date** by default.
- In the **Party A/c name** field select **Sky High Solutions**
- Under **Particulars** field select **Purchase of Software** ledger
- Enter the amount as **₹ 50,000** and press **Enter**
- Select **TDS on Software** ledger (Tax ledger) and the TDS amount **₹ -5,000** will get deducted automatically (the amount will have a negative sign)
- You will get the **Bill-wise Details** screen, enter the following details:
 - Select **Type of Ref** as **New Ref**
 - Name** – Let it be as it is i.e., **SS/1**
 - Due Date** - Do not enter any details
 - In the **Amount** field – Amount **₹ 50,000** will get captured automatically
 - Press **Enter**. The amount after TDS deduction will appear in the **Amount** field automatically
 - Again, select **Type of Ref** as **New Ref**
 - Name** – Let it be as it is i.e., **SS/1**
 - Due Date** - Do not enter any details

- In the **Amount** field – Amount ₹ 5,000 will get captured automatically
 - Select **End of List** and press Enter to go back to the voucher creation screen
10. Enter the **Narration**
 11. Press **Alt+A: Tax Analysis** in order to view the TDS calculation; press **Alt+F1**, to view the **Tax Analysis** in detailed mode

The **Tax Analysis** screen appears as shown in the figure 3.1.3:

Tax Analysis			
Comfort Enterprises			
Tax Analysis			
Particulars	Assessable Value	Tax rate	Duty/Tax Value
TDS			
Payment/Royalty on Acquisition of Software U/s 194J	50,000.00	10.00 %	5,000.00
Purchase of Software 50,000.00			
Income Tax	50,000.00	10.00 %	5,000.00

Figure 3.1.3 Tax Analysis Screen

12. Press **Esc** to go back to the **Voucher Creation** screen and press **Enter**

The **Purchase Voucher Creation** screen appears as shown in the figure 3.1.4:

Accounting Voucher Creation			
Comfort Enterprises			
Purchase No. 1			
Supplier invoice no.: SS/1 Date : 1-Aug-2019			
Party A/c name : Sky High Solutions			
Current balance :			
Particulars	Rate	per	Amount
Purchase of Software			50,000.00
TDS on Software			(-)5,000.00

Figure 3.1.4 Purchase Voucher Creation Screen

13. Accept the Entry.

Step 4: Making Payment to Party

To record a Payment Voucher, follow the steps:

1. Go to **Gateway of Tally > Accounting Vouchers > F5: Payment** press **F2: Date** and provide as **05-08-2019** > select **Kotak Bank** in **Account** field, under **Particulars** field, select **Sky High Solutions**, **Bill-wise Details** screen appears, select **Agst Ref** and track the bill with **Name SS/1** and press entry amount appears automatically.

The completed **Payment Voucher Creation** screen appears as shown in Figure 3.1.5:

Accounting Voucher Creation			
Comfort Enterprises			
Payment No. 2			
5-Aug-2019 Monday			
Account : Kotak Bank			
Cur Bal: 6,61,000.00 Dr			
Particulars	Amount		
Sky High Solutions	45,000.00		
Cur Bal: 0.00 Dr			
Agst Ref SS/1	45,000.00 Dr		

Figure 3.1.5 Payment Voucher Screen



2. Accept the Entry.

Illustration: 3 Booking expenses on Commission Expenses

Date	Particulars
15-08-2019	Voucher: Journal Comfort Enterprises incurred commission expenses of ₹1,20,000 for services taken from a Business Consultancy Mayur Agency .

Table 3.1.4

Step 1: Creation of Accounting Masters

Activity:

1. Create **TDS Nature of Payment** as **Commission Or Brokerage**, mention the rate as 5% and exemption limit as ₹ 15,000
2. Create **Commission Expenses** ledger under **Indirect Expenses**, set **Is TDS applicable** as **Applicable** and select the **Nature of Payment** as **Commission Or Brokerage**.
3. Create **Mayur Agency** under **Sundry Creditors**, set **Is TDS Deductable** as **Yes**, select **Deductee type** as **Company- Resident**, enable **Deduct TDS in Same Voucher**, do not enter the PAN No accept the ledger.
4. Create **TDS on Commission Duty** ledger.

Step 2: Recording Journal Voucher to book Expenses and Deduct TDS

1. Go to **Gateway of Tally > Accounting Vouchers > F7: Journal**
2. Click **F2: Date** to set the date to **15-8-2019**
3. Debit the **Commission Expenses** ledger
4. Enter **₹ 1,20,000** in the amount field
5. Credit **Mayur Agencies**, you will get the **Bill-wise Details** screen, enter the following details:
 - Select **Type of Ref** as **New Ref**
 - **Name** – Let it be as it is i.e., 3
 - **Due Date** - Do not enter any details
 - **Amount** – Amount **₹ 1,20,000** will get captured automatically
 - Press **Enter**. The amount after TDS deduction will appear in the Amount field automatically
 - Again, select **Type of Ref** as **New Ref**
 - **Name** – Let it be as it is i.e., 3
 - **Due Date** - Do not enter any details

- **Amount** – Amount ₹ 24,000 will get captured automatically
6. Credit the ledger **TDS on Commission** (Tax ledger).
 7. The TDS amount ₹ 24,000 will capture automatically.
 8. Press Enter
 9. Enter **Narration**, in the Narration field

The **Journal Voucher Screen** appears as shown in the figure 3.1.6:

Accounting Voucher Creation		Comfort Enterprises	Ctrl + M
Journal	No. 3		15-Aug-2019 Thursday
Particulars	Debit	Credit	
Dr Commission Expenses Cur Bal: 1,20,000.00 Dr	1,20,000.00		
Cr Mayur Agency Cur Bal: 96,000.00 Cr		96,000.00	
New Ref 3 1,20,000.00 Cr			
New Ref 3 24,000.00 Dr			
Cr TDS on Commission Cur Bal: 24,000.00 Cr		24,000.00	

Figure 3.1.6 Journal Voucher Screen

10. Press Enter to accept the entry.

Rectification of errors in TDS returns

To resolve the exception and generate TDS report, follow the steps:

1. Go to **Gateway of Tally > Display > Statutory Reports > TDS Reports > Form 26Q**

The **Form 26 Q** appears as shown in figure 3.1.7:

Form 26Q		Comfort Enterprises	Ctrl + M
Form 26Q			1-Jul-2019 to 30-Sep-2019
Statistics of Vouchers			
Total Number of Transactions			5
Included Transactions			2
Excluded Transactions			2
Uncertain Transactions			1
Particulars	Assessable Value		Tax
	Prev. Period	Current Period	Deductible
Deduction Details			
Deduction at Normal Rate		3,50,000.00	11,000.00
Deduction at Higher Rate			
Lower Rated Taxable Expense			
Zero rated Taxable Expense			
Under Exemption limit			
Exempt in lieu of PAN available			
Total Deducted			11,000.00

Figure 3.1.7 Form 26 Q

2. Select **Uncertain Transactions**

The **Summary of Exception** appears as shown in figure 3.1.8:



Summary of Exceptions		Comfort Enterprises	Ctrl + M
Summary of Exceptions		1-Jul-2019 to 30-Sep-2019	
Particulars	No. of Vouchers		
Master Related Exceptions			
Expenses/Purchase Master			
Unable to determine TDS applicability for ledgers or stock items			
Party Master			
Unable to determine the deductee type for party			
PAN not available for party			
Notification is not available for zero or lower rate			
Duty Master			
Unable to determine TDS applicability for duty ledgers			
Nature of Payment			
Unable to determine the tax rate for nature of payment			
Transaction Related Exceptions			
Mismatch in Nature of Payment			
Unable to determine the nature of payment in transaction			
Booking & Booking with Deduction Entries			
No link is available in booking and booking with deduction voucher			
Unable to determine deductee details in cash transactions			
Deduction Entries			
TDS deducted but not linked with expense/purchase transaction			
Expenses/purchase returns not linked with expense/purchase transaction			
Overridden Entries			
1 more ...			

Figure 3.1.8 Summary of Exception

3. Press enter on **PAN not available for party**

The **Ledgers with Exceptions** appears as shown in figure 3.1.9:

Ledgers with Exceptions					Comfort Enterprises	Ctrl + M
Exception: PAN not available for party						
Sl. No	Name of Ledger	PAN No	Applicable From	PAN Status		
1	Mayur Agency			[Unknown		

Figure 3.1.9 Ledgers with Exceptions screen

4. Enter the **PAN No** and **Applicable From** date and accept the screen.

5. Press Esc to return to Form **26 Q** report.

The **Form 26 Q** after resolving the exception appears as shown in the figure 3.1.10:

Form 26Q			Comfort Enterprises			Ctrl + M		
Form 26Q						1-Jul-2019 to 30-Sep-2019		
Statistics of Vouchers								
Total Number of Transactions								
Included Transactions						5		
Excluded Transactions						3		
Uncertain Transactions						2		
						0		
Particulars			Assessable Value		Tax	Deducted		Balance
			Prev. Period	Current Period	Deductible	Prev. Period	Current Period	Deductible
Deduction Details								
Deduction at Normal Rate			4,70,000.00	4,70,000.00	17,000.00	35,000.00	35,000.00	(-)18,000.00
Deduction at Higher Rate								
Lower Rated Taxable Expense								
Zero rated Taxable Expense								
Under Exemption limit								
Exempt in lieu of PAN available								

Figure 3.1.10 Form 26 Q - Exception Resolved

In Figure 3.3.10, we can observe that the Balance Deductible is appearing as (-)18,000, this is because TDS was deducted at 20% instead of 5% as PAN was not available. Press enter **Deduction Details** screen appears as shown in figure 3.1.11

The **Deduction Details** screen appears as shown in the figure 3.1.11:

Deduction Details Comfort Enterprises Ctrl + M								
Deduction at Normal Rate 1-Jul-2019 to 30-Sep-2019								
Particulars	Assessable Value			Tax Deductible	Deducted			Balance Deductible
	Prev. Period	Current Period	Total		Prev. Period	Current Period	Total	
Mayur Agency		1,20,000.00	1,20,000.00	6,000.00		24,000.00	24,000.00	(-)18,000.00
Quick Agency		3,00,000.00	3,00,000.00	6,000.00		6,000.00	6,000.00	
Sky High Solutions		50,000.00	50,000.00	5,000.00		5,000.00	5,000.00	

Figure 3.1.11 Deduction Details screen

Drill down (Press **Enter** thrice) and alter the transaction as shown in the figure 3.1.12

Accounting Voucher Alteration (Secondary) Comfort Enterprises Ctrl + M			
Journal No. 2		15-Aug-2019 Thursday	
Particulars	Debit	Credit	
Dr Commission Expenses Cur Bal: 1,20,000.00 Dr	1,20,000.00		
Cr Mayur Agency Cur Bal: 0.00 Cr		1,14,000.00	
New Ref: 2 1,20,000.00 Cr			
New Ref: 2 6,000.00 Dr			
Cr TDS on Commission Cur Bal: 6,000.00 Cr		6,000.00	

Figure 3.1.12 Journal Voucher Alteration screen

Note: As per the TDS rate for Commission, we have altered the TDS amount to ₹ 6,000 instead of ₹ 24,000 in the transaction, you can either alter the existing transaction or delete the old entry and record a new entry. After this step observe **Form 26 Q** the **Balance Deductible** will disappear.

Activity: Record a Payment voucher as on 20-08-2019

20-08-2019	Voucher: Payment Made a payment of remaining amount of ₹1,14,000 to Mayur Agency . vide cheque no: 000003 dated 20-08-2019
------------	---

Table 3.1.5

3.1.3 Payment of TDS

As per the income tax act, corporate & non- corporate entities (deductor) making payments (specified under income tax act) to third parties (deductee) are required to deduct tax at source at the prescribed rates on such payments.

The TDS so deducted should be deposited to the credit of the central government within one week from the last day of the month in which the deduction is made. This is deposited into any of the designated branches of banks authorized to collect taxes on behalf of the government accompanied by income tax challan ITNS 281.

**Illustration 4: Recording of TDS payment to government and printing of challan ITNS 281.**

Date	Particulars
30-09-2019	Comfort Enterprises , paid ₹ 17,000 to the government towards TDS on all expenses from 01-07-2019 to 30-09-2019 , vide Kotak cheque number 000010 dated 30-09-2019

Table 3.1.6

To record the transactions in the books of accounts, follow the steps:

Step 1: Check the TDS Balance Payable Amount

- Go to **Gateway of Tally > Display > Statutory Reports > TDS Reports > Form 26Q**
- Press **Alt+F2: Period** and enter the period as 1-7-2019 to 30-9-2019

The **Form 26Q** appears as shown in the figure 3.1.13:

The screenshot shows the Tally Form 26Q interface. At the top, there are menu options like Print, Export, E-Mail, Upload, TallyShop, Language, Keyboard, Control Centre, Support Centre, and Help. The form title is 'Form 26Q' for 'Comfort Enterprises' for the period '1-Jul-2019 to 30-Sep-2019'. The 'Statistics of Vouchers' section shows 'Total Number of Transactions' as 6, with 'Included Transactions' as 3, 'Excluded Transactions' as 3, and 'Uncertain Transactions' as 0. The 'Deduction Details' section shows 'Assessable Value' as 4,70,000.00, 'Tax Deductible' as 17,000.00, and 'Balance Deductible' as 17,000.00. The 'Payment Details' section shows 'Included Transactions' as 0 and 'Not Included Transactions' as 0. The 'Balance Payable' is shown as 17,000.00. The 'Stat Payment' button is highlighted in red.

Figure 3.1.13 Form 26Q

Observation: In the form 26Q, we can observe that the balance payable is displaying the total amount which is deducted by the company and payable to the government.

Step 2: Recording of Payment Voucher from Form 26Q

- From form 26Q, press **Alt+S: Stat Payment**
- Enter the required details in **Stat Payment Details** screen as follows

The **Stat Payment Details** screen appears as shown in the figure 3.1.14:



Statutory Payment			
Tax Type	: TDS		
Period From	: 1-Jul-2019	To	30-Sep-2019
Deducted Till Date	: 20-8-2019		
Section	: <input type="checkbox"/> All Items		
Nature of Payment	: <input type="checkbox"/> All Items		
Deductee Status	: <input type="checkbox"/> All Items		
Residential Status	: Resident		
Cash/Bank	: Kotak Bank		

Figure 3.1.14 Stat Payment Details Screen

3. Select the Kotak Bank ledger, we will get the payment voucher screen.
4. Press **F2: Date** and change the date to 30-09-2019
5. Enter the bank details in the bank allocation screen

The **Payment Voucher** appears as shown in the figure 3.1.15:

Accounting Voucher Creation		Comfort Enterprises		Ctrl + M
Payment No. 4				30-Sep-2019 Monday
Account : Kotak Bank				
Cur Bal: 5,30,000.00 Dr				
Particulars				Amount
TDS on Commission				6,000.00
Cur Bal: 0.00 Dr				
Agst Ref Jrnl / 2 / 5	6,000.00 Dr			
Income Tax	6,000.00 Dr			
Surcharge				
Education Cess				
Secondary Education Cess				
TDS on Rent of Machinery				6,000.00
Cur Bal: 0.00 Dr				
Agst Ref Jrnl / 1 / 1	6,000.00 Dr			
Income Tax	6,000.00 Dr			
Surcharge				
Education Cess				
Secondary Education Cess				
TDS on Software				5,000.00
Cur Bal: 0.00 Dr				
Agst Ref Purc / 1 / 3	5,000.00 Dr			
Income Tax	5,000.00 Dr			
Surcharge				
Education Cess				
Secondary Education Cess				

Figure 3.1.15 Payment Voucher Screen

6. Accept the screen

Note: We can record the payment voucher even from **Accounting Vouchers** menu available in **Gateway of Tally**.

Once after recording the transaction in Tally Check form 26Q report under **Payment Details** section.



The **Form 26Q** after making a TDS payment appears as shown in figure 3.1.16:

Payment Details		1-Jul-2019 to 30-Sep-2019
Included Transactions		0
Not Included Transactions		1

Figure 3.1.16 Form 26Q – After TDS Payment

Observation: In form 26Q, we can observe that the TDS payment voucher appears under the head **Not Included Transactions** and still the balance payable is showing the payable amount as 17,000. To include TDS payment voucher, we need to reconcile it.

The following step will explain to reconcile the payment voucher in Tally

3.1.4 Payment Challan Reconciliation

As per the income tax act, the details of payment of TDS are required to be furnished in the TDS certificate issued to the deductee. For this purpose, the challan details containing the information with respect to bank challan no. & date, bank name, BSR code etc., are required to be specified. Tally allows us to enter all the required information as specified by the statutes, by using the challan reconciliation facility, if these details are not previously furnished while recording the payment voucher.

1. Go to **Gateway of Tally > Display > Statutory Reports > TDS Reports > Challan Reconciliation**

The **Challan Reconciliation Report** screen appears as shown in the figure 3.1.17:

P: Print	E: Export	M: E-Mail	O: Upload	S: TallyShop	G: Language	K: Keyboard	K: Control Centre	H: Support Centre	H: Help	Ctrl + M			F2: Period	
TDS Challan Reconciliation											Comfort Enterprises			F3: Company
TDS Challan Reconciliation											1-Sep-2019 to 30-Sep-2019			F4: Reconcile Challan
Date	Particulars	E-TDS Quarter From To	Section No.	Deductee Type	Resident Type	Cheque/DD No.	Cheque/DD Date	BSR Code	Challan No.	Challan Date	Vch No.	Amount	S: Set Challan Details	
30-9-2019	TDS on Commission	1-Jul-2019 30-Sep-2019	194H	Company	Resident						4	6,000.00	L: Show All	
	Bank Name :			Branch Name :										
30-9-2019	TDS on Rent of Machinery	1-Jul-2019 30-Sep-2019	194I	Company	Resident						4	6,000.00		
	Bank Name :			Branch Name :										
30-9-2019	TDS on Software	1-Jul-2019 30-Sep-2019	194J	Company	Resident						4	5,000.00		
	Bank Name :			Branch Name :										

Figure 3.1.17 Challan Reconciliation Report

2. Press **F5: Reconcile Challan**
3. Press **Alt+S: Set Challan Details**, enter the details as shown in figure 3.1.18

The **Set Challan Details** screen appears as shown in the figure 3.1.18:



Challan Details	
Quarter From Date	: 1-7-2019
Quarter To Date	: 30-9-2019
Bank Name	: Kotak Bank
Branch Name	: Kormangala
BSR Code	: 1234567
Bank Challan No.	: 2345
Challan Date	: 30.9.2019

Figure 3.1.18 Set Challan Details Screen

4. Press **Enter** to go back to the **TDS Challan Reconciliation** screen

The completed **TDS Challan Reconciliation** screen appears as shown in the figure 3.1.19:

TDS Challan Reconciliation					Comfort Enterprises					Ctrl + M B		
TDS Challan Reconciliation					1-Sep-2019 to 30-Sep-2019							
(Reconciliation)												
Date	Particulars	E-TDS Quarter Period From To	Section No.	Deductee Type	Resident Type	Cheque/DD No.	Cheque/DD Date	BSR Code	Challan No.	Challan Date	Vch No.	Amount
30-9-2019	TDS on Commission	1-7-2019 30-9-2019	194H	Company	Resident			123456	2345	30-9-2019	4	6,000.00
	Bank Name : Kotak Bank			Branch Name : Koramangala								
30-9-2019	TDS on Rent of Machinery	1-7-2019 30-9-2019	194I	Company	Resident			123456	2345	30-9-2019	4	6,000.00
	Bank Name : Kotak Bank			Branch Name : Koramangala								
30-9-2019	TDS on Software	1-7-2019 30-9-2019	194J	Company	Resident			123456	2345	30-9-2019	4	5,000.00
	Bank Name : Kotak Bank			Branch Name : Koramangala								

Figure 3.1.19 TDS Challan Reconciliation

5. Press **Enter** to accept

Once after reconciliation check the form 26Q report

The **Payment Details** section of **Form 26Q** after reconciliation appears as shown in the figure 3.1.20:

Payment Details			1-Jul-2019 to 30-Sep-2019
Included Transactions			1
Not Included Transactions			0
Particulars	Paid Amount	Amount	
Commission Or Brokerage	6,000.00		
Payment \Royalty on Acquisition of Software U/s 194J	5,000.00		
Rent of Plant, Machinery Or Equipment	6,000.00		
Total Paid	17,000.00		
Balance Payable			

Figure 3.1.20 Form 26Q - After reconciliation

Observation: Once after reconciling, the balance payable is showing nil balance and the **Total Paid** amount is shown as 17,000. And also, the payment voucher is reflecting under the head **Included Transactions**.

Activity: Take a print of the ITNS Challan 281 by following the given procedure

1. Go to **daybook** and select the payment voucher recorded on **30-09-2019**



2. Press **Alt+P** from the **Payment Voucher Alteration** screen to view the **Voucher Printing** screen
3. In the **Voucher Printing** screen,
 - Ensure **Print as TDS Challan** is set to **Yes**

3.1.5 E-Return

With the automation of collection, compilation and processing of TDS returns, the ITD notified electronic filing of returns of Tax Deducted at Source in the Scheme 2003.

Generating Form 26Q and Filing e-Return.

Form 26Q is a quarterly return for deduction of tax in respect of payments (other than salary) made to residents.

To file the e-Return, go to **Gateway of Tally > Display > Statutory Reports > TDS Reports > Form 26Q** and follow the given steps

Step 1: Resolve the Exceptions or Uncertain Transactions if any,

Check for any Uncertain Transaction and resolve if any, we have already resolved exceptions

Step 2: Save the Form 26Q return

Once after resolving the exception, next step is to save the return,

1. Click **F6: Save** button from the **Form 26Q** report

Note: If you try to save the return with uncertain transactions, you will get the popup message which reads as “There are still unsolved exception for the period. The tax values may not be correct if all exceptions are not solved. Do you really want to save without resolving?”

2. Once after saving the voucher, the details of the saved return can be viewed in **Return Transaction Book**

Activity: Generate Return Transaction book, go to **Gateway of Tally > Display > Statutory reports > TDS reports > select Return Transaction Book**

Note: Once after saving the return, if we make any changes in the TDS voucher then the return will come for recompute, we can either overwrite the previous return with the existing one or save a revised one. The saved return will be available in the return transaction book where you will get the details of return along with the modification details.

Step 3: Exporting the Form 26 Q

1. Go to **Gateway of Tally > Display > Statutory Reports > TDS Reports > Form 26Q**
2. Press **Ctrl+E: e-Return**, to export the file

The **Export Report** screen appears as shown in the figure 3.1.21:

Exporting eTDS Forms	
Language	: Restricted (ASCII Only)
Format	: SDF (Fixed Width)
Export Location	: C:\Program Files\Tally\Tally.ERP9\6.5.4
Output File Name	: Tally.txt
Open Exported Folder	? Yes
Place : Bangalore	
Date : 30-Sep-2019	
Is change in Address of Responsible Person since last Return ?	No
Is change in Address of Deductor since last Return ?	No
Appearance of Deductee Names	: Ledger Name
Is Regular Return Filed for Previous Period	? No
<div>Export ?</div> <div>Yes or No</div>	
NOTE : Validate the exported file through the NSDL's File Validation Utility before submitting the data.	

Figure 3.1.21 Export Report Screen

3. Enter the details as shown in the figure 3.1.21 and press **Enter** to export the file in selected format
The **Exported File** appears as shown in figure 3.1.22:








Name	Date modified	Type	Size
 regodbc32	05-11-2019 10:30	Application	1,624 KB
 Setup	05-11-2019 10:30	Application	2,761 KB
 tally	05-11-2019 10:30	Application	6,361 KB
 tally.imp	24-12-2019 18:46	IMP File	23 KB
 tally	26-12-2019 10:44	Configuration sett...	2 KB
 tally.lic	26-12-2019 17:26	LIC File	7 KB
 Tally	26-12-2019 17:35	Text Document	2 KB

Figure 3.1.22: Exported File

Step 4: Validate TDS returns with File Validation Utility

The exported file (Form 26Q) is required to be validated with the File Validation Utility (a freely downloadable utility tool from NSDL website)

FVU is a program developed by NSDL, which is used to ascertain whether the e-TDS return file contains any format level error(s).

After you have prepared your e-TDS return you can check/verify the same by using the File Validation Utility (FVU). This utility is freely downloadable from the NSDL-TIN website.

When you pass e-TDS return through FVU, it generates an 'error/response file'. If there are no errors in the e-



TDS return file, error / response, the file will display the control totals. If there are errors, the error/response file will display the error location and error code along with the error code description. In case you find any error, you can rectify it and pass the e-TDS return file again through the FVU till you get an error-free file, after file gets generated without error upload the return to the website.

To file TDS return, open the file validation utility (downloaded from NSDL website) and follow the steps:

1. Open the file validation utility tool.
2. Based on the returns being filed, you can browse and select 26Q or 27Q returns **.txt** file exported from Tally in the field **TDS/TCS Input File Name with Path**.
3. Browse and select the challan status inquiry **.csi** file downloaded from TIN website in the field **Challan Input File Name with Path**.
4. Enter the location to save the validation error file in the field **Error/Upload & Statistics Report File Path**.
5. Click **Validate**.
6. Click **OK** to close the messages displayed after validation.
7. Print the **Form 27A** created by the validation tool.
8. Submit the **Form 27A** and 26Q or 27Q returns **.txt** file (soft copy) at TIN-FC or upload on NSDL website.

Note: In case the validation is not successful, results are updated in the error report file. Rectify these errors in the data and re-generate the 26Q or 27Q returns text file for validation.

Form 27 Q

Form 27Q is a quarterly return for deduction of tax in respect of payments made (other than salary) to non-residents. In Tally, we can also record the transactions related to Non- Residents and generate the required form.

To generate **Form 27Q**, follow the given steps:

Go to **Gateway of Tally > Display > Statutory Reports > TDS Reports > Form 27Q** and follow the steps:

1. Resolve the Exceptions or Uncertain Transactions
2. Save the **Form 27Q** return
3. Press **Ctrl+E** and export the file
4. Exporting **Form 27 Q** and validate TDS returns with File Validation Utility
5. After validating upload, the return to the government website

Conclusion

In this chapter, we have learnt to record the TDS transactions for Nature of Payments like rent on machinery, purchase of software and commission and brokerage. we have seen how TDS payments can be made in Tally without much manual work and learnt to rectify uncertain transactions, also understood the process of e-filing from Tally.

3.2 Tax Collected at Source

LEARNING OBJECTIVES

- Understand basics concepts of TCS
- Enabling TCS in Tally
- Create masters necessary for TCS transactions
- Record TCS transactions
- Generate TCS reports and challans from Tally

3.2.1 Introduction

Tax Collected at Source (TCS) is tax collected from the source (transaction) by the seller (collector) from the buyer (collectee/ payee), for goods traded u/s 206C (1) of the Income Tax Act, 1961. It is collected when accrued or when paid, whichever occurs earlier. It is prescribed for any business or trade dealing with alcoholic drinks, forest produce, scrap, etc. It also includes lease, license or contract related to parking lots, toll plaza, mines and quarry, etc., as defined in Section 206C of the Income Tax Act, 1961. The following brief description covers the applicability of the Act.

3.2.1.1 Basic Concepts of TCS

TCS Nature of Goods

The following table describes the Nature of Goods covered under TCS and the rate applied as shown:

Sl. No	Nature of Goods	TCS Rate
1	Alcoholic liquor for Human Consumption	1%
2	Any Other Forest Produce (Not Being Tendu Leaves & Forest Timber)	2.5%
3	Bullion or Jewellery (If consideration exceeds ₹ 2,00,000)	1%
4	Minerals, Being Coal or Lignite or Iron Ore	1%
5	Scrap*	1%
6	Tendu Leaves	5%
7	Timber Obtained by Any Mode Other Than Forest Lease	2.5%
8	Timber Obtained Under Forest Lease	2.5%
9	Sale of any goods in cash exceeding ₹ 2 lakhs	1%
10	Sale of any cars (both new & old) if sales is above ₹ 10 lakhs	1%
11	Sale of Motor Vehicle (if the value exceeds the threshold limit of ₹10, 00,000.)	1%
12	Sale in Cash of Any Goods (Other Than Bullion/Jewellery) – (if the value exceeds) the threshold limit of ₹ 2,00,000.)	1%
13	Providing of Any Services (Other Than Ch-XVII-B) – (if the value exceeds the threshold limit of ₹ 2,00,000.)	1%

Table 3.2.1



Note: Scrap means waste. The residual matter or any damaged materials arise and caused during manufacturing the finished units which cannot be useful in any further use.

Seller

A seller can refer to any one of the following:

- The Central Government
- A State Government
- Any Local Authority
- Corporation or Authority established by or under a Central, State or Provincial Act
- Any Company
- Firm
- Co-operative Society

It also includes Individuals or Hindu Undivided Family (HUF) running businesses or professions. The total sales, or turnovers of these businesses must exceed the monetary limits specified under Clause (a) or Clause (b) of Section 44AB of Tax Audit of Income Tax Act, 1961. This must be done during the financial year immediately preceding the financial year in which the goods of the nature specified above are sold.

Buyer

A Buyer is a person who has the right to receive or obtain goods specified above by means of a sale, auction, tender, or any other mode. A buyer does not include:

- A public sector company, the central government, a state government, an embassy, a high commission, legation, commission, consulate and the trade representation of a foreign state and a club; or
- A buyer in the retail sale of such goods purchased by him for personal consumption

TCS on Contracts, License and Leases

According to Sec 206C (1C), other than a public sector company (licensee or lessee), every person while dealing with another person for business who in whole or in part, either:

- Grants a lease or license
- Enters a contract
- Transfers any right or interest

Time and Mode of Payment of TCS to the Government Account

The tax collected is to be paid to the Central Government within one week of the last day of the month in which the tax was collected. This payment is made in any branch of Reserve Bank of India (RBI), State Bank of India (SBI), or any other authorized bank. The payment is made accompanied by Income Tax challan 281. If the tax is collected on behalf of the Government, then the amount can be paid without the Income Tax challan.

Credit for Tax Collected at Source

The amount collected on behalf of a person and paid under Section 206C (3) to the Central Government and specified in the second provision to sub-section (5) shall be deemed as payment of tax. Credit shall be given for that amount, for the assessment year in which such income is assessable without the production of a certificate.

TCS Returns

To ensure proper checks on the collections (TCS) and subsequent credit taken by the collectee/payee, the collectors are required to file their TCS returns with the Income Tax Department. The TCS returns contain the following information in the form prescribed by the Income Tax Department:

- Collector details (the TAN, name, address)
- The bank where the tax is deposited (like the amount, challan identification number)
- The collectee details (the PAN, name, amount paid, Tax Collected at Source)

Forms and Periodicity

The revised forms for e-TCS returns and their periodicity, prescribed under income tax laws are as follows:

Form	Periodicity	Due Date
Form 27D	Annual	Annual return of collection of tax under Section 206C of Income Tax Act, 1961, filed on or before 30 th June, immediately after the financial year.
Form 27EQ	Quarterly	On or before 15 th July 15 th October 15 th January and 15 th May
Form 27E	Annual	On or before 30 th June, immediately after the financial year.
Form 27B	Annual/Quarterly	Filed in physical form with each return i.e., Form 27E and Form 27EQ

Table 3.2.2

Business Scenario

Comfort Enterprises deals with timber that is obtained from forest lease, as it is subjected to TCS 2.5%. The company collects TCS and remits the same to the government. The company also sells goods at lower and nil rate.

Let us maintain TCS in Tally,

3.2.2 Setting up TCS in Company

Tally's simple yet powerful TCS feature enables you to record transactions related to Tax Collection at Source with ease.

Follow the steps given, to enable TCS in Tally for **Comfort Enterprises**



To Enable TCS,

1. Go to **Gateway of Tally > F11: Features > F3: Statutory**
2. Set the option **Enable Tax Collected at Source (TCS)** and **Set/alter TCS details** to **Yes**
3. We have already provided **Company TCS Collector Details**, Enable the option **Set/alter details of person responsible** and enter **Person Responsible Details**
4. Accept the screen and save the **Statutory and Taxation** screen

Illustration 1: Recording Sales Transaction with TCS

Date	Particulars			
01-10-2019	Comfort Enterprises sold the following stock item to Krish Timber Traders . Timber attracts TCS @ 2.5% with reference CE/1.			
	Name of Stock Item	Quantity	Rate/MT	Amount
	Timber	10	₹ 8,000	₹ 80,000

Table 3.2.3

To record the above transaction in the books of accounts, follow the steps:

Step 1: Create TCS Nature of Goods

- Go to **Gateway of Tally > Accounts Info. > Statutory Info. > TCS Nature of Goods > Create** or press **Ctrl+C: Helper**, to get predefined **List of Nature of Goods>Select Timber Obtained Under Forest Lease>Enter the Rate as 2.50%>Enter Rate, if PAN not available as 5%>Enter the Threshold/exemption Limit** if applicable and press **Enter** to save the **TCS Nature of Goods**.

Note: There is no threshold limit for Timber obtained under forest lease.

The completed **TCS Nature of Goods** appears as shown in figure 3.2.1

TCS Nature of Goods	
Name	: Timber Obtained Under Forest Lease
Section	: 206C
Payment code	: 6CB
Rate	: 2.50 %
Rate, if PAN not available	: 5 %
Threshold/exemption limit	:
<div>Accept ?</div> <div>Yes or No</div>	

Figure 3.2.1 Completed TCS nature of Goods Screen

Note:

- Press **F12 Configuration** from the **TCS Nature of Goods** and enable the option **Allow rate details for others** to **Yes**, in order to define the TCS rate for Individual/HUF and others.

- When we are selling the goods to customers who may or may not have PAN. In this case we can define the TCS rates for customers with or without PAN for each TCS Nature of Goods, in **Rate if PAN Not available** field

Step 2: Creation of Accounting Master

Krish Timber Traders

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create** > create **Krish Timber Traders** under **Sundry Debtors** > set **Is TCS Applicable?** to **Yes**, select **Buyer/Lessee Type** as **Company- Resident**, and enter **PAN/IT No.** and save the ledger.

Sales

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create** > create **Sales** under **Sales Account** > select **Is TCS Applicable?** as **Applicable** and select **Nature of Goods** as **Timber Obtained Under Forest Lease**.

TCS Duty

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create** > create **TCS Duty** under **Duties and Taxes** > select **Type of duty/tax** as **TCS** select **Nature of goods/contract/license/lease** as **Timber Obtained Under Forest Lease**.

Step 3: Creation of Inventory Master

- Go to **Gateway of Tally >Inventory Info.>Stock Items > Create**.

Timber	
Against the Field	Action to be Performed
Name	Enter as Timber
Under	Select as Primary
Units	Select as MT (Create UOM) using Alt+C
Is TCS Applicable?	Select as Applicable
Nature of Goods	Select as Timber Obtained Under Forest Lease

Table 3.2.4

Activity: Record the purchase entry mentioned in table 3.2.5 by creating the ledger **Crystal Timber Traders** under **Sundry Creditors** and Purchase ledger.

Date	Particulars			
01-10-2019	Comfort Enterprises purchased the following stock item from Crystal Timber Traders , with PUR/002 item value is inclusive of TCS.			
	Name of Stock Item	Quantity	Rate/MT	Amount
	Timber	100	₹7,000	₹7,00,000

Table 3.2.5



Step 4: Recording Sales of TCS Goods

1. Go to **Gateway of Tally > Accounting Vouchers > F8: Sales**
2. Press **F2: Date** and change the date to **01-10-2019**
3. Ensure it is in **Item Invoice mode**, enter **Reference no** as **CE/1**
4. In the **Party A/c name** field, select **Krish Timber Traders** and select the **Sales** ledger
5. In the **Name of Item** field, select **Timber**
6. Enter 10 in the Quantity field and ₹ 8,000 in the Rate field. The Amount will be automatically calculated and captured
7. Select the **TCS Duty** ledger and press enter
8. To view the **Tax Analysis**, press **Alt+A** and then click Alt+F1 for Detailed view

The **Tax Analysis** screen appears as shown in figure 3.2.2:

Tax Analysis			
Comfort Enterprises			
Tax Analysis			
Particulars	Assessable Value	Tax rate	Duty/Tax Value
TCS			
Timber Obtained Under Forest Lease	80,000.00	2.50 %	2,000.00
Sales 80,000.00			
Income Tax	80,000.00	2.50 %	2,000.00

Figure 3.2.2 Tax Analysis Screen

9. Press Esc from tax analysis screen, to go back to the voucher creation screen

The completed **Sales Invoice** appears as shown in figure 3.2.3:

Accounting Voucher Creation			
Comfort Enterprises			
Sales No. 1			
Reference no.: CE/1			
1-Oct-2019			
Tuesday			
Party A/c name : Krish Timber Traders			
Current balance :			
Sales ledger : Sales			
Name of Item	Quantity	Rate per	Amount
Timber	10 MT	8,000.00 MT	80,000.00
TCS Duty			2,000.00

Figure 3.2.3 Completed Sales Invoice Screen

10. Press **Ctrl+A** to accept

3.2.2.1 Sales of TCS Goods at Lower Rate

Where the Assessing Officer is satisfied that the total income of the buyer justifies the collection of tax at any lower rate than the relevant rate specified in Section 206C (1), Buyer (or licensee or lessee) will be allowed a lower rate of TCS on an application made by the buyer (or licensee or lessee) under sub-section (9) of Section 206C in Form No. 13.

The certificate granted shall be valid for the assessment year specified and is valid only for the person named therein. In Tally, the user can record and compute TCS on transactions, on which a lower rate of collection is applicable.

Illustration 2: Accounting sale of TCS goods at lower rate

Date	Particulars			
06-10-2019	Voucher: Sales			
	Comfort Enterprises sold the following stock item to Jai Timbers At a lower rate of TCS 1.5% with reference number CE/2 .			
	Name of Stock Item	Quantity	Rate/MT	Amount
	Timber	5	₹8,000	₹40,000

Table 3.2.6

To record the above transaction in the books of accounts, follow the steps given:

Step 1: Creation of Accounting Masters

Jai Timber

- Go to **Gateway of Tally >Accounts Info.>Ledgers> Create > create Jai Timbers** under **Sundry Debtors > click F12: Configure** to enable the option **Allow advanced entries in TDS/TCS master?**, set **Is TCS applicable** to **Yes**, select **Buyer/Lessee Type** as **Company- Resident**, enable **Use advanced configurations for TCS?** and set the option **Set/alter zero/lower rate for collection** to **Yes** and provide the details as shown in the figure 3.2.4 and enter **PAN/IT No.** and save the ledger.

The **Zero/Lower Collection Details** screen appears as shown in figure 3.2.4:

Zero / Lower Collection Details					
Nature of Goods	Section Number	Certificate No. / Date	Applicable From	Applicable To	TCS
Timber Obtained Under Forest Lease	206C	132	1-4-2019	31-3-2020	1.50 %

Figure 3.2.4 Zero/Lower Collection Details Screen

Step 2: Recording Sales Invoice

- Go to **Gateway of Tally > Accounting Vouchers > F8: Sales**
- Press **F2: Date** and change the date to **06-10-2019**, enter **Reference no** as **CE/2**
- In the **Party A/c name** field, select **Jai Timbers**, select the **Sales** ledger
- In the **Name of Item** field, select **Timber**
- Enter **5/MT** in the **Quantity** field and **₹ 8000** in the **Rate** field. The amount will be automatically calculated and captured
- Select the **TCS Duty** ledger and press **Enter**



7. To view the **Tax Analysis**, press **Alt+A** and then press **Alt+F1**

The **Tax Analysis** screen appears as shown in the figure 3.2.5:

Tax Analysis			
Comfort Enterprises			
Tax Analysis			
Particulars	Assessable Value	Tax rate	Duty/Tax Value
TCS			
Timber Obtained Under Forest Lease	40,000.00	1.50 %	600.00
Sales	40,000.00		
Income Tax	40,000.00	1.50 %	600.00

Figure 3.2.5 Tax Analysis Screen

Note: We can observe that the TCS is calculated @ 1.5% as we have entered zero/Lower Collection Details.

8. Press **Esc** from the Tax Analysis to go back to the voucher creation screen

The **Sales Invoice** appears as shown in the figure 3.2.6:

Accounting Voucher Creation			
Comfort Enterprises			
Sales No. 2			
Reference no.: CE/2			
Party A/c name : Jai Timbers			
Current balance :			
Sales ledger : Sales			
Name of Item	Quantity	Rate per	Amount
Timber	5 MT	8,000.00 MT	40,000.00
TCS Duty			600.00

Figure 3.2.6 Completed Sales Invoice Screen

9. Press **Ctrl+A** to accept

Once after recording the Sales transaction with lower rate of TCS the sales transaction is reflected in the TCS reports available in Tally.

3.2.2.2 Sales of TCS Goods at Nil Rate

In case, the goods referred in Section 206C (1) are to be utilized for the purposes of manufacturing, processing or producing articles or things and not for trading purposes, the buyer can get the approval for TCS @ Nil Rate by submitting a declaration in Form No. 27C.

Such certificate shall be valid only for the person named therein and to claim the benefit of Nil Rate, the declaration should be furnished to the person responsible for collecting tax.

Activity: Create the required masters and record the following transaction:

Illustration 3: Recording of TCS transaction at Nil Rate.

Date	Particulars			
15-10-2019	Comfort Enterprises sold the following stock item to Jyoti Timber Works with reference number CE/3 . The TCS applicable is Nil, as Jyoti Timber Works are using the timber for manufacturing.			
	Name of Item	Quantity	Rate	Amount
	Timber	5	₹ 8,000/MT	₹ 40,000

Table 3.2.7

Hint:

1. Create the ledger **Jyoti Timber Works**, Select **Buyer/Lessee type** as **Association of Persons** enable **Use advanced configurations for TCS?** and set the option **Set/alter zero/lower rate for collection** to **Yes** and provide the details and rate of TCS as **0%**, Do not enter **PAN/IT No.** and save the ledger.
2. Record the sales transaction without selecting the **TCS Duty** ledger.

3.2.3 Rectification of errors in TDS returns

To resolve the exception and generate TDS report, follow the steps:

1. Go to **Gateway of Tally > Display > Statutory Reports > TCS Reports > Form 27 EQ**

The **Form 27 EQ** appears as shown in figure 3.2.7:

Form 27 EQ			Comfort Enterprises			Ctrl + M		
Form 27 EQ						1-Oct-2019 to 31-Dec-2019		
Statistics of Vouchers								
Total Number of Transactions								
Included Transactions								
Excluded Transactions								
Uncertain Transactions								
Particulars			Assessable Value		Tax Collectable	Collected		Balance Collectable
			Prev. Period	Current Period		Prev. Period	Current Period	
Collection Details								
Collection at Normal Rate				80,000.00	80,000.00		2,000.00	2,000.00
Collection at Higher Rate								
Collection at Zero/Lower Rate				40,000.00	40,000.00		600.00	600.00
Under Exemption limit								
Total Collected								
2,600.00								

Fig

Figure 3.2.7 Form 27 EQ

2. Select **Uncertain Transactions** and resolve the exception.

Note: Here we have resolved the exception only for Not providing the PAN, all other exceptions if any would be listed here, which can be resolved from Summary of Exceptions screen.

The **Form 27 EQ** after resolving the exception appears as shown in the figure 3.2.8:



Form 27 EQ							
Comfort Enterprises							
Form 27 EQ							
1-Oct-2019 to 31-Dec-2019							
Statistics of Vouchers							
Total Number of Transactions							
Included Transactions							4
Excluded Transactions							3
Uncertain Transactions							1
							0
Particulars	Assessable Value			Tax Collectable	Collected		
	Prev. Period	Current Period	Total		Prev. Period	Current Period	Balance Collectable
Collection at Normal Rate		80,000.00	80,000.00	2,000.00		2,000.00	2,000.00
Collection at Higher Rate		80,000.00	80,000.00	600.00		600.00	600.00
Collection at Zero/Lower Rate							
Under Exemption limit							
Total Collected						2,600.00	

Figure 3.2.8 Form 27 EQ - Exception Resolved

In Figure 3.2.8, we can observe that the TCS Collected is ₹ 2,600 which needs to be paid to the department.

3.2.4 Payment of TCS

In Tally, we can record the payment of TCS collected to government in a payment invoice using the stat payment button.

Illustration 4: Recording payment of TCS collected to the department

Date	Particulars
19-10-2019	Voucher: Payment Comfort Enterprises made a payment of TCS duty towards Timber Obtained Under Forest Lease to the government vide Kotak Bank cheque no. 000012 . TCS collected on amount of ₹ 2, 600.

Table 3.2.8

To record the transaction in the books of accounts follow the steps:

Step 1: Recording Payment Voucher using Stat Payment

1. Go to **Gateway of Tally > Accounting Vouchers > F5: Payment**
2. Press **F2: Date** and change the date to **19-10-2019**
3. Press **Alt+S** or click **S: Stat Payment**
4. Select **TCS** in the **Type of Tax** field
5. Period **from 1-10-2019 to 31-10-2019**
6. Collected till date **19-10-2019**
7. Section **206C**
8. Nature of Goods **Timber Obtained Under Forest Lease**
9. Collectee status **Company**

10. Residential status **Resident**

11. Select **Kotak Bank**

The **Statutory Payment** screen appears as shown in figure 3.2.9:

Accounting Voucher Creation		Comfort Enterprises	Ctrl + M
Payment No. 5		19-Oct-2019 Saturday	
Account : Kotak Bank Cur Bal: 5,27,400.00 Dr			
Particulars	Amount		
TCS Duty	2,600.00		
Cur Bal: 0.00 Dr			
Agst Ref Sale / 1 / 11	2,000.00 Dr		
Income Tax	2,000.00 Dr		
Surcharge			
Education Cess			
Secondary Education Cess			
Agst Ref Sale / 2 / 12	600.00 Dr		
Income Tax	600.00 Dr		
Surcharge			
Education Cess			
Secondary Education Cess			

Figure 3.2.9 Payment of TCS

12. Accept the entry

Step 2: Print Challan ITNS 281

To print the Challan,

1. Press **Page Up** to go back to Payment Voucher or go to Display> Daybook> and open the payment entry.
2. Press **Alt+P** from the Payment Voucher to view the **Voucher Printing** screen
3. In the **Voucher Printing** screen,
 - Ensure **Print as TCS Challan** is set to **Yes** or else press backspace to fill all the details
4. Press Enter to print

The printed **TCS Challan** appears as shown in figure 3.2.10:



T.C.S. TAX CHALLAN		Single Copy (to be sent to ZA0)												
CHALLAN No./ ITNS 281	Tax Applicable (Tick one)* TAX COLLECTED AT SOURCE FROM (0020) COMPANY DEDUCTEES <input checked="" type="checkbox"/> (0021) NON-COMPANY DEDUCTEES <input type="checkbox"/>	Assessment Year 2020-21												
Tax Deduction Account No. (T.A.N.) AAAA12345A														
Full Name COMFORT ENTERPRISES														
Complete Address with City & State No:16&6, Raheja Building, Bangalore 560031														
Karnataka														
Tel. No.		Pin												
Type of Payment TCS Payable by Taxpayer (200) <input checked="" type="checkbox"/> TCS Regular Assessment (Raised by I.T. Deptt.) (400) <input type="checkbox"/>		Code* 6CB FOR USE IN RECEIVING BANK Debit to A/c / Cheque credited on DD MM YY SPACE FOR BANK SEAL Rs. 2,600.00												
DETAILS OF PAYMENTS Income Tax 2,600.00 Fee under sec. 234E Surcharge Education Cess Interest Penalty Total 2,600.00 Total (in words): <table border="1" style="width: 100%; text-align: center; font-size: small;"> <thead> <tr> <th>CRORES</th> <th>LACS</th> <th>THOUSANDS</th> <th>HUNDREDS</th> <th>TENS</th> <th>UNITS</th> </tr> </thead> <tbody> <tr> <td>Zero</td> <td>Zero</td> <td>Two</td> <td>Six</td> <td>Zero</td> <td>Zero</td> </tr> </tbody> </table>		CRORES	LACS	THOUSANDS	HUNDREDS	TENS	UNITS	Zero	Zero	Two	Six	Zero	Zero	
CRORES	LACS	THOUSANDS	HUNDREDS	TENS	UNITS									
Zero	Zero	Two	Six	Zero	Zero									
Paid in Cash/ Debit to A/c /Cheque No. Dated 19-Oct-2019 Drawn on (Name of the Bank and Branch) Date: 19-Oct-2019 Signature of person making payment														
Taxpayers Counterfoil (To be filled up by taxpayer) TAN AAAA12345A Received from COMFORT ENTERPRISES (Name) Cash/ Debit to A/c /Cheque No. For Rs. 2,600 Rs. (in words) Two Thousand Six Hundred Only. Drawn on (Name of the Bank and Branch) on account of Tax Collected at Source(TCS) from 6CB for the Assessment Year 2020-21		SPACE FOR BANK SEAL Rs. 2,600.00												

Figure 3.2.10 ITNS 281 Tax Challan

3.2.5 TCS Reports

TCS reports in Tally are extensive. Statutory reports are integrated, making it convenient to print and file reports in government prescribed formats. Additionally, a wide range of reports such as reconciliation reports and display reports are available. These reports provide information and help in managing TCS issues with ease.

3.2.5.1 Form 27EQ

As per the Income Tax Act, 1961, every corporate and government entity responsible for collection of tax at source should furnish TCS returns containing details of collectee(s) and challan details relating to deposit of tax with the Income Tax Department. Form 27EQ is the quarterly return statement for TCS. The due dates for filing returns are July 15th, October 15th, January 15th, and for the last quarter, it is May 15th.

The Form 27EQ report in Tally assists you in generating accurate returns to be filed.

The report can be drilled down to the voucher entry level to display complete information of each transaction.

To generate the Form 27EQ,

1. Go to **Gateway of Tally > Display > Statutory Reports > TCS Reports > Form 27EQ**
2. Click **F1: Detailed**

The **Form 27 EQ** statistics of voucher appears as shown in figure 3.2.11:

Form 27 EQ			Comfort Enterprises			Ctrl + M			B		
Form 27 EQ									1-Oct-2019 to 31-Dec-2019		
Statistics of Vouchers											
Total Number of Transactions											
Included Transactions											
Excluded Transactions											
Uncertain Transactions											
Particulars			Assessable Value			Tax	Collected			Balance	
			Prev. Period	Current Period	Total	Collectable	Prev. Period	Current Period	Total	Collectable	
Collection Details											
Collection at Normal Rate				80,000.00	80,000.00	2,000.00		2,000.00	2,000.00		
Collection at Higher Rate											
Collection at Zero/Lower Rate				80,000.00	80,000.00	600.00		600.00	600.00		
Under Exemption limit											
Total Collected								2,600.00			
Payment Details											
1-Oct-2019 to 31-Dec-2019											
Included Transactions											
Not Included Transactions											
Particulars						Paid Amount			Amount		
Balance Payable											
								2,600.00			

Figure 3.2.11 Form 27EQ

Total Number of Vouchers

This displays the total number of transactions which are considered for the generation of Form 27 EQ. Press Enter on Total Number of Transactions to view the Statistics of Vouchers.



Included Transactions:

Transactions that will be considered as Included for generating Form 27EQ:

- Sales entries in the current period, with TCS collection
- Entries recorded in Debit Note/Journal voucher for increase in sales value and/or TCS value
- Entries for payments received in advance from collectee
- TCS adjustment entries
- Entries accounting for TCS reversals and TCS deduction w.r.t escalations and de-escalations
- TCS 'book entries' for collections made by or on behalf of the Government

Excluded Transactions:

These are transactions that do not carry the TCS details that are requisite to generate Form 27EQ, and hence will be excluded while generating the form. Transactions that will be considered as Excluded for generating Form 27EQ:

- All entries where TCS is not applied
- Entries recorded using any of the following Voucher Types:
 - Payment
 - Contra
 - Inventory Vouchers
 - Order Vouchers
 - Debit Note (entries with no TCS implications)
 - Credit Note (entries with no TCS implications)
 - Vouchers marked as Optional
 - Reversing Journal
 - Memorandum Vouchers
 - Payroll Vouchers
 - Journal Vouchers recorded with adjustment entries not related to TCS

Press Enter on Excluded Voucher Details to view the Excluded Voucher Details.

Uncertain Transactions

It displays the complete list of information gaps found in transactions. Until these details are specified, either in masters or transactions, the transaction cannot be considered for filing returns. It consists of two broad categories,

- Master Related Exceptions
- Transactions Related Exceptions

All the transactions which are displayed here require the user's intervention to provide the appropriate details. Provision to completely exclude uncertain transactions is also made available. Hence, any transaction which has information gaps but is not required to be shown in the quarterly return, can be moved to Excluded Transactions.

Collection Details

Details of all TCS entries are listed here under two heads:

- Collection at Normal Rate
- Collection at Zero Rate

Payment Details

This will contain the statistics of all TCS payments (deemed or actual) that exist in the data till date. This will not contain any of the payment entries that are not related to the current period. Any payment entries other than TCS payment entry will not appear here.

Included Transactions

All the TCS payment to department till date, which is applicable for the report period, will be listed as Included Transactions under this section.

Not Included Transactions

Payment transactions that may possibly be TCS payments, but cannot be ascertained due to missing information, will be listed here. Transactions will be listed here under the following circumstances:

- The Duty Type has not been set for the duty ledger
- The type of TCS Payment is not available. That is, whether the payment is made towards Late Fee, Interest, Income Tax, Surcharge, Education Cess, Secondary Education Cess, or Other Payments.
- Details of the bank where the payment has been made, is unavailable
- The period for which the payment is made, is not available
- The payment entry has not been linked to a deduction entry
- The payment amount has not been rounded off. As per rules, TCS payments need to be rounded off figures.

Activity: Reconcile Challan from **Challan Reconciliation** report.

3.2.5.2 Saving Form 27EQ

After resolving the required exceptions, the changes made can be saved.

To save the Form 27EQ,

1. Go to **Gateway of Tally > Display > Statutory Reports > TCS Reports > Form 27EQ** > Press **F6** to save
2. Once after saving the **Form 27 EQ**, you can export the form 27 EQ.



Exporting the Form

On saving the form, e-filing of the returns can be done from Form 27EQ.

To export Form 27EQ

1. Click **Ctrl+E: e-Return** from **Form 27EQ**

The **Exporting eTCS Forms** screen appears as shown in figure 3.2.12:

Exporting eTCS Forms	
Language	: Restricted (ASCII Only)
Format	: SDF (Fixed Width)
Export Location	: C:\Program Files\Tally\Tally.ERP9\6.5.4
Output File Name	: Tally.txt
Open Exported Folder	? Yes
Place : Bangalore	
Date : 19-Oct-2019	
Is change in Address of Responsible Person since last Return ? No	
Is change in Address of Collector since last Return ? No	
Appearance of Deductee Names : Ledger Name	
Is Regular Return Filed for Previous Period ? No	
Export ?	
Yes or No	

NOTE : Validate the exported file through the NSDL's File Validation Utility before submitting the data.

Figure 3.2.12 TCS Export Screen

You can view the text file as shown in figure 3.2.13:

This PC > Local Disk (C:) > Program Files > Tally > Tally.ERP9 > 6.5.4				
Name	Date modified	Type	Size	
regodbc32	05-11-2019 10:30	Application	1,624 KB	
Setup	05-11-2019 10:30	Application	2,761 KB	
tally	05-11-2019 10:30	Application	6,361 KB	
tally.imp	24-12-2019 18:46	IMP File	23 KB	
tally	26-12-2019 10:44	Configuration sett...	2 KB	
tally.lic	27-12-2019 15:26	LIC File	7 KB	
Tally	27-12-2019 15:44	Text Document	2 KB	

Figure 3.2.13 Text File

2. After exporting eTCS form, a text file will be created under Tally folder namely Tally.txt

3. Now Tally text file should be validate through NSDL file validation utility.
4. After successfully validating the file we can submit validated file to govt. portal

3.2.5.3 Return Transaction Book

The Return Transaction Book displays the list of saved returns. Each time the form is modified and saved; the details are displayed as a separate row in return transaction book.

To view **Return Transaction Book**, From **Gateway of Tally > Display > Statutory Reports > TCS Reports > Return Transaction Book**

The **Return Transaction Book** screen appears as in figure 3.2.14:

Return Transaction Book						Ctrl + M
Return Transaction Book						1-Apr-2019 to 19-Oct-2019
Date	From Date	To Date	Tax Type	Is Modified	Form Type	
19-Oct-2019	1-Oct-2019	31-Dec-2019	TCS	No	27EQ	

Figure 3.2.14 Return Transaction Book

To generate the return, which was saved, select the required row and press **enter**.

3.2.5.4 Recompute, Overwrite and Save Corrected Return

In Tally, we have the option to modify the details once after saving the form 27 EQ and then save the revised return with the changes made.

Recompute

This option will be displayed in the report if we have made any changes in the TCS transactions which belongs to the saved return period.

Activity: Alter the payment of TCS entry and change the date to 21-10-2019.

Let us check Form 27 EQ once after altering the payment of TCS entry in Tally.

The **Form 27 EQ** appears as shown in figure in 3.2.15:



Form 27 EQ

Comfort Enterprises

Ctrl + M

Form 27 EQ

1-Oct-2019 to 31-Dec-2019

(The return values might have been changed, press F5 to recompute.)

Modified Masters0

Modified Vouchers1

Statistics of Vouchers

Total Number of Transactions5

Included Transactions3

Excluded Transactions2

Uncertain Transactions0

Particulars	Assessable Value			Tax Collectable	Collected			Balance Collectable
	Prev. Period	Current Period	Total		Prev. Period	Current Period	Total	
Collection Details								
Collection at Normal Rate		80,000.00	80,000.00	2,000.00		2,000.00	2,000.00	
Collection at Higher Rate								
Collection at Zero/Lower Rate		80,000.00	80,000.00	600.00		600.00	600.00	
Under Exemption limit								
Total Collected						2,600.00		
Payment Details								
1-Oct-2019 to 31-Dec-2019								
Included Transactions								0
Not Included Transactions								1
Particulars								
						Paid Amount	Amount	
Timber Obtained Under Forest Lease						2,600.00		
Total Paid						2,600.00		
Balance Payable								

Figure 3.2.15 form 27 EQ

The message '(The return values might have been changed, press F5 to recompute)' appears with a new section comprising details of:

- **Modified Masters:** If the duty ledger is not selected in invoice, this row will not show transaction count.
- **Modified Vouchers:** This row displays the total count of vouchers which are Created, Altered, Cancelled and Deleted. Press Enter to display the Summary of Modified Vouchers. As shown in figure 3.33.

To view the list of transactions captured against each modification type,

1. Press **Enter** on the Created or Altered or Cancelled or Deleted vouchers row in which the transaction count is displayed.
2. Press **Enter** to display the voucher alteration screen
3. To include the changes made into the report and recalculate the values, click F5: Recompute. Once the values are recomputed, the section displayed for modified masters and transactions will not appear.

In the figure 3.2.15, we can observe that **Modified Vouchers** displays 1 voucher, press enter **Summary of Modified Vouchers** screen, press **Enter** on the **Altered Vouchers** field you will get the screen as shown in figure 3.2.16:

The **Summary of Modified Voucher** appears in figure 3.2.16:

Altered Vouchers										Comfort Enterprises										Ctrl + M									
List of Altered Vouchers																				1-Oct-2019 to 31-Dec-2019									
Date		Particulars								Vch Type		Vch No.		Debit		Credit													
19-10-2019		TCS Duty								Payment		6		2,600.00															
		Current vch. status : 21-10-2019 TCS Duty								Payment		5		2,600.00															

Figure 3.2.16 Summary of Modified Voucher Screen

Observation: In the figure 3.2.16, we can observe the current voucher status details i.e., we have changed the date of payment of TCS entry to 21-10-2019.

To recompute the changes made after saving the return press **F5: Recompute** from Form 27 EQ.

Overwrite

By using this option, we can overwrite the existing form 27 EQ return.

On recomputing the values of modified transactions, the Form 27EQ report displays:

1. **Two buttons, F6: Overwrite** and **F7: Save as Revised** if all exceptions are resolved and Uncertain Transactions count is zero
2. **One button, F6: Overwrite** if Uncertain Transactions count is NOT zero

To overwrite the recomputed information on the existing return,

1. From Form 27 EQ, click **F6: Overwrite**. The message appears as **Do you want to Overwrite the Existing Return?**
2. Press **Enter** or **Y** to accept and overwrite the data with modified details.

Note: If required, we can save the return as revised by following the below given procedure.

Save as Revised

To save the recomputed valued as revised return without overwriting the information, click **F7: Save as Revised** button. This button appears only if the Uncertain Transactions count of Form 27EQ is zero.

To save modified values as revised return,

1. Click **F7: Save as Revised** button. The message appears as **Do you want to Save the Revised Returns?**
2. Press **Enter** or **Y** to Accept and Save the Revised Return

Activity: Once after modifying the return and overwriting it, the details can be checked in Return Transaction Book. In this report we will get the modified details i.e., if the return is modified and overwritten, then **Is Modified** field will display as **Yes**

Conclusion

In this chapter we have learnt about Tax Collected at Source (TCS), also we have learnt to record the TCS transactions like recording sales at normal, lower and TCS rates, making payment of TCS to department, generating TCS Reports and filing e-TCS return in Tally.



3.3 Payroll and Income Tax

LEARNING OBJECTIVES

- Creation of Basic Pay heads and Statutory Deduction Pay heads.
- Maintenance of Attendance.
- Defining Salary Details and Processing of Salary.
- Income Tax configurations such as Declaration of Incomes, Previous Employer Income Details etc.
- Payroll and Statutory Reports such as Pay Slip, Pay Sheet, Payment Advice, Income Tax Computation and Form 16 etc.

3.3.1 Introduction

The term payroll refers to a series of accounting transactions involved in the process of paying employees for the services rendered after taking all the statutory and non-statutory deductions into account, in conformance with the terms of employment, company policy and the law of the land.

Business Scenario

Future Technologies Pvt. Ltd. is engaged in the sales of business software and services. company was started with a capital of ₹ 10,00,000, in April 2019.

company wants to maintain payroll of their employees in Tally. It is based at Bengaluru with the following two major departments:

- Sales Department
- Administration Department

Activity:

1. Create the following Company

Company Name: Future Technologies Pvt. Ltd.

Address: #52, 5th Main Road, Garden Tech Park, Bengaluru- 560051

Financial Year: 01-04-2019

2. Create the ledger **Kotak Bank** under **Bank Accounts** and **Proprietors Capital** under **Capital Account**.
3. Record a Receipt entry for introducing capital of ₹ 10,00,000 as on **01-04-2019** to business as shown below

Particulars	L.F	Dr.	Cr.
Kotak Bank _____ Dr.		10,00,000	
To, Proprietors Capital A/c			10,00,000
(Being cash invested by the proprietor)			

Table 3.3.1



3.3.2 Activate Payroll

To activate Payroll in Tally, follow the steps given below:

1. Go to **Gateway of Tally > F11: Features>** press **F1: Accounts>** set **Maintain payroll** to **Yes** and set **Maintain more than one payroll or cost category** to **Yes>** accept **Accounting Features** screen.
2. Press **F3: Statutory >** set **Enable payroll statutory?** to **Yes** and **Set/alter payroll statutory details?** to **Yes**, enter Payroll Statutory Details as shown in the figure 3.3.1

The Completed **Payroll Statutory Details** screen appears as shown in figure 3.3.1:

<u>Payroll Statutory Details</u>	
<u>Provident Fund</u>	
Company code	: KNBNG001795001
Company account group code	: 12121
Company security code	: 21313
<u>Employee State Insurance</u>	
Company code	: 234132423423424
ESI branch office	: WILSON GARDEN
Standard working days per month	: 26 Days
<u>National Pension Scheme</u>	
Corporate registration number	: 334564
Corporate branch office number	: 2434534
<u>Income Tax</u>	
Tax deduction and collection Account Number (TAN):	ASDF12456D
TAN registration number	: T22098776DAC
Income tax circle or ward	: Bengaluru-South
Deductor type	: Others
Deductor branch/division	: Bengaluru- South
Name of person responsible	: Mahesh
Son/daughter of	: Mr. Prashanth
Designation	: CFO
PAN	: ASDCC1234D
(Note: All the above details will be used in Challan, Forms & Returns)	

Figure 3.3.1 Payroll Statutory Details

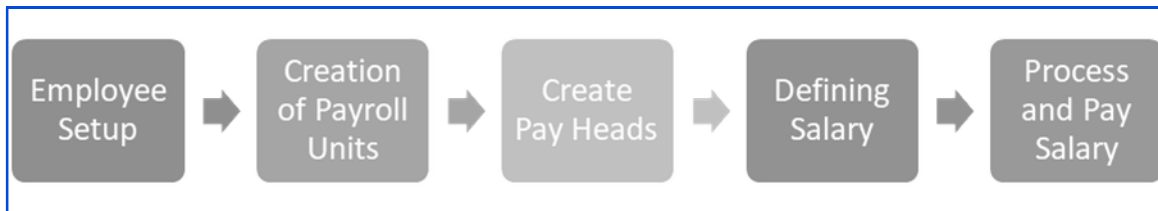
3. Accept the **Payroll Statutory Details** screen.



3.3.3 Processing Payroll in Tally

Tally's payroll features require minimal effort for accurate payroll processing. It takes five easy steps to process payroll and generate pay slip in Tally.

The salary of **Future Technologies Pvt. Ltd.** employees can be processed in the following five steps.



3.3.4 Employee Setup

The Employee master is used to record the employee information. In Tally, the following employee masters can be created:

- Employee Category Master
- Employee Group Master
- Employee Master

Employee Group Master

Businesses with multiple departments, divisions, functions or activities may create the required employee groups and classify individual employees under a specified group.

In this case, we will create employee group as departments such as **Sales Department** and **Administration Department**.

Step 1: Creation of Employee Group

Go to **Gateway of Tally > Payroll Info. > Employee Groups > Create** > select **Category** as **Primary Cost Category** > Enter the name as **Sales Department** > Under **Primary** > Set the option **Define salary details** to **No** > Accept the screen

Activity: Create the employee group for **Administration Department** under **Primary**.

Employee Master

The Employee Master is used to record all employee- related information.

Creation of Employee Masters

1. Go to **Gateway of Tally > Payroll Info. > Employees > Create (under Single Employee)**, create the employee **Rajesh Jain** Under **Sales Department** as shown in the figure 3.3.2
2. Click **F12: Configure** and Set **Provide passport and visa details** to **Yes** and **Provide contract details** to **Yes** to get expat details in employee creation.

The **Employee Creation Screen** appears as shown in the figure 3.3.2

Employee Creation		Future Technologies Pvt. Ltd.	
Category	: Primary Cost Category		
Name	: Rajesh Jain		
(alias)	:		
Display name in reports as	: Rajesh Jain		
Under	: Sales Department		
	(# Primary)		
Date of joining	: 1-Apr-2019		
Define salary details	? No		
General Information Employee Number : 2001 Designation : Sales Manager Function : Sales Location : Bengaluru Gender : Male Date of birth : 1-Feb-1987 Blood group : B Positive Father's/mother's name: Vikram Jain Spouse's name : Address : #15, 7th Cross, Viveknagar Bengaluru Phone no. : 9990008871 E-Mail : rajesh.jain@gmail.com		Provide bank details ? No Statutory Details Income Tax Number (PAN) : ASDFG1234Q Aadhaar number : 012312345678 Universal Account Number (UAN): 100018336042 PF account number : 1121341 EPS account number : 1121341 Date of joining for PF : 1-Apr-2019 PR account number (PRAN) : ESI number : 21384376473 ESI dispensary name : Wilson Garden	Passport and Visa Details Passport number : IND22292 Country of issue : India Passport expiry date : 31-Mar-2025 Visa number : 574854 Visa expiry date : 31-Mar-2025 Contract Details Work permit number : Contract start date : Contract expiry date :
		Accept ? Yes or No	

Figure 3.3.2 Employee Creation Screen

3. Accept the screen

Note:

- The date of resignation/retirement option will be available only on the employee alteration screen. After you enter the date of resignation/retirement, you can also select a reason for leaving.
- By enabling the option **Provide bank details to Yes**, we can provide the bank information like, account number, IFS code, MICR code, bank name and branch- It is mandatory for generating payment advice.

Activity: Create the employee **Ajay Dutt** under **Administration Department** as shown in figure 3.3.3

Hours of 60 Minutes	
Against the field	Action to be performed
Type	Select Compound
First unit	Enter Hrs.
Conversion	Enter 60
Second unit	Select Mins

Table 3.3.3

3.3.6 Attendance/Production Types

An Attendance/Production Type is used to record the attendance and production data. Based on the various components (pay head), we may need to define multiple attendance/production types.

Examples for attendance types are days present or absent, and examples of production types are hours worked, or number of pieces produced.

The Attendance/Production Type may be:

- **Attendance/Leave with Pay:** should be used to record positive attendance and leave with pay. For example: Present, Sick Leave, etc.
- **Leave without Pay:** should be used to record negative attendance. For example: Absent, Leave without Pay etc.
- **Production type:** should be used to record the production details. For example: Piece Production, Overtime Hours, etc.
- **User Defined Calendar Type:** should be used to create user defined calendar which can be later used to specify the variable number of days for each month. For example: 25 days in January, 24 days in February, 26 days in March, etc.

Attendance Type Creation

1. Go to **Gateway of Tally > Payroll Info. > Attendance/Production Types > Create**

Create as **Present** Under **Primary**, select **Attendance type** as **Attendance/Leave with Pay**.

The **Completed Present Attendance Type Creation** screen appears as per shown in the figure 3.3.4:



Attendance/Production Type Creation		Future Te
Name : Present		Current Date day, 1 Apr, 2019
(alias) :		
Under : [Primary		List of Attendance Types
Attendance type : Attendance / Leave with Pay		Attendance / Leave with Pay
Period type : Days		Leave without Pay
		Production
		User Defined Calendar Type

Figure 3.3.4 Attendance/Production Type Creation Screen

2. Accept the screen

Activity: Create the following Attendance Type

Absent	
Against the field	Action to be performed
Name	Enter Absent
Under	Select Primary
Attendance Type	Select Leave Without Pay

Table 3.3.4

Production Type Creation

Go to **Gateway of Tally > Payroll Info. > Attendance/Production Types > Create**

Overtime	
Against the field	Action to be performed
Name	Enter Overtime
Under	Select Primary
Attendance Type	Select Production
Unit	Hrs. of 60 Min.

Table 3.3.5

3.3.7 Creation of Pay Heads

The salary components constituting an employee's pay structure is called a Pay Head. **Pay Heads** may be broadly considered as earnings and deductions from an employee's point of view.

The essential pay heads required to be created to process the salaries of the employees of **Future Technologies Pvt. Ltd.** includes,

- Basic Pay
- House Rent Allowance
- Conveyance
- Overtime

The Payroll Statutory deduction pay heads required are

- Employees PF Deduction @12%
- Employers EPS Contribution @8.33%
- Employers EPF Contribution @3.67%
- EDLI Contribution@0.50%
- PF Admin Charges@0.50%
- Employees ESI Deduction @1.75%
- Employers ESI Contribution @4.75%
- Professional Tax
- Income Tax

Let us now see how these pay heads are created in Tally.

Creation of Pay heads

1. Basic Pay

Go to **Gateway of Tally > Payroll Info. > Pay Heads > Create**

Basic Pay	
Against the Field	Action to be Performed
Pay head type	Select Earnings for Employees
Income type	Select Fixed
Under	Select Indirect Expenses
Affect net salary	Select Yes
Name to be displayed in payslip	Basic Pay appears by default, accept the same
Use for calculation of gratuity	Select No
Set/Alter Income Tax Details	Set to No
Calculation type	Select On Attendance



Attendance/leave with pay	Select Present
Calculation period	Select Months
Basis of calculation (per day)	Select As per Calendar Period
Rounding Method	Select Normal Rounding
Limit	Enter 1

Table 3.3.6

The Completed **Basic Pay Head Creation** screen appears as per shown in the figure 3.3.5:

Pay Head Creation		Future Technologies Pvt. Ltd.	
Name : Basic Pay			Total Opening Balance
(alias) :			
Pay Head Information Pay head type : Earnings for Employees Income type : Fixed Under : Indirect Expenses Affect net salary ? Yes Name to be displayed in payslip : Basic Pay Use for calculation of gratuity ? No Set / Alter Income Tax Details ? No Calculation type : On Attendance Attendance/leave with pay : Present Calculation period : Months Basis of calculation (per day) : As per Calendar Period			
Rounding Off Information Rounding Method : Normal Rounding Limit : 1			
Opening Balance (on 1-Apr-2019) :			Accept ? Yes or No

Figure 3.3.5 Pay Head Creation Screen - Basic Pay

Accept the Pay head.

2. House Rent Allowance

House Rent Allowance	
Against the Field	Action to be Performed
Pay head type	Select as Earnings for Employees
Income type	Select as Fixed
Under	Select as Indirect Expenses
Affect net salary	Set to Yes
Name to be displayed in payslip	Enter as HRA
Use for calculation of gratuity	Set as No

Set/Alter Income Tax Details	Set to No
Calculation type	Select As Computed Value
Calculation period	Months will be selected as default
Rounding Method	Select Normal Rounding
Limit	Enter as 1
Compute	Select as On Specified Formula
Compute on Specified Formula	
Function	Add Pay Head appears as default
Pay Head	Select Basic Pay
Effective From	Enter 01-04-2019
Slab Type	Select Percentage
Value Basis	Enter 40%

Table 3.3.7

The **Computation Information for House Rent Allowance Pay head** appears as shown in the figure 3.3.6:

Computation Information				
Compute		: On Specified Formula		
Specified formula		: <i>Basic Pay</i>		
Effective From	Amount Greater Than	Amount Up To	Slab Type	Value
1-Apr-2019			Percentage	40 %

Figure 3.3.6 Computation Information - HRA

3. Conveyance

Conveyance	
Against the Field	Action to be Performed
Pay head type	Select Earnings for Employees
Income type	Select Fixed
Under	Select Indirect Expenses
Affect net salary	Select Yes
Name to be displayed in payslip	Conveyance
Use for calculation of gratuity	Select No
Set/Alter Income Tax Details	Set to No



Calculation type	Select Flat Rate
Calculation period	Select Months
Rounding Method	Select Normal Rounding
Limit	Enter 1

Table 3.3.8**4. Overtime**

Overtime	
Against the Field	Action to be Performed
Pay head type	Select Earnings for Employees
Income type	Select Variable
Under	Select Indirect Expenses
Affect net salary	Select Yes
Name to be displayed in payslip	Overtime
Use for calculation of gratuity	Select No
Set/Alter Income Tax Details	Set to No
Calculation Type	Select On Production
Production Type	Select Overtime
Rounding Method	Select Normal Rounding
Limit	Enter 1

Table 3.3.9**3.3.8 Payroll Statutory Deduction Pay heads**

Provident Fund is a benefit scheme for salaried individuals created by the government. It is not only tax saving instrument, but it also provides security and stability to the employee and his family as well. Both the employers and employees make equal monthly contributions to this fund under various accounts. **Employer and Employee Contributions** are equal in PF which is 12%. This means 12% contribution from employee and 12% contribution from employer. Company contribution is split into two parts i.e. 8.33% on family pension fund and 3.67 % on employee provident fund

Creation of Statutory Pay Heads

1. Employees PF Deduction@12%

Employees PF Deduction@12%	
Against the Field	Action to be Performed
Pay head type	Select Employees' Statutory Deductions
Statutory pay type	Select PF Account (A/c No. 1)
Under	Select Current Liabilities
Affect net salary	Select Yes
Name to be displayed in payslip	Employee's PF Deduction@12%
Rounding Method	Select Normal Rounding
Limit	Enter 1
Compute	Select On Specified Formula
Compute on Specified Formula	
Function	Add Pay Head appears as default
Pay Head	Select Basic Pay
Effective From	Enter 01-04-2019
Slab Type	Select Percentage
Value Basis	Enter 12%

Table 3.3.10

2. Employers EPS Contribution@8.33%

Employers EPS Contribution@8.33%	
Against the Field	Action to be Performed
Pay head type	Select Employer's Statutory Contributions
Statutory pay type	Select EPS Account (A/c No. 10)
Under	Select Indirect Expenses
Affect net salary	Select No
Rounding Method	Select Normal Rounding
Limit	Enter 1
Compute	Select On Specified Formula
Compute on Specified Formula	
Function	Add Pay Head appears as default
Pay Head	Select Basic Pay
Effective From	Enter 01-04-2019
Amount Up To	Enter 15,000
Slab Type	Select Percentage



Value Basis	Enter 8.33%
Amount greater Than	By default it will be taken as 15,000
Amount Up To	Leave it blank
Slab type	Select Value
Value basis	Mention the amount as ₹ 1,250

Table 3.3.11

The **Computation Information for Employers EPS Contribution@8.33%** Pay head appears as shown in the figure 3.3.7:

Computation Information				
Compute	: On Specified Formula			
Specified formula	: <i>Basic Pay</i>			
Effective From	Amount Greater Than	Amount Up To	Slab Type	Value
1-Apr-2019	15,000.00	15,000.00	Percentage Value	8.33 % 1,250

Figure 3.3.7 Computation Information - Employers EPS Contribution@8.33%

3. Employers EPF Contribution@3.67%

Employers EPF Contribution@3.67%	
Against the Field	Action to be Performed
Pay head type	Select Employer's Statutory Contributions
Statutory pay type	Select PF Account (A/c No. 1)
Under	Select Indirect Expenses
Affect net salary	Select No
Rounding Method	Select Normal Rounding
Limit	Enter 1
Compute	Select On Specified Formula Add Pay Head: Employees PF Deduction@12% Subtract Pay head: Employer's EPS@8.33%
Compute on Specified Formula	
Slab Type	Select Percentage
Value basis	Enter 100%

Table 3.3.12

The **Computation on Specified formula for Employers EPF Contribution@ 3.67%** screen appears as shown in the figure 3.3.8:

Compute: On Specified Formula	
Function	Pay Head
Add Pay Head	Employees PF Deduction@12%
Subtract Pay Head	Employers EPS Contribution@8.33%

Figure 3.3.8 Computation on Specified formula for Employers EPF Contribution@ 3.67%

EDLI: Employee Deposit Linked Insurance is a scheme which is amended in the year 1976. It is insurance on PF deposit. This scheme pays a lump sum payment to the insured nominated beneficiary in the event of death due to accident or illness.

All employees who join employee provident scheme are covered by EDLI Scheme and the EDLI Contribution rate is 0.5%. EDLI Contribution will be calculated on PF gross (PF gross refers to the value of pay heads used for A/c. No. 1 (employee PF@12%) pay head.)

Administrative charges: These are the charges collected by the government in order to maintain the PF and EDLI account. It's a charge paid by the employers to maintain the PF and EDLI account.

Employer PF administrative charges and EDLI contribution are calculated based on the PF gross at 0.50% each as per the latest changes.

4. **EDLI Contribution@0.50%**

EDLI Contribution@0.50%	
Against the Field	Action to be Performed
Pay head type	Select Employer's Other Charges
Statutory pay type	Select EDLI Contribution (A/c No.21)
Under	Select Current Liabilities
Affect net salary	Select No
Calculation type	By default, it will take As Computed Value
Calculation Period	By default, it will take as Months
Computation Info	
Compute	By default, it will take as On PF Gross.
Effective From	Enter 01-04-2019
Amount Upto	Leave it Blank
Slab Type	Select Percentage
Value Basis	Enter 0.50%

Table 3.3.13



5. PF Admin Charges@0.50%

PF Admin Charges@0.50%	
Against the Field	Action to be Performed
Pay head type	Select Employer's Other Charges
Statutory pay type	Select Admin Charges (A/c No.2)
Under	Select Current Liabilities
Affect net salary	Select No
Calculation type	By default, it will take As Computed Value
Calculation Period	By default, it will take as Months
Computation Info	
Compute	By default, it will take as On PF Gross.
Effective From	Enter 01-04-2019
Amount Upto	Leave it Blank
Slab Type	Select Percentage
Value Basis	Enter 0.50%

Table 3.3.14

Employee State Insurance is a health insurance scheme can be used for your medical treatment. For all employees earning ₹ 21,000 or less per month as wages. The employer's share of contribution is 4.75% of gross salary and employee's share is 1.75% of the gross salary. Thus, in respect of each of the employee, 6.50% of the wages (including overtime allowance) is to be paid as contribution to scheme. This fund is managed by the ESI Corporation (ESIC) according to rules and regulations, which oversees the provision of medical and cash benefits to the employees and their family through its large network of branch offices, dispensaries and hospitals.

Note: The **Employees' State Insurance Corporation (ESIC)** increased the monthly wage threshold to ₹ 21,000, from ₹ 15,000, for coverage under its health insurance scheme effective from **01.01.2017**

In order to process ESI in Tally, the following pay heads must be created:

- Employee ESI deduction
- Employer ESI contribution

6. Employees ESI Deduction@1.75%

Employees ESI Deduction@1.75%	
Against the Field	Action to be Performed
Pay head type	Select Employees' Statutory Deductions
Statutory pay type	Select Employee State Insurance
Under	Select Current Liabilities
Affect net salary	Select Yes
Name to be displayed in payslip	Employees ESI Deduction@1.75%
Rounding Method	Select Normal Rounding
Limit	Set as 1
Compute	Select On Specified Formula Add all the Earnings Pay Heads on which ESI need to be calculated. Add Pay Head: Basic Pay Add Pay Head: House Rent Allowance Add Pay Head: Conveyance
Effective From	01-04-2019
Slab Value	Enter 1.75%

Table 3.3.15

7. Employers ESI Contribution@4.75%

Employers ESI Contribution@4.75%	
Against the Field	Action to be Performed
Pay head type	Select Employers' Statutory Contributions
Statutory pay type	Select Employee State Insurance
Under	Select Indirect Expenses
Affect net salary	Select No
Rounding Method	Select Normal Rounding
Limit	Set as 1
Compute	Select On Specified Formula Add all the Earnings Pay Heads on which ESI need to be calculated. Add Pay Head: Basic Pay



	Add Pay Head: House Rent Allowance Add Pay Head: Conveyance
Effective From	01-04-2019
Slab Value	Enter 4.75%

Table 3.3.16

Professional Tax is charged by respective municipal corporations and most of the states in India charge this tax. The tax is deducted by the employer every month and remitted to the municipal corporation and it is mandatory like income tax.

Professional tax is a tax levied by the various state governments of India on salaried individuals, working in government or non-government entities, or in practice of any profession

8. Professional Tax

Professional Tax	
Against the Field	Action to be Performed
Pay head type	Select Employees' Statutory Deductions
Statutory pay type	Select Professional Tax
Registration Number	Enter KA/PT8983
Under	Select Current Liabilities
Affect net salary	Select Yes
Name to be displayed in payslip	Professional Tax
Calculation type	As Computed Value
Calculation period	Months
Rounding Method	Select Normal Rounding
Limit	Enter 1
Compute	Select On Current Earnings Total

Table 3.3.17

Enter the Computation information as shown in figure 3.3.9

The **Computation Information for Professional Tax Pay Head** appears as shown in the figure 3.3.9:



Computation Information				
Compute : On Current Earnings Total				
Effective From	Amount Greater Than	Amount Up To	Slab Type	Value
1-Apr-2019	15,000.00	15,000.00	Value Value	0 200

Figure 3.3.9 Computation Information for Professional Tax Pay Head

9. Income Tax

Income tax is the levied on personal income. **Income tax** is a tax payable, at enacted by the union budget (finance act) for every assessment year on the total income earned in the previous year by every person.

Income Tax

Income Tax	
Against the Field	Action to be Performed
Pay head type	Select Employees' Statutory Deductions
Statutory pay type	Select Income Tax
Under	Select Current Liabilities
Affect net salary	Select Yes
Name to be displayed in payslip	Income Tax
Calculation type	As Per Income Tax Slab
Calculation period	Select Months
Rounding Method	Upward Rounding will be selected by default
Limit	1 will be selected by default

Table 3.3.18

3.3.9 Defining Salary Details for an Employee

The pay structure for an employee can be defined in Tally using the Salary Details option.

1. Go to **Gateway of Tally > Payroll Info. > Salary Details > Define > Select Rajesh Jain**



2. Specify the details referring to the table: 3.3.19

Salary Details for Rajesh Jain		
Against the Field		Action to be Performed
Effective From		Enter 01-04-2019
Salary Structure Details for Rajesh Jain		
Pay Head	Rate	Per
Basic Pay	42,000	Months
House Rent Allowance	As Computed Value	As Computed Value
Conveyance	2,500	Months
Overtime	300	Hrs
Employees PF Deduction@12%	As Computed Value	As Computed Value
Employers EPS Contribution@8.33%	As Computed Value	As Computed Value
Employers EPF Contribution@3.67%	As Computed Value	As Computed Value
Employees ESI Deduction@1.75%	As Computed Value	As Computed Value
Employers ESI Contribution@4.75%	As Computed Value	As Computed Value
Professional Tax	As Computed Value	As Computed Value
Income Tax	As Per Income Tax Slab	

Table 3.3.19

Note: The Pay Head Type, Calculation Type and Computed On columns will display information based on the Pay Head selected. Either based on percentage for specified formulas or amounts for flat rate as configured in the pay head.

The Completed Salary Details Screen appears as shown in the figure 3.3.10:

Salary Details Alteration						
Future Technologies Pvt. Ltd.						
Name : Rajesh Jain (2001)						
Under : Sales Department						
(\$ Primary)						
Salary Details						
Effective From	Pay Head	Rate	Per	Pay Head Type	Calculation Type	Computed On
1-Apr-2019	Basic Pay	42,000.00	Months	Earnings for Employees	On Attendance	Basic Pay
	House Rent Allowance			Earnings for Employees	As Computed Value	
	Conveyance	2,500.00	Months	Earnings for Employees	Flat Rate	
	Overtime	300.00	Hrs	Earnings for Employees	On Production	
	Employees PF Deduction@12%			Employees' Statutory Deductions	As Computed Value	Basic Pay
	Employers EPS Contribution@8.33%			Employer's Statutory Contributions	As Computed Value	Basic Pay
	Employers EPF Contribution@3.67%			Employer's Statutory Contributions	As Computed Value	Basic Pay
	Employees ESI Deduction@1.75%			Employees' Statutory Deductions	As Computed Value	Basic Pay
	Employers ESI Contribution@4.75%			Employer's Statutory Contributions	As Computed Value	Basic Pay
	Professional Tax			Employees' Statutory Deductions	As Computed Value	Basic Pay
	Income Tax			Employees' Statutory Deductions	As Per Income Tax Slab	On Current Earnings Total

Figure 3.3.10 Salary Details of Rajesh Jain

Accept the salary details screen

Activity: Define salary details for the employee **Ajay Dutt (Administration Department)** by referring the table 3.3.20

Salary Details for Ajay Dutt		
Against the Field		Action to be Performed
Effective From		Enter 01-04-2019
Salary Structure Details for Ajay Dutt		
Pay Head	Rate	Per
Basic Pay	12,000	Months
House Rent Allowance	As Computed Value	As Computed Value
Conveyance	2,500	Months
Overtime	200	Hrs
Employees PF Deduction@12%	As Computed Value	As Computed Value
Employers EPS Contribution@8.33%	As Computed Value	As Computed Value
Employers EPF Contribution@3.67%	As Computed Value	As Computed Value
Employees ESI Deduction@1.75%	As Computed Value	As Computed Value
Employers ESI Contribution@4.75%	As Computed Value	As Computed Value
Professional Tax	As Computed Value	As Computed Value
Income Tax	As Per Income Tax Slab	

Table 3.3.20

Note:

- You can also copy salary details from one employee to another or from one employee group to an employee. In the pay head field, the Start Type list displays three options namely, Copy from Employee, Copy from Employee Group, and Start Afresh.
- Copy from employee option will appear if the option “**Allow Copy From Employee**” in F12 Salary Details Configuration is set to Yes from salary details alteration screen.

3.3.10 Providing Income Tax details

As per **Income Tax Act of 1961**, all persons who are considered as an assessee and when their income exceeds the maximum exemption in the prescribed limit the income tax will be levied at the prescribed rates according to finance act.

The **Income Tax Details** menu provides various master setup/configurations required for the successful income tax computation.

To view the income tax details menu,

- Go to **Gateway of Tally > Payroll Info. > Income Tax Details**

The **Income Tax Details** Menu appears as shown in the figure 3.3.11:

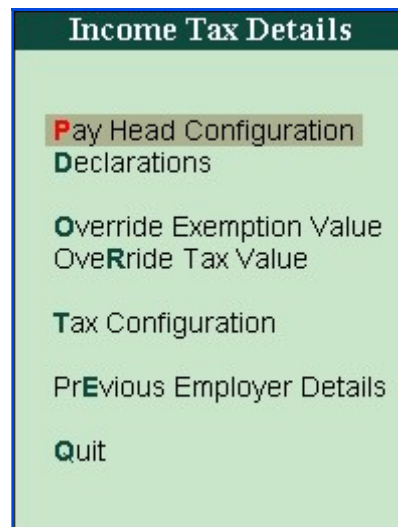


Figure 3.3.11 Income Tax Details Menu

3.3.10.1 Pay Head Configuration

The **Pay Head Configuration** screen allows the user to configure the pay heads with the income tax components as specified by the income tax department.

The **Pay Head Configurations** screen appears as shown in the figure 3.3.12:

Pay Head Configuration				
Future Technologies Pvt. Ltd.				
Ctrl + M				
Pay Head and Ledger Configuration for Income Tax				
S.No.	Particulars	Income Tax Component	Tax Calculation Basis	Deduct TDS Across Periods
1.	Basic Pay	Other Earnings/Allowances (Fully Taxable)	On Projected Value	Yes
2.	Conveyance	Other Earnings/Allowances (Fully Taxable)	On Projected Value	Yes
3.	Employees PF Deduction@12%	Other Earnings/Allowances (Fully Taxable)	On Projected Value	Yes
4.	House Rent Allowance	Other Earnings/Allowances (Fully Taxable)	On Projected Value	Yes
5.	Overtime	Other Earnings/Allowances (Fully Taxable)	On Projected Value	Yes
6.	Professional Tax	Other Earnings/Allowances (Fully Taxable)	On Projected Value	Yes

Fig

Figure 3.3.12 Pay Head Configuration Screen

1. Press enter on **Basic Pay** to configure/re-configure the same for income tax
2. In the Income Tax Configuration screen,
 - The name of the pay head will appear by default
 - The master type field displays whether it is a pay head or a ledger for easy identification of user
 - Select the proper income tax component for correct tax computation from the list of income tax components
 - Select the appropriate tax calculation basis from **On Projection**
 - Set the option deduct TDS across Period to No, to deduct the entire TDS in the same month. Set it to Yes to spread the TDS deduction across the remaining period.

Note:

- **On Projected Value:** Will take the pay head/ledger value from salary details projected for 12 months even though there are no payroll vouchers passed.
- **On Actual Value:** Will take the pay head value only based on payroll vouchers. If the payroll vouchers are passed then only the values will be taken in consideration.

The **Income Tax Configurations** screen appears as shown in the figure 3.3.13:

<u>Income Tax Configuration</u>	
Name of Pay Head / Ledger	: Basic Pay
Master Type	: Pay Head
Income Tax Component	: Basic Salary
Tax Calculation Basis	: On Projected Value
Deduct TDS Across Periods	: Yes

Accept ?

Yes or No

Figure 3.3.13 Income Tax Configuration

Similarly, configure all other pay heads to the respective income tax components referring the below table.

Pay Head Configuration	
Name of Pay Head	Income Tax Component
Conveyance	Transport Allowance
Employees PF Deduction @12%	Employee Provident Fund (EPF)
House Rent Allowance	House Rent Allowance
Overtime	Other Earnings/Allowances (Fully Taxable)
Professional Tax	Professional Tax (Tax on Employment)
<ul style="list-style-type: none"> • Tax Calculation Basis select as On Projected Value by default • Deduct TDS across Period as Yes 	

Table 3.3.21

3.3.10.1.1 Declarations

As per the **Income Tax Act**, while computing the taxable income, the following are deducted from the gross salary for the employees.

Exemptions: As per Section 10, there are certain allowances which are exempted from income tax such as HRA, LTA, transport allowance, children education allowance and children hostel expenditure allowance.

Deductions Under Chapter VI-A: As per **Chapter VI-A of Income Tax**, the following deductions are allowed while computing the taxable income:



Investments (U/s 80C, 80CCF, 80CCG, etc.): Under **Section 80C, 80CCF, 80CCG**, etc. certain investments are allowed as deduction (based on a ceiling) for the computation of taxable income.

Others (U/s 80D, 80DD, 80E, etc.): Under **Section 80D, 80DD, 80E** etc., certain other expenses are also deducted before arriving at taxable amount such as Mediclaim, interest paid on higher education loan, etc.

Define Income Tax Declarations

The employee can provide the exemption and deduction details to the employer and these details can be entered in the system as employee declaration by following the process given below:

1. Go to **Gateway of Tally > Payroll Info. > Income Tax Details > Declarations** select **House Rent Allowance** or press **ALT+R: House Rent Allowance** and press **Enter** select group > **Sales Department**

In House Rent Declaration screen,

- Specify the date from which the rent is paid in the effective from field
- In **Rent Declared** amount field, specify the amount which is declared by the employee
- In **Rent Proof** Amount field, specify the amount for which the rent proof has been provided by the employee
- In **Place of Residence**, select **Metro or Non-Metro** based on the city
- Enter the **Name of Landlord** and **PAN of Landlord**

Note: Name and PAN of the landlord are mandatory if the rent declared for the year is more than 1 lakh.

The completed **House Rent Declaration** screen appears as shown in the figure 3.3.14:

House Rent Declaration		Future Technologies Pvt. Ltd.					Ctrl + M
Employee / Group	Sales Department					Financial Year : 1-Apr-2019 to 31-Mar-2020	
Type of Allowance	House Rent Allowance						
Name and PAN of the landlord are mandatory if the rent declared for the year is more than 1 lakh.							
Employee Name	Employee Number	Effective From	Monthly Rent		Place of Residence	Name of Landlord	PAN of Landlord
			Declared	Proof			
Rajesh Jain	2001	1-4-2019	12,000.00	12,000.00	Metro	Sunil	ASDFP1234S

Figure 3.3.14 House Rent Declaration Screen

Leave Travel Assistance

Leave Travel Assistance is also exempted **U/s 10 of Income Tax** from the gross salary for the computation of income tax. **Travel Concession** provided in connection with proceeding on leave to any place in India.

Note: To declare **Leave Travel Assistance**, pay head must be created as earnings to employee, in this case it is not required to declare.

Declaring Transport Allowance

Conveyance Allowance is renamed as **Transport Allowance**. It is also exempted U/s 10 of income tax from the gross salary for the computation of income tax. Transport allowance is provided for travelling expenses incurred between residence and place of duty.

1. In the Income Tax Declaration screen, press **ALT + A for Transport Allowance** OR press **Enter>**Select employee as **Rajesh Jain**
2. In the Transport Allowance screen,
 - Specify the date from which the transport allowance is applicable in the Effective From field
 - Select the Employee Status as **Others** and save the screen

Declaring Children Education Allowance

Children Education Allowance is also exempted **U/s 10 of Income Tax**. An assessee can avail children education allowance benefit up to a maximum of two children.

Note: To declare **Children Education Allowance**, pay head must be created as earnings to employee, in this case it is not required to declare.

Declaring Children Hostel Expenditure Allowance

Children Hostel Expenditure Allowance is also exempted **U/s 10 of Income Tax**. An assessee can avail children hostel expenditure allowance benefit up to a maximum of two Children.

Note: To declare **Children Education Allowance**, pay head must be created as earnings to employee, in this case it is not required to declare.

Income Declared by Employee - Single Employee Multi Component

Under this head, you can define employee(s) declarations & proofs/eligible amount for the other incomes like house property, other sources and interest on housing loan if self-occupied.

Deductions Under Chapter VI-A

Investments (U/s 80C, 80CCF, 80CCG, etc.)

Similar like declaring other incomes explained in the previous sections, declaring the **Investments**

U/s 80C, 80CCF, 80CCG, etc. can be declared using either **ALT+S** for single employee multi component or **ALT+M** for multi employee's single component.

Activity: Declare the investments U/s 80C, 80CCF, 80CCG, etc., for the employee Rajesh Jain as shown in the tables 3.3.23

Insurance Premium 80C		
Employee	Effective From	Annual Amount (Both Declared & Proof/Eligible)
Rajesh Jain	01-04-2019	₹ 20,000

Table 3.3.22

Others (U/s 80D, 80DD, 80E, etc.)

Declaring the Investments **U/s 80D, 80DD, 80E** etc. can be declared using either **ALT+T** for **Single Employee Multi Component** or **ALT+O** for **Multi Employees Single Component**.



Note: *Declared and Proof/Eligible value can be the same in the above given example. In this case it is not required to declare.*

3.3.10.1.2 Override Exemption Value

The **Override Exemption Value** allows the user to override either the **Income Amount or Exemption Amount**.

When income amount is overridden for any allowance, the voucher value will not be considered for income tax computation and the value specified in the override screen will be considered for the income tax.

3.3.10.1.3 Override Tax Value

The override tax value allows the user to override the tax amount which will be deducted as income tax in each month. It also provides the facility to specify the required period to override the income tax amount.

3.3.10.1.4 Tax Configuration

The tax configuration screen allows the user to make all the necessary income tax related configuration changes from one single screen.

The Tax Configuration screen allows the users to configure the following:

- Salary as per provisions contained in Sec 17(1)
- Details of Perquisites Sec 17(2) (As Per Form 12BA)
- Details of Profits shared in lieu of salary Sec 17(3) (As Per Form 12BA)
- Details of Allowances exempted U/s 10
- Deductions U/s 16
- Other Income Declared by Employees
- Deductions Under Chapter VI-A
- Details of Reliefs granted
- Tax Deduction details

To view the tax configuration screen,

Go to **Gateway of Tally > Payroll Info. > Income Tax Details > Tax Configurations**. Press Enter and provide the declarations, exemptions etc.

Salary as per provisions contained in Sec 17(1)

The pay heads and ledgers can be configured to select the appropriate income tax component, tax calculation basis and deduct **TDS across Period** as explained earlier during pay head creation. It includes all earnings pay head components (either based on actuals or projected)

Value of Perquisites U/s 17(2) (as per Form 12BA)

Perquisites are Non-monetary benefits given to employee, if any recovered from employee which are taxable

1. In **Tax Configuration** screen select **Value of Perquisites u/s 17(2), Income Tax Allowance Setup** screen appears, select **Perquisites Details (Form 12BA) - Single Employee**
2. Select **Rajesh Jain** from the **List of Employees/Group**
3. In the employee **Perquisites** screen, specify the details as shown considering the below example on club expenses and free meals for employee **Rajesh Jain**

Perquisites for Employee – Rajesh Jain				
Nature of Perquisites	Effective From	Value of Perquisites Computed Value	Amount of Perquisite Chargeable to Tax	Amount on Which Tax Paid by Employer
Club Expenses	01-04-2019	₹ 10,000	₹ 10,000	₹ 10,000
Free Meals	01-04-2019	₹ 2,000	₹ 2,000	₹ 2,000

Table 3.3.23

The completed employee **Perquisites** screen appears as shown in the figure 3.3.15:

Perquisites Future Technologies Pvt. Ltd. Ctrl + M E3					
Employee Name : Rajesh Jain Financial Year : 1-Apr-2019 to 31-Mar-2020					
Employee Number : 2001					
PAN Number : ASDFG1234Q					
Nature of Perquisites	Effective From	Value of Perquisites Computed Value (for Financial Year)	Amount if any recovered from the Employee (for Financial Year)	Amount of Perquisite chargeable to Tax	Amount on which Tax paid by Employer (U/s 192(1A))
Employer Contribution to NPS 80CCD(2)	1.4.2019				
Club Expenses	1.4.2019	10,000.00		10,000.00	10,000.00
Free Meals	1.4.2019	2,000.00		2,000.00	2,000.00

Figure 3.3.15 Perquisites

Profits in lieu of Salary u/s 17(3) (as per Form 12BA): Includes any compensation paid to the employees in connection with termination, modification of terms of employment, amount paid prior to employment which is taxable.

Allowance to the extent exempted U/s 10

The user can enter the declaration details for the selected allowance similar to income tax declaration which is exempted from income tax. The below mentioned allowances are commonly used by assessee for claiming exemption **U/s 10**

- Allowance for Transport Employee
- Children education allowance
- Children Hostel Expenditure Allowance
- Conveyance Allowance
- House Rent Allowance
- Leave Travel Allowance



- Medical Reimbursement
- Transport Allowance

Deduction U/s 16

Entertainment Allowance and Professional Tax falls **U/s 16** which is exempted from income tax.

Entertainment Allowance - Entertainment allowance specially granted to an employee who is in receipt of salary from government.

Professional Tax - Tax on employment calculate as per slab state wise paid to income tax department.

Other Income Declared by Employees

To enter the details of **Other Income Declared by Employees**,

1. In the tax configuration screen, select **Other Income (House Property/Other Source)/ Interest on Housing Loan**
2. Select the required employee from the **List of Employees**
3. The declarations made earlier will be listed here for that employee

Deductions under Chapter VI-A- Investments

To add Investment declarations for all employees, select **Multi Employee Single Component** and follow the process explained in **Investments - Multi Employee Single Component** under income tax declarations.

To add Investment declarations for each employee one by one, select **Single Employee Multi Component** and follow the process explained in **Investments - Single Employee Multi Component** under income tax declarations.

Relief (U/s 89, 90 & 91)

The special reliefs granted to some employees due to the dual taxation system are also allowed as **Relief U/s 89,90 and 91** and is reduced from the **Taxable Income** based on the type of agreement with the other country.

2. Tax Deducted by Previous Employer - The user can select the required employee and enter the tax details of the previous deductor (previous employer) in this screen.

3. Tax Deducted Other Than Salary - The user can select the required employee and enter the tax deducted other than salary as applicable.

4. Self-Assessment Tax Declared by Employee - The user can select the required employee and enter the tax details for self-assessment tax declared as applicable.

3.3.10.1.5 Previous Employer Details

For successful computation of income tax and **Form16** generation, the previous employer income and tax payment details are necessary for the employees who joined the organization in the middle of the year.

To understand this better, let us consider that **Rajesh Jain** worked for company called **Great Enterprises** before he joined **Future Technologies Pvt. Ltd.**

The previous salary details as provided by Rajesh Jain can be entered in Tally. To specify the previous employer's income/exemption details,

1. Go to **Gateway of Tally > Payroll Info. > Income Tax Details > Previous Employer Details > Income/Exemption Details**
2. Select **Rajesh Jain** from the **List of Employees** and press **Enter**
3. Specify the particulars of the salary as shown in the figure 3.3.16:

Previous Employer Income / Exemption			
Future Technologies Pvt. Ltd.			
Ctrl + M			
Employee Name	Rajesh Jain	Financial Year: 1-Apr-2019 to 31-Mar-2020	
Employee Number	2001		
PAN Number	ASDFG1234Q		
Date of joining	14-2019		
Particulars of Previous Employer Income / Exemption		Effective From	Income Amount
Basic Salary		14-2019	30,000.00
House Rent Allowance		14-2019	10,000.00
Transport Allowance		14-2019	5,000.00

Figure 3.3.16 Previous Employer Income Details

To specify the previous employer's tax deducted/paid details,

1. Go to **Gateway of Tally > Payroll Info. > Income Tax Details > Previous Employer Details > Tax Deducted/ Paid Details**
2. Select **Rajesh Jain** from the **List of Employees** and press **Enter**
3. Specify the **Previous Employer** and **Tax payment** details as shown in the figure 3.3.17:

Tax Deducted by Previous Employer		Future Technologies Pvt. Ltd.				Ctrl + M	
Employee Name	: Rajesh Jain					Financial Year: 1-Apr-2019 to 31-Mar-2020	
Employee Number	: 2001						
PAN Number	: ASDFG1234Q						
Date of joining	: 14-2019						
As per Form 16 issued by Previous Employer(s)							
Tax Deduction Account Number(TAN) of the Deductor	Name and address of the Employer	Income Chargeable under the head Salaries	Deductions under Chapter VI-A	Tax Payable (incl. Education cess)	Total Tax Deducted	Tax Payable / Refundable	
ADSF01234A	Great Enterprises HSR Layout Bangalore	5,50,000.00	25,000.00	6,000.00	6,000.00		

Figure 3.3.17 Tax Deducted by Previous Employee

3.3.11 Salary Processing

Salary process comprise of the following Vouchers:

- Recording of attendance voucher
- Processing the salary payable
- Processing PF Payable
- Processing ESI Payable
- Process PF Admin Charges



- Payment of salary

Activity:

- Create the Pay heads **Salary Payable, PF Payable, ESI Payable** under **Current Liabilities** as shown in the figure 3.3.18

Pay Head Creation	
Name	: Salary Payable
(alias)	:

Pay Head Information	
Pay head type	: [Not Applicable
Under	: Current Liabilities

Figure 3.3.18 Salary Payable Payhead

Step 1: Recording of Attendance Voucher

To process the salary, firstly we require to calculate the attendance of the employees. Attendance voucher allows you to enter attendance, overtime, leave or production details.

1. Go to **Gateway of Tally > Payroll Vouchers > Press Ctrl+F5: Attendance**
2. **Click F2: Date** or press F2 and change the date to **30-04-2019**
3. Record the attendance voucher for the employees with overtime as shown in the figure 3.3.19:

Attendance Voucher Creation		Future Technologies Pvt. Ltd.		Ctrl + M	
Attendance No. 1				30-Apr-2019 Tuesday	
Employee Name	Employee Number	Attendance/Production Type		Value	Unit
Rajesh Jain	2001	Present	Cur Bal: 30 Days	30	Days
Rajesh Jain	2001	Overtime	Cur Bal: 5- 0 Hrs	5	Hrs
Ajay Dutt		Present	Cur Bal: 30 Days	30	Days
Ajay Dutt		Overtime	Cur Bal: 10- 0 Hrs	10	Hrs

Figure 3.3.19 Attendance Voucher Screen

4. Accept the screen

Step 2: Process Salary

The salary can be directly paid from the payroll vouchers or the payroll vouchers can be used to create the liability and the salary can be paid using the payment voucher. Before we make the payment of the salary using a payment voucher, we must calculate the salary.

To process the salary of the employee,

1. Go to **Gateway of Tally > Payroll Vouchers > Ctrl+F4: Payroll > Date: 30-4-2019**

2. Press **Alt+A** for Payroll Autofill
3. Select **Process for Salary, Declared Value**
4. Enter the From and To dates **01-4-2019 to 30-4-2019**
5. Select **Primary Cost Category** as the **Employee Category**
6. Select **Employees/Group** as **All Items** (we can also process the salary employee wise or department wise if required)
7. Select Sort by as **Employee Name**
8. Select **Payroll/Bank/Cash Ledger** as **Salary Payable**

The **Payroll Autofill** screen appears as shown in the figure 3.3.20:

Payroll Autofill	
Process for	: Salary
Compute Income Tax based on	: Declared Value
From (blank for beginning)	: 1-4-2019
To (blank for end)	: 30-4-2019
Employee Category	: Primary Cost Category
Employee/Group	: [All Items
Sort by	: Employee Name
Payroll/Bank/Cash Ledger	: Salary Payable

Figure 3.3.20 Auto fill screen for Salary Payable

The **Payroll Voucher Creation for Salary** appears as shown in the figure 3.3.21:

Payroll Voucher Creation		Future Technologies Pvt. Ltd.		Ctrl + M
Payroll	No. 1			30-Apr-2019 Tuesday
Account : Salary Payable		Payroll autofill (Salary)		
Cur Bal: 0.00 Cr				
Particulars	Amount			
Primary Cost Category	74,840.00 Dr			
Ajay Dutt	19,322.00 Dr			
Basic Pay	12,000.00 Dr	Cur Bal:	12,000.00 Dr	
House Rent Allowance	4,800.00 Dr	Cur Bal:	4,800.00 Dr	
Conveyance	2,500.00 Dr	Cur Bal:	2,500.00 Dr	
Overtime	2,000.00 Dr	Cur Bal:	2,000.00 Dr	
Employees PF Deduction@12%	1,440.00 Cr	Cur Bal:	1,440.00 Cr	
Employees ES Deduction@1.75%	338.00 Cr	Cur Bal:	338.00 Cr	
Professional Tax	200.00 Cr	Cur Bal:	200.00 Cr	
Income Tax		Cur Bal:	0.00 Cr	
Rajesh Jain	55,518.00 Dr			
Basic Pay	42,000.00 Dr	Cur Bal:	42,000.00 Dr	
House Rent Allowance	16,800.00 Dr	Cur Bal:	16,800.00 Dr	
Conveyance	2,500.00 Dr	Cur Bal:	2,500.00 Dr	
Overtime	1,500.00 Dr	Cur Bal:	1,500.00 Dr	
Employees PF Deduction@12%	5,040.00 Cr	Cur Bal:	5,040.00 Cr	
Employees ES Deduction@1.75%		Cur Bal:	0.00 Cr	
Professional Tax	200.00 Cr	Cur Bal:	200.00 Cr	
Income Tax	2,042.00 Cr	Cur Bal:	2,042.00 Cr	

Figure 3.3.21 Payroll Voucher for Salary payable

9. **Accept** the entry.



Observations: In Figure 3.3.20, we can observe that for employee **Ajay Dutt** Income Tax is not calculated as Income Tax is not applicable for his income, whereas for the employee **Rajesh Jain** Employee ESI Deduction is not applicable as the salary is more than ESI limit (₹ 21,000). But Income Tax is applicable.

Step 3: Process the Statutory Pay Heads

Provident Fund

Let us process **Employer Contribution** towards provident fund in Tally. The following illustration shows how PF is processed for the employee

To process the Provident Fund of the employees,

Go to **Gateway of Tally > Payroll Vouchers> Press CTRL+F4 for Payroll Voucher> Date: 30-4-2019**

1. Press **ALT+A** for Payroll Auto Fill
2. Select **PF Contribution** in Process for field
3. Enter the From and To date as **01-4-2019 to 30-4-2019**
4. Select **Primary Cost Category** as the **Employee Category**
5. Select Employee/Group as **All Items**
6. Select sort by as **Employee name**
7. Select **PF Payable** from the List of Ledger Account

The **Payroll Voucher Creation for PF Payable** appears as shown in the figure 3.3.22:

Payroll Voucher Creation		Future Technologies Pvt. Ltd.		Ctrl + M
Payroll	No. 2			30-Apr-2019 Tuesday
Account : PF Payable		Payroll autofill (PF contribution)		
Cur Bal: 0.00 Cr				
Particulars			Amount	
Primary Cost Category			6,480.00 Cr	
Ajay Dutt			1,440.00 Dr	
Employees EPS Contribution @ 8.33%	1,000.00	Dr Cur Bal: 1,000.00 Dr		
Employees ESI Contribution @ 0.67%	440.00	Dr Cur Bal: 440.00 Dr		
Rajesh Jain			5,040.00 Dr	
Employees EPS Contribution @ 8.33%	1,250.00	Dr Cur Bal: 1,250.00 Dr		
Employees ESI Contribution @ 0.67%	3,790.00	Dr Cur Bal: 3,790.00 Dr		

Figure 3.3.22 PF Contribution Voucher Creation

Employee State Insurance

Let us process **Employer Contribution** towards employee state insurance in Tally.

The following illustration shows how ESI is processed, To process the Employee State Insurance,

Go to **Gateway of Tally > Payroll Vouchers> Press CTRL+F4 for Payroll Voucher>Date: 30-4-2019**

1. Press **ALT+A** for Payroll Auto Fill
2. Select **ESI Contribution** in Process for field
3. Enter the From and To date as **01-4-2019 to 30-4-2019**

4. Select **Primary Cost Category** as **Employee Category**
5. Select Employee/Group as **Ajay Dutt**
6. Select sort by as **Employee Name**
7. Select **ESI Payable** from the **List of Ledger Accounts**

The **Payroll Voucher Creation** screen for ESI payable appears as shown in the figure 3.3.23:

Payroll Voucher Creation		Future Technologies Pvt. Ltd.		Ctrl + M
Payroll	No. 3			30-Apr-2019 Tuesday
Payroll autofill (ESI contribution)				
Account : ESI Payable Cur Bal: 0.00 Cr				
Particulars	Amount			
Primary Cost Category	917.00 Dr			
Ajay Dutt	917.00 Dr			
Employees ESI Contribution@6.75%	917.00 Dr	Cur Bal:	917.00 Dr	

Figure 3.3.23 Payroll Voucher -ESI Payable

8. Accept the screen

Note: It is not required to process ESI for Rajesh Jain as the salary is more than ESI limit (₹ 21,000).

PF Admin Charges

Activity: Create the Ledger **PF Admin Charges** under **Indirect Expenses**, do not enable **Use For Payroll?** option in the ledger.

To process the Employer PF Admin Charges,

1. Go to **Gateway of Tally > Accounting Vouchers > Press F7: Journal > Date: 30-4-2019**
2. Press **CTRL+O** for **Other Charges Auto Fill**
3. In the **Other Charges Auto Fill** screen, enter the From and To date as **01-4-2019** to **30-4-2019**
4. Select **Primary Cost Category** in the **Employee Category** field
5. Select Employee group **All Items** for the **Employee/Group**
6. Select **PF Admin Charges** in the **Expense Ledger** field
7. In **Admin Charges (A/c No.2)**, select **PF Admin Charges@0.50%**
8. In **EDLI Contribution (A/c No.21)**, select **EDLI Contribution@0.50%**
9. In **EDLI Admin Charges (A/c No.22)**, select **Not Applicable**

The **Other Charges Auto Fill** screen appears as shown in the figure 3.3.24:



Other Charges Auto Fill	
From (blank for beginning)	: 1-4-2019
To (blank for end)	: 30-4-2019
Employee Category	: Primary Cost Category
Employee/Group	: [All Items
Expense Ledger	: PF Admin Charges
Admin Charges (A/c No. 2)	: PF Admin Charges@0.50%
EDLI Contribution (A/c No. 21)	: EDLI Contribution@0.50%
EDLI Admin Charges (A/c No. 22)	: [Not Applicable

Figure 3.3.24 Other Charges Auto Fill

10. The **Admin Charges** will be calculated for all the employees automatically.

The **completed Journal Voucher** appears as shown in the figure 3.3.25:

Accounting Voucher Creation		Future Technologies Pvt. Ltd.	Ctrl + M
Journal No. 1			30-Apr-2019 Tuesday
Account : PF Admin Charges		Payroll autofill (Other charges)	
Cur Bal: 170.00 Dr			
Particulars		Amount	
PF Admin Charges@0.50%		500.00	
Cur Bal: 500.00 Cr			
Primary Cost Category			
Ajay Dutt	175.00 Cr		
Rajesh Jain	325.00 Cr		
EDLI Contribution@0.50%		270.00	
Cur Bal: 270.00 Cr			
Primary Cost Category			
Ajay Dutt	60.00 Cr		
Rajesh Jain	210.00 Cr		

Figure 3.3.25 Journal Voucher-Other Charges

11. Accept the screen

Step 4: Salary Payment

To make the Salary Payment to employees,

1. Go to **Gateway of Tally > Accounting Vouchers > F5: Payment>Date :30-4-2019>press Alt+A for Payment Autofill**
2. Process for **Salary Payment**
3. Enter the From and To date **01-4-2019 to 30-4-2019**
4. Enter the Voucher Date as **30-4-2019**
5. Select **Primary Cost Category** as the **Employee Category**
6. Select **All Items** from the **List of Employees/Group**
7. Select **Payroll Ledger** as **Salary Payable**

8. Select **Kotak Bank** ledger from the List of Ledger Accounts
9. Set the option “**Use Mode of Payment/Transaction Type**” to **No**
10. Accept the **Bank Allocations** screen

The **Completed Accounting Voucher Creation Screen** for Salary Payment appears as shown in the figure 3.3.26:

Accounting Voucher Creation		Future Technologies Pvt. Ltd.	Ctrl + M
Payment	No. 1		30-Apr-2019 Tuesday
Account : Kotak Bank Cur Bal: 9,25,160.00 Dr		Payroll autofill (Salary payment)	
Particulars			Amount
Salary Payable Cur Bal: 0.00 Dr			74,840.00
Primary Cost Category			
Ajay Dutt			19,322.00 Dr
Rajesh Jain			55,518.00 Dr

Figure 3.3.26 Salary Payment

11. Accept the entry

Step 5: Provident Fund Payment to PF department

To record the payment of PF,

1. Go to **Gateway of Tally > Accounting Vouchers > F5: Payment>Date: 30-4-2019**
2. Press **ALT+A** for Payroll Auto Fill
3. Select **PF Challan** in Process for field
4. Enter the From and To dates as **01-4-2019 to 30-4-2019**
5. Enter the Voucher Date as **30-4-2019**
6. Select **Primary Cost Category** as the **Employee Category**
7. Select **All Items** from the List of Employees/Group in the **Employee/Group** field
8. Select **PF Payable** in the Payroll Ledger field from the **List of Ledger Accounts**
9. Select **Kotak Bank** as Bank/Cash Ledger from the **List of Ledger Accounts**
10. Set **Provide Details** to **No**
11. Enter the Narration

The completed payment voucher for **Provident Fund Payment** appears as shown in the figure 3.3.27



Accounting Voucher Creation		Future Technologies Pvt. Ltd.	Ctrl + M
Payment No. 2		30-Apr-2019 Tuesday	
Account : Kotak Bank		Payroll autofill (PF challan)	
Cur Bal: 9,11,430.00 Dr			
Particulars	Amount		
PF Payable			
Cur Bal: 0.00 Dr			
Primary Cost Category			
Ajay Dutt	1,440.00 Dr		
Rajesh Jain	5,040.00 Dr		
Employees PF Deduction@12%			
Cur Bal: 0.00 Dr			
Primary Cost Category			
Ajay Dutt	1,440.00 Dr		
Rajesh Jain	5,040.00 Dr		
EDLI Contribution@0.50%			
Cur Bal: 0.00 Dr			
Primary Cost Category			
Ajay Dutt	60.00 Dr		
Rajesh Jain	210.00 Dr		
PF Admin Charges@0.50%			
Cur Bal: 0.00 Dr			
Primary Cost Category			
Ajay Dutt	175.00 Dr		
Rajesh Jain	325.00 Dr		
Provide Details : No			
Narration:			
		13,730.00	

Figure 3.3.27 Payment for PF

12. Accept the screen

Note: While making PF payment to department, it includes employees' deduction, employer's contribution and employees' other charges.

Generating PF Challan

PF Challans can be generated from Tally which is used for department deposits. To Print PF Challan,

1. Go to **Gateway of Tally> Display> Day Book > Open PF Payment Voucher >Press Alt+P > Enable the option Print challan > Accept the Screen**

Step 6: ESI Payment

Employee State Insurance Payment

Activity: Record a payment voucher for the ESI contribution by selecting Process for as **ESI Challan** for **Ajay Dutt** selecting using auto fill option on 30-4-2019 and provide the required payment details.

Note: ESI challans can be generated from Tally, Go to > ESI Payment voucher >press **Alt+P** > enable the option **Print challan**. You will be able to generate ESI challans which can be used for department deposits.

Step 7: Professional Tax Payment

Activity: Record a payment voucher for the professional tax by selecting Process for as **Professional Tax Payment** for all employees using auto fill option on 30-4-2019 and provide the required payment details.

Step 8: Payment of Income Tax to Department.

Income Tax value which is captured while processing salary must be paid to income tax department. To make the income tax Payment,

1. Go to **Gateway of Tally > Accounting Vouchers > F5: Payment> Date: 30-4-2019**
2. Press **ALT+A** for **Payroll Autofill**
3. Process for **Income Tax Challan**
4. Enter the **From** and **To** dates as **1-4-2019** to **30-4-2019**
5. Enter the **Voucher Date** as **30-4-2019**
6. Select **Primary Cost Category** as the **Employee Category**
7. Select **Rajesh Jain** from the **List of Employees/Group**
8. Select **Payroll ledger** as **Income Tax**.
9. Select **Kotak Bank** ledger from the **List of Ledger Accounts**
10. **Set Provide Details** to **Yes** and provide the necessary details

The **Income Tax Payment** voucher appears as shown in the figure 3.3.28:

Accounting Voucher Creation		Future Technologies Pvt. Ltd.	Ctrl + M
Payment	No. 5		30-Apr-2019 Tuesday
Payroll autofill (Income Tax challan)			
Account : Kotak Bank			
Cur Bal: 9,07,733.00 Dr			
Particulars			Amount
Income Tax			2,042.00
Cur Bal: 0.00 Dr			
Primary Cost Category			
Rajesh Jain 2,042.00 Dr			

Figure 3.3.28 Income Tax Payment

Generating Income Tax Challan

Income Tax Challans can be generated from Tally, which is used for Income Tax department deposits. To Print Income Tax Challan,

1. Go to **Gateway of Tally> Display> Day Book > Open Income Tax Payment Voucher >Press Alt+P >** Enable the option **Print Challan > Accept the Screen**

3.3.12 Payroll Reports

To view the Payroll Reports, follow the procedure shown below:

1. Go to **Gateway of Tally > Display > Payroll Reports**

Payroll Reports menu consists of reports such as **Statements of Payroll, Attendance Sheet, Attendance Register, Expat Reports** and **Statutory Reports**.

Statements of Payroll

Statements of Payroll consists of reports like Pay Slip, Pay Sheet, Payroll Statement, Payment Advice, Payroll Register, Employee Profile, Employee Head Count, Employee Pay Head Breakup and Pay Head Employee Breakup.



Pay Slip

Pay Slip is a document issued to an employee that lists each component of earnings and deductions, and the net amount paid to an employee for a given pay period. It provides details on how the net amount has been arrived at.

To view Pay Slip, go to **Gateway of Tally > Display > Payroll Reports > Statements of Payroll > Pay Slip > Single Pay Slip > Rajesh Jain** or required employee.

The **Pay Slip Screen** appears as shown in the figure 3.3.29:

Pay Slip

Future Technologies Pvt. Ltd.

Ctrl + M

Pay Slip for April-2019

Rajesh Jain

Employee Number : 2001

Function : Sales

Designation : Sales Manager

Location : Bengaluru

Bank Details : 32434234278, Kotak Mahindra Bank (India), Kormangala

Date of joining : 1-Apr-2019

Income Tax Number (PAN) : ASDFG1234Q

Universal Account Number (UAN) : 100018336042

PF account number : KN/ENG/0017950/001/1121341

ESI Number : 21384376473

PR Account Number (PRAN) :

Passport Details : IND22292

Visa expiry date : 31-Mar-2025

Attendance Details		Value
Overtime	5- 0 Hrs.	
Present	30 Days	

Earnings	Amount	Gross Salary	Deductions	Amount	Gross Salary
Basic Pay	42,000.00	42,000.00	Employees PF Deduction@12%	5,040.00	5,040.00
House Rent Allowance	16,800.00	16,800.00	Professional Tax	200.00	200.00
Conveyance	2,500.00	2,500.00	Income Tax	2,042.00	
Overtime	1,500.00	1,500.00			
Total Earnings	62,800.00	62,800.00	Total Deductions	7,282.00	5,240.00
			Net Amount	₹ 55,518.00	₹ 57,560.00

Figure 3.3.29 Pay Slip

Tally also provides the option to print or email the pay slips for all the employees.

Pay Sheet

Pay Sheet contains all earnings and deduction details for a given month or period with several options to re-configure the appearance of rows and columns.

To view the pay sheet,

1. Go to **Gateway of Tally > Display > Payroll Reports > Statements of Payroll > Pay Sheet**
2. In the **Employee Filters** screen, In the **Name of Category** field select **All Items** ,
3. In the **Name of Employee Group** select **All Items** from the **List of Employees/Groups** to view Pay Sheet.

Payroll Statement

Payroll Statement report allows you to generate the report for a specific Pay Head/Ledger.

1. Go to **Gateway of Tally > Display > Payroll Reports > Statements of Payroll > Payroll Statement**
2. In the Select Item screen, select the **Basic Pay** from the **List of Pay Heads**
3. Press **F12: Configure** and enable the option “**Show Employee By Categories & Groups**” and save the configuration screen

Payroll Advice

The **Payment Advice** report is used to generate **Payment Advice/Bank Transfer** letters to transfer salary amount from a specific bank account to the respective bank accounts of the employees based on the salary payment voucher.

For more details refer to salary payment section.

1. Go to **Gateway of Tally > Display > Payroll Reports > Statements of Payroll > Payment Advice**, provide the details to print the report.

The **Payment Advice** appears as shown in the figure 3.3.30:

Future Technologies Pvt. Ltd.
 #52, 5th Main Road, Garden Tech Park,
 Bengaluru- 560051
Payment Advice

6-Jan-2020

The Manager
 Kotak Bank

Dear Sir,

Payment Advice from Future Technologies Pvt. Ltd. A/c No. for period 1-Apr-2019 to 30-Apr-2019

Please make the payroll transfer from above account number to the below mentioned account numbers towards employee salaries:

Sl. No.	Name of the Employee	Account No.	Amount
1.	Ajay Dutt	1100999223	19,322.00
2.	Rajesh Jain	114567890	55,518.00
	Total		74,840.00

Amount (in words) : INR Seventy Four Thousand Eight Hundred Forty

Figure 3.3.30 Payment Advice

Payroll Register

The **Payroll Register** is a month-wise transaction summary report displaying payroll vouchers, similar to the statistics report in the accounting module. Though the register primarily displays payroll vouchers, you can however add new columns for any other voucher type. The user can drill down to the voucher level from this report.



Attendance Reports

The following Attendance/Production related reports can be generated in Tally:

- Attendance Sheet
- Attendance Register

3.3.13 Payroll Statutory Reports

Provident Fund Reports

To view the Provident Fund reports,

1. Go to **Gateway of Tally > Display > Payroll Reports > Statutory Reports > Provident Fund**

The provident fund reports are sub divided into the monthly and annual based on the period as listed below:

Monthly:

- Form 5
- Form 10
- Form 12A
- Monthly Statement
- E-Challan Return (ECR)

Annual:

- Form 3A
- Form 6A
- E-Return

The Employee Provident Fund Scheme- Monthly Statement appears as shown in figure 3.3.31

EMPLOYEE PROVIDENT FUND SCHEME - Monthly Statement											
Name & Address of the Factory or Establishment : Future Technologies Pvt. Ltd. #52, 5th Main Road, Garden Tech Park, Bengaluru- 560051											
Statement for the Period : 1-Apr-2019 to 30-Apr-2019											
S. No.	Emp No	PF Number	Employee Name	Work- ed Days	Earned Wages	Employee's Contribution			Employer's Contribution		
						PF 12%	VPF	Total	EPS 8.33%	EPF 3.67%	Total
1	2001	1121341	Rajesh Jain	30	42,000.00	5,040.00		5,040.00	1,250.00	3,790.00	5,040.00
2	2002	1121342	Ajay Dutt	30	12,000.00	1,440.00		1,440.00	1,000.00	440.00	1,440.00
			Total		54,000.00	6,480.00		6,480.00	2,250.00	4,230.00	6,480.00

Figure 3.3.31 PF- Monthly Statement

Activity: View all the other reports falling under Provident Fund

Employee State Insurance Reports

The **Employee State Insurance** reports is sub divided into the **Monthly** and **Annual** on the period as listed below:

Monthly

- ESI Form 3
- Monthly Statement
- E-Return

Annual

- Form 5
- Form 6

Activity: View all the reports falling under Employee State Insurance

Professional Tax Reports

To view the Professional Tax reports,

Go to **Gateway of Tally > Display > Payroll Reports > Statutory Reports > Professional Tax**

The Professional Tax Report is further sub-divided into two types of reports:

- **Computation Report**
- **Statement**

Activity: View the reports falling under Professional Tax

Income Tax Reports

To view the **Income Tax Reports**,

Go to **Gateway of Tally > Display > Payroll Reports > Statutory Reports > Income Tax**

The following **Income Tax** reports are provided in Tally:

- Computation
- Salary Projection
- Challan Reconciliation
- Returns
- E-Return
- Exception Reports



The **Computation Report** displays the employee-wise income tax computation details in the Form 16 format. Along with the total tax payable, it also displays the balance tax payable, tax already paid and tax amount to be deducted in the subsequent month. To view the Income Tax Computation report,

1. Go to **Gateway of Tally > Display > Payroll Reports > Statutory Reports > Income Tax > Computation**
2. Select **Rajesh Jain** and press Enter

The **Income Tax Computation** screen appears as shown in the figure 3.3.32:

Income Tax Computation				Future Technologies Pvt. Ltd.		Ctrl + M	
Income Tax Computation for : Rajesh Jain				Financial Year: 1-Apr-2019 to 31-Mar-2020			
Employee No.	: 2001	PAN Number	: ASDFG1234Q	Total Income Tax	:	24,497.00	
Gender	: Male	Computed based on	: Declared Value	Less: Deducted till Apr-2019	:	2,042.00	
Date of joining	: 1.4.2019	Computed for the month	: Apr - 2019	Balance Deductible	:	22,455.00	
Date of Birth	: 1.2.1987	Assessment Year	: 2020 - 2021	Tax Per Month from May-2019	:	2,042.00	
S.No	Particulars					Amount	Amount
1. Gross Salary							8,10,600.00
	Salary as per provisions contained in Sec 17(1)					7,98,600.00	
	Value of Perquisites u/s 17(2) (as per Form 12BA)					12,000.00	
	Profits in lieu of Salary u/s 17(3) (as per Form 12BA)						
2. Less: Allowance to the extent exempted U/s 10							93,600.00
	House Rent Allowance					93,600.00	
3. Balance (1 - 2)							7,17,000.00
4. Deductions U/s 16							52,400.00
	Standard Deduction					50,000.00	
	Professional Tax (Tax on Employment)					2,400.00	
5. Total Income from Salary (3 - 4)							6,64,600.00
6. Add: Other Income declared by Employee							
	Other Income (House Property / Other Source) / Interest on Housing Loan						
7. Gross Total Income (5 + 6)							6,64,600.00
8. Deductions under Chapter VI-A							80,480.00
	Investments (U/s 80C, 80CCF, 80CCG, etc.)					80,480.00	
	Others (U/s 80D, 80DD, 80E, etc.)						
Balance Tax Payable / Deductible (12 - 13)							22,455.00

Figure 3.3.32 Income Tax Computation

The above report displays the Employee details on the top of the screen, on the right-hand top corner it gives the overall Tax deduction snapshot. In the remaining report each Income Tax Component value is displayed.

To know the income tax slab and the calculation method in Tally, From **Income Tax computation** screen, select **Serial Number 10>Tax on Total Income > Press Enter**.

The **Tax on Total Income** appears as shown in the figure 3.3.33:

Income Tax Computation				Future Technologies Pvt. Ltd.		Ctrl + M B	
Income Tax Computation for : Rajesh Jain				Financial Year: 1-Apr-2019 to 31-Mar-2020			
Employee No.	: 2001	PAN Number	: ASDFG1234Q	Total Income Tax	:	24,497.00	
Gender	: Male	Computed based on	: Declared Value	Less: Deducted till Apr-2019	:	2,042.00	
Date of joining	: 1-4-2019	Computed for the month	: Apr - 2019	Balance Deductible	:	22,455.00	
Date of Birth	: 1-2-1987	Assessment Year	: 2020 - 2021	Tax Per Month from May-2019	:	2,042.00	
S.No	Particulars			Amount	Amount		
1	Less: Allowance to the extent exempted U/s 10				93,600.00		
	House Rent Allowance			93,600.00			
2	Balance (1 - 2)				7,17,000.00		
3	Deductions U/s 16				52,400.00		
	Standard Deduction			50,000.00			
	Professional Tax (Tax on Employment)			2,400.00			
4	Total Income from Salary (3 - 4)				6,64,600.00		
5	Add: Other Income declared by Employee						
	Other Income (House Property / Other Source) / Interest on Housing Loan						
6	Gross Total Income (5 + 6)				6,64,600.00		
7	Deductions under Chapter VI-A				80,480.00		
	Investments (U/s 80C, 80CCF, 80CCG, etc.)			80,480.00			
	Others (U/s 80D, 80DD, 80E, etc.)						
8	Total Income chargeable to Tax (7 - 8)				5,84,120.00		
10. Tax on Total Income					30,497.00		
11. Less: Relief							
					8 more...		

Figure 3.3.33 Tax on Total Income

Tax on Total income for employee Rajesh Jain displays as shown in the figure 3.3.34:

Tax On Total Income		Future Technologies Pvt. Ltd.		Ctrl + M	
Employee Name	: Rajesh Jain	Financial Year	: 1-Apr-2019 to 31-Mar-2020		
Employee No	: 2001	Assessment Year	: 1-Apr-2020 to 31-Mar-2021		
Gender	: Male				
PAN Number	: ASDFG1234Q				
S.No	Particulars	Chargeable amount	Tax rate	Tax amount	
1.	Income Chargeable to Tax	5,84,120.00			
2.	Upto 2,50,000.00	2,50,000.00			
3.	From 2,50,000.00 Upto 5,00,000.00	2,50,000.00	5 %	12,500.00	
4.	From 5,00,000.00 Upto 10,00,000.00	84,120.00	20 %	16,824.00	
5.	From 10,00,000.00 and above		30 %		
6.	Income Tax			29,324.00	
7.	Health and Education Cess	29,324.00	4 %	1,172.96	
8.	Total Tax after Cess			30,496.96	

Figure 3.3.34 Tax on Total Income with PAN

The above calculation i.e. based on income tax slab is done based on **PAN**.

Salary Projection

The **Salary Projection report** provides the details of the **Earnings and Deduction** pay head values which are considered for income tax for selected employees. It provides the projection for twelve months and displays the actuals if payroll is already processed for any given month. To display the salary projection report,

1. Go to Gateway of Tally > Display > Payroll Reports > Statutory Reports > Income Tax > Salary Projection
2. Select **Rajesh** and press Enter to view **Salary Projection**

Challan Reconciliation

All the **Income Tax Payment Challan** details can be reconciled from one single menu known as challan reconciliation. To reconcile challan details,



1. **Go to Gateway of Tally > Display > Payroll Reports > Statutory Reports > Income Tax >Challan Reconciliation**
2. **Press F5 for Challan Reconcile** and set/alter the required challan details

Returns

The following **Income Tax returns** can be generated from Tally:

Monthly

- Form 24Q
- Annexure I to 24Q
- Annexure II to 24Q

Annual

- Form 16
- Form 12BA
- ITR-1

Form 16

Form 16 is the certificate issued for tax deducted at source from income chargeable under the head salaries. To view the Form 16,

1. Go to **Gateway of Tally > Display > Payroll Reports > Statutory Reports > Income Tax >Returns > Form 16**
2. Select **Rajesh Jain** from the **List of Employees** and press **Enter**

E- Return

The following income tax E-returns can be generated from Tally:

- **E-24Q**
- **Print Form 27A**

Conclusion

The **Payroll and Income Tax** feature in Tally enables recording payroll related transactions of employees and facilitates instant generation of **Payroll and Statutory MIS Reports** with transaction details. You will be able to determine the salary payable, salary paid to employee with deductions and the management can easily track the payments made to employees and statutory payments made to respective departments which aids in decision making and growth of a company.



Self-Evaluation Section

1. To bring the interest receivable amount in the books of accounts which of the following entry is recorded?
 - a. Credit Note
 - b. Sales Voucher
 - c. Purchase Voucher
 - d. Debit Note
2. Adjustment of Forex Gain/Loss is recommended to be done using_____.
 - a. With Voucher Class in Journal
 - b. Without Voucher Class in Journal Voucher
 - c. Credit Note Voucher
 - d. Debit Note Voucher
3. In Tally, we can check the details of home currency and foreign currency from Balance Sheet report.
 - a. True
 - b. False
4. In Tally, from _____register we can check the details of finished goods and raw materials.
 - a. Material Movement Register
 - b. Job work out order
 - c. Material In Register
 - d. Material Out Register
5. Which of the following two options gets activated automatically after enabling Job Order Processing in Tally?
 - a. Godowns & Cost Tracking
 - b. Godowns & Material In / Out
 - c. Sales Order & Purchase Order
 - d. Godown & Purchase Order
6. In Tally.ERP 9, you can create new price list but cannot revise the existing price list.
 - a. True
 - b. False
7. Multiple Price Levels can be maintained in Tally _____.
 - a. True



- b. False
8. We can see user-wise report in Tally Audit.
- a. True
- b. False
9. In Tally, the shortcut key to connect company for remote login is _____.
- a. F5
- b. Alt+F4
- c. F6
- d. F4
10. _____ is the quarterly return for deduction of tax in respect of payments (other than salary) made to residents.
- a. Form 26Q
- b. Form 27Q
- c. Form 16
- d. Form 24Q
11. In Tally, once after reconciling the TDS payment voucher the entry will reflect under Included Transaction.
- a. True
- b. False
12. As per the Income Tax Act, 1961, every corporate and government entity responsible for collection of tax at source should furnish _____ returns.
- a. TDS
- b. TCS
- c. GST
- d. Customs
13. What is gross earnings limit for ESI calculation?
- a. 10,000
- b. 21,000
- c. 15,000
- d. 20,000



14. Form 16 is used as_____.
- PF challan
 - TDS Challan
 - TDS Certificate
 - ESI Challan
15. What is the rate of percentage for PF Calculation?
- 12%
 - 12.5%
 - 15%
 - 15.5%
16. the **Computation Report** of Income Tax displays the employee-wise income tax computation details in the Form 16 format.
- True
 - False
17. ESI Rate for Employee's contribution is_____.
- 4.83%
 - 0.75%
 - 2.50%
 - 1.73%
18. Sec 80D is related with_____.
- Income Tax
 - ESI
 - Gratuity
 - NPS

Keys Answers

Question No	Fundamentals of Accounting	Answer
1	To bring the interest receivable amount in the books of accounts which of the following entry is recorded?	Debit Note
2	Adjustment of Forex Gain/Loss is recommended to be done using_____.	With Voucher Class in Journal



3	In Tally, we can check the details of home currency and foreign currency from Balance Sheet report.	True
4	In Tally, from _____ register we can check the details of finished goods and raw materials	Material Movement Register
5	Which of the following two options get activated automatically after enabling Job Order Processing in Tally?	Godowns & Material In / Out
6	In Tally.ERP 9, you can create new price list but cannot revise the existing price list.	True
7	Multiple Price Levels can be maintained in Tally _____.	True
8	We can see user-wise report in Tally Audit.	True
9	In Tally, the shortcut key to connect company for remote login is _____.	F4
10	_____ is the quarterly return for deduction of tax in respect of payments (other than salary) made to residents.	Form 26Q
11	In Tally, once after reconciling the TDS payment voucher the entry will reflect under Included Transaction.	True
12	As per the Income Tax Act, 1961, every corporate and government entity responsible for collection of tax at source should furnish _____ returns.	TCS
13	What is gross earnings limit for ESI calculation?	21,000
14	Form 16 is used as_____.	TDS Certificate
15	What is the rate of percentage for PF Calculation?	12%
16	In Tally.ERP 9, the Computation Report of Income Tax displays the employee-wise income tax computation details in the Form 16 format.	True
17	ESI Rate for Employee's contribution is_____.	0.75%
18	Sec 80D is related with_____.	Income Tax

PRACTICAL LAB EXERCISES AND CASE STUDIES



UNIT-3 : ADVANCE DATABASE CONCEPTS

CHAPTER 1 : ADVANCE SQL QUERIES

Exercise 1.1: Sub Queries

Rohit is an Accountant in Apex Ltd. At the closing of the quarter, he has to check the Invoices for which the payments are made in Quarter-I of year 2008.

Solution

Student is requested to create a query to retrieve all records from *Invoices* table for which the *Payment Date* in *Payments* table lies in Quarter-I i.e. between 1/1/2008 and 4/30/2008. Since we do not require any details from the *Payments* table, we use the table in a sub-query.

For Result please refer to Page No 4 of Study Module – II.

Exercise 1.2: Unmatched Queries

Ankur Mathur, Sales Head of Apex Ltd. wishes to reduce the production of few products. To analyse which products should not be produced further, he needs to find out the products which have not been ordered so far.

Solution

For the purpose of finding the unmatched products in Sales Item Description, students are requested to use Unmatched Query Wizard and find out products from Inventory table which do not have a matching Item Number in Sales Item Description table.

For Result please refer to Page No 10 of Study Module – II.

Exercise 1.3: Duplicate Queries

Varun Gupta, a Chartered Accountant in Apex Ltd., is required to audit the invoices and the payments. While tracking the payments he noticed that multiple invoices have been created for a single sales order. To sort out the things, he wishes to check all the sales order having duplicate invoices.

Solution

For above requirement, student are requested to use Find Duplicates Query wizard for table Invoices based on the field Sales Order Number so that it displays all the duplicate invoices created for a single sales order.

For Result please refer to Page No 15 of Study Module – II.

Exercise 1.4: Grouping & Summarising Records using criteria

The Country Head in Apex Ltd. wishes to compute the sales volume of its products. He also would like to see the number of orders placed for each product, so that they can focus on products with greater sales volume.

**Solution**

Here students use a Total query that calculates the count of orders placed for each product and arrange them in descending order of the counts so as to find the products which are sold more.

For Result please refer to Page No 18 of Study Module – II.

Exercise 1.5: Grouping & Summarising Records using a Crosstab Query

The company Apex Ltd. wishes to revise the credit limit of its customers. For this purpose, Ashish, the PRO needs a summary report that indicates the count of orders placed by each customer in every month of last financial year i.e. 2011-2012.

Solution

To obtain the desired summary report, students are requested to create a Crosstab query on table Sales Order with month of Sales Date as row heading, Customer Number as column heading and count of Sales Order Number as values.

For Result please refer to Page No 29 of Study Module – II.

Exercise 1.6: PivotTable and PivotChart

The Head of Sales Department in Apex Ltd. has demanded a Sales Summary report for review. The following are the desired requirements: the sales of the products can be viewed in terms of Year, Quarters and Months; the report should enable the user to view the products filtered by Category.

Solution

To create this Summary report, students are requested first to create a query that displays the Products and their Category, Sales amount of each product, also the date on which they were sold. Then to create summary sheet, create a PivotTable view of the query having

a) Category field as a filter b) Product field on row c) Year, Quarter and Month on columns and Total Sales (which is computed as Quantity sold into Product cost) displayed as values

For Result please refer to Page No 35 of Study Module – II.

Exercise 1.7: Joining Tables in Queries

The Operations Regional Head of Apex Ltd. is required to produce a report giving the details of the payments received.

For this purpose, two reports are required to be prepared:

- First report indicating the Invoices for which payments have been made, including the invoice and payments detail.
- Second report displaying a list of all the sales order, their invoices and details of payments, including those invoices for which payments have not been received.



Solution

To get the desired result, student is requested to create two queries as a) First query to fulfil the requirement using inner join between tables Invoice and Payments and b) Second query to achieve the second requirement which includes Sales Order, Invoice and Payments tables with a left outer join between Invoice and Payments tables.

For Result please refer to Page No 53 of Study Module – II.

Exercise 1.8: Calculated Fields

Ramit, an executive in Apex Ltd. is required to produce a report displaying all the sales orders which contains the field Total Amount Paid as a sum of Tax, Freight and Other Charges.

Solution

Here students are requested to create a query on table Sales Order with a calculated column Total Amount Paid computed as a sum of Tax, Freight and Other Charges.

For Result please refer to Page No 60 of Study Module – II.

CHAPTER 2 : DESIGNING FORMS & REPORTS

Exercise 2.1: Form - Adding Unbound Control

The database Apex Inventory Shipment has a form *frmOrders*, based on table *Sales Order* which keeps track of all the orders placed. The Sales Manager wishes to add a current date on the form, so that it becomes easy for the user to keep track of dates.

Solution

Here students are required to add an unbounded control, a label to the form and sets its property to store the current date.

For Result please refer to Page No 70 of Study Module – II.

Exercise 2.2: Adding Graphics to Form

The Database Developer wants to make a form *frmOrders* more presentable and thought of adding a picture to the background of this form.

Solution

Here students are required to set the picture as form background using the image control. Select the picture to be added, draw the image control and adjust its properties to make image as a background.

For Result please refer to Page No 73 of Study Module – II.

Exercise 2.3: Adding Unbound Control (Text Box)

The Manager wishes to add another date in a form *frm Orders*, which may indicate when the order will reach customers.



This date can be computed as 15 days after the date of shipment.

Solution

Here students are required to add a textbox to the form. This textbox contains calculated value, which is computed as 15 days + date of shipment.

For Result please refer to Page No 77 of Study Module – II.

Exercise 2.4: Adding Unbound Control (Combo box)

The executives are making many mistakes while typing the reference of the customer to which orders are sold. The Sales Manager asked the Database Developer to find the solution to this problem.

Solution

The Database Developer thought that it will be a good way to add a combo box for the customers. Users will have an option to choose the value from the list or type a new value if required, thereby decreasing the typing mistakes.

For Result please refer to Page No 79 of Study Module – II.

Exercise 2.5: Adding Unbound Control (Calendar)

Database Designer of Apex Ltd. has designed the *frmOrders* form to be used for *Sales Orders* table. The Supervisor of the Customer Service Group informs the designer that people taking orders often need to refer to a calendar to answer customer questions, such as when they will receive a shipment. A calendar is necessary so that customer service employees can take weekends & holidays into account when they make an estimate as to when orders will be shipped.

Solution

Here students are required to add a Calendar control to all the date fields to make the form convenient for the users. A calendar control can be added for Sales Date and Ship Date for users to pick up date graphically.

For Result please refer to Page No 85 of Study Module – II.

Exercise 2.6: Form Design

The Sales Manager asks the Information Analyst to store the information of the customer which could be displayed in a friendly manner, such that the customer's personal details and company details can be viewed separately.

Solution

Here students are advised to divide the information into separate tab in a form. One tab in the form should contain customer contact detail, while the other can contain customer's company details, and third tab can contain customer's terms with the company.

For Result please refer to Page No 90 of Study Module – II.



Exercise 2.7: Displaying Summary Data in a Form

The Sales Manager wishes to see the summarized data of sales. He requests the Database Developer to create a form in such a manner, that it should display the summarized data in terms of cost of Item Sold per year, per country. For example, he needs a report displaying summary of the items sold country wise and state wise in year 2008 Quarter-2.

Solution

Here students are advised to create a query based on table Sales Order, Customers, Sales Item Description, and Inventory and fetches the required data from it. Once query is created, then a form using pivot table option is created over the query.

For Result please refer to Page No 94 of Study Module – II.

Exercise 2.8: Advanced Reports – Creating Customized Header & Footer

The Database Developer has prepared a report *rpt Customers* to display all the details of the customers. The Zonal Sales Head requires the report to be customized; each page of the report must contain the *Report Title* at the top and date & time at bottom.

Solution

Here students are advised to add a Page Header & Footer to the report and customizes the Page Header to hold a label with Report Title, and Page Footer to contain the date & Time using Date Time control.

For Result please refer to Page No 99 of Study Module – II.

Exercise 2.9: Advanced Reports – Adding Calculated Values

The Sales Head wishes the customer name should be displayed as a complete name, not as first name and last name.

He requests the Database Developer to implement the change.

Solution

Here students are required to add calculated value that concatenates first name and last name in the report *rptCustomers* and replaces the First Name and Last Name textboxes.

For Result please refer to Page No 103 of Study Module – II.

Exercise 2.10: Advanced Reports – Sub Report

The Regional Head notices that the database users face a big problem while tracing the orders placed by each customer. He asks the Database Developer to create a user-friendly object which can display both the customer's details and orders placed by the customer.

**Solution**

Here students are required to add a sub report to the report rptCustomers which include details of the orders placed by the customers. For this purpose, the table Sales Order is used and the fields Sale to Customer from Sales Order and Customer Number from Customers are mapped.

For Result please refer to Page No 106 of Study Module – II.

Exercise 2.11: Advanced Reports – Adding Chart

The Sales Head wishes to create a summary report. The report should show the quarterly total sales for each category.

The Sales Head requests the Information Analyst to show a diagrammatic representation of the report.

Solution

Here the best way to display the summary report is to create charts to represent the data. The charts can be included in a report, and based on a query sales data to show its diagrammatic representation.

For Result please refer to Page No 109 of Study Module – II.

CHAPTER 3 : BUILDING CRITERIA EXPRESSIONS**Exercise 3.1: Using Functions**

Apex Ltd. is launching a new production unit in “California”, which will also focus on some new products. To promote these products a detailed list of all existing customers from “California” (state code CA) is required.

Solution

Here students are required to create a query that displaying Name, Contact Info and Address of the customers is required. To get only the customers from “California” the value CA in the criteria for the state field needs to be specified. Here, CA is a literal operand and is typed direct in query criteria.

For Result please refer to Page No 125 of Study Module – II.

Exercise 3.2: Using Compound Criteria

At the end of a quarter, Country Head of Apex Ltd. wishes to review the following data:

- A report displaying all sales orders placed in from January to March 2008.
- All inventory details from the “Car”, “Snowmobile”, and “Boat” categories along with the details of the order placed for them.
- A list of all the products that were sold with a quantity greater than 5 or the price greater than 1000.
- A contact list for all Customers whose first name starts with A, B or C.



Solution

For creating the query containing the report of Sales Order, the query will be created on the Sales Order table, using “Between” and “And” operator in query criteria.

The inventory details query will contain the Inventory table and Sales Item Description. The query criteria will be based on the IN operator.

For obtaining the list of products, query needs to be based on Inventory and Sales Item Description containing compound criteria.

To retrieve the contact list of Customers, query will be based on the Customers table and the criteria for the first name will contain the LIKE operator.

For Result please refer to Page No 135 of Study Module – II.

CHAPTER 4 : MACROS AND SWITCHBOARDS

Exercise 4.1: Creating Macro

Kanika Mathur, a sales executive in Apex Ltd. is required to send a detailed report of all the orders that have been placed today to the Sales Head every evening in a form of an Excel sheet, also the same sheet also has to be uploaded in a shared folder for delivery to check. She thought to automate the process of transferring records so as to save the efforts required.

Solution

Here students are required to create a macro that transfers the table Orders into Excel and stores it in a shared folder using the Transfer Spread Sheet Action. Then, use Send Object Action to mail it to the Sales Head.

For Result please refer to Page No 164 of Study Module – II.

Exercise 4.2: Attaching Macro

Based on the above problem scenario in the Orders form add a button that enables the user to export and mail the table.

Solution

Here students are required to add a button on the form and attach a macro to the click event of the button.

For Result please refer to Page No 168 of Study Module – II.

Exercise 4.3: Restricted Macro using Where Condition

In the Database Apex Inventory Shipment, as an enhancement to the Orders form, the Manager wishes to see the details of the Customer who has placed the order.

**Solution**

Here students are required to add a command button to the form. On the click event of the command, a macro will be created that displays the Customers form restricted to the Customer Number for the order.

For Result please refer to Page No 173 of Study Module – II.

Exercise 4.4: Validating Data using a Macro

In the *frmOrders* form Rahul Sharma, the database developer in Apex Ltd. is asked to place a check on the *Item Number* field. It is to be ensured that *Item Number* should not be left blank.

Solution

Here students are required to add a macro that will be embedded on the Click event property of the Save Command Button. This macro will check if the Item Number is blank and will display a message accordingly.

For Result please refer to Page No 182 of Study Module – II.

Exercise 4.5: Automating Data Entry using a Macro

In the *frmOrders* form, the Operational Manager wishes to see the total cost of the order, which would be computed as *Quantity ordered * price* of an Item.

Solution

Here students are required to add a text box as Total Order Cost to the form and a macro is created on the Exit event of price to compute the total cost of an order. This macro first checks the value of Quantity is not null and then computes Total Cost.

For Result please refer to Page No 187 of Study Module – II.

Exercise 4.6: Creating a Database Switchboard

Employees of Apex Ltd. need to keep updating the company database frequently for various reasons. However, employees are confused over the interface that appears when the application is started. The application developer wishes to resolve this confusion by providing a clear and concise environment in which users can reduce the amount of time spent figuring out how to obtain the information they are looking for.

Solution

Here students are required to create a Switchboard form that contains buttons to open the Customers and Inventory tables and the *frmOrders* form needs to be created. Since switchboard is not capable of opening the tables directly through the Command button, so students must create macros to open the Customers and Inventory tables named as Macro Cust and Macro Invent respectively.

For Result please refer to Page No 194 of Study Module – II.



Exercise 4.7: Modifying Database Switchboard

The developer noticed that the *switchboard* created in earlier example is not giving a professional look. He wishes to add the *company logo* to the *switchboard*. In addition, he wants to add a new *button* to the *switchboard* which will help the user to create an excel copy of data and mail it to the manager.

Solution

Here students are required to add a company logo to the switchboard by modifying the switchboard in the Design view. To add a new button to the switchboard, use the Edit option in Switchboard Manager. Also create a command button to execute the macro Mail Current Orders which was created in earlier example.

For Result please refer to Page No 203 of Study Module – II.

UNIT-4 : ADVANCED ERP CONCEPTS

CHAPTER1: SIMPLIFYING ADVANCED TRANSACTIONS IN TALLY

Exercise 1.1

Illustration 1: Configuration of interest in advance parameters and recording of sales transaction refer Page 218

Exercise 1.2

Illustration 2: Checking of Interest payable amount and bringing the same in the books of accounts refer Page 222

Exercise 1.3

Illustration 3: Recording of payment voucher along with interest amount refer Page 224

Exercise 1.4

Illustration 4: Calculating interest based on compound interest formula. refer Page 226

Exercise 1.5

Illustration 1: Recording sales voucher with dollar currency and corresponding receipt transaction. refer Page 232

Exercise 1.6

Illustration 2: Recording of journal voucher in order to write-off the forex gain/loss to the profit/loss account refer Page 234

Exercise 1.7

Illustration 3: Recording of sales transactions with different rate of exchange refer Page 236



Exercise 1.8 Multiple Currency

Create currency

Currency Name	Shortcut Keys
Pounds Sterling	Alt+156=£
Yen symbol	Alt+0165=¥
Euro symbol	Alt+0128=€
Dollar	\$

Entry using foreign currency

- Q.A. 01/04/2017 sold 100 nos of digital watch to Prism times @\$25/nos (invoice no export/1). The rate of exchange on that date is Rs.64/\$. Pass the entry.
- Q.B. On 02/04/2017, prism time paid \$2,500 (ch. No-754210). The bank charges of \$50 were incurred and the rate of exchange on that date is Rs.66/\$. Display the forex gain/loss from balance sheet and pass an adjustment entry for forex gain of prism time.
- Q.C. On 01/04/2017 the following goods were purchase from 123 systems Invoice no123/045/17-18. The rate of exchange is Rs.85/£. Pass the necessary entry.
- Q.D. On 02/04/2017 the company paid £110 to 123 systems against invoice no123/045/17-18. The rate of exchange is Rs.82/£. The bank charges incurred were Rs.500 (corporation bank ch. No-781972).Display the forex gain/loss from balance sheet and pass an adjustment entry for forex gain/loss of 123 system.

Exercise 1.9

Illustration 1: Listing of Components using Bill of Materials in Finished goods. refer Page 240

Exercise 1.10

Illustration 2: Record purchase of raw materials and manufacturing the finished product. refer Page 242

Exercise 1.11

Illustration 3: Recording of manufacturing journal for converting raw materials in to finished goods refer Page 243

Exercise 1.12

Illustration 4: Recording Stock Journal voucher to transfer materials from one location to refer Page 245

Exercise 1.13 Create BOM

BOM example.

A readymade manufacturer manufacturing a Shirt with Following Components :



Raw materials (Components)	Quantity
Cloth	2 Meter
Buttons	8 Nos
Thread	1 Roll

In tally there are three kinds of BOM available based on the usability

Single BOM:- Follow Above Steps

Multiple BOM:- By Using Above Single BOM, Create Shirt 40 Modern BOM with Unit of Manufacture 1 PC

BOM with Item:- Cut piece of the cloth is used to make kerchief create the same.

Exercise 1.14

Emerald-Shine Makers has placed a job work out order for manufacturing electronic cookers to Madan Manufacturing Co. The raw materials for manufacturing electronic cookers are purchased by Emerald-Shine Makers. and are transferred to Madan Manufacturing Co. refer Page 250

Exercise 1.15

Illustration 2: Handling job work in order processing in Tally refer Page 262

Exercise 1.16 ASSIGNMENT ON JOB WORK OUT ORDER PROCESSING

Company placed an order to XYZ INDUSTRIES for manufacturing 20no.s of Laptops. To manufacture 20no.s of laptops following raw materials will be supplied by our company. Raw Materials – Each Item Opening Balance is 40pcs. (Order No: Job out / xyz / 001)

S.NO	NAME OF THE ITEM	QUANTITY	RATE
1	Mother Board	20pcs	1500
2	CPU	20pcs	3000
3	RAM 6GB	20pcs	2000
4	Monitor	20pcs	3000
5	i8 processor	20pcs	4000

B. Company transferred the raw materials to XYZ Industries against JOB WORK Order no : Job out / xyz / 001. (Challan no: Ch/XYZ/01)

C. Our company received the following finished goods against the job work out order job out / xyz/ 001 from XYZ Industries.

D. Our company received job work invoice from XYZ Industries (Challan Number : Ch/ XYZ / 001) Job work charge – 50,000) . Invoice no: Pur/XYZ/001

E. Our company paid amount to XYZ Industries in cheque of SBI against the ref no: Pur / XYZ / 001.



Exercise 1.17

Illustration 1: Defining price levels for different buyers refer Page 267

Exercise 1.18

Illustration 2: Defining price list for different stock items of the company in Tally refer Page 268

Exercise 1.19

Illustration 3: Recording Sale Voucher refer Page 271

Exercise 1.20

Illustration 4: Revising of price list in Tally refer Page 272

Exercise 1.21

Illustration 5: Recording sales voucher with revised price list in Tally refer Page 274

Exercise 1.22 PRICE LIST

Parker Company purchased 500 pieces of parker pen for Rs. 15 each. The company sold 427 pieces of pen on following conditions:-

- Less than 10 pieces for Rs. 18.
- More than 10 pieces and less than 50 pieces for Rs. 17 on 1% discount.
- More than 50 pieces and less than 100 pieces for Rs. 16 on 2% discount.

Exercise 1.23

Illustration 1: Recording of transaction with different user levels refer Page 278

Exercise 1.24 Security Control

Create Security Levels as given below.

Sr. No.	Name of Security Level	Back Dated Access	Type of Access		Transactions
			Masters Accounts	Inventory	
1	Manager		Create, Alter, Display	Create, Alter, Display	Create, Alter, Display, Print
2	Accountant	7	Create	Create	Create, Display, Print
3	Operator	1	Display Only	Display Only	Create Only
4	Auditor	0	Display Only	Display Only	Display Only
5	Remote Manager	30	Create, Alter, Display	Create, Alter, Display	Create, Alter, Display, Print
6	Remote Auditor	0	Display Only	Display Only	Display Only



PRACTICAL LAB EXERCISES AND CASE STUDIES

Create User IDs and allocate security levels as under

Sr. No.	Name of User	User ID	Security Level
1	Pankaj Deshpande	Pankaj	Manager
2	Swapnil Ghat	Swapnil	Manager
3	Amit Shirwas	Amit	Accountant
4	Mayura Rahane	Mayura	Operator
5	Nivedita Dighe	Nivedita	Auditor
6	Sumeet Thawri	Sumeet	Auditor
7	You	<Use your actual email ID>	Remote Manager
9	Your Auditor	<Use one more actual email ID>	Remote Auditor

Exercise 1.25 Security control

- Create a company named as Security control and Enable Security Control option for a Company (Administrator Login).

Tally.ERP 9

Directory : C:\Users\Public\Tally.ERP9\Data

Name : **Security Control**

Books and Financial Year Details

Financial year begins from : 1-4-2016

Books beginning from : 1-4-2016

Primary Mailing Details

Mailing name : Security Control

Address :

Country : India

State : Delhi

Pincode :

Contact Details

Phone no. :

Mobile no. :

Fax no. :

E-mail :

Website :

Security Control

TallyVault password (if any) :

Repeat password :

(Warning: Forgetting TallyVault password will render your data inaccessible.)

Use security control ? **Yes**

(Enable security to avail TSS features)

Name of administrator : Admin

Password : *

Repeat password : *

(Password strength is weak)

Use Tally Audit features ? **No**

Disallow opening in Educational Mode? **No**

Base Currency Information

Base currency symbol : ₹

Formal name : INR

Suffix symbol to amount ? **No**

Add space between amount and symbol ? **Yes**

Show amount in millions ? **No**

Number of decimal places : 2

Word representing amount after decimal : none

No. of decimal places for amount in words : none

Accept ?

Yes or No

Q: Quit

Product : Tally.ERP 9

Version & Updates Ctrl + Alt + T : Series A Release 5.3.8 (Latest)

License & Services Ctrl + Alt + L : Educational Mode

Configuration Ctrl + Alt + F : Gateway localhost:9999

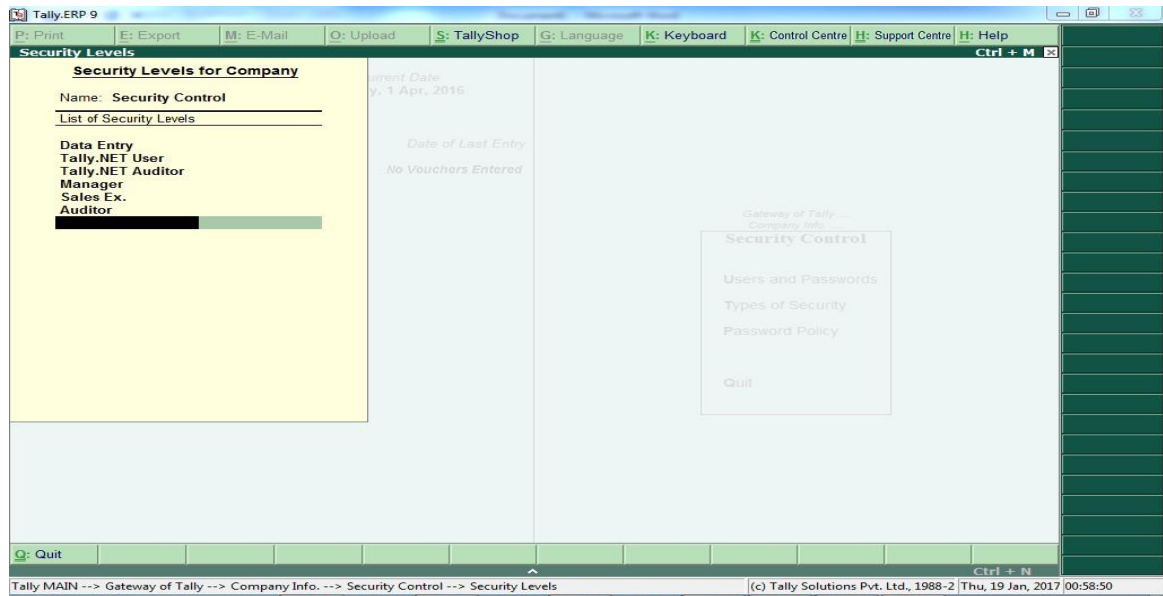
Calculator Ctrl + N : 1>

Tally MAIN --> Company Info. --> Company Creation

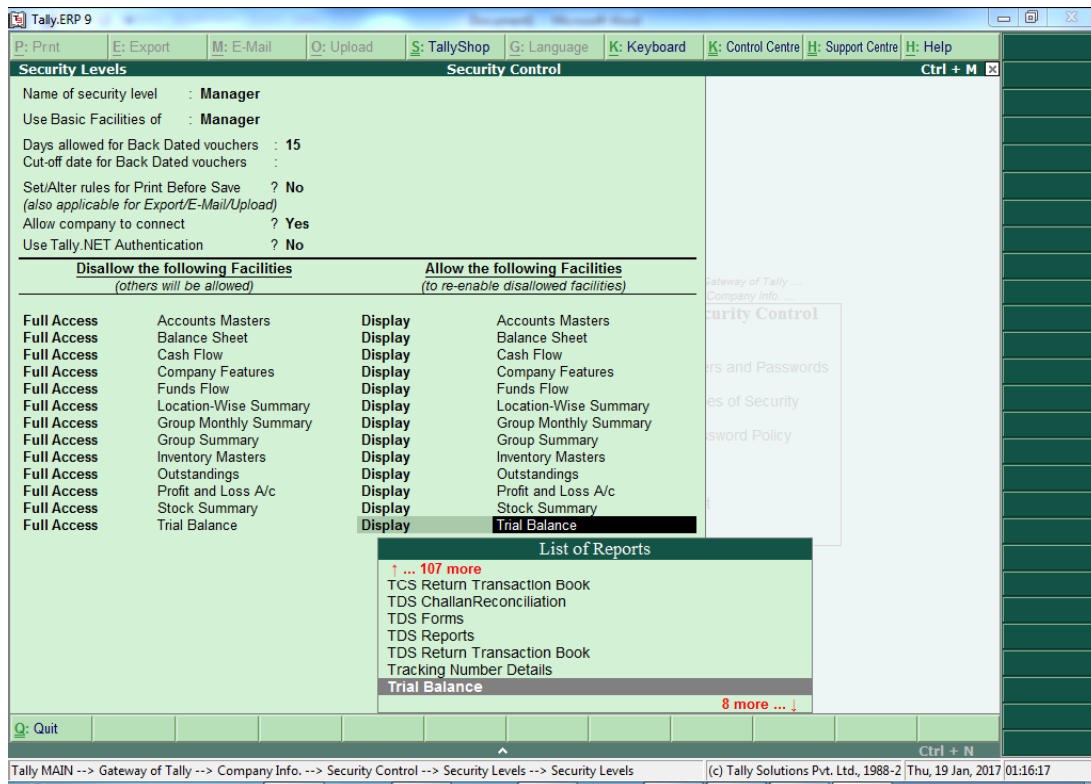
(c) Tally Solutions Pvt. Ltd., 1988-2 Thu, 19 Jan, 2017 00:46:14



2. Create Security Levels for Manager, Sales exe. and Auditor. Go to Gateway of Tally > Alt+F3 > Security Control > Types of security.



3. Set the Manager profile as shown below:





4. Set the Sales ex. profile as shown below:

The screenshot shows the 'Security Levels' window in Tally.ERP 9 for the 'Sales Ex.' profile. The window has a menu bar with options: P: Print, E: Export, M: E-Mail, O: Upload, S: TallyShop, G: Language, K: Keyboard, K: Control Centre, H: Support Centre, H: Help. The main area is divided into two sections: 'Disallow the following Facilities (others will be allowed)' and 'Allow the following Facilities (to re-enable disallowed facilities)'. The 'Disallow' section is currently active, showing a list of reports under the 'Sales' category. The list includes: Payroll Reports, Payroll Vouchers, Physical Stock, Post-Dated Summary, Price List, Profit and Loss A/c, Purchase, Purchase Order, Purchase Register, Quick Setup, Receipt, Receipt Note, Receipts and Payments, Rejections In, Rejections Out, and Reversing Journal. Below this list, the 'Sales' category is expanded, showing 'Sales Order' and 'Sales Register'. The 'Allow' section is empty. The status bar at the bottom shows the navigation path: Tally MAIN --> Gateway of Tally --> Company Info. --> Security Control --> Security Levels --> Security Levels. The copyright notice is (c) Tally Solutions Pvt. Ltd., 1988-2, and the date/time is Thu, 19 Jan, 2017 01:21:24.

Security Levels	
Name of security level	: Sales Ex.
Use Basic Facilities of	: Sales Ex.
Days allowed for Back Dated vouchers	: 10
Cut-off date for Back Dated vouchers	:
Set/Alter rules for Print Before Save (also applicable for Export/E-Mail/Upload)	? Yes
Allow company to connect	? No
Use Tally.NET Authentication	? No

Disallow the following Facilities (others will be allowed)	Allow the following Facilities (to re-enable disallowed facilities)
Full Access	
Accounting Vouchers	
Create/Alter	
Sales	

List of Reports
↑ ... 93 more
Payroll Reports
Payroll Vouchers
Physical Stock
Post-Dated Summary
Price List
Profit and Loss A/c
Purchase
Purchase Order
Purchase Register
Quick Setup
Receipt
Receipt Note
Receipts and Payments
Rejections In
Rejections Out
Reversing Journal
Sales
Sales Order
Sales Register
37 more ... ↓

5. In Auditor Profile do as following:

- | | |
|---|---|
| a. Set "use the basic facilities of" | > Auditor |
| b. Set "Days Allowed for Back Dated Vouchers" | > 0 |
| c. Set "Cut-off date for Backdated vouchers" | > Blank |
| d. Set "Set Rules for Print Before Save" | > No |
| e. Set "Allow to Connect Company" | > No |
| f. Set "Use Tally.NET Authentication" | > No |
| g. Set "Disallow the Following Facilities" | > List all report with full access Type |
| h. Set "Allow the following Facilities" | > List all report with display/print Type |



6. Create User ID and allocate security level as under:

Name of user	User ID	Security level
Krishan	Krishan	Manager
Pinki	Pinki	Manager
Saleem	Saleem	Sales ex.
Deepak	Deepak	Sales ex.
Honey	Honey	Auditor
A.K Bansal	A.K Bansal	Auditor

CHAPTER3: E-FILING

Exercise 3.1:

Illustration 1: Booking of rental expenses on equipment's, which attracts TDS refer Page 306

Exercise 3.2:

Illustration 2: Recording of purchase of software transaction which attracts TDS refer Page 309

Exercise 3.3:

Illustration: 3 Booking expenses on Commission Expenses refer Page 312

Exercise 3.4:

Illustration 4: Recording of TDS payment to government and printing of challan ITNS 281. refer Page 316



Exercise 3.5: TDS 1

Type of Deductor: - Partnership Firm (Non-Government)

TAN of Head Office: N.A.

TAN: - TRKD53565N

Ward: - Ward (1)

Following are the details of payments made during 2010-11

Sr	Date	Name of Party	Deductee Status	PAN	Reason for payment	TDS Nature of payment	TDS Rate	Total Expenditure	TDS	Net Payment
1	01.04.14	S. Gandhi Controls Ltd.	Company-Resident	RFTCS7657 G	For execution of painting contract for office building	Payment to contractor (other than advertisement)	2%	75,000	1,500	73,500
2	02.04.14	S. Pawar Pvt. Ltd.	Company-Resident	HTYCV545 4D	For execution of painting contract for office building	Payment to contractor (other than advertisement)	2%	50,000	1,000	49,000
3	02.04.14	Man Mohan	Individual-Resident	AGIPM0879 N	For execution of plumbing contract for office building	Payment to contractor (other than advertisement)	1%	25,000	250	24,750
4	01.05.14	PWC	Partnership Firm	AAEFP7381 C	Certification of Cash & Bank Balance	Fees for professional services	10%	1,00,000	10,000	90,000
5	02.05.14	Nitin G.	Individual Resident	AGUPG398 9K	Rent for office premises	Rent	10%	40,000	4,000	36,000
6	02.05.14	C.C. Enterprises	Individual Resident	ARGPC443 4L	Rent for office premises	Rent for office premises	10%	25,000	2,500	22,500
7	01.06.14	Pranav M.	Individual Resident	POHPM231 2B	Interest on unsecured loan	Interest other than interest on securities	10%	15,000	1,500	13,500



Exercise 3.6: TDS 2

Following are the transactions entered into with Image India Inc.

Name of Expenses: Advertisement Expenses

Party Image India Inc.

Deductee Status: Individual / HUF Resident

PAN of Deductee: ABCDT1234J

Nature of Payment: Payment to Contractors (Advertisement)

Date	Voucher No.	Voucher Type	Particulars	Billing	TDS	Net Payment
01-05-14	P01	Payment	Advance given Rs. 1,00,000		1,000	99,000
02-05-14	J01	Journal	Bill received for services	2,00,000	1,000	
03-05-14	P02	Payment	Amount demanded by Party Rs. 3,00,000		2,010	2,97,990
04-05-14	J02	Journal	Bill received for services	4,00,000	1,990	
05-05-14	P03	Payment	Amount demanded by Party Rs. 3,00,000		1,030	2,98,970
06-05-14	J03	Journal	Bill received for services	1,00,000	-	
07-05-14	J04	Journal	Bill received for services	50,000	470	
08-05-14	P04	Payment	Amount demanded by Party Rs. 5,00,000		4,535	4,95,465
09-05-14	J05	Journal	Bill received for services	6,00,000	1,465	
10-05-14	P05	Payment	Final payment		-	1,45,075
Total				13,50,000	13,500	13,36,500

Exercise 3.7:

Illustration 1: Recording Sales Transaction with TCS refer Page 326

Exercise 3.8:

Illustration 2: Accounting sale of TCS goods at lower rate refer Page 329

Exercise 3.9:

Illustration 3: Recording of TCS transaction at Nil Rate. refer Page 331

Exercise 3.10:

Illustration 4: Recording payment of TCS collected to the department. refer Page 332



Exercise 3.11: Payroll Exercise

Create the following Employee Masters

Employee Name	Department	Date of Joining
Ajay	Administration	1-4-2016
Vijay	Sales	1-5-2016
Manish	Purchase	1-5-2016
Ashu	Research and Development	1-6-2016
Gagan	Purchase	1-4-2016
Murari	Sales	1-6-2016

Note: - Fill the General Info, Payment Detail and Statutory Detail of overall Employees.

Create the following Units

Name	Type	Symbol
Hour	Simple	Hrs
Minutes	Simple	Mins
Hrs of 60 Mins	Compound	Hrs of 60 mins

Create the following Attendance Types

Name	Under	Attendance/ Production Type	Period Type
Present	Primary	Attendance/ Leave with pay	Days
Absent	Primary	Leave without pay	Days
Overtime	Primary	Production	Hrs of 60 Mins



Create the following Pay Heads:-

Pay Head Name	Pay Head Type	Under	Affect Net Salary	Name to Appear in Pay Slip	Use for Gratuity	Calculation Type	Calculation Period/ Production Type
Basic Pay	Earnings for Employees	Indirect Expenses	Yes	Basic	Yes	On Attendance	Months
DA	Earnings for Employees	Indirect Expenses	Yes	DA	No	As Computed Value	Current earning Total
House Rent Allowance	Earnings for Employees	Indirect Expenses	Yes	HRA	No	As Computed Value	on Specified formula
Conveyance	Earnings for Employees	Indirect Expenses	Yes	Conveyance	No	Flat Rate	Months
Overtime Pay	Earnings for Employees	Indirect Expenses	Yes	Overtime	No	On Production	Overtime
Variable Pay	Earnings for Employees	Indirect Expenses	Yes	Variable Pay	No	As User Defined Value	-----
Employees PF Contribution @12%	Employees Statutory Deductions	Current Liabilities	Yes	EPF @ 12%	-----	As Computed Value	on Specified formula

Hint:-

- Basic pay is Based on Present
- DA is under Normal Rounding Method & Based on Current earning Total & the percentage of DA is 10%
- HRD is under Normal Rounding Method & based on Specified formula & i.e.: -Basic + DA and percentage is 8%
- PF should be as per the below picture.

Pay Head Alteration		Payroll														
Name : Employee 's PF Contribution @ 12%						Total Op. Bal.										
(alias) :																
Pay Head Info Pay Head Type : Employees' Statutory Deductions Under : Current Liabilities Affect Net Salary : ? Yes Name to appear in Payslip : PF Calculation Type : As Computed Value Calculation Period : Months		Computation Info Compute : On Specified Formula Specified Formula : Basic Pay <table border="1"> <thead> <tr> <th>Effective From</th> <th>Amount Greater Than</th> <th>Amount Upto</th> <th>Slab Type</th> <th>Value Basis</th> </tr> </thead> <tbody> <tr> <td>1-Apr-2016</td> <td>6,500.00</td> <td>6,500.00</td> <td>Percentage Value</td> <td>12 % 800</td> </tr> </tbody> </table>					Effective From	Amount Greater Than	Amount Upto	Slab Type	Value Basis	1-Apr-2016	6,500.00	6,500.00	Percentage Value	12 % 800
Effective From	Amount Greater Than	Amount Upto	Slab Type	Value Basis												
1-Apr-2016	6,500.00	6,500.00	Percentage Value	12 % 800												
Rounding Info Rounding Method : Normal Rounding Limit :																
Opening Balance (on 1-Apr-2016) :																



Create the following Salary Detail:-

Employee Name	Pay Head	Rate	Effective Date
Ajay	Basic	1000	1-4-2016
Vijay	Basic	2000	1-5-2016
Manish	Basic	1500	1-5-2016
Ashu	Basic	3000	1-6-2016
Gagan	Basic	1200	1-4-2016
Murari	Basic	1000	1-6-2016

Note: - Also enter the Details of Pay Head in a Salary Detail of all employees.

After completing the Payroll Info now we are doing the entries in Payroll Master which are given below:-

Attendance/ Production Types	Vijay	Ajay	Ashu	Murari
Present Days	26	22	15	17
Attendance/ Production Types	Vijay	Ajay	Ashu	Murari
Overtime hours	900 Min (15hr x 60min)		720 Min (12hr x 60min)	

Note:-

- Overtime Rate 100 Rs/- per Hour.
- Above attendance/ production table is only for first month, rest month and employees are present for 30 days.
- Enter the entries in Payroll Master of overall employees through Auto Fill.
- Find the output till 31 July 2016 of all the employees.

Output:

Basic Pay:-454000	DA:45400	HRA:39952	Overtime:2700	PF:4800
-------------------	----------	-----------	---------------	---------