Unit 6 Database Power of Excel

6.0 Introduction

Every organisation works towards maintaining data of various kinds, e.g., all the details of the employees, sales details, client data, products data. The purpose of storing and maintaining data is to retrieve it later for day-to-day transactions and management planning.

The data which is collected from the source is the raw data. Various operations can be carried out with the data, like, sorting, searching and totalling. This is processed and manipulated to be transformed as **Information**.

The most important database feature of MS-EXCEL is a powerful and simplified tool to store, manage and analyse data.

There are two kinds of databases :

Internal Database - Databases created in the worksheet.

External Database - Database which is created through other DBMS or RDBMS packages like MS-ACCESS, FOXPRO, dBASE, SQL Server, ORACLE.

6.1 Objectives

After going through the unit, you will be able to
Create data base in the worksheet
Use external databases
List the different sorting techniques
Work with data tables, pivot tables.

6.2 Database Concepts

Database is also referred to as a **list** or a **table**. It is an organised collection of information. Each row of the list is called as a **record**, and each column is called as a **field**.
Let's take an example of the employee details as shown below:

EMPCODE	NAME	AGE	DEPARTMENT	SALARY
E001	Rishi	27	Marketing	4500
E002	Sandeep	35	Marketing	6000
E003	Vinita	24	Accounts	4000
E004	Prakash	23	Inventory	5200
E005	Aruna	23	Marketing	3700

In this example, EMPCODE, NAME, AGE, DEPARTMENT and SALARY are the field names. Each row with the data for one employee is the record of that employee. The record contains the data pertaining to the fields.

The field names must be unique and there should not be any blank row between the field names and the records.

6.3 Creating Database

In MS-EXCEL, database can be created in two ways :

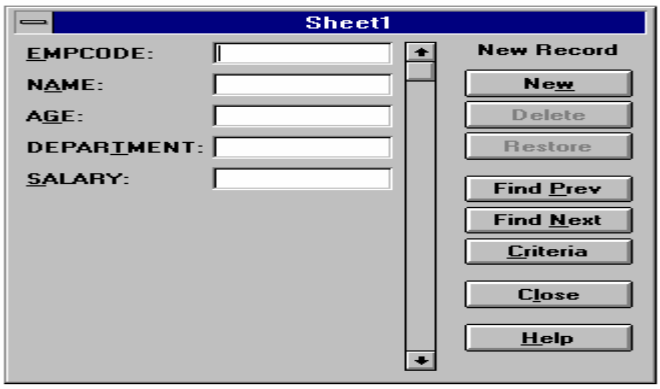
1. Enter the data in the form of table in the worksheet. You can enter the data as shown. This is the simplest way to create the database.
2. Use Data Form command.

To create database using Data Form command, follow the given steps:

1. Enter the given details :

IN CELL	ENTER
A1	EMPCODE
B1	NAME
C1	AGE
D1	DEPARTMENT
E1	SALARY

2. Choose **Data -> Form** command while keeping one of the field name active.
3. The dialog box is displayed, warning you for taking the row of the selected cell as the header row of the database. Click on OK.
4. Another dialog box is displayed, which shows one record at a time. Fill-in the appropriate details in the box against each field name.



5. Click on **New**. This will add the entered record in the database.
6. To finish the entry of records, click on **Close**.

6.4 Adding Records

The records can be added in two different ways :

1. Type the new record entries in the blank row next to the database list.

2. The records can be entered in the way that is similar to the steps of creating a database.

    a) Activate any cell of the database list.
    b) Choose **Data -> Form** command.
    c) Goto the last record and click on **New**.
    d) Type-in the new record details in the boxes against fields.
    e) Click on **OK**.

6.5 Deleting Records

The records can be deleted by simply selecting the entire cell range of the record to be deleted and press the **Delete** key. Move the rest of the records on row up. Another way of deleting the records is as follows :

1. Activate any cell from the database list.

2. Choose **Data -> Form** command.

3. Get the record to be deleted by clicking on the **Find Prev** or **Find Next** button.

4. Click on the **Delete** button.

6.6 Editing Records

The records once entered in the database list can be changed or modified. This can be done by selecting the cell and retyping the data. Another way of doing this is by Data Form:

1. Scroll up or down to select the desired record.

2. Edit the field value.

3. Click on **New** button to update the modification in the record.

4. Click on **Close** once you have finished up the task of modification of records.

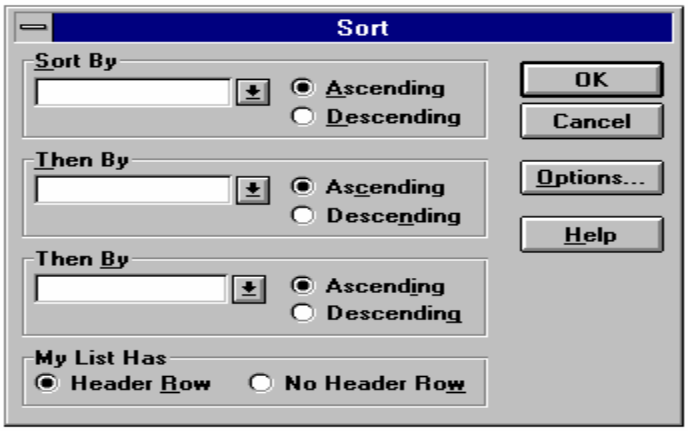
6.7 Sorting a Database

To arrange the records in either ascending or descending order of a field is called sorting. To sort a database, first create the given database.

	A	B	C	D	E
1		MONTHLY SALES			
2					
3	PRODUCT	QTR1	QTR2	QTR3	QTR4
4	SHIRTS	200	230	234	250
5	TROUSERS	60	75	80	50
6	BLAZERS	100	143	124	130
7	T-SHIRTS	300	320	290	350
8	JACKETS	600	500	560	690
9	JEANS	50	30	60	45
10					

1. Choose **Data -> Sort..** command.
2. In the dialog box as shown below, you can select maximum 3 fields on the basis of which you want to sort your database. The drop-down list of the

Sort By option displays all the field names. Select the field from the list.



3. Choose the order in which you want to display records - ascending or descending.
4. Select **Header Row** option given under **My List has**.
5. Click on **OK** and see the results on the worksheet.

Then By option is used when you want to sort the database on the basis of more than one fields. The field name chosen for this option will become the secondary field.

6.8 Filtering a Database

Viewing records that meet certain criteria is called filtering the database. For example, you have stored the data of all the employees of your organisation. The query can be made on the database to view the details of all those employees who have been working with the organisation for more the 5 years. This would be your search criteria and finding all those records which have the Date-of-join of 5 years back would meet this criteria.

There are two ways to filter the database - AutoFilters and Advanced Filters. AutoFilter meets most needs. However, when you need to use complex criteria to filter a list, use Advanced Filter. Your list should have column labels for better results.

6.8.1 Using AutoFilters

This is an easier and quick method to filter the database. To filter the database follow the given steps :

1. Select any cell of the database range and choose **Data -> Filter -> AutoFilter** command. MS-Excel inserts drop down arrows next to each column label in the list.
2. Click the arrow in the column that contains the data you want to display.
3. Select the item you want to display.

The various other options other than column items that are available are:

1. **All -** Shows all records.
2. **(Custom...) -** To specify two criteria for a column.
3. **(Blanks...) -** Shows all those records that have no entry in the in the particular column.
4. **(Non Blanks...) -** Shows all those record that have some entry in the column.

   To remove AutoFilters, again choose **Data -> Filter -> AutoFilter**.

6.8.2 Using Advanced Filters

These filters are used to filter the data on the basis of more than one field. Using the same database, suppose you want to view only those records where the sale was more than 200 in the third quarter and more than 300 in the fourth quarter. To get the results, follow the given steps :

1. Enter the data as given below.

	H	I
3		
4	QTR3	QTR4
5	>200	>300
6		

2. Choose **Data -> Filter -> Advanced Filter** command.

3. A message dialog box is displayed that asks you to assume the top row of the data range as the header row. Click on OK.

4. A dialog box is displayed with two kinds of action :

   a) **Filter the list, in-place -** displays only those records that match the criteria.
   b) **Copy to another Location -** to copy the records that match the criteria to another location in the worksheet, leaving the database range as it is.
   Select the first action, i.e., **Filter the list, in-place**.

5. Specify the list range as A3:E9, and the criteria range as H4:I5.

6. Click on OK.

6.9 Data Tables

Once you have entered formulas on your worksheet, you can perform a "what-if" analysis to see how changing certain values in your formulas affects the results of the formulas. Data tables provide a shortcut for calculating all the variations in one operation. A data table is a range of cells that shows the results of substituting different values in one or more formulas.

There are two types of data tables :

a) **One-input table -** With a one-input data table, you type different values for one variable and see the effect on one or more formulas. Follow the given steps to create one input table :

1. Enter the data as shown below :

	F	G	H
8			
9	Interest Rate :		10%
10	Initial Amount :		8,000
11	Monthly Interest :		800.00
12			

2. In a single column, enter a list of values you want MS-Excel to substitute in the input cell.
3. In the row above the first value and one cell to the right of the column of values, enter the formula +H9*H10 that refers to the input cell.

G	H
	=+H9*H10
12%	
11%	
9%	
11.50%	

4. Choose **Data -> Table...** .
5. In the column input cell box, enter the cell reference H9.
6. Click on OK button.

MS-Excel substitutes each value in the input cell and displays the result of the right of each input value.

b) **Two-input table -** With a two-input data table, you enter different values for two variables and see the effect on one formula. Follow the steps as given below to enter the two-input table :

1. Refer to the same data as in the above example.

2. In an empty cell, enter the formula +H9*H10.

3. Starting in the cell below the formula, enter the values that you want to substitute in the same column as the formula.

4. Starting in the cell to the right of the formula enter the values that you want to substitute in the other input cell in the same row as the formula as given below.

G	H	I	J	K
=+H9*H10	10000	7500	9000	8500
12%				
11%				
9%				
11.50%				

5. Choose **Data -> Table...** .
6. In the column input cell box, enter the cell reference H9.
7. In the row input cell box, enter the reference H10.
8. Click on OK button.

6.10 Pivot Table

A pivot table is an interactive worksheet table you use to summarise and analyse data from an existing list or table. You can update a pivot table whenever changes occur in the original source data. The original data remains intact, and the pivot table stays on the worksheet you created it on.

You create a pivot table by using the Pivot Table Wizard, a series of interactive dialog boxes that guide you through the steps of locating and retrieving the data you want to analyse. The Pivot Table Wizard also lets you define how you want to arrange the pivot table using row and column labels, and how you want to present data in the fields. You can create a pivot table from source data that resides in:

1. A Microsoft Excel list or database.
2. An external database, such as a table or file created in an application or database management system external to Microsoft Excel.
3. Multiple Microsoft Excel consolidation ranges.
4. Another pivot table in the same workbook.

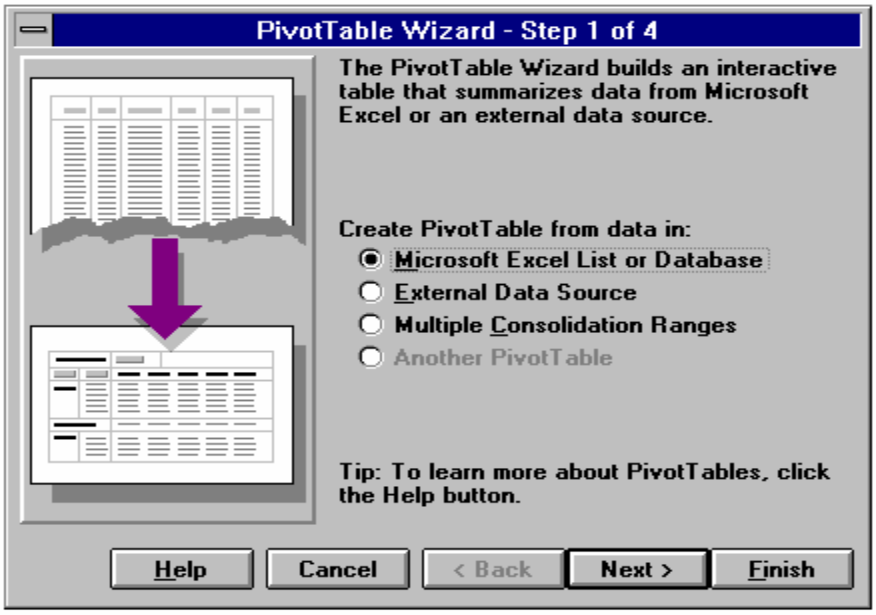
Once you create a pivot table, you can rearrange, organise, and analyse the data by dragging and dropping the fields in the pivot table. You can also include subtotals, change the summary function for a field, or select a custom calculation for your pivot table.

6.10.1 Creating Pivot Table

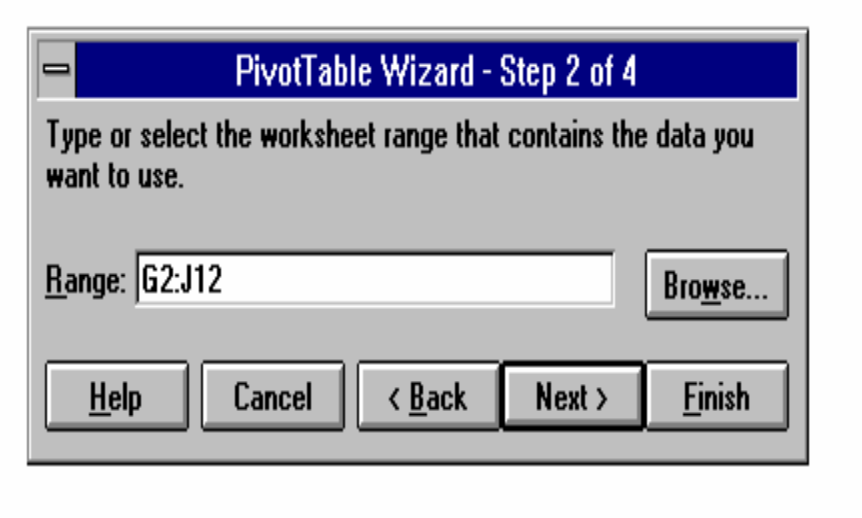
To create the Pivot Table from an internal Database, follow the given steps :
1. Create the database as shown.

	G	H	I	J
2	SALESMAN	PRODUCT	REGION	SALES
3	SUNIL	MONITOR	NORTH	60000
4	MANISH	KEYBOARD	SOUTH	40000
5	SUDHIR	PRINTER	SOUTH	67000
6	ARTI	CPU	WEST	45000
7	VINAYAK	KEYBOARD	EAST	54000
8	ANJALI	MONITOR	WEST	70000
9	NAVEEN	CPU	NORTH	60000
10	SUBODH	CPU	EAST	73000
11	SHAILASH	PRINTER	EAST	57000
12	VINAY	MONITOR	SOUTH	58000
13				

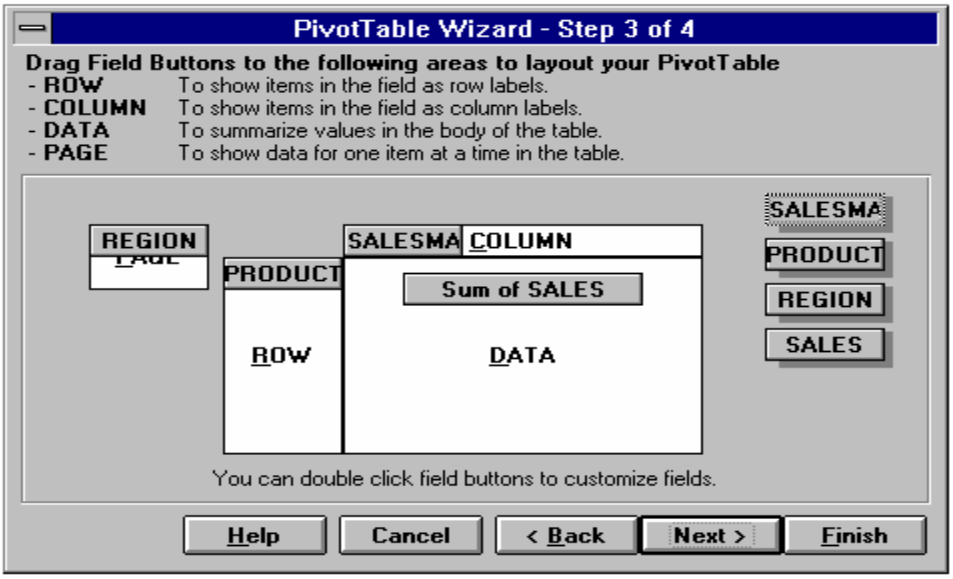
2. Select any cell from the database range and choose **Data -> Pivot Table..** .



3. In the dialog box, Choose the option **Microsoft Excel List or Database** and click on **Next>** button.



4. Give the database range as G2:J12 and click on **Next>** button.



5. Drag **Salesman** field to **Column** area.

   Drag **Product** field to **Row** area.
   Drag **Region** field to **Page** area.
   Drag **Sales** field to **Data** area, and click on **Next>** button.

6. Give **Pivot Table starting cell** as G14 and specify the **Pivot Table name**. By default, the name given is Pivot Table1.

7. Select the appropriate options and click on **Finish**.

6.10.2 Changing the layout

If you want a new layout on your pivot table data, shift selected row, column, page, or data fields to a new position or orientation. You can change the layout of pivot table data in two ways:

1. Drag and drop fields directly in the pivot table.

2. Use the Pivot Table Wizard to rearrange the fields.

When you reorganise the data in a pivot table, it is automatically recalculated. Reorganising the pivot table does not affect the source data.

6.10.3 Adding or Removing fields

After you create a pivot table, it's easy to include additional information from the source data. Microsoft Excel automatically recalculates the pivot table to reflect the new data you insert.

6.10.4 Adding Pivot Table Data

To add a data field in the Pivot Table, choose **Data -> Table Wizard**. This will start from the third step of the wizard where you can add the fields.

6.10.5 Removing Pivot Table Data

To remove data from a pivot table, simply drag a field out of the pivot table area.

6.10.6 Updating data in Pivot Table

When the source data changes, refresh the data in the Pivot Table by following the given steps :

1. Select a cell in the Pivot Table.

2. Choose **Data -> Refresh Data**.

If an additional row or column is inserted in the internal database, then you must run the Pivot Table Wizard to modify the Pivot Table to include new data.

6.10.7 Deleting Pivot Table

To delete the Pivot Table, follow the given steps :

1. Select the entire Pivot Table, including the Page field.

2. Choose **Edit -> Clear -> All**.

6.11 Summary

In this session you learned,

1. Database can be created in the worksheet or external databases can also be used.
2. The data can be arranged through sorting techniques.
3. The information matching a certain criteria can be extracted from the database.
4. Records in the database can be added, deleted, or edited.
5. Data Tables help in What-if analysis.
6. Pivot Tables are also used to analyse data.

6.12 Exercise

1. What is the significance of formulas in calculations ?
2. Explain the recalculation feature of MS-Excel.
3. Give the basic properties of formulas.
4. What are functions ?
5. Give two examples for each category of functions.
6. Differentiate between VLOOKUP() and HLOOKUP() functions.
7. What is Function Wizard ?