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**Further
Inside**

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**At This
Level**Note: The following material is only for the students to remember what has been taught in class.**MS - Excel****What is an Electronic Spreadsheet?**

An electronic spreadsheet can be considered as an electronic notepad or as a powerful calculator, which eases repetitive calculation tasks. A spreadsheet is useful when you are working with numbers or when you want to display numeric data graphically. It is organized in rows and columns. Text, numbers and formulas are entered to perform numeric and financial analysis. Spreadsheets compare costs, prices, and gross margins of individual products in a product line. They also analyze sales, calculate prices, forecast budgets, and make cash flow projections. Lotus 123, Lotus SmartSuite and MS-Excel is an example of Spreadsheet. Generally, We do not use MS-Word for doing financial calculation and analysis because of the following special features of spreadsheet.

Features of Electronic Spreadsheets:

An electronic spreadsheet is completely automated and has the following features:

1. The spreadsheet structure (rows, columns, cells) is automatically created as soon as the spreadsheet program is loaded into the memory.
2. Rows and columns are automatically given unique identifying labels.
3. If a change is made in one independent cell, the spreadsheet is automatically recalculated to reflect the effect of the change in all the dependent cells.

In earlier days, Lotus 123 was used for numerical calculation, but due to various new features, MS Excel has become popular now a days.

Introduction to Excel

If the job at hand requires lot of lists, tables, financial calculations, analysis, and graphs, Excel is just a package for use. Microsoft Company has developed the Excel package. It is a part of the MS Office. With Excel, you can create financial documents and business forms. You can plot charts and map to represent your financial table in diagrammatic way. For example how would your profits change if you gave employees a raise? Excel can automatically recalculate values when you change even a single number, so you can easily see the effects of that change every place it affects.

Features of Excel:

Excel has following features.

1. **Worksheet & Graphics:** Besides working with numbers and texts, Excel also provides for presenting data graphically.
2. **Data Lists and Databases:** Database functions are available for working with data listed in a tabular form.
3. **Data Exchange with other applications:** Excel uses the advantage of windows environment. This especially applies to dynamic Data Exchange (DDE) and Object Linking & Embedding (OLE) within Excel and other applications. As result data, graphics sound and animations can be easily mixed in a single document.
4. **Standardized User Interface:** Excel is a part of Microsoft Office. Except for a specific menu in each application, the menus in the main menu bar of Excel, Word, and PowerPoint are identical. The key combinations (for example, cut, copy, paste etc.) are also identical i.e. standardized. Most of the dialog box looks similar.

Excel Terms:

Workbook: In Microsoft Excel, a workbook is the file in which you work and store your data, because each workbook can contain many sheets. Each new workbook contains three worksheets, but you can add and delete sheets as needed. By default one workbook contains total 64 sheets so you can organize various kinds of related information in a single file. An Excel file has an extension **.xls**. There are four types of Sheets in Each Workbook.

Worksheet: Excel worksheets are also called as spreadsheets. A worksheet is a primary document that you can use in MS Excel to store and work with data. It consists of cells that are organized into columns and rows a worksheet is always stored in a workbook.. Typically rows are labeled numerically i.e. 1,2, 3.. and so on and columns are labeled alphabetically, i.e. A, B, C, And so on. Each worksheet has 256 columns numbered A through Z, then AA through AZ, BA through BZ, and so on, up to column IV. There are 65,536 rows. Intersection of a row and column is called a Cell and you refer to a cell by its column letter and row number----- called its address or its reference. So the address of the first cell i.e. located in the upper-left corner of the

sheet is A1 (the column letter always comes first). Because it is in column A and row 1.

Chart Sheet: Chart sheet allows us to insert chart in the workbook. We can insert chart in the worksheet also but we want a chart to appear on the new sheet, at that time we are using chart sheet, which can contain only charts.

MS Excel 4.0 Macro: A macro is a shortcut for executing a set of Excel commands in fewer steps. They provide a way to automate or speed up repetitive procedures. MS Excel 4.0 Macro sheet allows us to create & save macros in it.

MS Excel 5.0 Dialog: This sheet contains forms and the some controls as we are having in VB. With the help of this sheet, we can write the programs to fulfill our requirement in VB Itself.

Sheet Tabs: as you know each workbook contains numbers of sheets, so it becomes necessary to give name to identify them easily. Therefore sheet tab are used to give name to each sheet which are present at the bottom of the workbook window .It is also used to move from one sheet to another sheet. The sheet on which we click is known as Active Sheet.

Cell: A cell is an intersection of row and column. The uppermost cell is called A1. A cell can contain text, numbers, formulas, or dates and times.

Active Cell: A cell with dark border around it is called Active cell. It is a cell in which the data is inputted in this cell. At a time only one cell is active.

Range Of Cells: Two or more adjacent cells are referred to as a range of cells.

Cell Address: Each cell is identified by its cell address, which is made up of rows & columns .In Excel, each is having unique cell address. For example cell address of first cell in worksheet will be A1.

Excel Screen:

Title Bar: It shows the name of the application i.e. Microsoft Excel and name of the file. By default it shows Book1.

Menu Bar: it contains menus & submenus.

Toolbar: Toolbar is the shortcut to menu bar. It contains the same options that are available in the menu bar.

Formula Bar: It appears below the toolbar. It displays information about the active cell. We can change the data of the active cell using the formula bar.

Entering Information:

Typing text : Text is any information that contains nonnumeric characters, other than a date or formula, and it appears on the left side of the cell. If you enter more information than can fit in the cell, Excel runs the overflow into adjacent blank cells. If an adjacent cell is not empty, however Excel displays only as many characters as fit. The complete entry is still stored in the worksheet, and it appears in the Formula bar when the cell is active.

Typing Numbers: When you enter a number in Excel, the number appears on the right of the cell, and Excel removes any zeros that come at the end of a number following the decimal point. For example if you enter 12.10, for example, Excel displays 12.1.

Entering Dates & Times: To enter a date, just type it using either a slash or a hyphen between the month, day, and year. When you accept the entry, Excel moves the date to the right of the cell and changes hyphens to slashes. Dates always appear in the format mm/dd/yyyy in the formula bar.

Entering Formulas: It establishes relationships between 2 or more cells. A value of 2 different cells can be added, subtraction, multiplied. E.g. you want to add the value of A1 and B1 and wish to display the result in C1, then move to C1 and type = A1 + B1 and press Enter.

Fill Handle: The small black square in the corner of the selection. When you point to the fill handle, the pointer changes to a black cross. To copy contents to an adjacent cells or to fill in the series such as dates, drag the Fill Handle. To display a shortcut menu that contains the fill option, hold down the right mouse button as you drag the fill handle.

Keys for entering data on a worksheet

Press	To
ENTER	Complete a cell entry and move down in the selection
ALT+ENTER	Start a new line in the same cell
CTRL+ENTER	Fill the selected cell range with the current entry
SHIFT+ENTER	Complete a cell entry and move up in the selection
TAB	Complete a cell entry and move to the right in the selection

SHIFT+TAB	Complete a cell entry and move to the left in the selection
ESC	Cancel a cell entry
BACKSPACE	Delete the character to the left of the insertion point, or delete the selection
DELETE	Delete the character to the right of the insertion point, or delete the selection
CTRL+DELETE	Delete text to the end of the line
Arrow keys	Move one character up, down, left, or right
HOME	Move to the beginning of the line
F4 or CTRL+Y	Repeat the last action
CTRL+D	Fill down
CTRL+R	Fill to the right

Keys for editing data on a worksheet:

CTRL+A	Select the entire worksheet
CTRL+C	Copy the content of active cells
CTRL+X	Cut the content of active cells
CTRL+V	Paste the content in the active cells

About cell and range references:

A reference identifies a cell or a range of cells on a worksheet and tells Microsoft Excel where to look for the values or data you want to use in a formula. With references, you can use data contained in different parts of a worksheet in one formula or use the value from one cell in several formulas. You can also refer to cells on other sheets in the same workbook, to other workbooks, and to data in other programs.

The difference between relative and absolute references:

Relative references: When you create a formula, references to cells or ranges are usually based on their position relative to the cell that contains the formula. In the following example, cell B6 contains the formula =A5 Microsoft Excel finds the value one cell above and one cell to the left of B6. This is known as

a relative reference.



	A	B
5	100	
6	200	=A5
7		=B6

When you copy a formula that uses relative references, Excel automatically adjusts the references in the pasted formula to refer to different cells relative to the position of the formula. In the following example, the formula in cell B6, =A5, which is one cell above and to the left of B6, has been copied to cell B7. Excel has adjusted the formula in cell B7 to =A6, which refers to the cell that is one cell above and to the left of cell B7.

Absolute references: If you don't want Excel to adjust references when you copy a formula to a different cell, use an absolute reference. For example, if your formula multiplies cell A5 with cell C1 (=A5*C1) and you copy the formula to another cell, Excel will adjust both references. You can create an absolute reference to cell C1 by placing a dollar sign (\$) before the parts of the reference that do not change. To create an absolute reference to cell C1, for example, add dollar signs to the formula as =A5*\$C\$1

Function:

Functions are predefined formulas that perform calculations by using specific values, called arguments, in a particular order, or structure. For example, the SUM function adds values or ranges of cells, and the PMT function calculates the loan payments based on an interest rate, the length of the loan, and the principal amount of the loan.

Arguments

Arguments can be numbers, text, logical values such as TRUE or FALSE, arrays, or cell reference. The

argument you designate must produce a valid value for that argument. Arguments can also be constants, formulas, or other functions.

Structure

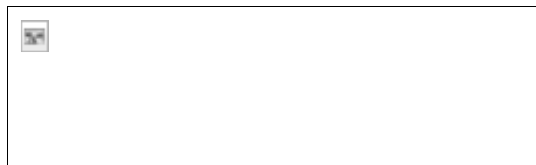
The structure of a function begins with the function name, followed by an opening parenthesis, the arguments for the function separated by commas, and a closing parenthesis. If the function starts a

formula, type an equal sign (=) before the function name



About nesting functions within functions:

In certain cases, you may need to use a function as one of the argument of another function. For example, the formula in this figure uses a nested AVERAGE function and compares the result with the value 50.



Valid returns

When a nested function is used as an argument, it must return the same type of value that the argument uses. For example, if the argument returns a TRUE or FALSE value, then the nested function must return a TRUE or FALSE. If it doesn't, Microsoft Excel displays a #VALUE! Error value.

Charts:

Charts are visually appealing and make it easy for users to see comparisons, patterns, and trends in data. In short, a chart is a graphic representation of worksheet data. For instance, rather than having to analyze several columns of worksheet numbers, you can see at a glance whether sales are falling or rising over quarterly periods, or how the actual sales compare to the projected sales.

You can create a chart on its own sheet or as an embedded object on a worksheet. You can also publish a chart on a Web page. Chart is linked to the data on the worksheet, it changes when the data changes. The relative rates of change are much more obvious on a graph. To create a chart, you must first enter the data for the chart on the worksheet. Then select that data and Use the chart wizard to step through the process of choosing the chart type and the various chart options.

You can also create a chart in a one step without using the Chart Wizard. When created this way, the chart uses a default chart type and formatting that you can change later.

Elements Of A Chart:

1. **Y-axis:** It is called as the "series" or "rank" axis. It shows the value of the data points that are plotted.
2. **X-axis:** It is known as the "Category" axis, which shows the categories of the data points that are plotted.
3. **Chart Title:** It can be taken from a cell on the sheet or it can be directly added to the chart.
4. **Category names:** they identify individual data points and may be dated, locations, products and so on.
5. **Legend:** It is a set of labels that describe each of the data series. These labels are attached to a symbol, a color, or a pattern that is associated with the series and placed on the chart. It is used to distinguish one data series from another.
6. **Data Marker:** It is used to distinguish one data series from another.
7. **Tick Marks:** They are small lines used to divide the two axes and provide the scaling.
8. **Gridlines:** They are displayed for both axes to help read the value of individual data points. Gridlines are scaled according to the values on the axes and can be changed.
9. **Data Labels:** They are displayed sometimes to show the value of data point.

How worksheet data is represented in a chart:

A chart is linked to the worksheet data it's created from and is updated automatically when you change the worksheet data.

Axis values: Microsoft Excel creates the axis values from the worksheet data. Note that the axis values in the example above range from 0 to 140000, which encompasses the range of values on the worksheet. Unless you specify differently, Excel uses the format of the upper-left cell in the value range as the number format for the axis.

Category names: Excel uses column or row headings in the worksheet data for category axis names. In the example above, the worksheet row headings 1st Quarter, 2nd Quarter, and so on appears as category axis names. You can change whether Excel uses column or row headings for category axis names or create different names.

Chart data series names: Excel also uses column or row headings in the worksheet data for series names.

Series names appear in the chart legend. In the example above, the row headings Projected and Actual appear as series names. You can change whether Excel uses column or row headings for series names or create different names

Data markers: Data markers with the same pattern represent one data series. Each data marker represents one number from the worksheet. In the example above, the rightmost data marker represents the Actual 4th Quarter value of 120000.

Tips: A chart tip that tells you the name of a chart item appears when you rest the pointer over the chart item. For example, when you rest the pointer over the legend, the chart tip Legend appears.

Embedded charts and chart sheets:

You can create a chart on its own chart sheet or as an embedded chart on a worksheet. Either way, the chart is linked to the source data on the worksheet, which means the chart is updated when you update the worksheet data.

Embedded charts: An embedded chart is considered a graphic object and is saved as part of the worksheet on which it is created. Use embedded charts when you want to display or print one or more charts with your worksheet data.

Macros: Automating tasks you perform frequently:

If you perform a task repeatedly in Microsoft Excel, you can automate the task with a **Macro**. A macro is a series of commands and functions that are stored in a Visual Basic module and can be run whenever you need to perform the task. When you record a macro, Excel stores information about each step you take as you perform a series of commands. You then run the macro to repeat, or "play back," the commands.

Record a macro to do a task in one step Before you record or write a macro, plan the steps and commands you want the macro to perform. If you make a mistake when you record the macro, corrections you make are also recorded. When you record macros, Visual Basic stores each macro in a new module attached to a workbook.

For example, if you often enter long text strings in cells, you can record a macro to format those cells so that the text wraps. Select a cell in which you want text to wrap and start recording. Click **Cells** on the **Format** menu, click the **Alignment** tab, select the **Wrap text** check box, click **OK**, and then click **Stop Recording**.

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