UNIT 3   SPREADSHEET

3.0   INTRODUCTION

Every business has numerical tasks to be performed, be it related to accounts, taxes, sales or budgeting. Businesses also need graphs and charts for analysis and projections. At homes, we track our own budgets and investments. Mathematics and Engineering students deal with big numbers, formulas and calculations. Almost all of us deal with tables, data and calculations in some or the other form. There are many software packages available to assists us in all these number based functions. Electronic spreadsheet is most common of them.

In this unit, we will study how we can use electronic spreadsheet to store, maintain, manage, manipulate and organize our data for budgeting, analysis and

planning purposes or how we can use to it track students performance, weather data or inventory and maintain friends list, customer list, etc.

3.1   OBJECTIVES

After going through this unit, you will be able to ;

* learn what a Spreadsheet is and how to use it;
* create, edit, save, preview and print Workbooks;
* format worksheets with different settings such as margins, headers or footers;
* store, search, retrieve, sort and filter tabular data;
* manage and Manipulate data using functions and formulas; and
* create graphical charts and perform analysis functions.

3.3   WHAT IS A SPREADSHEET ?

Spreadsheet is basically a grid consisting of horizontal rows and vertical columns. This format has traditionally been used in accounting to present book-keeping ledgers.

Electronic spreadsheet is a computer application that simulates the paper worksheet to organize data into rows and columns and stores various types of data.

Each intersection of rows and columns is called a cell where the data is stored to be used in calculations within the spreadsheet. Electronic spreadsheets have lot of in built features and tools such as functions, formulas, charts, and data analysis tools that make it easier to work with large amount of data. It provides ability to perform mathematical calculations quickly and has flexibility to perform quick recalculation in case of any data change.

Electronic spreadsheets can be used in any area or field that works with numbers and are commonly found in the accounting, budgeting, sales forecasting, financial analysis and scientific fields. It can be used to create and maintain a list, store database records, create charts or graphs, compare numerical or financial data.

There are quite a few electronic spreadsheet programs available like Excel, OpenOffice Calc or Google spreadsheets. We will consider MS Excel 3007 for our study. It comes bundled in MS Office which is an office automation tool.

3.3   EXCEL BASICS

In this section, we will cover how to start Excel, open, save and close a workbook and what different parts of Excel Window stand for.

3.3.1   Starting Excel

You can start MS Excel by either of the following two ways:

- Click on Start→ All Program→Microsoft Office→ Microsoft Office Excel 3007.
- Double click on the MS Excel icon on the desktop (if you have one).

When Excel opens, a new document (called Workbook in Excel) with default name as Book1 is opened. For each additional workbook you open, the number increases by one. Please note that you can open more than one workbook at a time. By default each workbook contains three worksheets. You may increase or decrease the number of worksheets in a workbook. How we do it, we will learn later in this unit.

You may also start Excel by clicking on a workbook saved on your hard drive. Excel will open automatically and the workbook will be displayed in the Excel window.

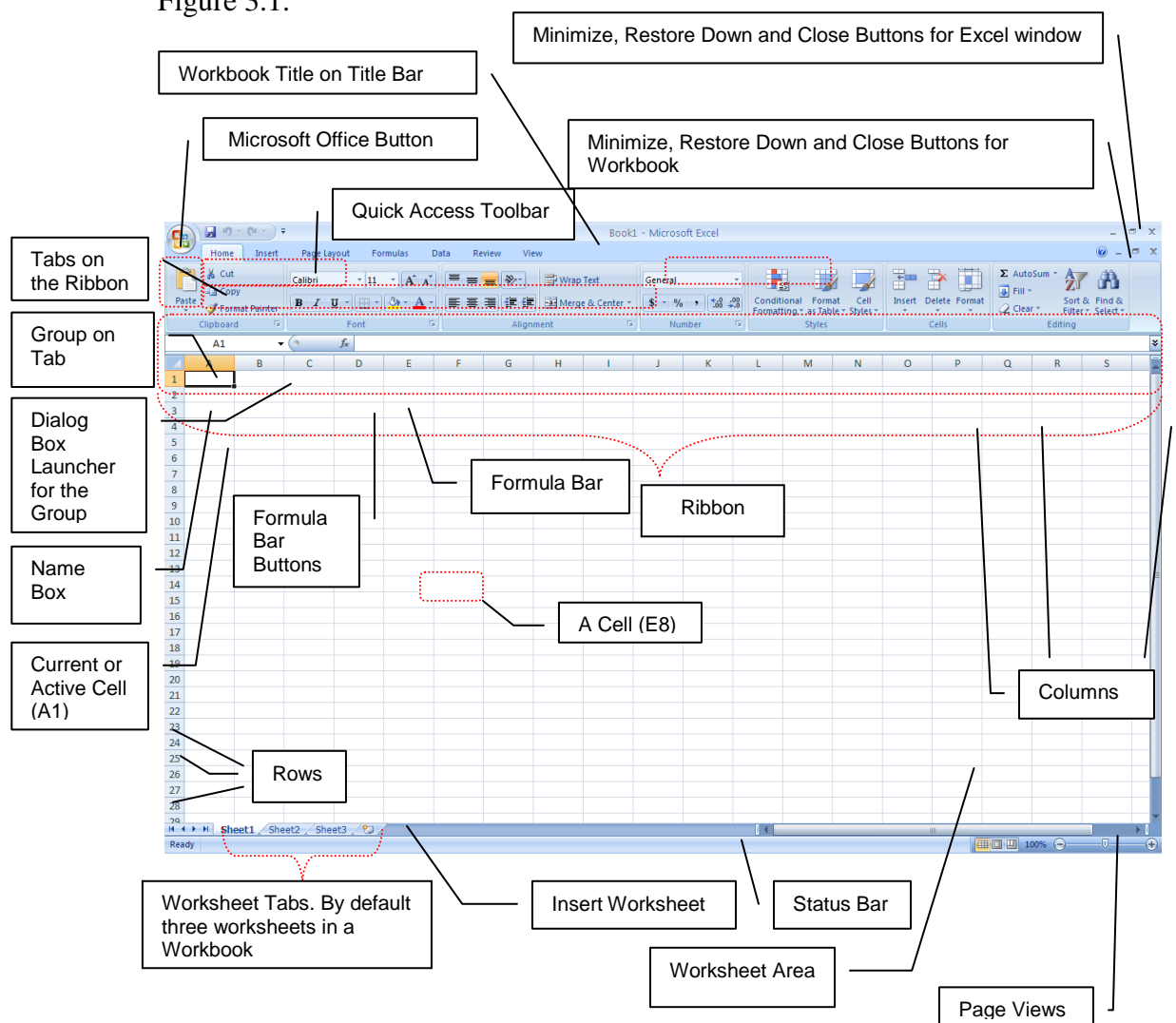When you open Excel from the menu or desktop icon, the screen will look like in Figure 3.1.

Figure 3.1: Microsoft Excel Window

3.3.2 Commands and Resources in Excel Window

Let us familiarize ourselves with the key commands and resources in Excel Window:

The Microsoft Office Button

It is the button in the upper-left corner of the Excel Window. When you click on the button, it displays a menu that can be used to create a new workbook, open an existing workbook, save a workbook, print and perform many other tasks.

The Quick Access Toolbar

It is present next to the Microsoft Office Button on the top. It provides you access to the commands you frequently use. By default Following appear on the Quick Access Toolbar:

- **Save**: To save your file (you may also press keyboard button (Ctrl+S).
- **Undo**: To rollback the action that you last took (Ctrl+Z).
- **Redo**: To reapply the action you rolled back or to repeat an action (Ctrl+Y).

The Title Bar

It is next to the Quick Access toolbar at the top. It displays the title of the workbook on which you are currently working. By default, the first new workbook is named as Book1. For each additional workbook you open, the number increases by one. You may save the workbooks by any legal filename you want.

The Ribbon

The Ribbon is the panel at the top portion of the document, right below the Title Bar. To begin with it has following seven tabs:

- **Home**: It has basic commands for creating, formatting and editing the spreadsheets. It has controls for working with the clipboard, fonts, alignment, number, styles, cells and editing.

- **Insert**: It has commands for inserting tables, pictures, shapes, other illustrations, links, charts, header, footer, etc.

- **Page Layout**: The commands here help to set the layout of the spreadsheet, apply a theme to set the overall look, set the margins, orientation, size, backgrounds, etc.

- **Formulas**: It has commands that help you use different formulas and functions.

- **Data**: Has commands to import, query, view data from external sources, sort, filter or manage data.

- **Review**: Has commands to add comments, protect sheet, protect workbook, share workbook, etc.

- **View**: Helps to change the display of the worksheet area.

Besides these basic tabs, additional tabs appear from time to time, depending on the context we are working in. These tabs are called contextual tabs. For example, if you select a chart, a Chart Tools contextual tab appears that has commands to help you design and format the chart. These contextual tabs appear in a different colour to make them easy to spot.

The commands on each tab are organized into groups. Hence, a group is a collection of logically related command buttons that you can use to manage a Worksheet. Commonly used features are displayed on the Ribbon and additional options can be accessed through the dialog box launcher at the bottom-right corner of each group.

The Formula Bar

The formula bar is divided into three sections:

Name Box: Located on the left most side of the formula bar, it displays the address of the current cell

Formula Bar Buttons: Middle section of the formula bar with indented circle on the left (to increase or decrease the size of the name box) and **function wizard** (labeled fx) on the right. When you start entering data in the cell, **Cancel** (✗) and **Enter** (✓) buttons also appear.

Cell Contents: Right side of the formula bar displays the cell entries.

The Worksheet Area

The worksheet area displays all the cells. It is in the cells that you enter, format or edit your data.

The Status Bar

The Status bar appears at the very bottom of the Excel window and provides such information as the sum, average, minimum, and maximum value of selected numbers. You can change what displays on the Status bar by right-clicking on the

Status bar and selecting the options you want from the Customize Status Bar menu. You click a menu item to select it. You click it again to deselect it. A check mark next to an item means the item is selected.

3.3.3 Setting up Your Excel Environment

Before you begin working on your spreadsheet, you may want to set up your Excel environment and become familiar with a few key tasks such as how to maximize and minimize the Ribbon, configure the Quick Access toolbar, display/ hide the formula bar, change page views etc.

Minimize and Maximize the Ribbon

- Right click anywhere in the main menu
- Select **Minimize the Ribbon** in the menu that appears. This will **toggle** the Ribbon on and off.
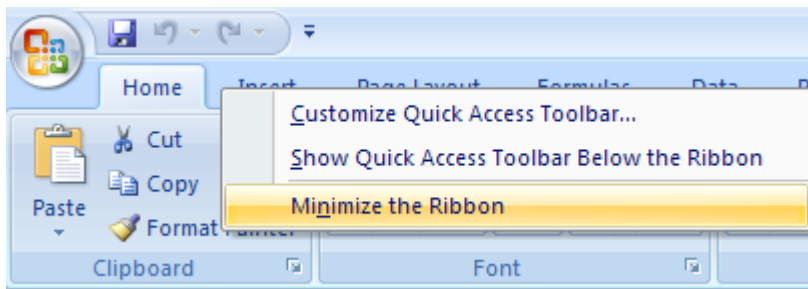
Figure 3.2 : Minimize the Ribbon

The check mark beside 'Minimize the Ribbon' option indicates the feature is active. You may choose to use this option, if you prefer not to use the Ribbon, but use different menus and keyboard shortcuts.

This menu also has option to **Show Quick Access Toolbar Below the Ribbon**, instead of at the top. You can also Customize Quick Access Toolbar using the option available in this menu. Choosing this option displays the window as shown in figure 3.

Add Commands to Quick Access Toolbar

- Click the arrow (customize quick access toolbar) to the right of the Quick Access toolbar.
- Select the command you wish to add from the drop down menu. The command will appear in the Quick Access Toolbar

You can also select **More commands…** from the menu to open the screen as shown in Figure 3.3. Here you can one by one add commands to the toolbar or remove commands from the toolbar to make specific features easily accessible.
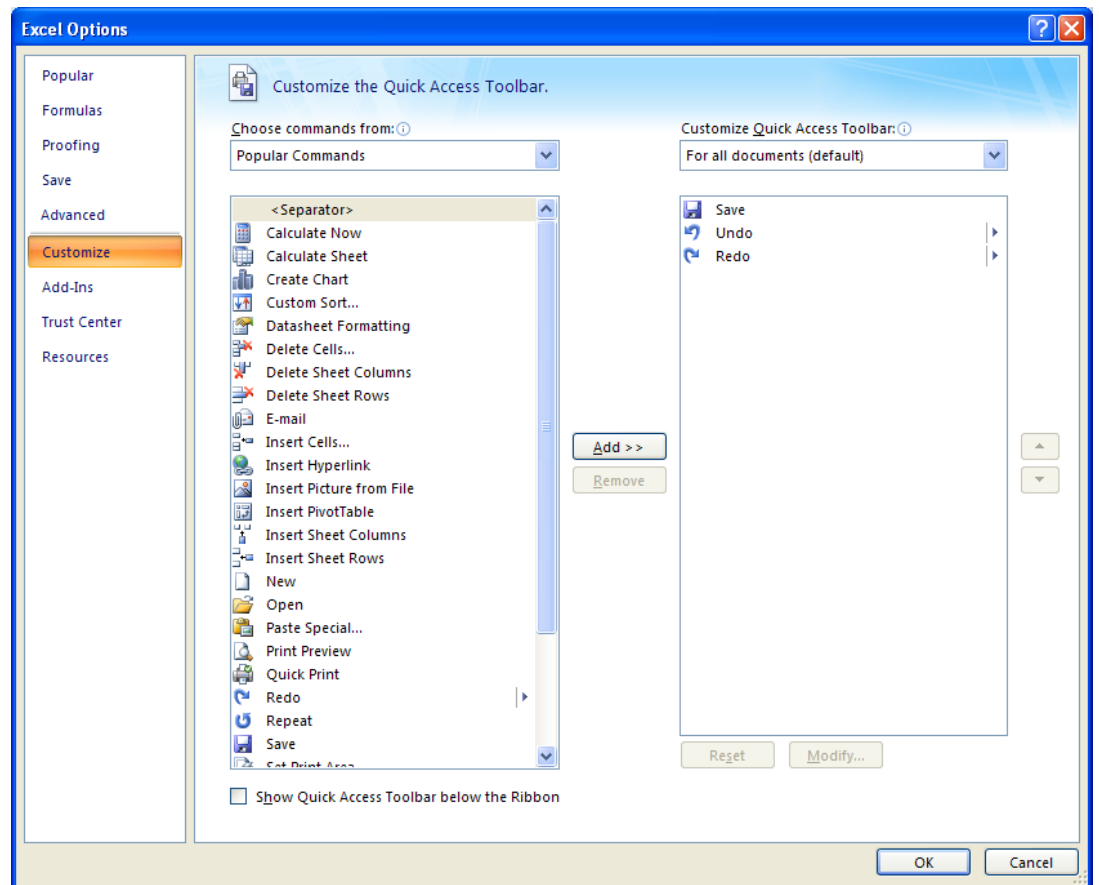
Figure 3.3: Customizing Quick Access Toolbar

Display or Hide the Formula Bar

- Click the **View** Tab of the Ribbon.
- In the **Show/ Hide** group check/ uncheck against formula bar to show/ hide formula bar.

Expand Formula Bar

The **Expand/ Collapse formula bar** button is present at the far right end of the formula bar.
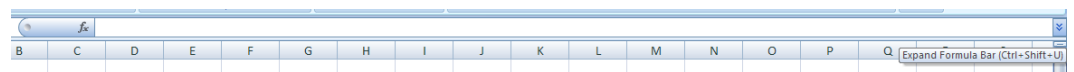
Figure 3.4: Expand Formula Bar Button

Click on the button to expand or collapse the formula bar.

Customize the Status Bar

- Right click anywhere on the Status Bar.
- From the menu that appears, select the options that you want to see on the Status Bar. If the option is selected a check mark appears before it. Ensure that **View Shortcuts** and **Zoom Slider** options are selected.

Zoom In and Out

- Locate the **zoom bar** in the bottom, right corner.
- Left-click the **slider** and **drag** it to the left to zoom out and to the right to zoom in.

Figure 3.5 : Zoom In

You can also use the **Zoom** group in the **View** Tab of the Ribbon to set your zoom.

Change Page Views

- Locate the **Page View options** in the bottom, right corner. Click on an option to select it. Different page view options are:
  - **Normal**: This is the default view.
  - **Page Layout**: This view is very helpful from printing point of view. When you select this view, you are able to see the header block, all the margins around the worksheet, the vertical and horizontal rulers and the column and row headings also appear differently. This view shows how exactly the workbook would look like when you print it.
  - **Page Break**: This is view is useful to determine where the page will break when you are trying to print an Excel sheet that spans multiple pages.
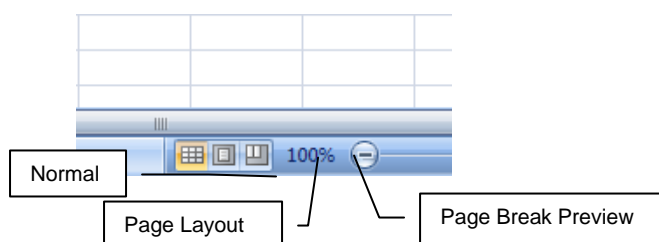
Figure 3.6 : Page Views

You can also set the page view using **Workbook Views** group in the View tab on the Ribbon.

Customizing the Environment Using Excel Options

The **Excel Options** menu allows you to customize Excel 3007 according to your preferences.

- Click the Microsoft Office Button
- Click on 'Excel Options' button located at the bottom of the menu.
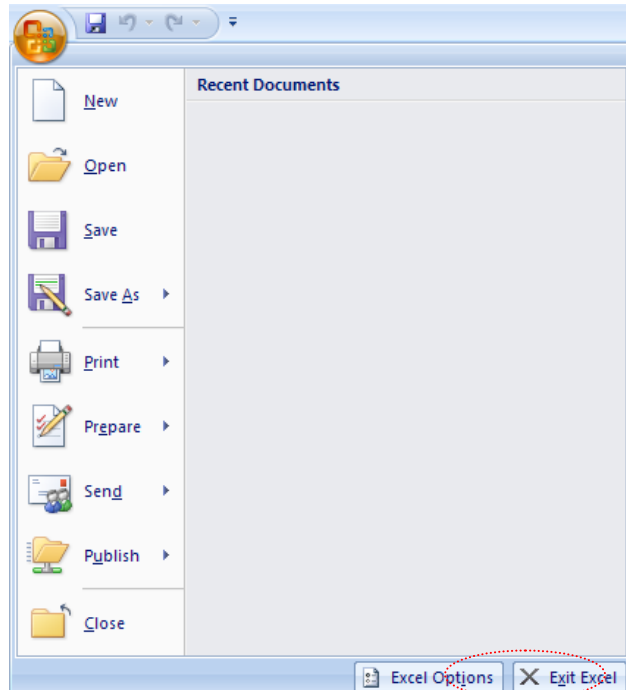
Figure 3.7 : Excel Options Button

When you click on Excel Options button, an extensive menu will open.

Using **Excel Options** menu, you can personalize your work environment with the mini toolbar, Live preview, colour schemes, customize sort and fill sequence, auto correction setting, modify default options for new workbooks, calculation options, specify options for editing, copying, pasting formulas, calculations and other general setting.

3.3.4   Creating a New Workbook

You can create a new workbook as follows:

- Click the **Microsoft Office Button**.
- Select **New**. The New Workbook dialog box appears.
- Select **Blank Workbook** under 'Blank and Recent' section. It will be highlighted by default.
- Click **Create**. A new, blank workbook appears in the Excel window.

You may also use keyboard shortcut Ctrl+N to create a new workbook. Please note that when you first open Excel, it open with a blank new workbook.

If you want to create a new document from a template, explore the templates and choose one that fits your needs, instead of choosing new blank workbook.

3.3.5   Opening an Existing Workbook

You can open an existing document in one of the following ways:

- Click the **Microsoft Office Button**.
- Select **Open**. Select the required workbook in the dialog box.

<div align="center">OR</div>

- Use keyboard shortcut Ctrl+O to select and open an existing document.

<div align="center">OR</div>

  If you have recently used workbook then

- Click the **Microsoft Office Button**.
- Choose from the Recent Documents section.

<div align="center">OR</div>

- Go to Windows Explorer. Find your document.
- Right mouse click on the document and select **Open**.

3.3.6   Saving a Existing Document

- Click the **Microsoft Office Button**.

- Select **Save** from the menu.

<div align="center">OR</div>

- Use keyboard shortcut Ctrl+S

<div align="center">OR</div>

- Use Save on the Quick Access Toolbar

On using any of these options, the workbook is saved in its current location with the same file name. If you are saving the workbook for the first time, then **Save As** dialog box appears which accepts the workbook name and location where it is to be saved.

Using Save As Option

You may use Save As option as below:

- Click the **Microsoft Office Button**.
- Select **Save As** from the menu. The Save As dialog box appears.
- Select the location where you wish to save the workbook.
- Enter the name for the workbook.
- Click the Save button

The **Save As** option can be used to:

- Create a backup copy of the workbook by saving it at another location or by different name.
- Save the workbook in a format that is fully compatible with Excel97-3003
- Save the workbook as macro-enabled or binary workbook.

3.3.7   Working with Multiple Workbooks

Multiple workbooks can be opened simultaneously if there is such a need. To see the list of open workbooks:

- Click on **View** tab of the Ribbon
- Click on **Switch Windows** in the Window group. A drop down list of all open workbooks is displayed.

The current workbook has a checkmark besides its name. You may select any workbook from the list to make it current.

3.3.8   Closing a Workbook

To close a workbook:

- Click the **Microsoft Office Button**.
- Select **Close** from the menu.

The current workbook closes. The next document in the list becomes current. If there is no other open document, then only Excel window is there.

3.3.9   Closing Microsoft Excel

- Click the **Microsoft Office Button**. A menu appears.
- Click **Close**. Excel closes.

3.4   ENTERING, EDITING AND FORMATTING DATA

Excel treats different types of data differently. You enter all kinds of data in a **cell** in the worksheet. An Excel workbook can hold any number of worksheets and each worksheet is made up of more than seventeen billion cells. Each cell can hold any of the following three **types of data**:

- **A numeric value :** It can be numbers (example 300.40), dates (example 4-Feb-2011) or times (example 3:35 am). There are many different format options available in Excel for the display of numerical values.
- **Text :** Text in Excel can be used as labels for values, headings for columns or worksheet or for any kind of instructions. Text that begins with a number is still considered as text.

- **A Formula :** Formulas can be entered in a cell where eventually the result of the formula is displayed. We will study more about formulas later in this unit.

A worksheet can also hold charts, diagrams, pictures and other objects. These objects aren't contained in cells. Rather, they reside on the worksheet's draw layer, which is an invisible layer on top of each worksheet.

In order to enter or edit data in a cell, that **cell must be current**. Excel indicates that a cell is current in following ways:

- A dark black border (called the cell cursor) appears around the cell.
- The cell address appears in the Name box of the formula bar. A **cell address** is combination of Column Letter(s) and Row number that intersect at that cell position. For example, if the cell address is A3, it means it is at the intersection of column A and row 3.
- The cell column heading (letters) and row heading (number) is shaded for that particular cell.

3.4.1   Moving around the Worksheet

Excel has many ways to move the cell cursor around the worksheet to the cell where you want to enter new data or edit existing data:

- Click the desired cell, provided the cell is displayed within the visible section of the worksheet area.
- In case, cell is not visible, then you may use horizontal or vertical scroll bars to move to that part of the worksheet that contains the desired cell.
- Press F5 to open the Go To dialog box. Type the cell address in the reference and press Enter or click OK. The cell cursor moves to the desired address.
- Press CTRL+G. This again opens Go To dialog box.
- Click in the Name box of formula bar and enter the address of the desired cell. Preas Enter. Cursor moves to the specified cell.
- You can also use the arrow and tab keys as specified below to move the cell cursor to the desired cell:

To Move	Keys to Press
One cell on right	Tab or right arrow key
One cell on left	Shift+Tab or left arrow key
One cell up	Up arrow key
One cell down	Down arrow key
To cell A1	Ctrl+Home
To last cell with any data (last column and last row)	Ctrl+End
Up or Down one screen	PgUp or PgDn
First cell of the current row	Home

3.4.2 Selecting Cells, Rows or Columns

If you wish to perform a function on a group of cells, you must first select those cells by highlighting them.

3.4.2.1 Selecting Cells

You can either use a mouse or a keyboard to select the desired group of cells:

Using Keyboard: To select cell A1 to C5 –

- Go to cell A1.
- Press F8. This anchors the cursor and 'Extend Selection' is displayed in the Status bar.
- Use arrow keys to select the desired cell area.
- Press Escape (Esc) to come out of the Extend mode.

Using Mouse: To select cells A1 to C5, as shown in figure 8 –

- Click on cell A1.
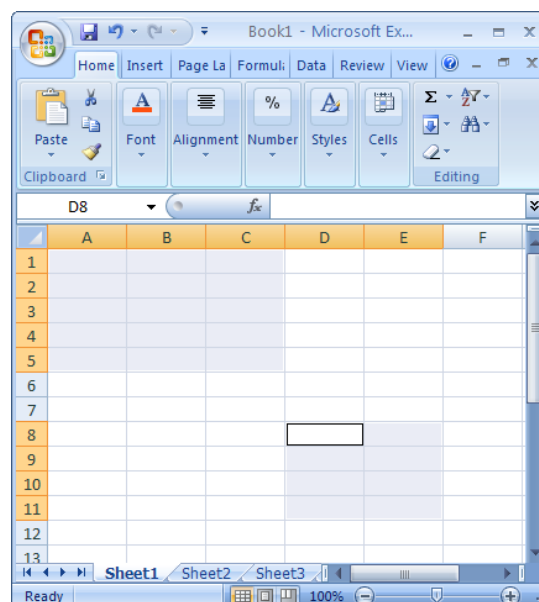- Keep the left mouse key pressed and drag the mouse to C5.

Figure 3.8: Noncontiguous Selected Cells

You can also select noncontiguous area of the worksheet using mouse. Press **Ctrl** key along with the left mouse key while dragging to select the cells.

To select a particular row or a column, just click on that particular row or column heading. For example, if you want to select row number 3, then just click on number 3 in the row heading and the entire row will be highlighted. When you take the cursor over the row heading, then it changes to a right arrow. Similarly, when you take the cursor over the column heading, then it changed to a down arrow.

3.4.3   Entering Data

There are different ways to enter data in Excel: in an active cell or in the formula bar.

To enter data in an **active cell**:

- Click in the cell where you want the data.
  Begin typing. Note that the text appears in formula bar also.

To enter data into the **formula bar**:

- Click the cell where you would like the data
- Place the cursor in the Formula Bar
- Type in the data in the formula bar

Please note that you can use **Alt**+**Enter** to go to next line within a cell. **Alt**+**Enter** in a cell works similar to Enter key in a word document.

3.4.4   Deleting Data

- Select the cell(s).
- Press the **Delete** key to delete the entire contents of a cell(s).
                      OR
- Double click in a cell. The insertion point appears in the cell.
- Press **Backspace** to delete one character at a time. Press **Enter** to confirm changes**.**

You can also make changes to and delete text from the formula bar. Just select the cell and place your insertion point in the formula bar and use backspace or select the whole text and use delete.

3.4.5   Editing Data

To change entire contents of a cell:

- Select the cell and start typing the new data.
- Press Enter to confirm the change.

To modify a part of the cell,

- Select the cell and switch to **edit mode**. You can switch to edit mode by following ways:

  - Press F3 once you have selected the cell. The Status changes to 'Edit' from 'Ready' in the status bar.

    OR
  - Double click in the cell to switch to edit mode.

Once you have made your changes, press Enter to confirm changes or press Esc to cancel changes.

You can also make changes in the **Formula bar**. Select cell. Click in the formula bar. Make the required changes. Press Enter to confirm or press Esc to cancel changes.

3.4.6   Working with Cells, Rows and Columns

Copy/ Cut and Paste

If you need to duplicate data in some cell(s), you can use copy & paste option. In case you need to move the data from one cell to another, then you use cut & paste option.

To copy data:

- Select the cell(s) that you wish to copy. This is the source location.
- On the **Clipboard** group of the Home tab, click **Copy** OR use Ctrl+C OR select **Copy** option from menu that appears when you right mouse click on the selected cell(s). The border of the selected cell(s) will change appearance and the data from the selected cell(s) is copied onto the clipboard.

To cut data:
- Select the cell(s) that you wish to cut. This is the source location.
- On the **Clipboard** group of the Home tab, click **Cut** OR use Ctrl+X OR select **Cut** option from menu that appears when you right mouse click on the selected cell(s). The border of the selected cell(s) will change appearance and the data from the selected cell(s) is copied onto the clipboard.

To paste data:

Once you have copied or cut data from the source location, you paste it to the destination location.

- Select the cell(s) where you would like to paste the data. This is the destination location.
- On the Clipboard group of the Home tab, click **Paste** OR use Ctrl+V OR use right mouse click menu option. The source information will now appear in the new destination cells.

If you use **cut**, then the information at the source location is removed automatically after the paste operation has been performed. If you use **copy**, then you have same information at both source and destination locations. Also, in case of copy, the copied information remains selected with changed border (even after the paste operation), until you perform next action or press Esc or double click the selection to deselect it.

Drag and Drop

Drag and drop works similar to cut and paste that you move information from one cell(s) to another. To drag and drop data from one point to another:

- Select the cell(s) that you wish to move.
- Position your mouse pointer near one of the **outside edges** of the selected cells. The mouse pointer should change from a **white, block cross** to a **black, thin cross with 4 arrows.**
- Click and hold the mouse button and **drag** the cells to the new location. As you drag the selected cells, the outline of the cells will change.
- Release the mouse button and the information appears in the new location.

Please note that for drag and drop to work, it should be enabled in Excel Options.

Undo and Redo

Undo and **Redo** buttons are present in the Quick Access Toolbar. You can also use keyboard shortcuts Ctrl+Z and Ctrl+Y for undo and redo respectively.

The undo command allows you to correct your mistakes in the worksheet. The redo button becomes active when you use undo. It lets you undo what you have undone. If you want to undo last action, then click on the Undo button. You can also click the arrow key next to the Undo button to open a list of previous actions. You can choose from the list to undo multiple actions at the same time. Please note that once you have saved the file and made a change to the worksheet, then you cannot undo any action performed before the save.

Insert Cell

You can insert a cell either **above a cell** or to the **left of a cell**. Keeping this in mind,

- Select the appropriate cell.

- Click **arrow** on **Insert** command from **Cells** group in the Home tab. If you click on the Insert button, a cell is inserted above the selected cell. But, if you click the arrow then a menu opens.
- Choose Insert Cells option. **Insert dialog** box opens.
- Choose the appropriate option.

                    OR

- Select the appropriate cell.
- Right mouse click on the cell. A menu opens.
- Select **Insert…** option from the menu. **Insert dialog** box opens.
- Choose the appropriate option.

Insert Row or Column

You can insert a row **above** a particular row or a column to the **left** of a particular column. While keeping this in mind,

- Select a cell in the appropriate row/ column.
- Either use right mouse click OR Insert command in Cells group of the Home tab on the Ribbon (as done to insert a cell above).
- In the Insert dialog box choose the appropriate option for row/ column.

                    OR

- Press right mouse button on the row number (above which you want to insert a row) in row heading on left of the worksheet OR press right mouse button on the column letter in column heading (left of which you want to insert the column) at the top of the worksheet. A menu opens.
- Choose insert option from the menu. A row is added above the selected row OR a column is added to the left of the selected column.

Delete Cell, Row or Column

To delete cells, rows, and columns:

- Place the cursor in the cell, row, or column that you want to delete
- Click the Delete button on the Cells group of the Home tab
- Click the appropriate choice: Cell, Row, or Column

                    OR

- Use right mouse click on the cell, row number in row heading or column letter(s) in column heading.
- Choose Delete option from the menu.

Modify Column Width

There are various ways that you can use to modify column width:

- Position the cursor over the **column line** (line that divides the two columns) in the column heading. A horizontal double arrow will appear.

- Click the mouse and **drag** the cursor to the right to increase the column width or to the left to decrease the column width.
- Release the mouse button.

<div align="center">OR</div>

- Click the column heading of a column you wish to modify. The entire column will be highlighted.
- Click the **Format** command in the **Cells** group on the Home tab. A menu will appear.
- Select **Column Width** to enter a specific column measurement

<div align="center">OR</div>

- select **AutoFit Column Width** to automatically adjust the column so all the text will fit.

<div align="center">OR</div>

- Right mouse click the column heading. A menu will appear.
- Select **Column Width…** from the menu.
- Enter the specific column measurement.

Modify Row Height

There are multiple ways that you can use to modify row height:

- Position the cursor over the **row line** (line that divides the two rows) in the row heading for the row you want to modify. A vertical double arrow will appear.
- Click the mouse and drag the cursor upward to decrease the row height or downward to increase the row height.
- Release the mouse button.

<div align="center">OR</div>

- Click the row heading of a row you wish to modify. The entire row will be highlighted.
- Click the **Format** command in the **Cells** group on the Home tab. A menu will appear.
- Select **Row Height** to enter a specific row measurement OR select **AutoFit Row Height** to automatically adjust the column so all the text will fit.
  OR
- Right mouse click the row heading. A menu will appear.
- Select **Row Height…** from the menu.
- Enter the specific row measurement.

Hide or Unhide Rows or Columns

To hide or unhide rows or columns:

- Select the row or column you wish to hide or unhide.
- Click the **Format** button on the **Cells** group of the Home tab. A menu appears.
- Under **Visibility** heading, click on Hide & Unhide option.
- Choose the appropriate option from sub menu that appears: Hide Rows or Hide Columns or Unhide Rows or Unhide Columns as per the requirements.

3.4.7   Data and Formatting

Auto Fill

Auto Fill feature fills cell data or series of data in a worksheet into a selected range of cells. If you want the same data copied into the other cells, you only need to enter data in one cell. If you want to have a series of data (for example, serial number) fill in the first two cells in the series and then use the auto fill feature. To use the Auto Fill feature:

- Enter the required data in the cell. For example, if you wish to enter 1 in all cells from A1 to A10, then just type 1 in cell A1. Similarly, if you wish to enter numbers 1 to 10 in cells A1 to A10 then enter 1 in A1 and 3 in A3.
- Now select the cell(s) with value(s) (just A1 OR both A1 and A3 depending on the case)
- Bring your cursor at the bottom right corner of the selection so that it changes from large white cross to a small, thin, black cross. Now the cursor is positioned over the fill handle.
- Click your mouse at the fill handle and drag it till all the cells you want to fill are selected (till A10 in our example).
- Release the mouse button and all the selected cells are automatically filled.

   You can use the fill handle to fill cells horizontally or vertically.

Aligning Values

In Excel, the data in a cell can be aligned both horizontally and vertically. The default horizontal alignment is left for the text data and right for the numerical data. Vertically, both text and numerical data are bottom aligned. You can change the default alignments as per your requirement:

The steps to change alignment are:

- Select the cell(s) for which alignment needs to be changed.
- Choose horizontal/ vertical alignment command from the **Alignment** group in the Home tab.

In the Figure 3.9, you can see the how the data can be positioned in a cell by choosing the appropriate combination of horizontal and vertical alignment values.
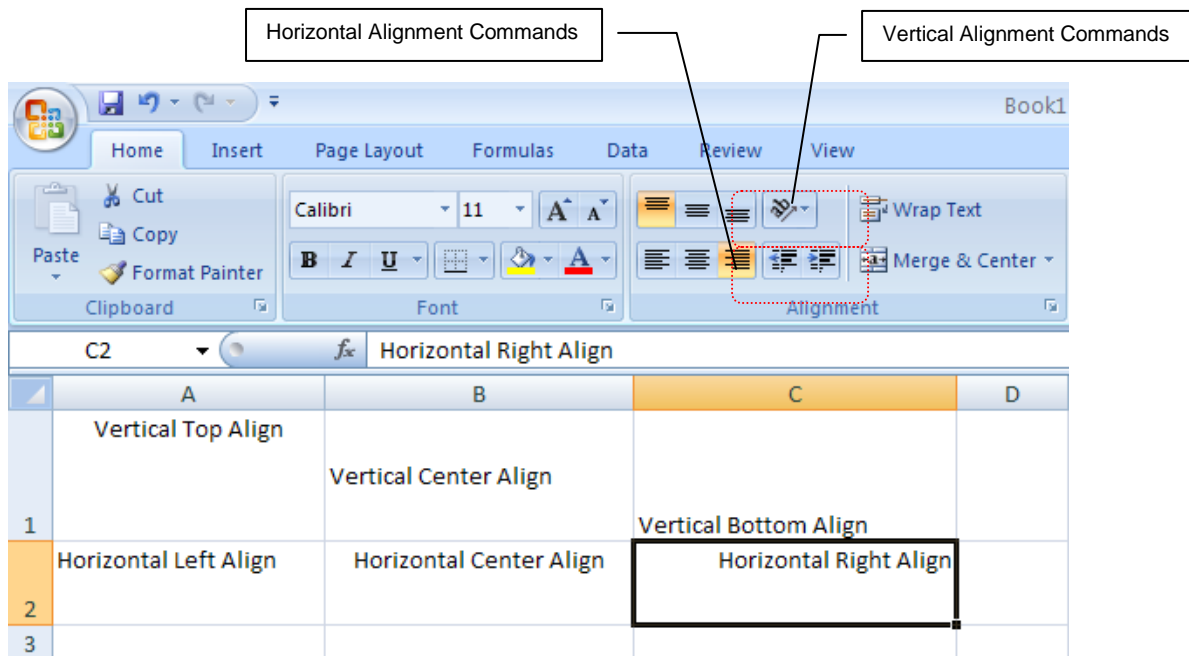
Figure 3.9: Horizontal and Vertical Alignments

Wrap Text

Wrap text command enable multiple text line inside a single cell. When you type text that is too long to fit in the cell, either the text is not displayed completely or it overlaps the next cell if it is empty. If you do not want it to overlap the next cell, you can wrap the text.
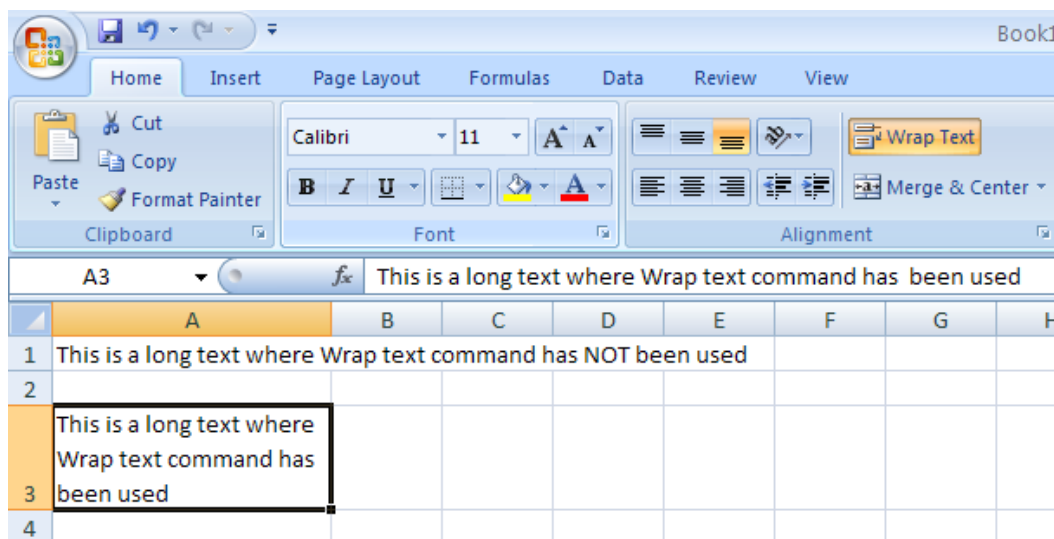
Figure 3.10: Text Wrapping

- Select the cell(s) where you wish to wrap the text.
- Click on **Wrap Text** command from **Alignment** Group in Home Tab. The text would change to multiline text.
- Set the column width and row height as needed.

Merge Cells

Sometimes, you may want to center a piece of text over several columns or rows. This is specially the case when you want to give a title to a section of your worksheet. This can be done through merging the cells (shown in Figure 3.11).

- Select the cell you want to merge. In our example in Figure 3.11, we have merged cells A1 to E1 for the title 'Student Marks'.
- Click **Merge and Center** Command in **Alignment** group of Home tab. The selected cell will be merged together to become one cell (the cell address now will be A1).
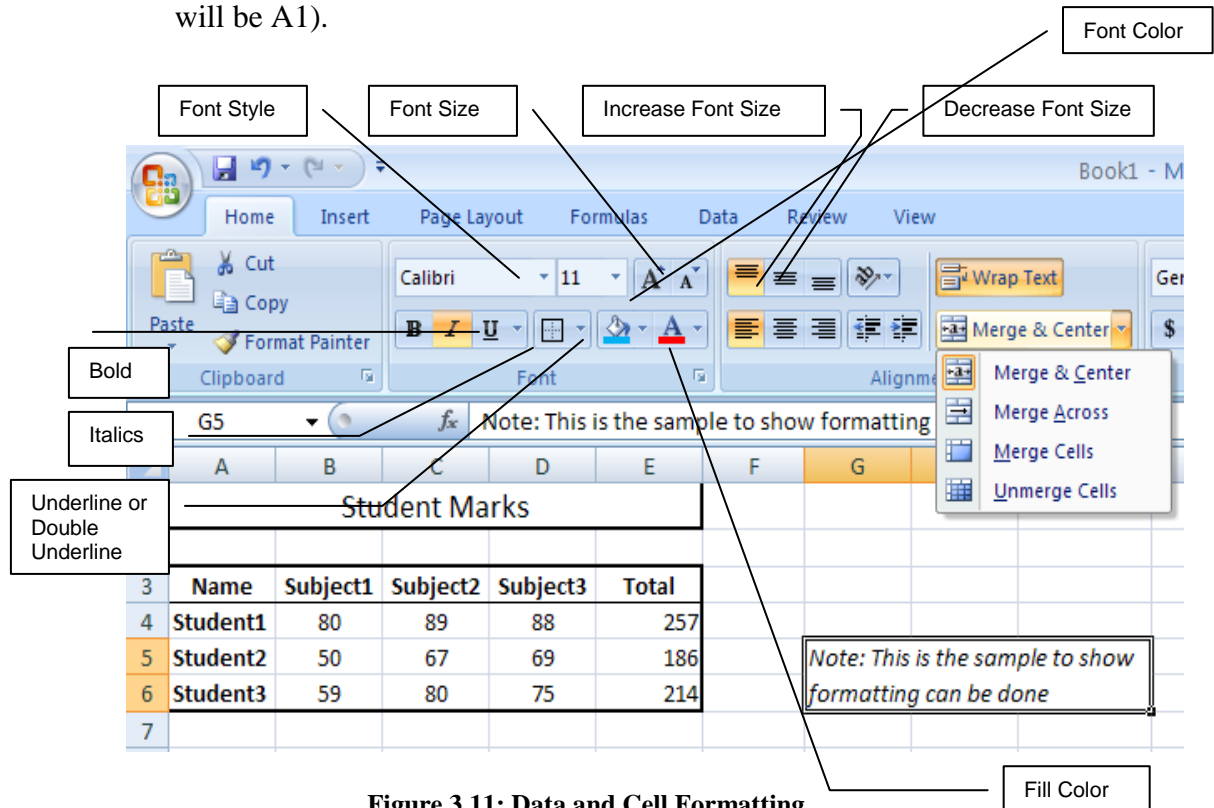

Figure 3.11: Data and Cell Formatting

In Figure 3.11, we have also merged cells, G5 to I6 for the Note. To do this, again

- Select the cells.
- Click the arrow for Merge and Center command. The menu opens.
- Choose **Merge Cells** option from the menu.

In case, you want to unmerge the merged cell for any reason:

- Select the merged cell.
- Click the arrow for Merge and Center command. The menu opens.
- Choose **Unmerge Cells** option from the menu. The cells will be unmerged.

Format Data as Bold, Italicized, Underlined or Double Underlined

The data in the spreadsheet can be formatted to make it more presentable. For formatting:

- Select the cell(s).
- Either click the appropriate command(s) (**Bold**, Italic, Underline, Double Underline) in **Font** group of the Home tab OR use keyboard shortcuts as below:

Command	Keyboard Shortcut
Bold	Ctrl+B
Italicize	Ctrl+I
Underline	Ctrl+U

For double underline format, click the down arrow next to Underline command. Choose **Double Underline** from the menu that opens.

In our example in figure 11, the Headings are in bold and Note is in italics.

Change Font Style

To change the font style,

- Select the cell(s).
- Click the drop-down arrow next to the **Font Style** box on the Home tab.
- Select a **font style** from the list.

As you move over the font list, the Live Preview feature previews the font for you in the spreadsheet.

Change the Font Size

To change the font size,

- Select the cell(s) you want to format.
- Click the drop-down arrow next to the **Font Size** box on the Home tab.
- Select a **font size** from the list.

Change the Text Colour

To change the Text Colour,

- Select the cell(s) you want to format.
- Click the drop-down arrow next to the **Font Color** command. A color palette will appear.
- Select a color from the palette.
        OR
- Select **More Colors…**. A dialog box will appear.
- Select a color.
- Click **OK**.

Add a Border

To add border(s),

- Select the cell or cells you want to format.
- Click the **drop-down arrow** next to the **Borders** command on the Home tab. A menu will appear with border options.
- Click an option from the list to select it. You can change the **line style** and **color** of the border.

In Figure 3.11, we have added thick border to the title and borders to the table, column heading and the note.

Add a Fill Color

To change the Text Colour,

- Select the cell or cells you want to format.
- Click the **Fill command**. A color palette will appear.
- Select a color.
       OR
- Select **More Colors…**. A dialog box will appear.
- Select a color.
- Click **OK**.

You can use the **fill color feature** to format columns and rows, and format a worksheet so that it is easier to read.

Format Numbers, Dates and Times

Excel treats dates and times as special type of numeric value. You can format any of these data as per your requirements:

- Select the cell(s) you wish to format.
- Click the drop-down arrow next to the **Number Format box** in **Number Group** in Home tab.
- Select one of the options for formatting numbers.
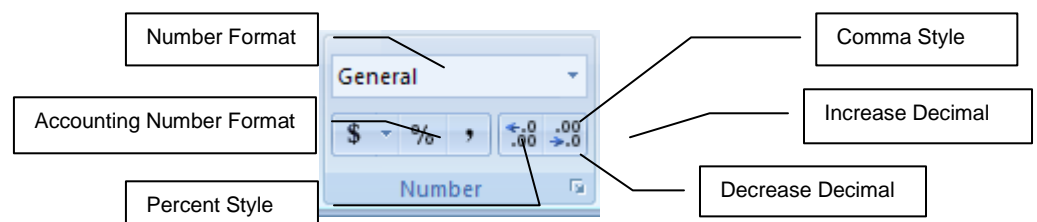
Figure 3.12 : Number Group in Home Tab

By default, the numbers appear in the General category, which means there is no special formatting.

In the Number group, you have some other options. For example, you can change the another currency format, set numbers to percents, add commas, and change the decimal location.

When you click on the dialog box launcher (arrow at the bottom right corner of the group), the Number tab of the **Format Cells** dialog box opens as in Figure 3.13. From here you can choose the specific format for number, date or time.
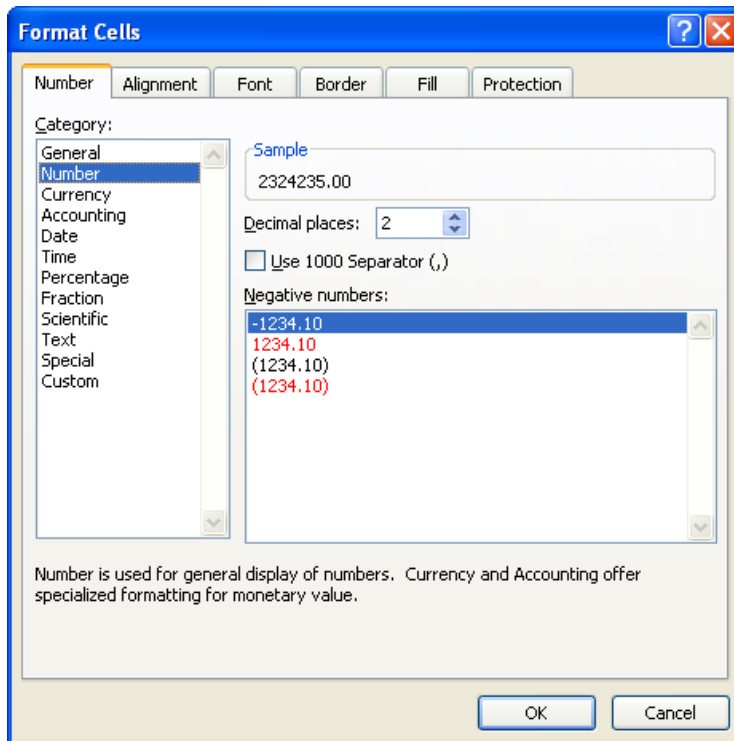
Figure 3.13: Number Tab of Format Cells Dialog box

Please Note: For any of the above formatting options, you can also right mouse click in the selected cell(s) and then choose **Format Cells…** option from the menu that opens. The Format Cells dialog box will appear with different tabs for number formatting, alignment, font, border, fill and protection.

You can also use **Format Painter** in Clipboard group of Home Tab to copy format from one cell to another.

3.5   FORMULAS AND FUNCTIONS

Formulas and Functions enhance Excels capability calculating and manipulating data for analytical purposes.

3.5.1 Formulas

A formula is a set of mathematical instructions that can be used to perform calculations. Formulas are started in the formula box with an = sign. A Formula may consist of:

- **Operators** : Symbols (+, -, *, /, etc.) that specify the calculation to be performed.
- **References** : The cell or range of cells that you want to use in your calculation.
- **Constants** : Numbers or text values that do not change.
- **Functions** : Predefined formulas in Excel.

3.5.1.1 Create a Simple Formula

We will learn to create a **formula to add two numbers**:
- Click the cell where you want the formula to be defined (for example cell A3).
- Type = sign to let Excel know that a formula is being defined.
- Type the two numbers to be added with the operator. For example type 35+1330 in cell A3 (after = sign). Press Enter.
- The result of the above addition operation is displayed in the cell A3, instead of the formula that we had typed. If you select A3, the formula appears in the formula bar.

We can now modify the above formula to **add contents of two cells** instead of the constant values:

- Click the cell where you want the formula to be defined and the answer will appear (for example cell A3).

- Type = sign to let Excel know that a formula is being defined.

- Type the cell number (example A1) that contains the first number to be added. Then type + operator and then the cell number (example A3) that contains the second number to be added. For example type A1+A3 in cell A3 (after = sign). Please note, if a cell does not contain a number then it is treated as containing zero.

- Press Enter.

- The result of the above addition operation is displayed in the cell A3. Cell A3 will display the value 333.

Change the value in cell A1 to 300, and notice that the value in cell A3 automatically changes to 334.

3.5.1.2 Create a Simple Formula using Point and Click Method

To create a formula using mouse:
- Click the cell where the answer will appear (B3, for example).
- Type the equal sign (=).

- Click on the first cell to be included in the formula (B1, for example).
- Type the operator sign (+ for addition or − for subtraction or * for multiplication or / for division) .
- Click on the next cell in the formula (B3, for example).
- Press Enter or click Enter button on the formula bar.

3.5.2 Using Cell References

When a cell address is used as part of a formula, it is called a **cell reference** because instead of entering specific numbers into a formula, the cell address referring to a specific cell is being used.

You have used **Fill Handle** in the auto fill feature in section 3.4.7. The same feature can be used to copy formulas from one cell to another. For example, if you have the formula =A1+B1 in cell C1, and you can use the fill handle to fill the formula into cell C3. Note that the formula won't appear the same in C3 as it does in C1. Instead of =A1+B1, you will see =A3+B3 in cell C3. This is called **Relative Reference** where cell references in formulas has changed cell addresses relative to the row and column they are moved to. In relative reference, formulas **automatically adjust** to new locations when they are pasted into different cells. Sometimes, our requirement is such that we don't want this change of cell address on pasting. To achieve this, cells must be addressed by **Absolute Reference**.

In **Absolute cell references**, a formula **always** refers to the **same cell** or cell range used in it. If a formula is copied to a different location, then the cell address remains the same. An absolute reference is designated in the formula by the addition of a **dollar sign** ($). It can precede the column reference or the row reference, or both. Examples of absolute referencing are:

$A1 - here the column will not change when copied.

A$1 – here the row will not change when copied.

$A$1 – here both row and column will not change when copied.

In the above example, if we have formula as =$A$1+$B$1 in cell C1 and we copy this formula in cell C3, then you will still see =$A$1+$B$1 in cell C3.

3.5.3   Linking Worksheets

Sometimes, you may want to use the value from a cell in another worksheet within the same workbook in a formula. For example, the value of cell A1 in the current worksheet and cell A3 in the second worksheet can be added using the format "sheetname!celladdress". The formula for this example would be "=A1+Sheet3!A3" where the value of cell A1 in the current worksheet is added to the value of cell A3 in the worksheet named "Sheet3".

3.5.4 Functions

A function is a built in **pre defined formula** in Excel. One of the key benefits of functions is that they save your time since you do not have to write the formula yourself. For example, you could use an Excel function called **Average** to quickly find the average of a range of numbers.

Excel has hundreds of different functions to assist with your calculations. Each function has a particular syntax, which must be strictly followed for the function to work correctly.

3.5.4.1 Function Library

The function library is a large group of functions on the **Formula** Tab of the Ribbon. These functions include:

AutoSum: Easily calculates the sum of a range
Recently Used: All recently used functions
Financial: Accrued interest, cash flow return rates and additional financial functions
Logical: And, If, True, False, etc.
Text: Text based functions
Date & Time: Functions calculated on date and time
Math & Trig: Mathematical Functions

You can visit each of these functions in the library to know more about them.

3.5.4.2 Insert a Function

To insert a function:

- Click the cell where you want the function applied
- Click the Insert Function button on the formula bar. The **Insert Function** dialog box opens.
- Choose the function from the dialog box. You may search on a particular function in the dialog box or change the category and select the function. Help for each function is available right there in the dialog box.
- Click OK. **Function Arguments** dialog box opens.
- Select the cells or range of cells for function arguments and click OK.
- The Function is added to the formula bar

3.6   WORKING WITH WORKSHEETS

In this section we will learn to name, add, delete, group or ungroup worksheets. We will also learn to format a worksheet for printing.

3.6.1 Name a Worksheet

The default names of Worksheets are Sheet1, Sheet3 and Sheet3. Since these names are not useful and descriptive, we will learn to rename the worksheet.

You can rename a worksheet using any of the following ways:

- Right mouse click on the Sheet1 tab. Menu appears as shown in figure 14(a).
- Select option **Rename**. The name Sheet1 is highlighted by a black box and becomes editable.
- Type the new name at the tab.
- Press Enter. The worksheet is renamed.

                    OR

- Click the Format command of the Cells group in Home Tab. A menu appears as shown is Figure 14(b).
- Select option Rename Sheet under Organize Sheet. The sheet name is highlighted by a black box and becomes editable.
- Type the new name at the tab.
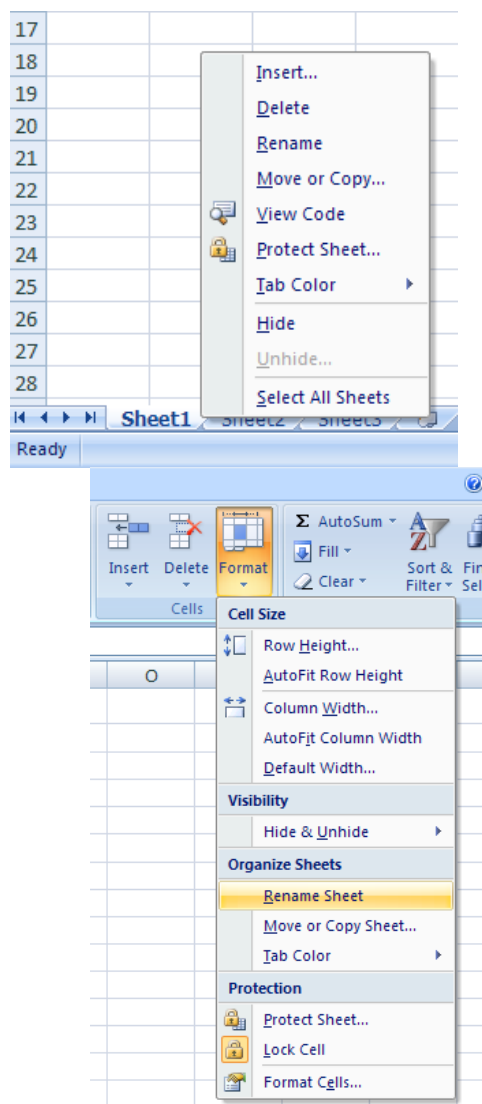- Press Enter. The worksheet is renamed.

Figure 3.14: Renaming a Worksheet

3.6.2 Insert a New Worksheet

You can add worksheets to the workbook anytime you want. The new sheets added will be named as Sheet4 and so on. There are many ways that you can add a new worksheet:

- Click on the **Insert Worksheet icon** near the worksheet tabs OR press Shift+F11.
- A new worksheet **after** the last tab will be added.

                OR

- Right mouse click on the worksheet tab.
- Choose **Insert…** from the menu (shown in Figure 14(a)). Insert dialog box opens.
- Select **Worksheet**. Click Ok
- A new worksheet **before** the selected tab will be added.

                OR

- Click the down arrow of **Insert** command in the Cells group of Home Tab. A menu appears.
- Choose Insert Sheet from the menu.
- A new worksheet **before** the selected worksheet will be added.

3.6.3 Delete a Worksheet

Any number of worksheets can be deleted irrespective of the fact that they contain any data or not. But, there should be at least one worksheet in the workbook. To delete a worksheet:

- Right mouse click on the worksheet tab.
- Choose **Delete** from the menu (shown in Figure 14(a)).
- The selected worksheet is deleted.

                OR

- Click the down arrow of **Delete** command in the Cells group of Home Tab. A menu appears.
- Choose Delete Sheet from the menu.
- The selected worksheet is deleted.

3.6.4 Grouping Worksheets

If the multiple worksheets of a workbook contain identical formula and formatting, then you can group them together. When the worksheets are grouped together, then any change made to one worksheet will be applied to all other worksheets in the group. You can group both contiguous and noncontiguous worksheets. To group **contiguous** worksheets:

- Click on the first worksheet tab.
- Press the **Shift** key.

- While holding the Shift key, click the last worksheet tab you want in the group.
- Release the Shift key.
- All the sheets from the first sheet to the last sheet are now grouped. The tab colour will now change to white indicating that they are grouped together.

To group noncontiguous worksheets:

- Click on the first worksheet tab.
- Press the **Ctrl** key.
- While holding the Ctrl key, select all the other worksheets you want in the group.
- Release the Ctrl key.
- All the sheets that you selected while keeping the Ctrl key pressed would be grouped together and sheet tabs will appear white.

3.6.5   Ungrouping Worksheets

To ungroup worksheets:

- Right mouse click one of the worksheets in the group.
- Select **Ungroup Sheets** from the menu.

3.6.6   Reposition Worksheets in a Workbook

To change the position of worksheets in a workbook:

- Click and hold the worksheet tab that is to moved until an arrow appears on the left corner of the sheet.
- Drag the worksheet to the desired location

3.6.7   Hide Worksheets

To **hide** a worksheet:

- Right-click on the tab of the sheet you wish to hide.
- Select **Hide**
              OR
- Click **Format** button.
- Select **Hide & Unhide** under Visibility in the menu.
- Choose **Hide Sheet** option.

To **unhide** a worksheet:

- Right-click on tab of any sheet.

- Select **Unhide….** A dialog box with the list of hidden worksheets is displayed.
- Choose the sheet to unhide.

OR

- Click **Format** button.
- Select **Hide & Unhide** under Visibility in the menu.
- Choose **Unhide Sheet**… option. A dialog box with the list of hidden worksheets is displayed.
- Choose the sheet to unhide.

3.6.8   Formatting and Printing the Workbook

In this section, we will learn how to set page headers, footers, margin, etc and prepare our workbook for printing.

To Change Page Orientation

- Select **Page Layout** Tab on the Ribbon.
- Click **Orientation** command in the **Page Setup** group.
- Choose the orientation you want – **Landscape** (horizontal) or **Portrait** (vertical).

To Change Paper Size

- Select **Page Layout** Tab on the Ribbon.
- Click **Size** command in the **Page Setup** group.
- A drop down menu appears with all the available paper sizes. Current size is highlighted.
- Choose the size option. Page size of workbook changes.

To Set Page Margins

- Select **Page Layout** Tab on the Ribbon.
- Click **Margins** command in the Page Setup group.
- Choose the predefined margins from the list.

OR

- Customize your margins by selecting Custom Margins from the menu and entering the desired margins in the appropriate fields.

To Set Headers and Footers

The **header** is the text that appears in the top margin of every page of the printed worksheet. Similarly, the **footer** is the text that appears in the bottom margin of every page of the printed worksheet. To add header and footer:

- Select **Insert** Tab on the Ribbon.

- Click the Header & Footer button in the Text group. A Design context tab appears under Header & Footer Tools. And worksheet changes to Page Layout view from the Normal view. Page Layout view structures the worksheet so that it is easy to change the format of the worksheet.
- Both Header and Footer are divided into three sections: left, center, right. You can type in your custom header/ footer or you can use predefined headers and footers. Click on Header/ Footer button in Header & Footer group of Design context tab to see the list of pre-defined headers and footers.

To Use Scale to Fit

Scale to Fit is a useful feature that can help you format spreadsheets to fit on a page.

- Select the **Page Layout** tab.
- Locate the **Scale to Fit** group.
- Enter a specific **height** and **width**, or use the percentage field to decrease the spreadsheet by a specific percent.

Be careful with how small you scale the information – you should be able to read it.

To Define a Print Area

At times you may want to print just a part of the whole worksheet. In that case you need to select your print area that you need to be printed. To define your print area:

- Click and drag your mouse to **select the cells** you wish to print.
- Click the **Print Area** command in Page Setup group of **Page Layout** Tab.
- Choose **Set Print Area**. Now, only the selected cells will print. You can confirm this by viewing the spreadsheet in Print Preview.

To return to printing entire worksheet, which is the default setting, click the **Print Area** command and select **Clear Print Area**.

To Print Titles on Each Page

Print Title command allows you to select **specific rows** and/or **columns** to appear on **each** printed sheet. This helps when the worksheet prints into many pages, since we can have row and column heading printed on each page for easy association and readability.

- Select the **Page Layout** tab.
- Click the **Print Titles** command in Page Setup group. The Sheet tab of Page Setup dialog box opens.
- Click the icon at the end of the field **Rows to repeat at top**.
- Select the row headings in the spreadsheet that you want to appear on **each printed page**.

- Repeat for the column, if required.
- Click OK. The select row/ column will now appear on each printed page.

Preview before Printing

- Click **Office Button**.
- Select Print → Print Preview. The worksheet opens in the Print Preview mode. In Print Preview, you can access many of the same features that you can from the Ribbon, through the Page Setup dialog box. However, in Print Preview you can see how the spreadsheet will appear in printed format.
- Click **Print** to print the document or **Close Print Preview** to come back to the document in original mode.

You can modify page margins, orientation, page size, etc in Print Preview mode.

To Quick Print the Document

- Click **Office Button**.
- Select Print → QuickPrint
- The document prints to the default printer. It bypasses the Print dialog box.

To Print the Document

- Click **Office Button**.
- Select Print → Print. The Print dialog box appears.
- Select the printer from the drop down list.
- Click **Properties** to change any necessary settings.
- Select the pages you would like to print – specific pages, all of the worksheet, a selected area, the active sheet, or the entire workbook.
- Select the number of copies.
- Click OK to print.

3.7 WORKING WITH TABLES AND CHARTS

Excel has features to help you manage and analyze related data. An Excel table stores information in a consistent manner, making it easier to format, sort, and filter worksheet data. Charts allow you to present information contained in the worksheet in a graphic format, which makes information easy to analyze.

3.7.1 Tables

Typically, an Excel table has only column headings and no row headings. Once you have converted the information into a table, you can sort and filter it as per your requirements.

3.7.1.1   Create Table

To create a table you need to have information stored in columns:

- Enter Column Headings for the table. Each heading should be in a different cell in a row. Column headings are also known as field names. The column headings should appear in a single row without any blank cells between the entries.
- Start adding data in the row right below column heading. This is the first record/ row of the table.
- Select any cell that contains the data.
- Click on **Format as Table** button in the **Styles** group of Home tab. A gallery of pre-defined styles of tables appears.
- Choose your table style. A **Format As Table** dialog box appears which has the range of cells to be converted into the table. Also a marquee appears around all the cells of the table, indicating the selection to be converted into a table.

Figure 3.15 : Cell Address to Create a Table

The range of cell to be converted into table in Figure 3.15 is for the Student Marks example that has been shown in Figure 3.11.

- Select **My table has headers** and click OK. The table created will look like as shown in Figure 3.16.

Figure 3.16 : An Excel Table

By default, the table will be set up with the **drop-down arrows** in the header so that you can **sort or filter** the table, if you wish.

Alternatively, after you have selected cell for table creation, you can also choose the **Table** command button in the **Tables** group of the Insert tab. This opens **Create table** dialog box with the range of cells to be converted into the table (similar to as in Figure 3.15). When you click OK, the table is created in the default style.

If you want to **convert** an existing Excel table back to a normal range of cells, select any cell in the table and then click the **Convert to Range** button on the **Table Tools Design** tab. All data and formatting is preserved. Using **Table Tools Design** context tab, you can change table style, add or delete table rows, resize table, remove duplicates, change table name and perform many more other functions on the table.

3.7.1.2   Sort Data

Sorting allows you to reorder your data. To sort data:

- Select a cell in the column you want to sort (for example, you can choose a cell in **Total** column to sort on total in our Students Marks example).
- Click the **Sort & Filter** command in the **Editing** group on the Home tab.
- In the menu you can choose **Smallest to Largest** or **Largest to Smallest** order for sort.
- For multi level sorting, you can also choose **Custom Sort…** and specify different columns and the order of sort for each in the dialog box.

Alternatively, you can also choose sort options from the **Sort & Filter** group in the **Data** Tab.

3.7.1.3   Filter Data

Filtering allows you to display only data that meets certain criteria. To filter:

- Click the column or columns that contain the data you wish to filter.
- On the Home tab, click on **Filter** button in the **Sort & Filter** group. Drop down arrows appear on column headings. These arrows would already be there if you are using an Excel table.
- Click the arrow in the column heading.
- Choose the appropriate data value(s) to filter from the drop down menu.

To clear the Filter, click the Sort & Filter button and choose Filter again.

3.7.2   Charts

Charts allow you to present information contained in the worksheet in a graphic format. Excel offers many types of charts including: Column, Line, Pie, Bar, Area, Scatter and more. To create a chart we first need to have the data.

3.7.2.1   Add Data

We will use the following sample data in our example. We will create a graph to compare daily attendance of two classes.

	A	B	C
1	Student Attendance		
2			
3	Day	Number of Students in Class A	Number of Students in Class B
4	Monday	25	29
5	Tuesday	27	30
6	Wednesday	30	26
7	Thursday	30	28
8	Friday	28	24

Figure 3.17: Sample Data for creating Graph

This is the **source data** for our chart, since it will be based on this data. Any change in the source data will automatically be reflected in the chart.

3.7.2.2   Create Chart

- Select the cells that that contain the data you want to use in the chart, including the column titles and the row labels.
- Click the **Insert** tab on the Ribbon.
- Click on one of the chart options from the **Chart** group. In this example, we will use the **Columns** option.
- Select a type of chart you want to create from the list. For our example, we will use a 3-D Clustered Column. The chart appears in the worksheet. Also notice Design, Layout and Format context tabs under Chart Tools:

Design Tab: has commands to control the chart type, layout, styles, and location of the chart.

Layout Tab: has commands to control pictures insert, shapes and text boxes, labels, axes, background, and analysis.

Format Tab: has commands to modify shape styles, word styles and size of the chart.

3.7.2.3   Apply Layout

To apply the layout:

- Click your chart. The Chart Tools become available.
- Choose the Design tab.
- Click the Quick Layout button in the **Chart** Layout group. A list of chart layouts appears.
- Select the layout. Excel applies the layout to your chart. We have chose layout 9 for our example.

3.7.2.4   Add Labels

Add appropriate Chart title and Axis title to the Chart.

- Click on the Chart Title and Axis title labels and change the labels appropriately.
- You can also add more labels, if required. Click on Layout Tab. Choose Textbox from Insert group. Click on Text box and place it on the chart. We have added a text box in our example to add the week (March1-7, Figure 3.18)
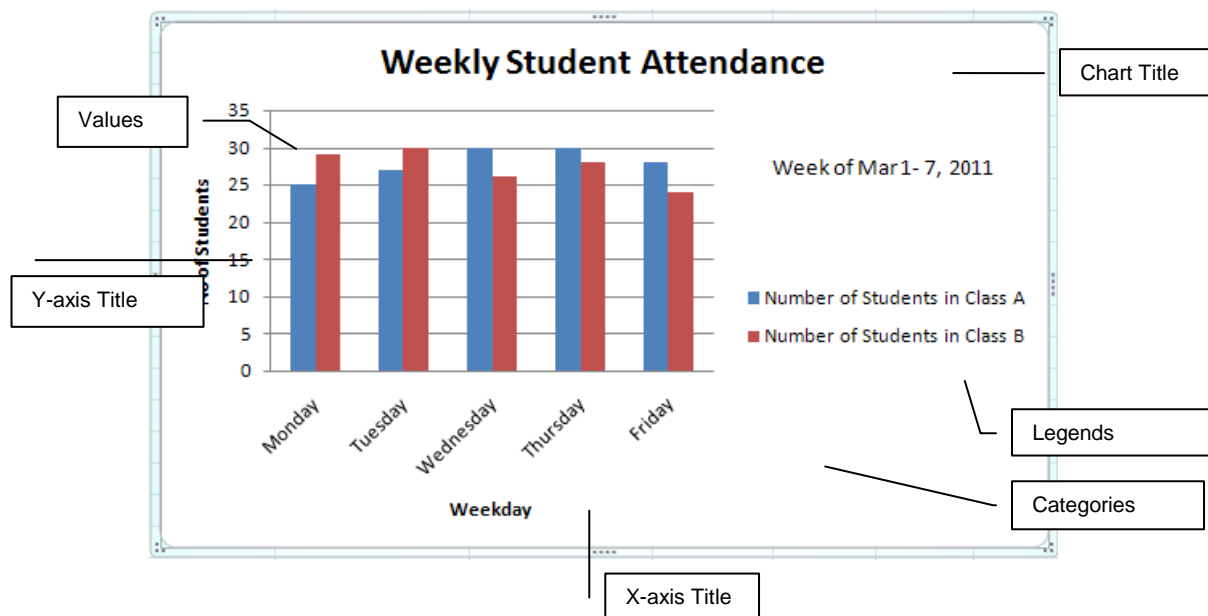

Figure 3.18 : 3D Clustered Column Chart for the Sample Data

3.7.2.5   Switch Data

Switch Data rotates the data displayed on the **x** and **y axes.** It rotates row data to column data and vice versa.

- Choose the **Design** tab.
- Click the **Switch Row/Column** button in the **Data** group. Excel changes the data in your chart.
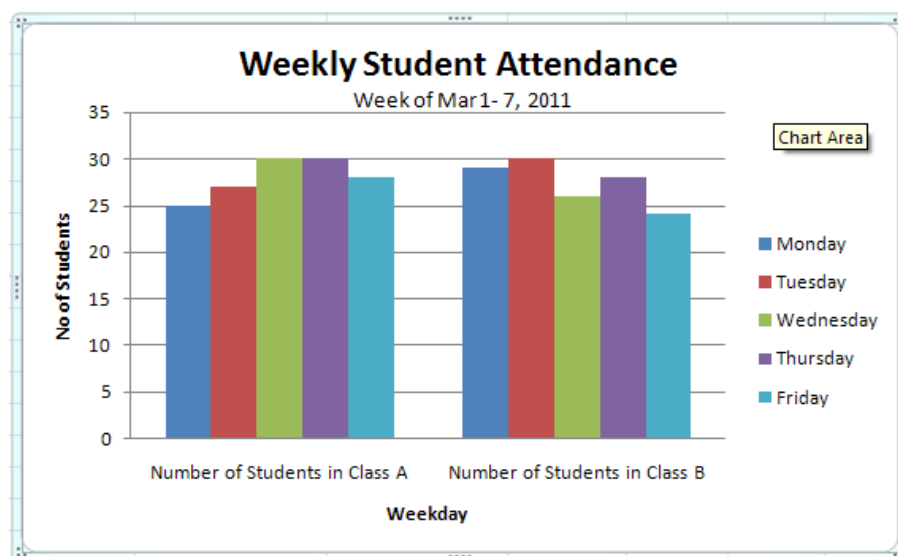
Figure 3.19: 3D Chart after Switch Data has been applied

3.7.2.6 Change Chart Type, Chart Style or Data Range

You can use the Design context tab to change Chart Type, Chart Style or Data Range.

- Select Design Tab.
- Choose the commands as per you requirements:
  - Click on change **Chart Type** from the **Type** group. Select the required type from the dialog box that opens.
  - Click **Select Data** command from the data group. You can make the required changes to the data in the dialog box that opens.
  - You can choose any of the chart styles available in the **Style** group.

3.7.2.7 Move the Chart to a Different Worksheet

- Select the **Design** tab.
- Click the **Move Chart** command. A dialog box appears. The current location of the chart is selected.
- Select the desired location for the chart (the desired location can be an existing worksheet or a New Sheet).

3.8 OTHER USEFUL EXCEL FEATURES

There are many other features in Excel that help us to create professional and error-free documents. Let us learn more about those features.

3.8.1 Conditional Formatting

Conditional formatting allows you to quickly see differences in numbers, patterns and trends at a glance. You can highlight interesting or unusual cell values using different conditional formatting rules. To apply conditional formatting:

- Select the cells you wish to format.
- Select the Home tab and locate the **Styles** group.
- Click the **Conditional Formatting** command. A menu will appear with your formatting options. You can choose from the **predefined rules** or create your **own new rule**.
- Select **one of the options** to apply it to the selected cells. When you choose a predefined rule, a cascading menu will appear. And an additional dialog box may appear, depending on the option you choose. Make the necessary choices, and click OK.

To Remove Conditional Formatting Rules:

- Click the **Conditional Formatting** command.
- Select **Clear Rules**. A cascading menu appears.
- Choose to clear rules from the **entire worksheet** or the **selected cells**.

3.8.2   Freeze Rows and Columns

To freeze row(s) or column(s) mean that those row(s) or column(s) are always visible on the screen and they never scroll. This feature is quite helpful while working with very large worksheets, where we want to see certain rows/ columns all the time (for example labels or headings) to be able to relate and analyze data.

To freeze row or column:
- Select the row below the one you want to freeze and select the column right of one you want to freeze. For example, if you want to freeze row 3, then select row 3 and if you want to freeze column B, then choose column C. If you want to freeze both row and column, then choose the correct cell.
- Click on **View** tab on the Ribbon.
- Click in **Freeze Panes** Command in the **Window** group.
- Select Freeze Panes from the menu.
- A thin black line appears below the frozen row and right of frozen column.

To unfreeze the panes, select **Unfreeze Panes** option from the menu that appears when you click Freeze Panes command in the Window group of the View tab.

3.8.3   Find and Replace

To find data or find and replace data:
- Click the **Find & Select** button on the **Editing** group of the Home tab.
- Choose Find or Replace tab in the dialog box.
- Complete the Find What text box.
- Click on Options for more search options.
- Use the button Replace All, Replace, Find All, Find Next as per the requirements.

3.8.4   Add Comments

Comments are basically notes that can be inserted into any cell in Excel. Comments can be used to explain formulas, cells, and other data in the spreadsheet itself. To add a comment in the Excel worksheet:

- Select the cell where you want to add the comment.
- Click on **Review** tab on the Ribbon.
- Select **New Comment** in the **Comments** group.

                 OR

- Right click the cell to which you want to add a comment.
- Select **Insert Comment** from the menu. The comment box appears near the selected cell, displaying the user name.
- Type your comments in the box.
- When finished, click any other cell.

A **red triangle** appears on the upper right corner of the cell, indicating a comment has been attached. When you place your mouse over the cell, the comment appears.

Figure 3.20 : Comment on the Total Column in Student Marks Worksheet

In our example of Students Marks in Figure 3.18, notice a small triangle on top right corner of Total column indicating there is a comment associated with it.

3.8.5   Protect Worksheet

You can protect your worksheet from being modified or changed by somebody else by using **Cell Lock** and Protect worksheet feature. The **Protect Sheet** option is effective only for the locked cells of the spreadsheet. Inversely, cell locking doesn't take effect until you protect your worksheet. Hence, cell lock and protect worksheet work in compliment with each other.

By default all the cells of the Excel spreadsheet are locked. Hence, it gets very simple to protect all the data in a single worksheet just by applying the Protect sheet option.

Unlocking specific cells permits changes to be made to these cells after the protect sheet option has been applied.

Unlock Cells

Cells in a worksheet are locked by default. We will unlock some of them:

- Click on the **Home** tab.
- Choose the **Format** option in **Cells** group to open the drop down list.
- Click on Lock Cell option at the bottom of the list (under Protection).
  The Lock Cell option works like an ON/OFF button. Since all cells are initially locked in the worksheet, clicking on the option has the affect of **unlocking** the highlighted cells. If you click on Lock Cell option again, it will lock the selected cells.

Protect Worksheet

Once the cells have been locked, we will protect the worksheet:

- Click on the **Home** tab.
- Choose the **Format** option in **Cells** group to open the drop down list.
- Click on **Protect Sheet…** option at the bottom of the list (under Protection) to open the Protect Sheet dialog box.
- Provide the password if you want to. Password does not prevent users from opening and viewing the worksheet. Choose the other options according to your requirements. Click OK.

Now you can access only unlocked cells on the worksheet.

3.8.6   Convert Text to Columns

Sometimes you might need to split data in one cell into two or more cells. For example, when both first and last names in a worksheet are stored in one cell, but they are required separately, then you can do this easily by utilizing the Convert Text to Columns Wizard. Depending on your data, you can split the cell content based on a delimiter, such as a space or a comma, or based on a specific column break location within your data. To use this wizard:

- Highlight the column in which you wish to split the data

- Click the **Text to Columns** button in **Data Tools** group on the **Data** tab

- Click Delimited if you have a comma or tab separating the data, or click fixed widths to set the data separation at a specific size. Click Next.

- In the next screen you either choose the delimiter (for delimited data) or specify the location where to break the data (for fixed width data). Click Next.

- In the next screen, specify data format and the destination columns for the separated data. Click Finish. Data is separated.

3.9   SUMMARY

Spreadsheets enable working with data easy and effective. It has ability to store, manipulate, format, sort, filter, retrieve, organize, represent and analyze data as per your requirements.

You can save any kind of data, in any format in cells of a worksheet. Multiple worksheets in a workbook enable you to store a large amount of data and manage it efficiently. Formulas and Functions allow easy calculation and manipulation of data. Tables facilitate uncomplicated organization and retrieval of data. Charts are visual display of the information. Additionally, there are many formatting and design features in the Excel program to create and print a professional looking workbook.

A Spreadsheet program is useful is any kind of area, since it is associated with data and information which is an important aspect of all of our lives. You can use it for small purposes like maintaining birthday lists, home budgets or for big ones like creating reports, preparing dashboards, for stock management, shipment planning, as analytical tool in large corporate environments. A Spreadsheet program can be used for any data related purpose.

3.10   LAB EXERCISE

1. Using 'Excel Options' do the following customizations:
    a. Set default two worksheets in a workbook. Original number is three.
    b. Disable autorecover for your current workbook.
    c. Set the Recent number of documents to be displayed to two.
    d. Don't display grid lines.
    e. Enable show page breaks.
    f. Set the Enter key direction so that the cursor moves to right when you press enter in a cell.

2. Open a new workbook. Create a table with two columns. Use columns A and B of the worksheet. The headings for first one should be First Name. Give the heading as Last Name for the second column. Add records in the table. Please ensure that you enter all the data in the lower case. For example, you should enter first name as **rahul** and second name as **gandhi**. Your data should contain multiple records with the same first or last name. Save workbook as Student.xlsx

3. Open Student.xlsx. Create another table using column E and F. Again the heading would be First Name and Last Name. Using string functions, change the names to proper case (for example to Rahul or Gandhi) and store in E and F. Original data should remain. Save and Close the worksheet.

4. Open Student.xlsx. Hide Columns A and B. Rename Sheet1 as Student Name. Delete all the worksheets in the workbook except Student Name. Add Borders to the table. Format heading as: Bold, center aligned, increase font size, change the font colour and the fill of the heading. Save and close.

5. Open Student.xlsx. Sort the records in alphabetical order of the first name. Filter all records with last name Agarwal.

   Now use a string function to concatenate the two names (first name and last name) and store in the column D (give heading as Name).

6. Create a new workbook containing Student Marks. Add column headings : Name, English, Hindi, Maths, Science, Social Science, Total Marks, Percentage Marks. Add records to the table. You may copy name from Student.xlsx. Add title to the table. Format the table properly. Use functions to calculate Total Marks and Percentage. Freeze the panes, so that headings don't scroll. Add Headers and Footer to the worksheet. Preview the worksheet. Save as StudentMarks.xlsx and close.

7. Create a table of records with columns **Name** and **Donation Amount**. Donation amount should be formatted with two decimal places. There should be at least twenty records in the table. Create a conditional format to highlight top 3 donations with blue colour and lowest 3 donations with red colour. The table should have a a heading.

8. Use Auto fill feature to fill column B with odd numbers and column C with even numbers. There should be twenty records in each column. Save the workbook as EvenOdd.xlsx

9. Using the workbook EvenOdd.xlsx, create a formula in column D1 to add B1 and C1. Copy the formula from D1 to all other following rows. Also use formula to display the sum of all the values in column B in cell B35. Similarly, for column C in cell C35. Add the label 'Sum' in cell A35. It should be bold and double underlined. Save the workbook.

10. Open workbook EvenOdd.xlsx. Go to Sheet 3. Type the value 1.5 in cell A1. Come back to Sheet1. Create a formula in E1 to multiply the value is D1 with the value in cell A1of Sheet3. Copy the formula to other rows.

11. Create a table of expenses for a house hold. The table will have two column : Expense name and Expense value in percent (it will the total percent spend under this head). Create a Pie Chart for the same data. Examples of Expense heads can be Food, education, utilities, clothing, house rent. The chart should have proper Title, labels and legends.

12. Create a list of names with all the names in column A, stored in the format Last name, First name, for example: Gandhi,Rahul. Use Convert to Text feature to separate the first name and the last name. The original data should not be lost.

3.11 FURTHER READINGS

Excel 3007 All-In-One Desk Reference for Dummies By Greg Harvey.

Teach Yourself Excel 3007 By Moira Stephen.

Microsoft Excel 3007 for Dummies By Greg Harvey.

http://www.gcflearnfree.org/excel3007.