Class 10

Concept of Information Technology-II

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Class X

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Preface

This book covers essential concept of Information Technology. The overall aim of this book is to introduce you to various advance processing tools, cyber crime, e-commerce, application softwares, system softwares, internet and its applications.

The coverage of this book is according to the recently revised syllabus of Board of Secondary Education, Rajasthan. This book comprises of 14 chapters and each chapter has its own significance.

Chapter 1 to 5, these chapters are part of first unit and cover advance processing tools which includes MS Excel, MS PowerPoint and MS Picture Manager.

Chapter 6 to 9, these are based on cyber crime and e-commerce, which includes introduction to cyber crime & cyber law, e-commerce/e-business, e-business security, privacy and legal requirements, e-commerce payment system and these are part of unit second.

Chapter 10, this chapter discusses application and system software which includes proprietary software, open source software, operating system and is part of unit third.

Chapter 11 to 14, these chapters are part of fourth unit and cover internet and its application, computer network, web, electronic mail, virus and antivirus.

Our thanks to all, who supported us directly or indirectly collect the data. Most importantly, our thanks to our family members, because without their support this book was a dream which would not have been turned into reality.

Suggestions for improvement in the book are welcome.

Authors

SYLLABUS

UNIT I: ADVANCE PROCESSING TOOLS

Introduction to MS-Excel, Comparison between MS-Word and MS-Excel, Worksheets and Workbooks: Creating a Workbook, Opening, Labeling, Format Workbook Tabs, Reposition Sheets, Naming, Adding, Deleting, Hiding, Unhiding, Saving Workbooks and Worksheets. Navigating MS Excel, Insert Cells, Rows and Columns, Delete Cells, Rows or Columns, Merge, Splitting, Hiding Columns and Rows, Unhiding Column and Rows, Format, Filter and Sort of Cells, Headers and Footers, Set Margins For Headers and Footers, Information About Printing: Select Print Area, Print a Range of Pages. About Entering Information into Excel: Entering Data, Entering Labels, Entering Values, Multiple Entries, Copying & Pasting of Cells, Rows and Columns. Filling Cells with a Series of Data, Editing Cell Data, Find and Replace, Go To Cell Data, Locking Rows and Columns by Splitting Panes and Freezing Panes, Spell Check, Autocorrect, Track Changes, Accept and Reject Changes, Comments. Formatting A Worksheet: Format Painter, Font Styles, Font Size, Adding Border and Colours to Cell, Changing Rows and Column width, Changing Rows and Column width Using the Mouse, Applying Number Formats, Creating Custom Number Formats, Align Cell Contents, Cell Styles, Creating your own Cell Styles, Conditional Formatting. Adding Elements to A Workbook: Adding Images, Modifying Image, Charts: Types of Charts, Chart Tools, Creating Charts, Modifying Charts, Moving Charts, Organizational Charts, Spark Line, Formulas and Calculations: Definition and Explanation of Formulas and Calculations, Mathematical Operators, Creating a Formulas, Creating Functions, References, Excel Forms, Tables, Creating a Table, Inserting Rows and Columns Into a Table, Data Validation, Finding Invalid Entries and Auditing, Page Margins, Page Orientation, Page Breaks, Sharing Worksheets and Workbooks, Importing and Exporting Data.

MS Power Point: Opening, Opening an Existing Presentation, Saving and Closing a Presentation, Changing Views, Creating a New Presentation, Adding a Slide, Changing a Slide Layout, Entering Text on a Slide, Changing Text Formats, Using The Format Painter, Bullets, Alignments Text, Using Templates, Adding a Picture, Using The Slide Master, Adding Headers, Footers and Speaker Notes, Arranging Slides, Introduction to Drawing Tools, Inserting and Formatting Picture Files, Insert a Table, Chart, Smart Art, Hyperlink, Transition Effects, Animation Effects, Sound Clip, Running a Slide Show, Creating a Custom Show.

MS Picture Manager: Open a Picture, Find the properties of picture, Auto Correct, Brightness and Contrast Enhancement, Color Enhancement, Crop Settings, Rotate and Flip Settings, Resize Settings, Compress Settings.

UNIT II: CYBER CRIME AND E-COMMERCE

Cyber Law, Technical Aspects of Cyber Crime, Computer Viruses, Social Engineering, Phishing, Software Piracy, Intellectual Property, Mail Bombs.

E-Commerce: features, Advantages to Organizations, Advantages to Customers, Advantages to Society, Technical Disadvantages, Non-Technical Disadvantages, E-Commerce Business Models, The six components of a marketing plan for small business, Perform SWOT Analysis, Business Philosophy and Vision, E-Business Security, Security, Types of Security Risks Encountered on an Intranet and Extranet, Firewalls and their Evolution, Types of Firewall,

Common Firewall Filtering Techniques, Cryptography, Digital Signature, Virtual Private Network (VPN), Types of VPN, Measures to Ensure Security, Modes of Electronic Payments, Third-Party Payment Processor, Payment Gateway, Traditional Marketing, Examples of Traditional Advertising, Internet Marketing, Protection of Privacy and Intellectual Property

UNIT III: APPLICATION AND SYSTEM SOFTWARE

Definition of Computer Data, Information, Computer Instruction, Computer Program, Software: Application and System Software, Uses and Examples of Application Software and System Software, Proprietary Software and Open Source Software (OSS), Foundation of the Open Source Software, Comparison Between OSS and Proprietary Software, Reasons for Adoption of Open Source Software, Advantages and Disadvantages of OSS, Operating System: Microsoft Window, Linux, Open Office

UNIT IV: INTERNET AND ITS APPLICATION

Objectives of Computer Network, Components of Computer Network, Advantages and Disadvantages of Computer Network, Application of Networks, Local Area Network, Wide Area Network, Internet, Future of the Internet, Applications of Internet, Different ways to access the Internet, Services on Internet, Communication on Internet, Internet Protocol, HTTP, FTP, SMTP, Telnet, Intranet, WWW (World Wide Web), Websites, Web Browsers, Internet Explorer, The URL address, Surfing the Internet, Chatting on Internet, Conferencing on Internet, E-Mail or Electronic Mail, Types of E-Mail Services, Uses of Mail Services, Basic Issues of Email, Virus, Anti-Virus, Virus Protection Software, Protection of the Computer from Virus, Updating the software, Type of Internet access, Online Services, Internet Services Provider, Hypertext and Hyperlinks, Favorites or Bookmarks, Cookies, Bluetooth, Wi-Fi, DHCP, Proxy Setting, IP address, Subnet Mask, Gateways, DNS

Chapter Index

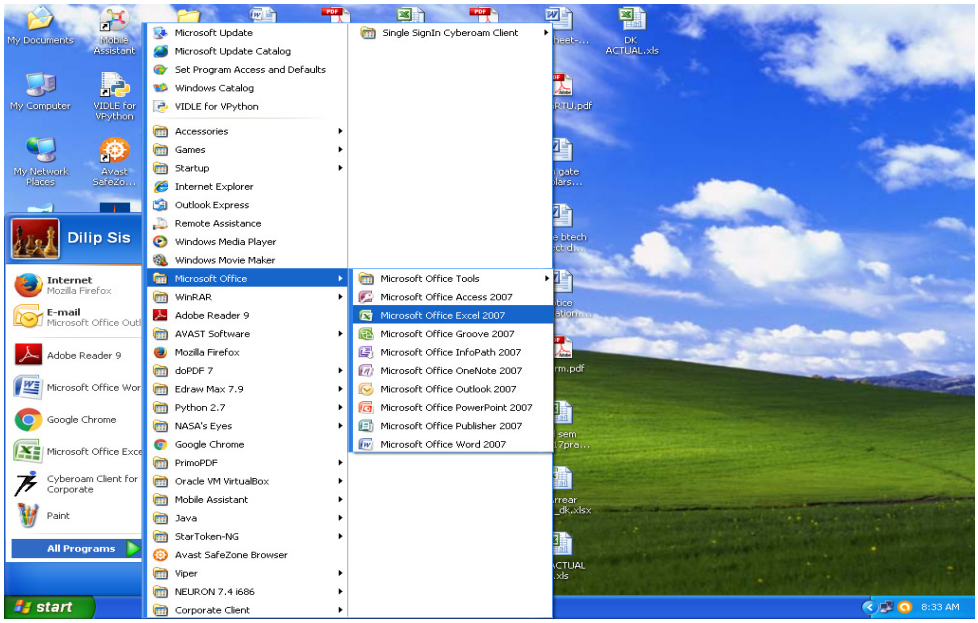
Chapter 1
Introduction to MS Excel

Microsoft (MS) Excel is a spreadsheet application developed by Microsoft. Excel is one of the most widely used spreadsheet application and it is part of Microsoft Office suite. A spreadsheet is basically a matrix of rows and columns. It is useful in entering, analyzing, editing and storing data. Using Excel, you can perform arithmetic operations with numerical data such as addition, subtraction, multiplication and division. Also you can sort numbers and use simple financial, mathematical and statistical formulas. To display numbers graphically, you can use Excel to create a chart. In this book, we are using MS Office suite version 2007 to explain Excel, PowePoint and Picture Manager and all the given figures and examples are accordingly.

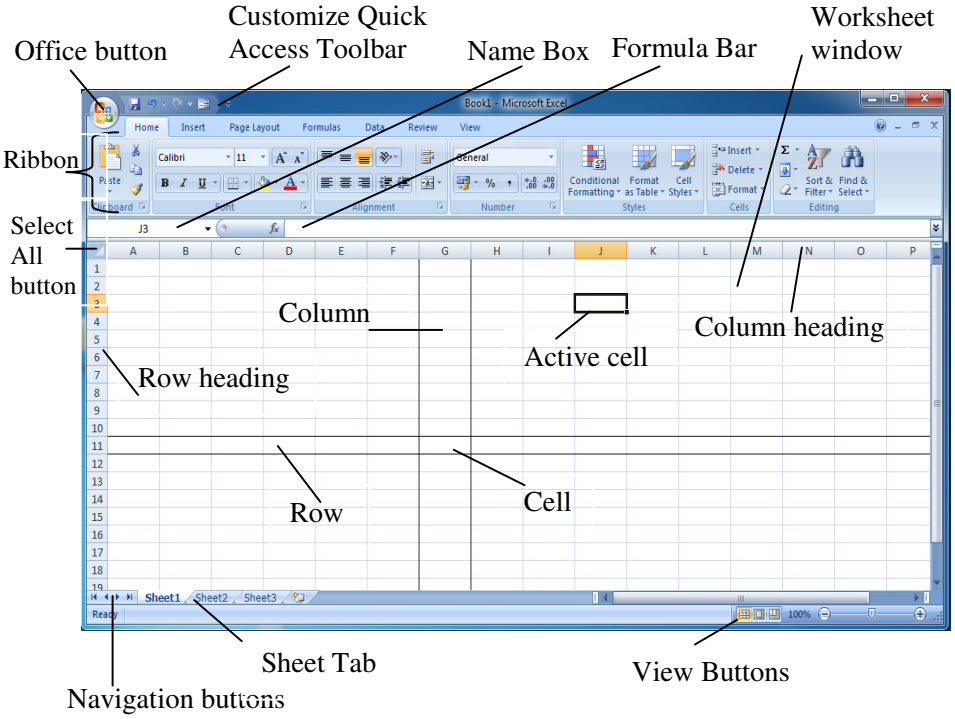
STARTING EXCEL

You start Excel in the same way that you start every application in Microsoft Office Suite like Word, PowerPoint, Access etc. You can start Excel from the start menu as follows:

Step 1: Click on the **Start** button on the task bar at the bottom-left corner of the screen
Step 2: Click on **All Programs** option from the menu
Step 3: Select **Microsoft Office** from the list of programs
Step 4: Click on **Microsoft Office Excel 2007**



This will launch the MS Excel 2007 application and the following excel window will be shown.



1.1 COMPARISON BETWEEN MS-WORD AND MS-EXCEL

Microsoft Excel and Microsoft Word are two application software programs in the Microsoft Office suite. Though they are made to work together, they each have different strengths. Word is first and foremost a word processor, while Excel is primarily for numeric calculations. Excel is a spreadsheet program that is used to record and analyze numerical data. Word, on the other hand, is word processing application that is used to write documents like letters or essays where text formatting is very essential to provide a printable document that can be read very easily.

You can insert tables in a Word document or write whole paragraphs inside a single Excel cell and both applications can create printable documents. Therefore, it is possible to use one to simulate the function of the other to some extent. But each application has strengths that make them well suited to the tasks they perform. The font, paragraph, and page formatting options of Word makes it easy to create documents, which is quite difficult in Excel. Whereas Excel has ability to analyze, compute formulas and conditional statements. This can be as simple as the sum of all the entered data, taking their average, to even more complex equations. You would not find this type of capability within Word.

Table 1: Comparison between MS-Word and MS-Excel

S. No.	**MS-Word**	**MS-Excel**
1	Word processing application	Spreadsheet application
2	Use for writing letters, essays	Use to create tabulated documents
3	Use where text formatting is essential	Use to record and analyze numerical data
4	Excel tables can be inserted inside a Word document	Word document can not be inserted inside a Excel table
5	Have advanced formatting facilities	Does not have advanced formatting facilities
6	Cannot write custom equations and formulas	Can write custom equations and formulas

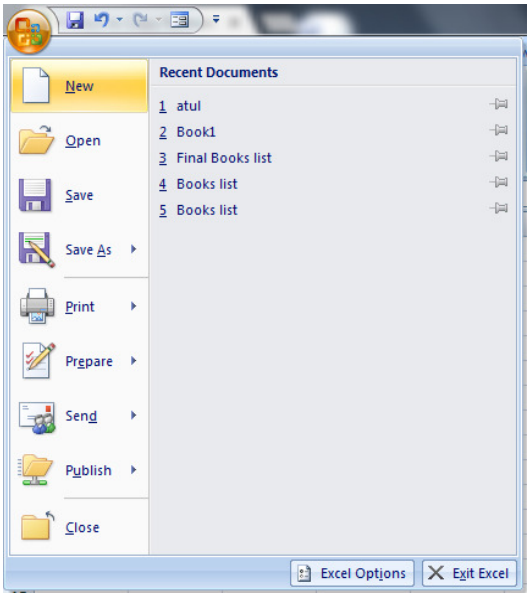
1.2 WORKSHEETS AND WORKBOOKS

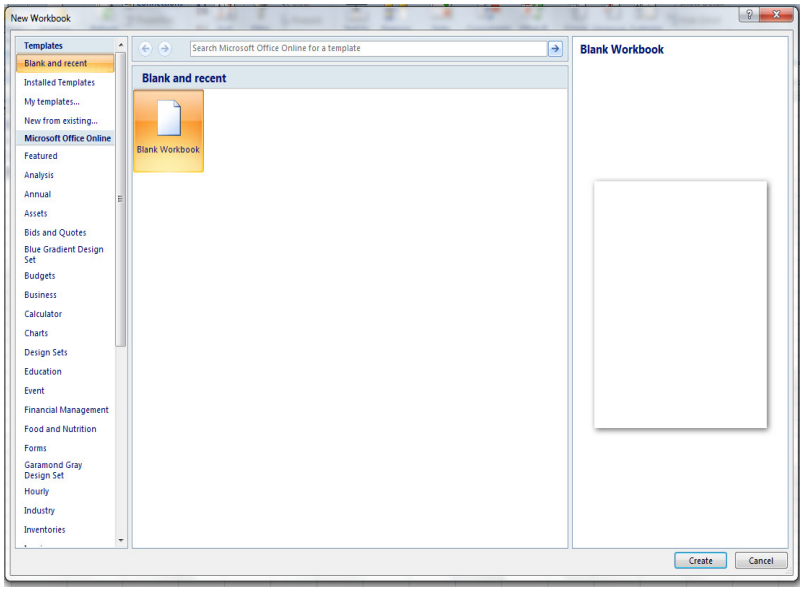
When you start Excel, you will automatically start in a new, blank workbook. An ordinary Excel file is called a “Workbook” that can contain different things such as worksheets, chart sheets and small programs. Each workbook can hold one or more worksheets. An Excel worksheet is a single spreadsheet that contains matrix

of rows (designated by numbers) and columns (designated by letters). The intersection of a row and a column is called a cell. Each cell has a cell address that is the column letter and the row number. Each cell can contain number, text or formula. A cell can also reference another cell in the same worksheet, the same workbook or a different workbook. The worksheets in a workbook are accessible by clicking the worksheet tabs, just above the status bar. By default, Excel provides three worksheets in a workbook with name as Sheet1, Sheet2, and Sheet3. You can insert additional worksheets or delete them as needed. You can also change the number of worksheets that appear by default in a new workbook.

1.3 CREATING A WORKBOOK

If you're working in MS Excel 2007 and want to begin work in a new Excel file, you can create a new workbook using following steps:
Step 1: Click the **Office** button
Step 2: Choose **New**
Step 3: Click the **Blank Workbook** icon
Step 4: Click the **Create** button





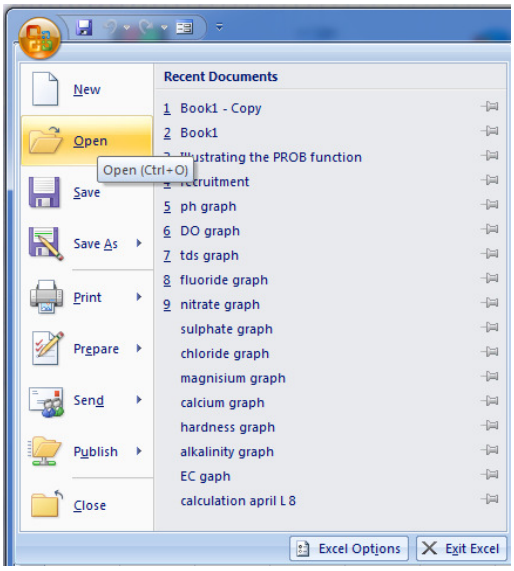
1.4 OPENING

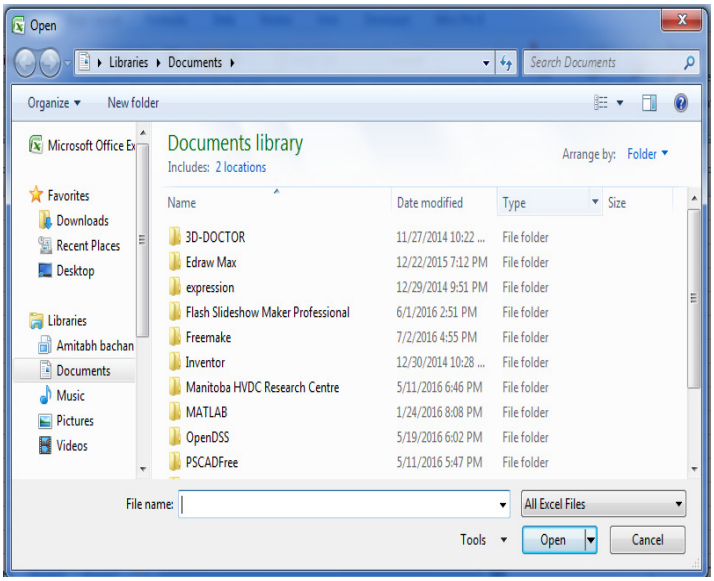
To open an existing workbook, you can use following steps:

Step 1: Click on the **Office** button and then click **Open**

Alternatively, use Open command (Ctrl + O)

Step 2: In the Open dialog box, locate and double-click the workbook file that you want to open





Alternatively you can go to window explorer and find out the file you want to open and double click on it.

1.5 LABELING

The letters and numbers of the columns and rows headings called labels, are displayed in gray boxes across the top and left side of the worksheet. Column headings are labelled with alphabetic characters, beginning with column A. Rows headings are labelled with numbers, beginning with row 1. Generally a workbook is labeled by three worksheets as Sheet1, Sheet2, and Sheet3. You can change the labeling of worksheets using renaming, inserting new sheets, deleting sheets and merging sheets etc.

1.6 FORMAT WORKBOOK TABS

When you open a new workbook, or add new worksheets to an existing workbook, Excel uses a generic name as Sheet1, Sheet2, Sheet3, and so on for each sheet. As you build out a workbook, you'll probably need to rename these sheets to keep things organized. The easiest way to rename a worksheet is to double click its name. This will highlight the text of the name, and you can then type a new name. You can also right click on a worksheet and choose Rename from the pop-up menu. There are a few rules to keep in mind when you rename tabs. Excel worksheet names have to be at least one character long, and can't be longer than 31 characters. Also you can't have two sheets with same name in the

same workbook. Some characters are not allowed in worksheet names, such as question marks, square brackets, asterisks, apostrophes, forward and backward slashes, periods and colons. You can also change the color of a worksheet tab. To change the color, right click and choose tab color from the menu, then choose a color of your choice.

1.7 REPOSITION SHEETS

It's easy to move or copy a whole worksheet to another location in a workbook. The calculations or charts data might become inaccurate during move of worksheet. To reposition the sheet use following steps:

Step 1: Select the worksheets that you want to move or copy

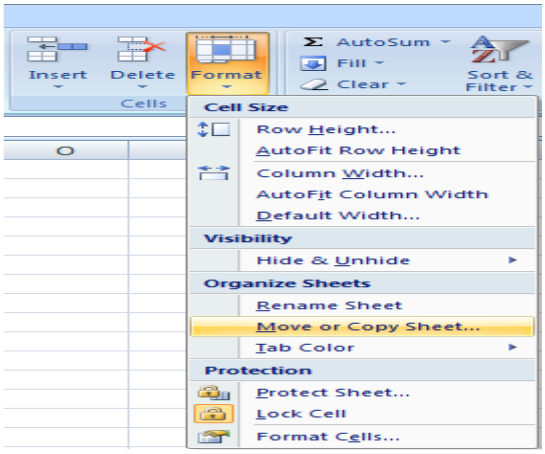
Step 2: On the **Home** tab, in the **Cells** group, click **Format**, and then under **Organize Sheets**, click **Move or Copy Sheet**

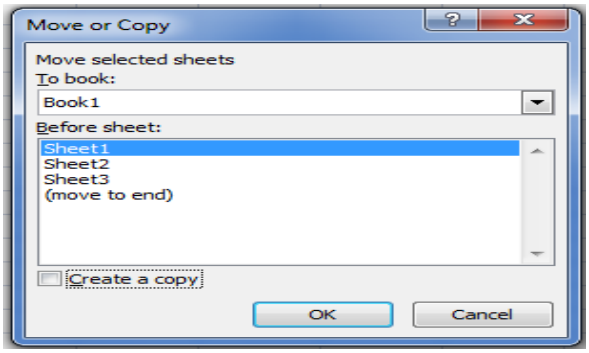
Alternatively, you can right click and select **Move or Copy** from pop-up menu

Step 3: In the **Move or Copy** dialog box, in the **Before sheet list**, do one of the following:

- Click the sheet before which you want to insert the moved or copied sheets
- Click **move to end** to insert the moved or copied sheets after the last sheet in the workbook and before the **Insert Worksheet** tab

Step 4: To copy the sheets instead of moving them, in the **Move or Copy** dialog box, select the **Create a copy** check box

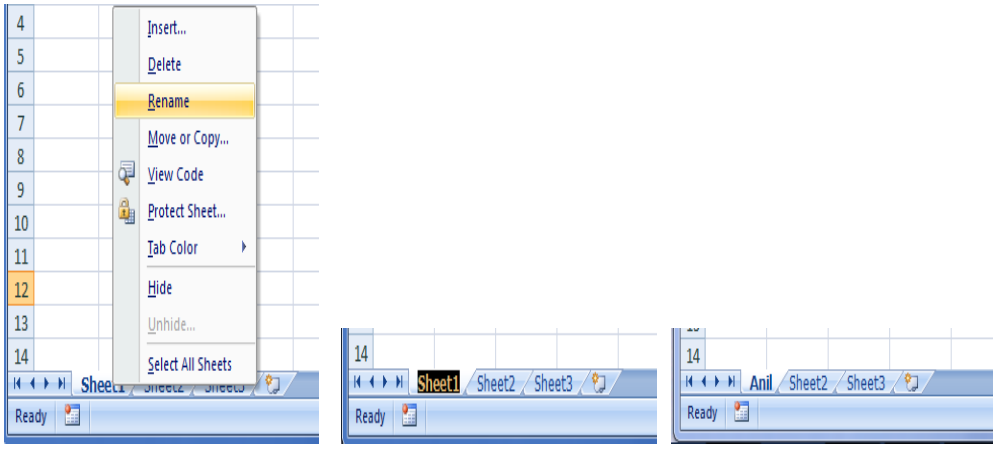




When you create a copy of the worksheet, the worksheet is duplicated in the workbook, and the sheet name indicates that it is a copy. For example, the first copy that you make of Sheet1 is named Sheet1 (2). We can also move or copy worksheets to another workbook. For this, we need to make sure that the target workbook is open in the same instance of MS Excel. All other steps are similar as above except in the **Move or Copy** dialog box, from **To book** list, select the workbook to which you want to move or copy the selected sheets.

1.8 NAMING

To name (or rename) a worksheet use following steps:
Step 1: Right click on the worksheet tab which you want to rename
Step 2: select **Rename** from the pop-up menu
Step 3: Type new name and press ENTER (Anil in our example)

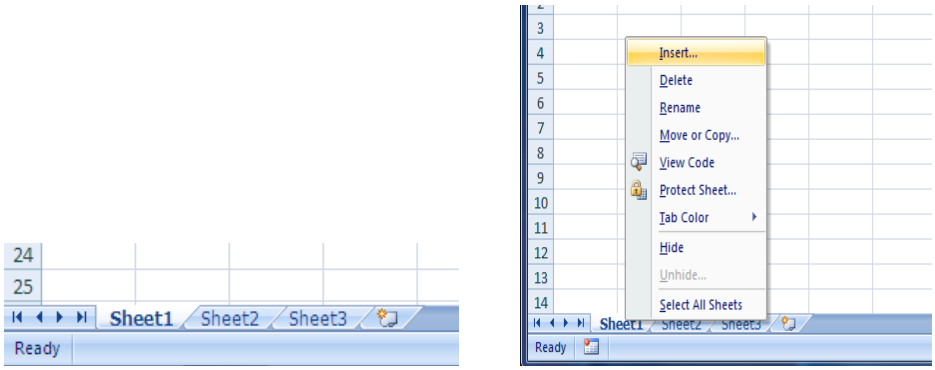


1.9 ADDING

To add a new worksheet at the end of the existing worksheets, click the Insert Worksheet tab at the bottom of the screen. To insert a new worksheet before an existing worksheet use following steps:

Step 1: Right click on the worksheet tab before which you want to add a new worksheet

Step 2: select **Insert** from the pop-up menu



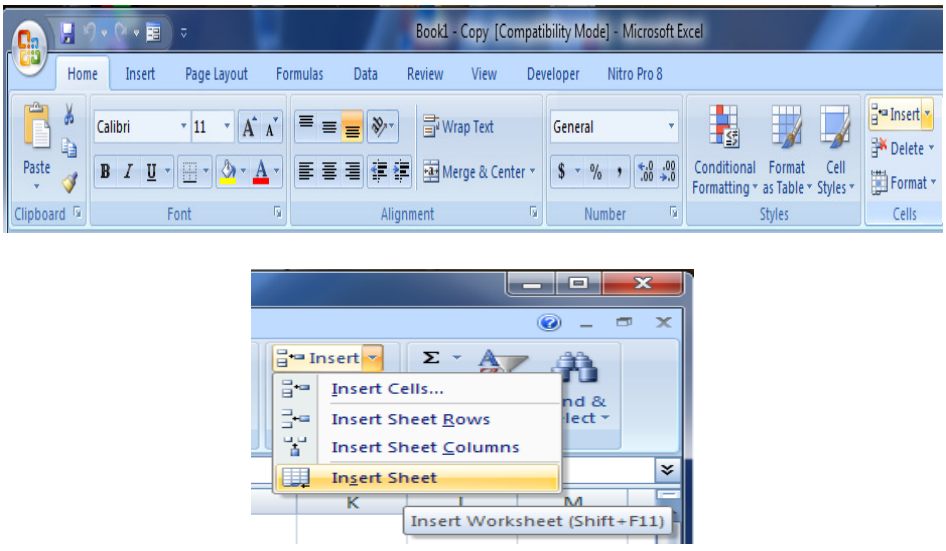
Another way to insert a new worksheet before an existing worksheet:

Step 1: Select the worksheet tab before which you want to add a new worksheet

Step 2: Select **Home** tab

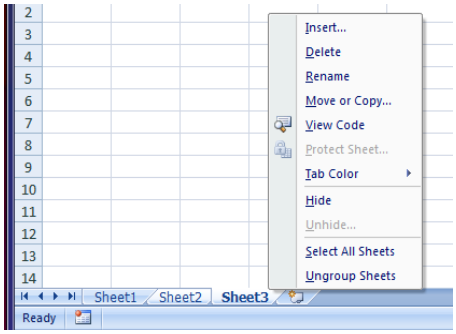
Step 3: Click **Insert** in **Cells** group

Step 4: Click on **Insert Sheet**

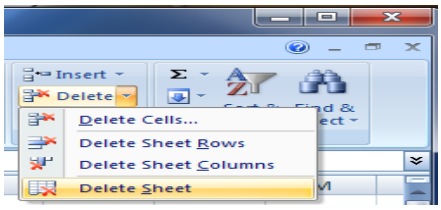


1.10 DELETING

To delete a worksheet, right click on the worksheet tab at the bottom of the screen which you want to delete and select **Delete** from the pop-up menu.

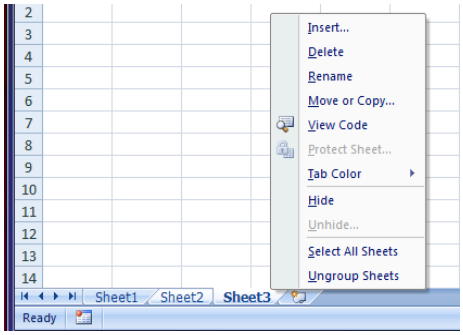


Another way to delete a worksheet:
Step 1: Select the worksheet tab which you want to delete
Step 2: Select **Home** tab
Step 2: Click **Delete** in **Cells** group
Step 3: Click on **Delete Sheet**

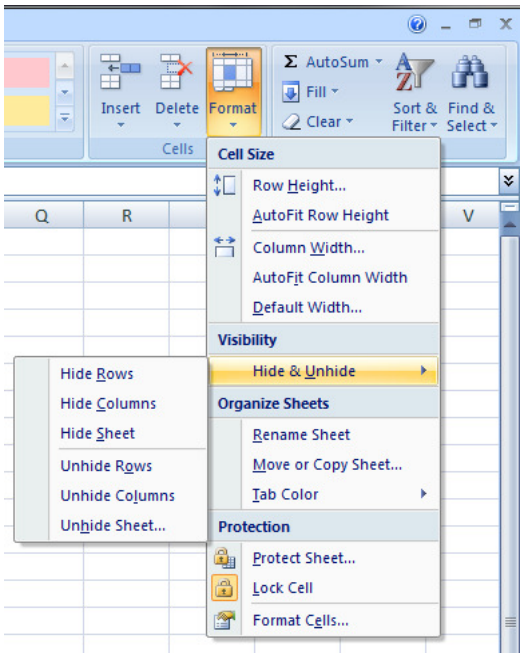


1.11 HIDING

To hide a worksheet, right click on the worksheet tab at the bottom of the screen which you want to hide and select **Hide** from the pop-up menu.



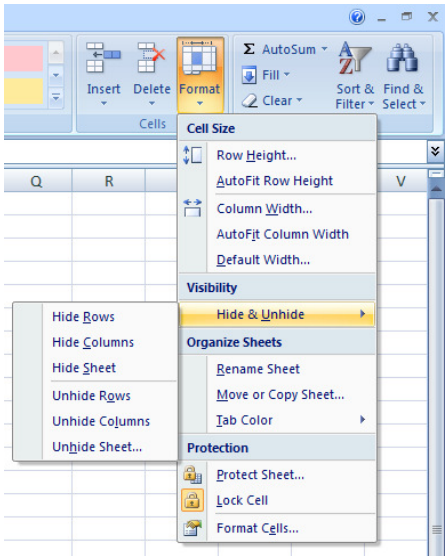
Another way to hide a worksheet:
Step 1: Select the worksheet tab which you want to hide
Step 2: Select **Home** tab
Step 3: Click **Format** in **Cells** group
Step 4: Under **Visibility**, go to **Hide & Unhide** option, and then click **Hide Sheet**

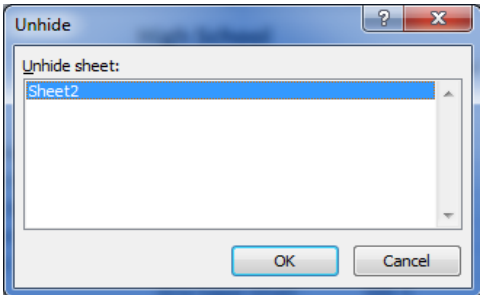


1.12 UNHIDING

To unhide the hidden worksheet, use following steps:
Step 1: Right click on the worksheet tab
Step 2: Select **Unhide** from the pop-up menu
Step 3: Choose the worksheets you want to unhide from the list and click ok

Another way to Unhide a worksheet:
Step 1: Select the worksheet tab
Step 2: Select **Home** tab
Step 3: Click **Format** in **Cells** group
Step 4: Under **Visibility**, go to **Hide & Unhide**, and then click **Unhide Sheet**
Step 5: Choose the worksheets you want to unhide from the list and click ok

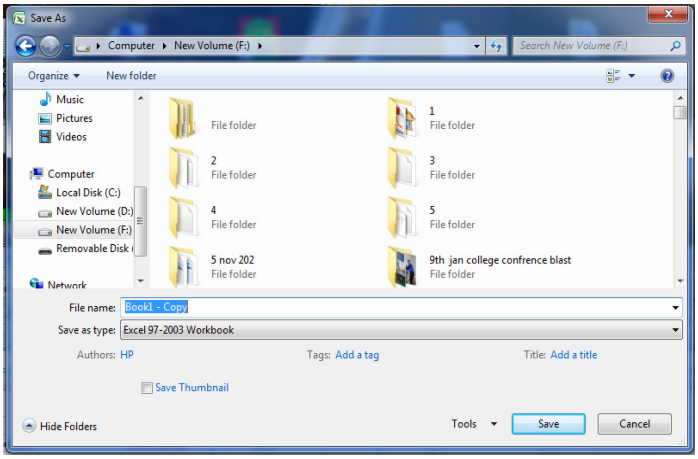




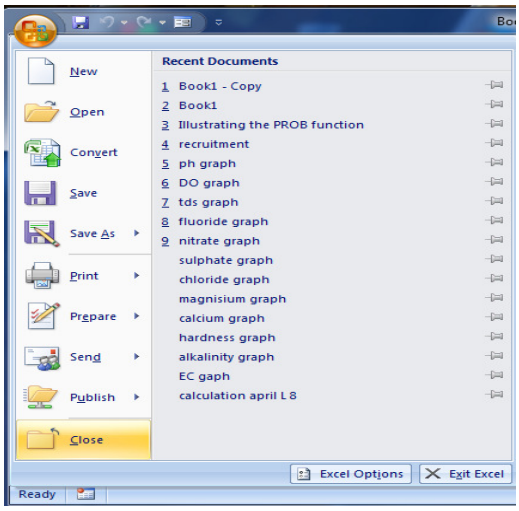
1.13 SAVING WORKBOOKS AND WORKSHEETS

You can save a workbook for the first time by using following steps:
Step 1: Click on the **Office** button and then click **Save**
Step 2: In the Dialog Box select the location where you want to save the file
Step 3: Type the file name
Step 4: Click on **Save**

Alternatively a workbook can be saved by clicking on the **Save** icon at the top left corner or by using command (Ctrl + S).

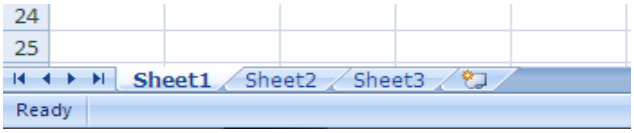


To close a workbook, click on the **Office** button and then click **Close.**



1.14 NAVIGATING MS EXCEL

Navigating around an Excel document with a lot of worksheets can be difficult. Navigation buttons can be use to quickly jump to a different worksheet in the current workbook. In the bottom-left corner of the Excel workbook, you'll see four navigation buttons to the left of the worksheet tabs.



Right-clicking on these buttons will display a list of all the worksheets, identified by name, in the current workbook. Selecting a name in this list will take you to that worksheet. Following are the shortcut keys to navigate the workbook:

- **Ctrl + Page Down**: Move to the next sheet in the workbook
- **Ctrl + Page Up**: Move to the previous sheet in the workbook
- **Ctrl + F6/Tab**: Move to the next workbook window
- **Ctrl + Shift + F6/Tab**: Move to the previous workbook window
- **F6/ Shift + F6**: Move to the next/previous worksheet-pane in a worksheet that has been split

1.15 INSERT CELLS, ROWS AND COLUMNS

Insert blank cells in a worksheet

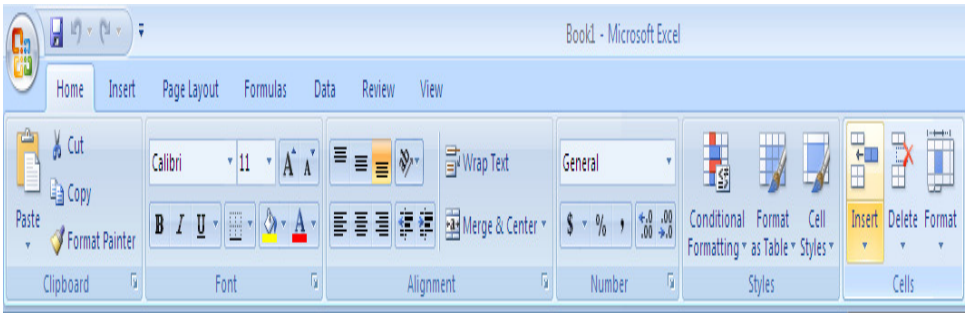
Select the cell where you want to insert the new blank cell and use following steps:

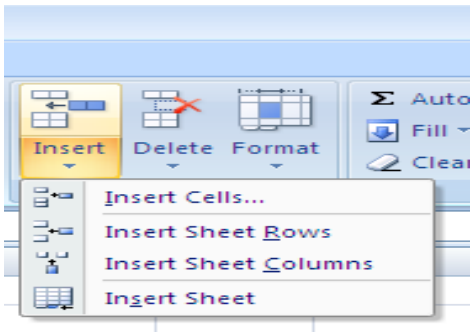
Step 1: On the **Home** tab, in the **Cells** group, click **Insert**

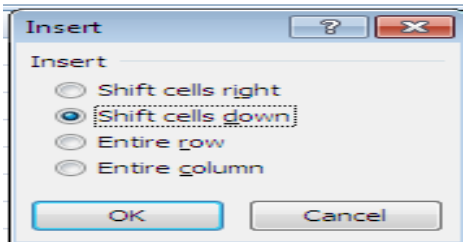
Step 2: Click **Insert Cells**

You can perform the same operation through right-click on the selected cell and then click **Insert**.

Step 3: In the **Insert dialog** box, choose appropriate option







To insert more than one cell, select multiple cells in the worksheet, where you want to insert the new blank cells and follow the same steps. For example, to insert four blank cells, you need to select four cells.

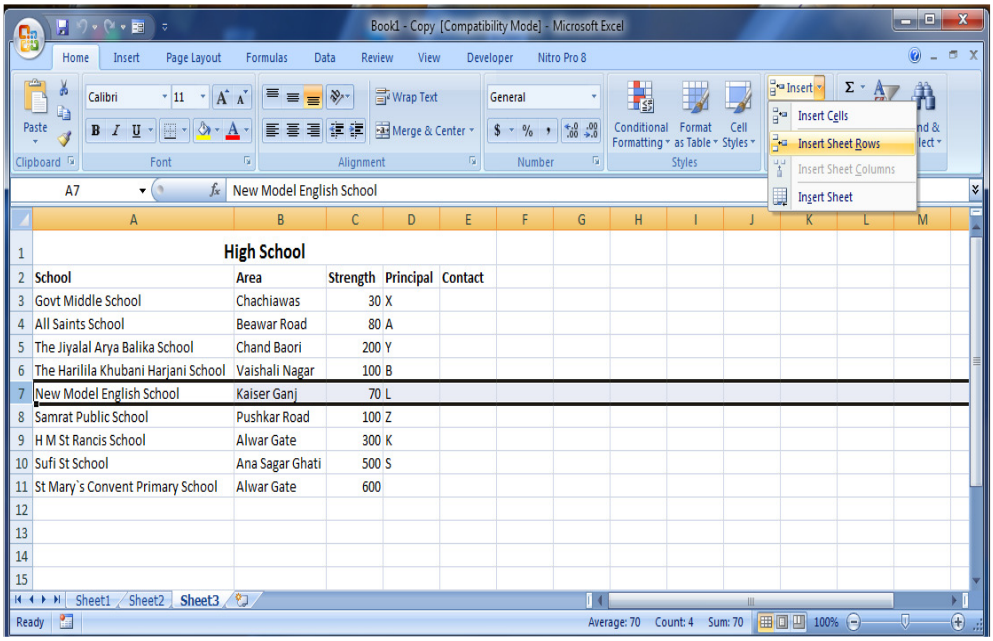
Insert blank Rows in a worksheet

Step 1:

- To insert a single row, select the row or a cell in the row above which you want to insert the new blank row
- To insert more than one row, select the rows above which you want to insert the new blank rows (Inorder to insert nonadjacent rows, hold down Ctrl while you select nonadjacent rows)

Step 2: On the **Home** tab, in the **Cells** group, click **Insert**
Step 3: Click **Insert Sheet Rows**

You can perform the same operation through right-click on the selected row(s) and then click **Insert**.



	A	B	C	D	E
1		High School			
2	School	Area	Strength	Principal	Contact
3	Govt Middle School	Chachiawas	30	X	
4	All Saints School	Beawar Road	80	A	
5	The Jiyalal Arya Balika School	Chand Baori	200	Y	
6	The Harilila Khubani Harjani School	Vaishali Nagar	100	B	
7	New Model English School	Kaiser Ganj	70	L	
8	Samrat Public School	Pushkar Road	100	Z	
9	H M St Rancis School	Alwar Gate	300	K	
10	Sufi St School	Ana Sagar Ghati	500	S	
11	St Mary`s Convent Primary School	Alwar Gate	600		
12					
13					
14					
15					

Insert blank Columns in a worksheet

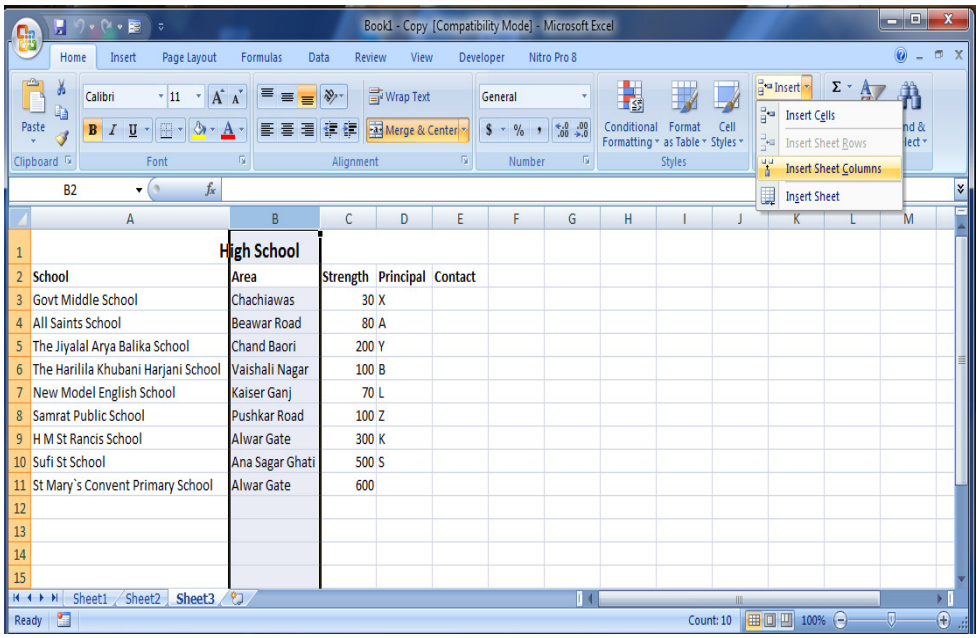
Step 1:

- To insert a single column, select the column or a cell in the column immediately to right of where you want to insert the new blank column

- To insert more than one column, select the columns immediately to right of where you want to insert the new blank columns (Inorder to insert nonadjacent columns, hold down Ctrl while you select nonadjacent columns)

Step 2: On the **Home** tab, in the **Cells** group, click **Insert**
Step 3: Click **Insert Sheet Columns**

You can perform the same operation through right-click on the selected column(s) and then click **Insert**.



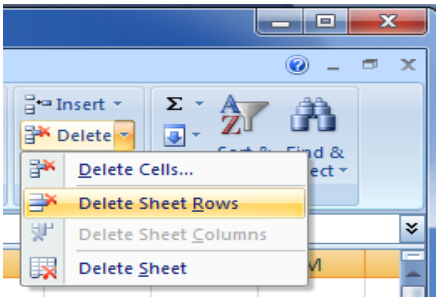
	A	B	C	D	E
1		High School			
2	School	Area	Strength	Principal	Contact
3	Govt Middle School	Chachiawas	30	X	
4	All Saints School	Beawar Road	80	A	
5	The Jiyalal Arya Balika School	Chand Baori	200	Y	
6	The Harilila Khubani Harjani School	Vaishali Nagar	100	B	
7	New Model English School	Kaiser Ganj	70	L	
8	Samrat Public School	Pushkar Road	100	Z	
9	H M St Rancis School	Alwar Gate	300	K	
10	Sufi St School	Ana Sagar Ghati	500	S	
11	St Mary's Convent Primary School	Alwar Gate	600		
12					
13					
14					
15					

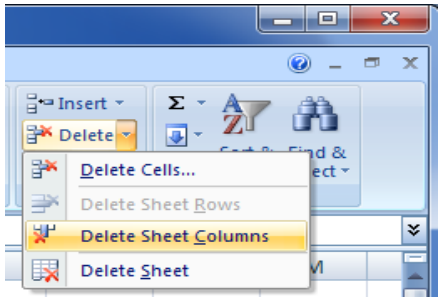
1.16 DELETE CELLS, ROWS OR COLUMNS

Select the cells, rows, columns that you want to delete and use following steps:
Step 1: On the **Home** tab, in the **Cells** group, click **Delete**
Step 2:

- To delete selected cells, click **Delete Cells**
- To delete selected rows, click **Delete Sheet Rows**
- To delete selected columns, click **Delete Sheet Columns**

Step 3: In the **Delete dialog** box, choose appropriate option





You can perform the same operation through right-click on the selected cells, rows, columns and then click **Delete**.

1.17 MERGE

A cell merge converts selected cells into a single cell. This can be useful for creating titles. You can combine or merge text from two or more cells into one cell. Use the following steps to perform merge operation:

Step 1: Select the cells you want to merge

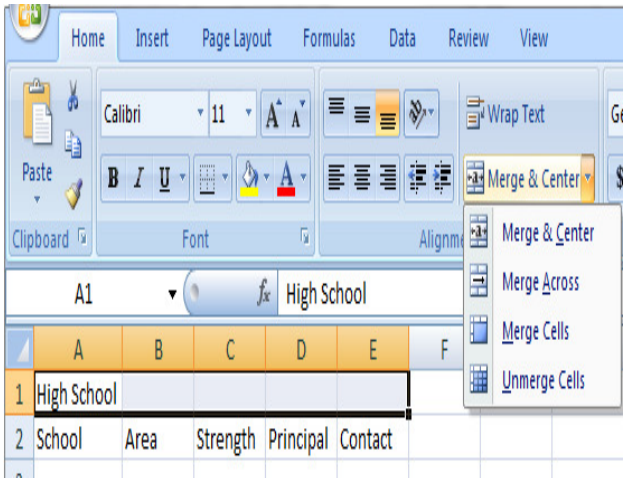
Step 2: Got to **Alignment** group of **Home** tab

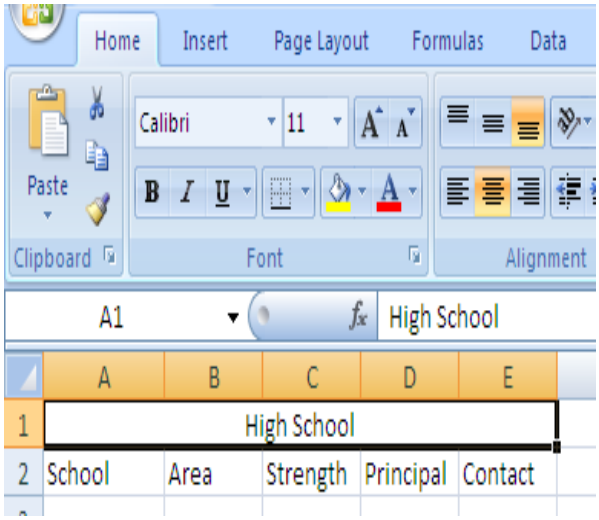
Step 3: Click **Merge & Center**

There are four options:

- Merge & Center
- Merge Across
- Merge Cells
- Unmerge Cells

Step 4: Click appropriate option

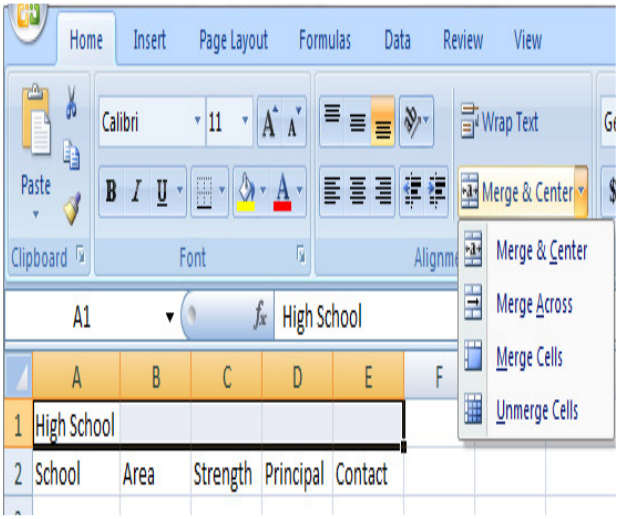


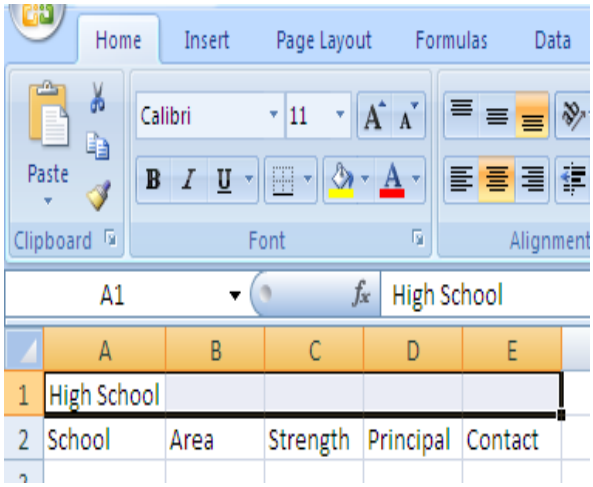


1.18 SPLITTING

After merging cells, you can split a merged cell into separate cells again. You cannot split an unmerged cell. Use the following steps to perform split operation:

Step 1: Select the cells you want to split
Step 2: Got to **Alignment** group of **Home** tab
Step 3: Click **Merge & Center**
Step 4: Click **Unmerge Cells** option





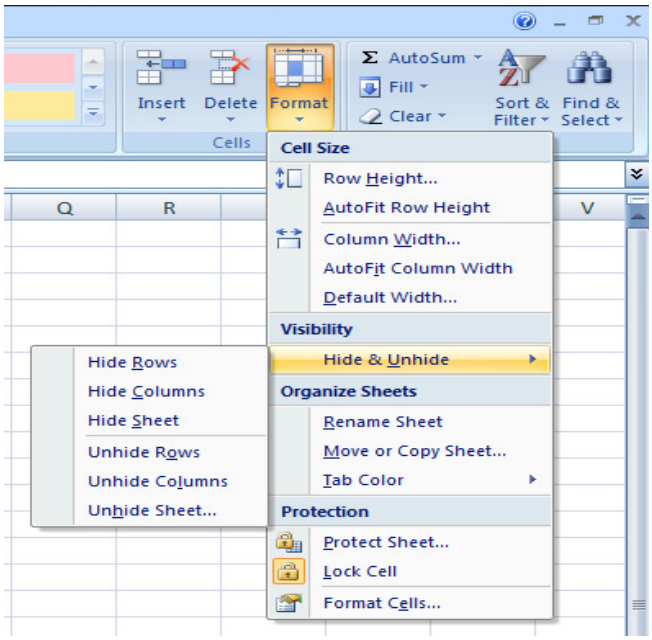
1.19 HIDING COLUMN(S) AND ROW(S)

Hiding column(s) or row(s) will help you to prevent unwanted changes in your workbook. To hide a column/row, use following steps:

Step 1: Select the column/row that you want to hide by clicking on their header

Step 2: On the **Home** tab, in the **Cells** group, click **Format**

Step 3: Under **Visibility**, point to **Hide & Unhide**, and then click **Hide Columns/ Hide Rows**



You can perform the same operation through right-click on the selected column(s)/row(s) header(s) and then click **Hide**.

1.20 UNHIDING COLUMN(S) AND ROW(S)

To unhide the hidden column(s)/row(s), perform following step:

Step 1: Select the columns/rows, adjacent to either side of the column(s)/row(s) that you want to unhide

Step 2: On the **Home** tab, in the **Cells** group, click **Format**

Step 3: Under **Visibility**, point to **Hide & Unhide**, and then click **Unhide Columns/Unhide Rows**

You can perform the same operation through right-click on the selected column(s)/row(s) header(s) and then click **Unhide**.

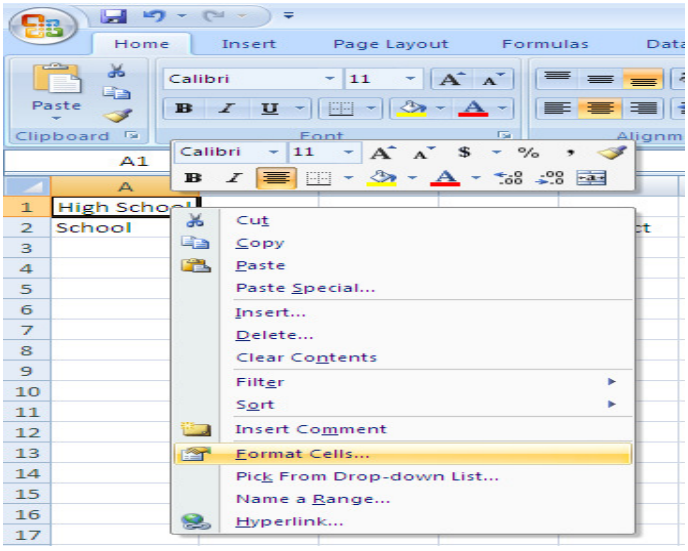
1.21 FORMAT

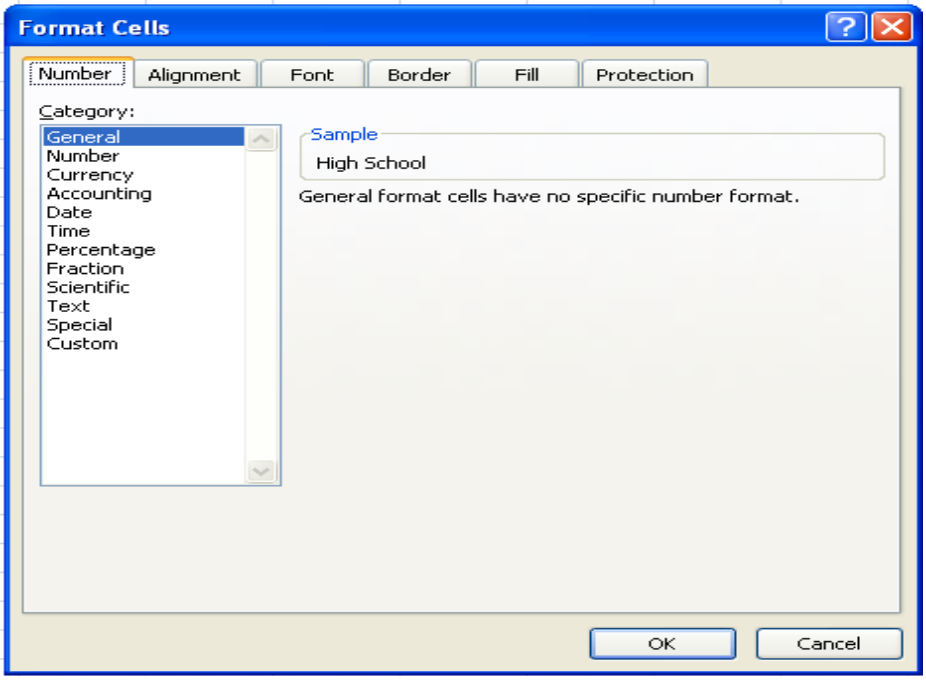
In Excel, every cell can be formatted differently. There are many options available to customize your Excel workbook, which can make the worksheet easier to read. Excel also provides many number formats, allowing you to standardize how numbers will appear in your document. Next chapter describes this topic in detail. To format cells use following steps:

Step 1: Select the cells that you want to format

Step 2: Right-click and then select **Format Cells** from the popup menu

Step 3: Select appropriate option from **Format Cells** and click OK





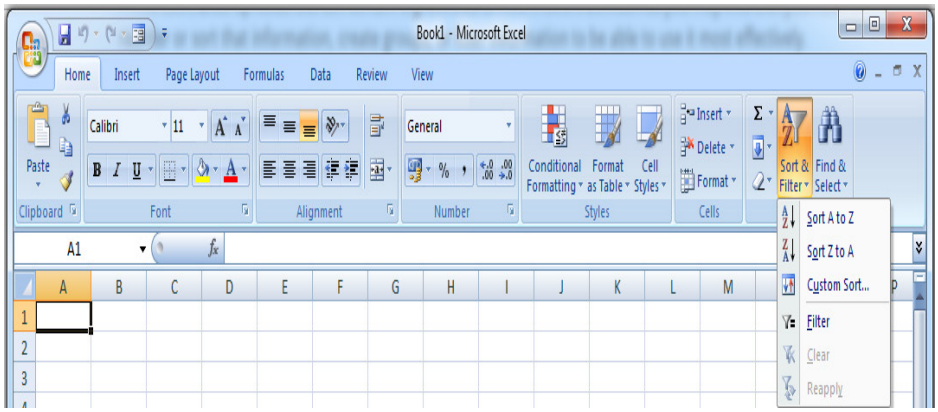
1.22 FILTER AND SORT OF CELLS

Sorting is a common spreadsheet task that allows you to easily reorder your data. The most common type of sorting is alphabetical ordering, which you can do in ascending or descending order. To sort in alphabetical order:

Step 1: Select a cell in the column you want to sort

Step 2: Click the **Sort & Filter** command in the **Editing** group of the **Home** tab

Step 3: Select appropriate option



You filter data to displays only the rows that meet criteria that you specify and hides rows that you do not want displayed. After you filter data, you can copy, find, edit, format, chart, and print the subset of filtered data without rearranging or moving it. You can also filter by more than one column. Filters are additive, which means that each additional filter is based on the current filter and further reduces the subset of data.

1.23 HEADERS AND FOOTERS

Headers and footers can be useful tools for identifying and organizing a document. A header is a section of information that is printed above the body of the document, and a footer is a section of information that is printed below the body of the document. Information in headers and footers is often static throughout a document. For example, you might create a footer that has page numbers, the date and time, and the name of your file. You may choose to add a built-in header or footer to your document, or to create a custom header and footer.

Headers and footers are only displayed in Page Layout view and on the printed pages. They are not displayed on the worksheet in Normal view. You can insert headers or footers in Page Layout view, or you can use Page Setup dialog box, if you want to insert headers or footers for more than one worksheet at the same time.

To Add or change the header or footer text by using Page Layout view, use following steps:

Step 1: Click the worksheet to which you want to add headers or footers, or that contains headers or footers that you want to change

Step 2: On the **Insert** tab, in the **Text** group, click **Header & Footer**, Excel will display the worksheet in **Page Layout** view (You can also click Page Layout View on the status bar to display this view)

Step 3: Do one of the following:

- To add a header or footer, click the left, center, or right header or footer text box at the top or the bottom of the worksheet page
- To change a header or footer, click the header or footer text box at the top or the bottom of the worksheet page respectively, and then select the text that you want to change

Step 4: Type the text that you want

Step 5: To close the headers or footers, click anywhere in the worksheet (To close the headers or footers without keeping the changes that you made, press ESC)

To Add or change the header or footer text by using Page Setup dialog box, use following steps:

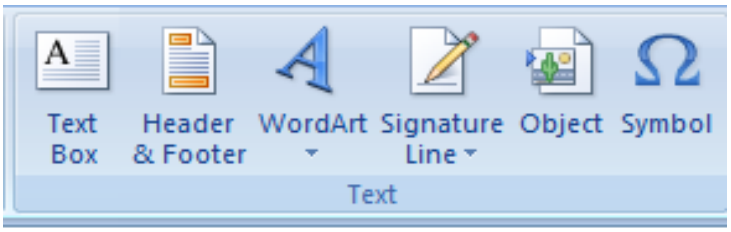
Step 1: Click the worksheet to which you want to add headers or footers, or that contains headers or footers that you want to change

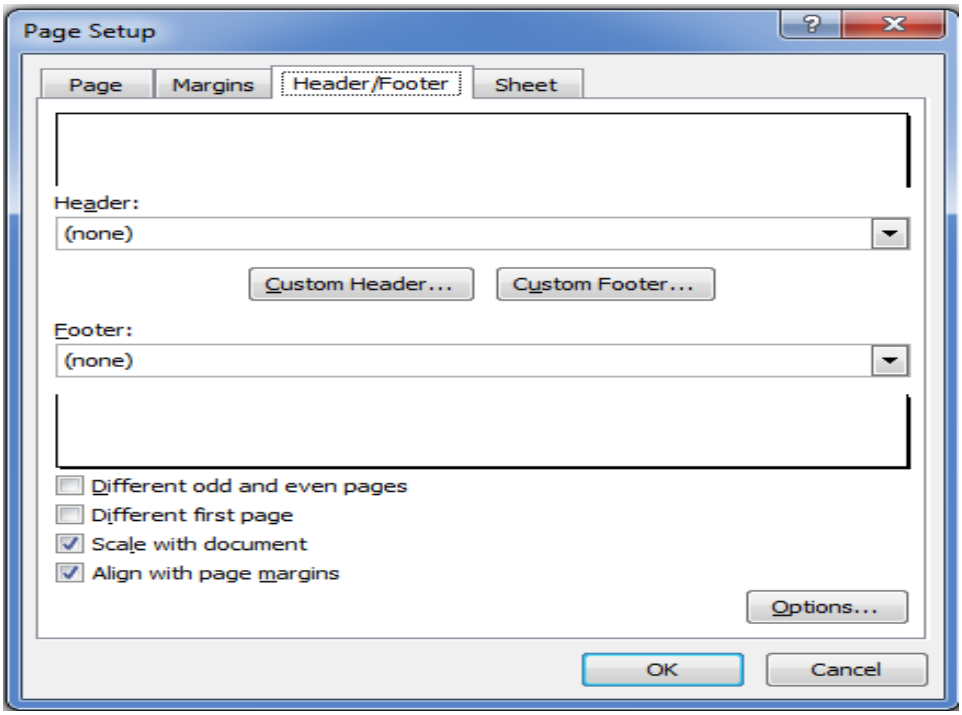
Step 2: On the **Page Layout** tab, in the **Page Setup** group, click the Dialog Box Launcher, next to **Page Setup**, the **Page Setup** dialog box will be displayed

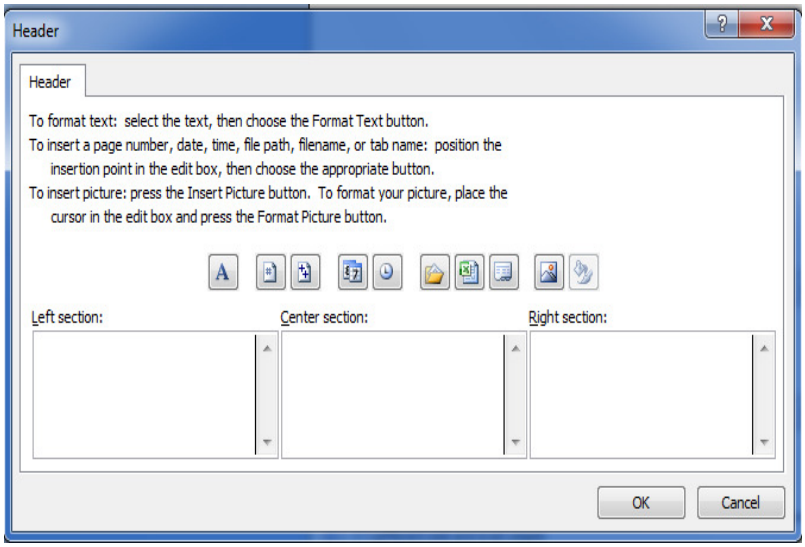
Step 3: On the **Header/Footer** tab, click **Custom Header** or **Custom Footer**

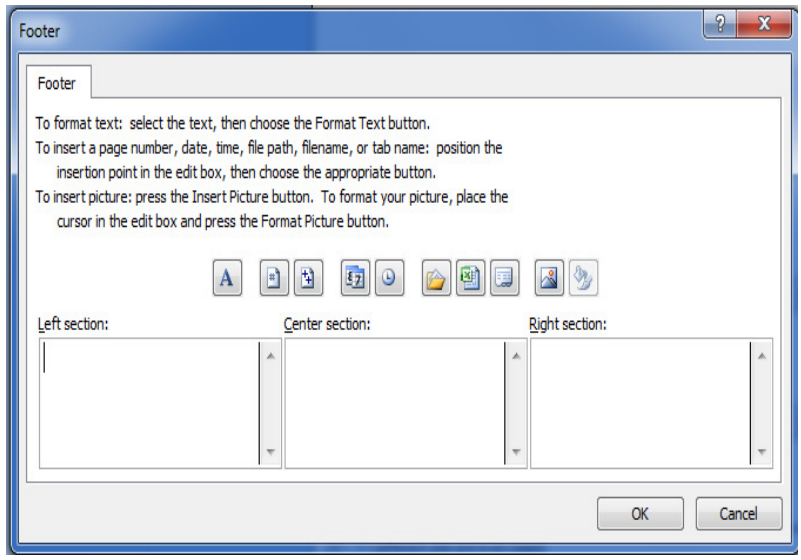
Step 4: Click in the **Left section**, **Center section**, or **Right section** boxes, to insert the header or footer information that you want in that section

Step 5: To add or change the header or footer text, type additional text or edit the existing text in the **Left section, Center section,** or **Right section** boxes









1.24 SET MARGINS FOR HEADERS AND FOOTERS

If there are problems with the display of your header or footer, you can fix them by adjusting the margins. You can adjust the margins in two ways: using the mouse option or the page setup dialog box option.

To adjust margins with the mouse use following steps:

Step 1: From the **Office** Button, select **Print** and then click **Print Preview** (Document will be displayed in Print Preview mode)

Step 2: In the **Preview** group, select **Show Margins** (Margin outline will appear)

Step 3: Using the mouse, click and drag the margin outlines to the desired position

Step 4: Click **Close Print Preview**

To adjust margins with the Page Setup Dialog Box use following steps:

Step 1: From the **Office** Button menu, select **Print** and click **Print Preview** (Document will be displayed in Print Preview mode)

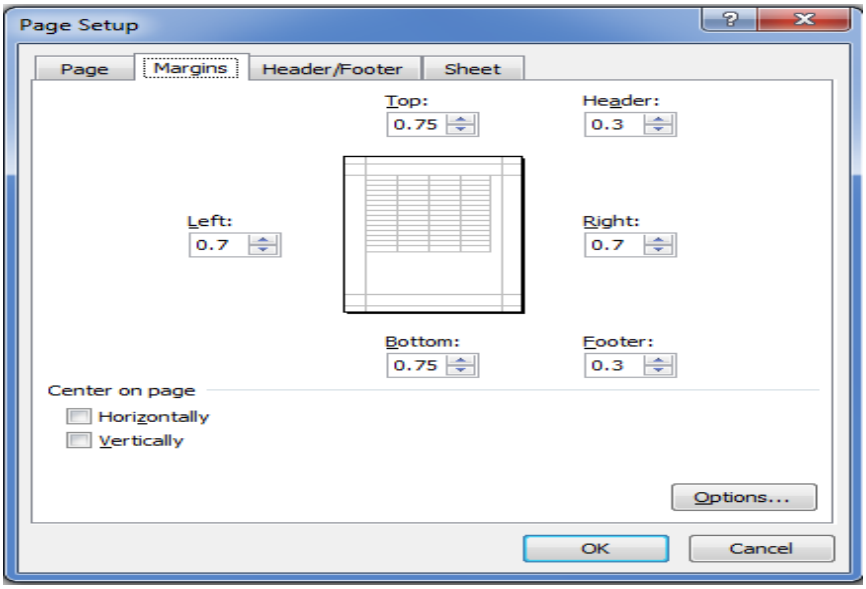
Step 2: In the **Print** group, click **Page Setup** (the **Page Setup** dialog box will be displayed)

Step 3: Select the **Margins** tab

Step 4: In the Top, Left, Right, Bottom, Header, and/or Footer text boxes, type the preferred margin size or use the nudge buttons to adjust the margins

Step 5: Click OK

Step 6: Click **Close Print Preview**



1.25 INFORMATION ABOUT PRINTING

You can print entire or partial worksheets and workbooks, one at a time, or several at once. And if the data that you want to print is in a Microsoft Office Excel table, you can print just the Excel table. You can also print a workbook to a file instead of to a printer. To print a partial or entire worksheet or workbook use following steps:

Step 1: Do one of the following:

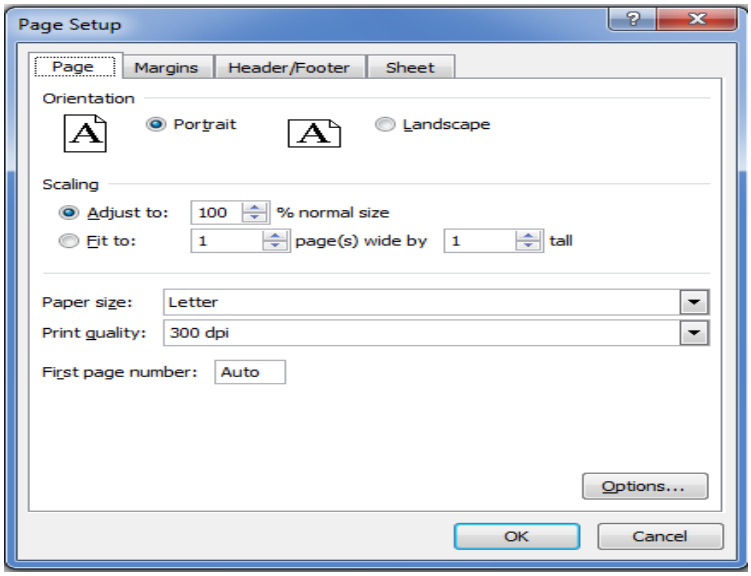
- To print a partial worksheet, click the worksheet, and then select the range of data that you want to print

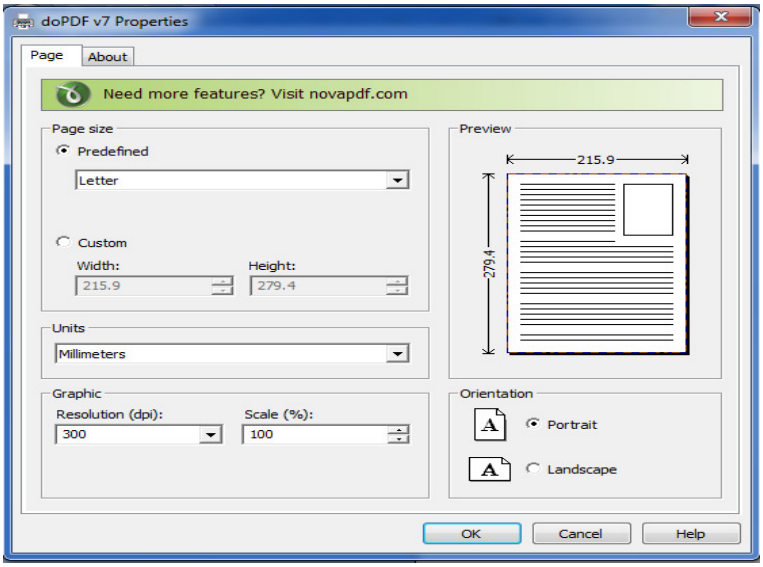
- To print the entire worksheet, click the worksheet to activate it
- To print a workbook, click any of its worksheets

Step 2: Click **Office** button, and then click **Print** (or press Keyboard shortcut Ctrl+P), Print dialog box will be displayed

Step 3: Under **Print what** section, select an option to print the selection, the active sheet or sheets, or the entire workbook

Step 3: Under **Copies** section, you can specify the number of copies to print





1.26 SELECT PRINT AREA

If you print a specific selection on the worksheet frequently, you can define a print area that includes just that selection. When you print the worksheet after defining a print area, only the print area will print. You can add cells to expand the print area as needed, and you can clear the print area to print the entire worksheet again.

To set a print area: select the cells that you want to define as the print area, then on the Page Layout tab, in the Page Setup group, click Print Area, and then click Set Print Area.

To add cells to an existing print area: select the cells that you want to add to the existing print area then on the Page Layout tab, in the Page Setup group, click Print Area, and then click Add to Print Area.

To clear a print area: click anywhere on the worksheet for which you want to clear the print area then on the Page Layout tab, in the Page Setup group, click Clear Print Area.

1.27 PRINT A RANGE OF PAGES

You can print a range of pages, by using appropriate options in Print Range section of Print dialog box. The options available under Print Range section are as follows:

1. **All**: When the All option is selected, all the pages in the current worksheet will print.
2. **Page(s)**:
    - To print a single page, enter its page number in both the From and To text boxes here or select these page numbers with the spinner buttons.
    - To print a range of pages, put the first page number in the From text box and the last page number in the To text box.

1.28 ABOUT ENTERING INFORMATION INTO EXCEL

To enter information in Excel, just select a cell and begin typing. You'll see the text appear both in the cell and in the formula bar above. To tell Excel to accept the information you've typed, press enter. The information will be entered immediately, and the cursor will move down one cell. You can also press the tab key instead of the enter key. If you press tab, the cursor will move one cell to the right once the information has been entered. At any time while you are typing you can press the escape key to cancel. This brings Excel back to the state it was in

before you started typing. When you want to delete information that has already been entered, just select the cells, and press the delete key. The information that you enter can be numbers, text, dates, or times. You can format the information in a variety of ways. And, there are several settings that you can adjust to make information entry easier for you.

1.29 ENTERING DATA

There are three types of data you enter in Excel: text, value (number), or formula. If Excel detects that the data you entry is a formula, it will calculate the formula and display the result in the cell. You can see the formula in the Formula Bar when the cell is active. If it detects that it's not a formula, Excel then decides if it's text or value. Text entries are aligned to the left side of the cell whereas values are aligned to the right. It is very important to know so you can make sure you are entering things correctly, and Excel is recognizing your entries as the correct data type.

1.30 ENTERING LABELS

A label most often refers to a text entry such as a heading used to identify a column of data. To enter label (i.e. text data) in excel, first select the cell in which data has to be entered and then type the text. Press ENTER key to finish your text entry. The text will be displayed in the active cell as well as in the Formula bar. Text entries are simply data that Excel can't classify as a formula or value. If you have numbers to be treated as text use an apostrophe (‘) as the first character. You cannot do calculations with these kind of data entry. You can always check if Excel is classifying your entry as text because text will be aligned to the left side of the cell.

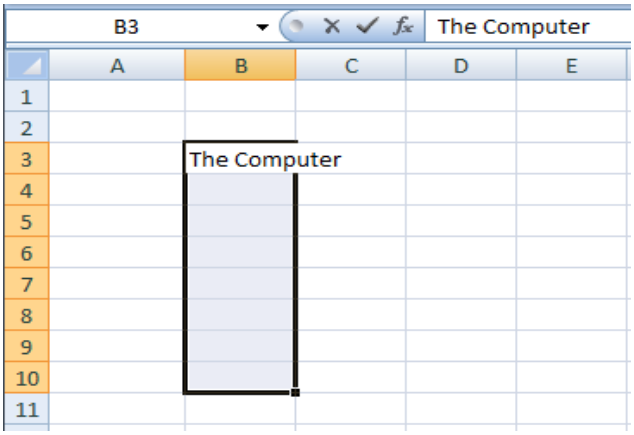
1.31 ENTERING VALUES

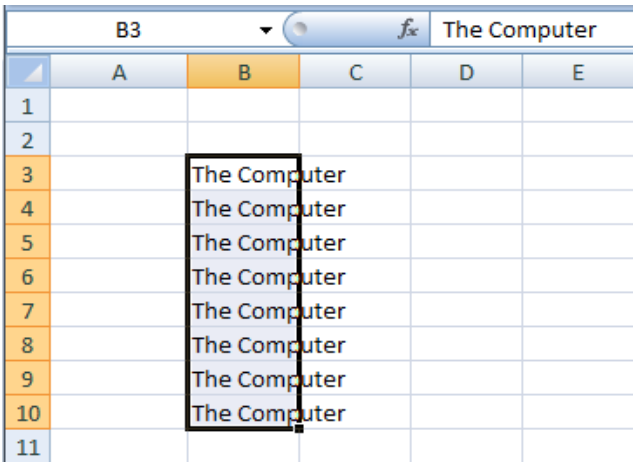
Values are numbers that represent quantities, and can be used in mathematical calculations. To enter value in excel, first select the cell to make it an active cell and then type the value. Values are aligned to the right side of the cell. Values are the building blocks of all formulas that you enter. Your numbers can be from the entire range of numeric values: whole numbers (example, 32), decimals (example, 18.56) and scientific notation (example, 0.146E+3). Excel displays scientific notation automatically if you enter a number that is too long to be viewed in its entirety in a cell. You may also see number signs (# # # # #) when a cell entry is too long. Widening the column that contains the cell with the above signs will allow you to read the number.

1.32 MULTIPLE ENTRIES

In Excel, you can enter the same data or text into multiple cells at once using following simple steps:
Step 1: Select all the cells that you want to have the same text
Step 2: Type the text you want
Step 3: After typing the text, instead of pressing **Enter**, press **Ctrl+Enter**

After completing the above steps, the text will automatically be entered into all selected cells. This technique can be very useful any time you have data that has the same prefix and just need to add something to the end of each cell. For example, the above steps can be use to enter "The Computer" in all the selected cells, as shown in the below figure.





1.33 COPYING & PASTING OF CELLS, ROWS AND COLUMNS

When you move or copy cell(s), rows and columns, Excel moves or copies all data that they contain, including formulas and their resulting values, comments, cell formats, and hidden cells. You can also copy specific contents or attributes from the cells. For example, you can copy the resulting value of a formula without copying the formula itself, or you can copy only the formula. To move or copy selected cell(s), row(s) and column(s), you can use Cut command or Copy command or mouse. Cut command or Copy commands can be used as follows:

Step 1: Select the cell(s), row(s) or column(s) that you want to move or copy

Step 2: On the **Home** tab, in the **Clipboard** group, do one of the following:

- To move them, click **Cut** or use keyboard shortcut Ctrl+X
- To copy them, click **Copy** or keyboard shortcut Ctrl+C

Step 3: Right-click a row or column below or to the right of where you want to move or copy your selection, and then do one of the following:

- When you are moving them, click **Insert Cut Cells**
- When you are copying them, click **Insert Copied Cells**

Using the mouse, you can move or copy cell(s), row(s) and column(s) as follows:

Step 1: Select the cell(s), row(s) or column(s) that you want to move or copy

Step 2: Do one of the following:

- To move them, point to the border of the selection, when the pointer becomes a move pointer, drag the them to another location
- To copy them, hold down Ctrl while you point to the border of the selection, when the pointer becomes a copy pointer, drag the them to another location

To copy specific contents or attributes from the cells, when you paste cells, click the arrow below Paste and choose specific options as follows:

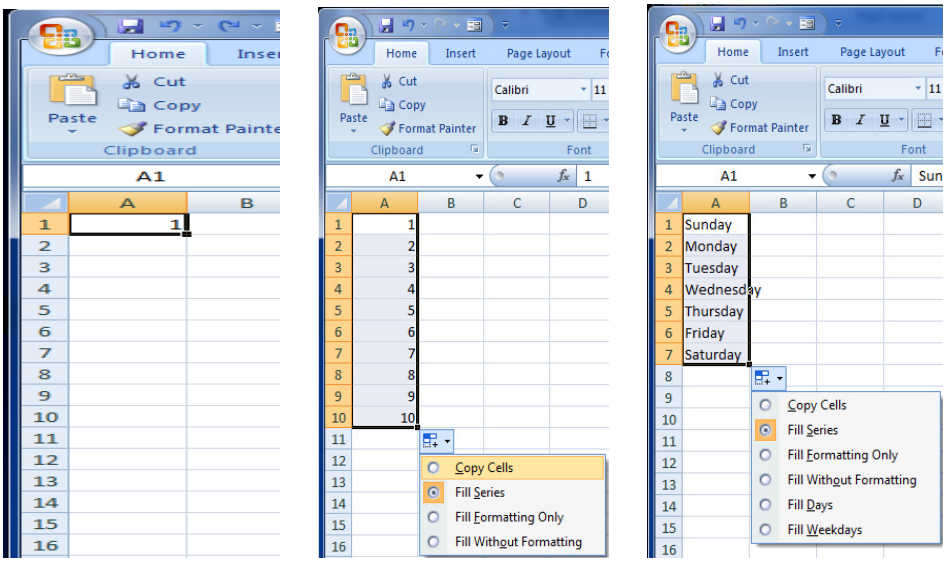
- To paste values only, click **Paste Values**
- To paste cell formats only, click **Paste Special**, and then click **Formats** under **Paste**
- To paste formulas only, click **Formulas**

1.34 FILLING CELLS WITH A SERIES OF DATA

Excel provides many ways to repeat information in many cells throughout a worksheet. The most convenient way to repeat information in contiguous cells is by using the Fill handle. If the first cell contains a formula, the formula will be repeated in the additional cells. If the first cell contains text, the text will be

repeated in the additional cells. Excel autofills dates, months, and other established patterns of non-numerical data. If Excel recognizes a pattern in the information you entered, the additional cells will contain the next item in the pattern. For example, if the first cell contains the day Sunday, Excel will fill the following cells with Monday, Tuesday, etc.

To use the fill handle, you select the cells that you want to use as a basis for filling additional cells, and then drag the fill handle across or down the cells that you want to fill. After you drag the fill handle, the Auto Fill Options button appears so that you can change how the selection is filled. For example, you can choose to fill just cell formats by clicking Fill Formatting Only, or you can choose to fill just the contents of a cell by clicking Fill Without Formatting.



1.35 EDITING CELL DATA

Editing your Excel worksheet data is very easy. You can edit your data by any of the following ways:

- Select the cell containing data to be edited, and Press F2, then Use Backspace key and erase the wrong entry (Retype the correct entry)
- Select the cell and simply retype the correct entry
- If you want only to clear the contents of the cell, select the cell and press **Delete** key
- To bring back the previous entry, either click on **Undo** button on standard Toolbar or use keyboard shortcuts Ctrl+Z

1.36 FIND AND REPLACE

Excel's Find and Replace feature is a very powerful tool that allows you to rapidly change the content of your worksheets. Use Find and Replace to locate and optionally replace text or values in a worksheet. You can narrow the search results by specifying formatting to look for as well as other search options, including Match Case. To find or replace text and numbers on a worksheet use following steps:

Step 1: In a worksheet, click any cell

Step 2: On the **Home** tab, in the **Editing** group, click **Find & Select**

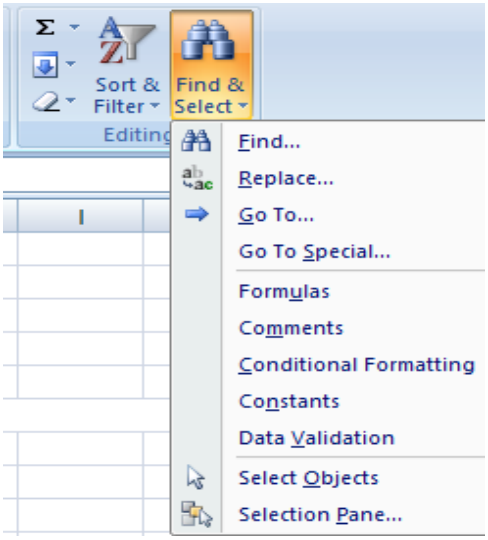
Step 3: Do the following:

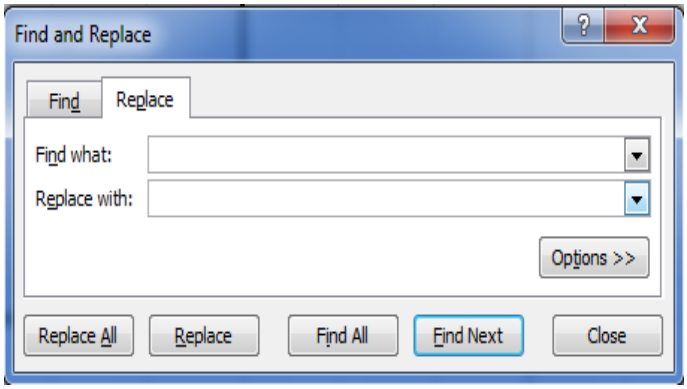
- To find text or numbers, click **Find**
- To find and replace text or numbers, click **Replace**

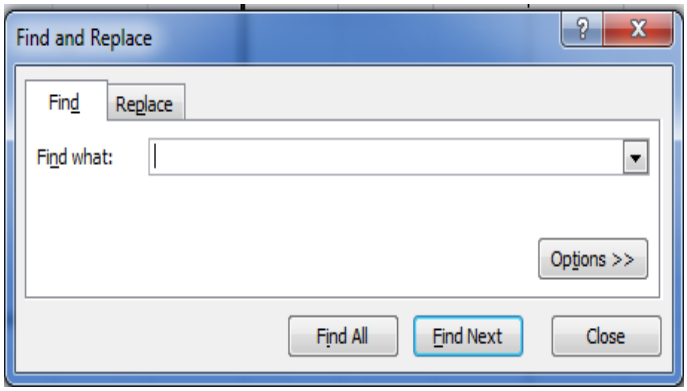
Step 4: In the **Find what** box, type the text or numbers that you want to search for

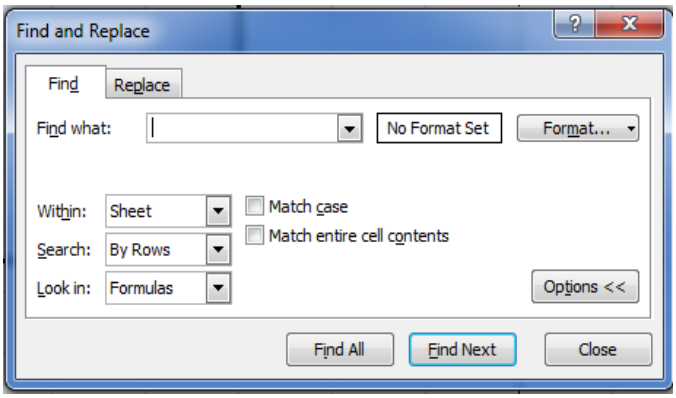
Step 5: Click **Options** to further define your search, and then do any of the following:

- To search for data in a worksheet or in an entire workbook, in the **Within** box, select **Sheet** or **Workbook**
- To search for data in specific rows or columns, in the **Search** box, click **By Rows** or **By Columns**
- To search for data with specific details, in the **Look in** box, click **Formulas**, **Values**, or **Comments**
- To search for case-sensitive data, select the **Match case** check box
- To search for cells that contain just the characters that you typed, in the **Find what** box, select the **Match entire cell contents** check box







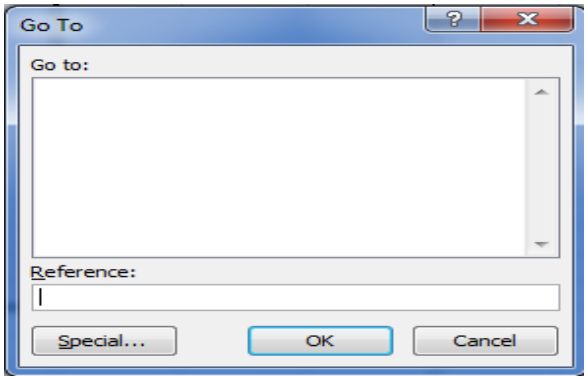


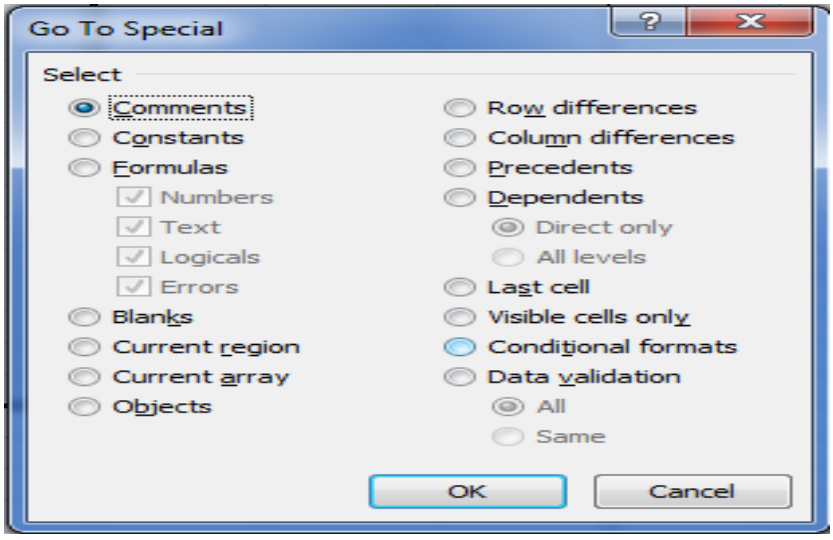
1.37 GO TO CELL DATA

To move to a specific cell of the worksheet, you can use the Go To command. The Go To command is also useful when moving between ranges. You can use F5 to display the Go To dialog box. You can use go to command as follows:

Step 1: In a worksheet, click any cell

Step 2: On the **Home** tab, in the **Editing** group, click **Go To...** or Press F5, (Go To dialog box appears)
Step 3: In the Go to scroll box, select a range name, or In the Reference text box, type a cell location
Step 4: For advanced Go To options, click **SPECIAL**, and select an appropriate option
Step 5: Click ok





1.38 LOCKING ROWS AND COLUMNS BY SPLTTING PANES AND FREEZING PANES

Splitting or freezing panes allow you to hold sections of a worksheet in place so they are visible at all times whilst scrolling through the worksheet. This is especially useful for large worksheets because you can hold the column and row

headings in place whilst you scroll through your data. For example, if the first row in your spreadsheet contains headers, you might freeze that row to make sure that the column headers remain visible as you scroll down in your spreadsheet. To Freeze rows or columns use following steps:

Step 1: Click the label of the row, below the row that should remain frozen at the top of the worksheet

Step 2: Click **Freeze Panes** in the **Window** Group of **View** Tab

Step 3: Do one of the following:

- To lock one row only, click **Freeze Top Row**
- To lock one column only, click **Freeze First Column**
- To lock more than one row or column, or to lock both rows and columns at the same time, click **Freeze Panes** (You will need your cursor to be below the row(s) you want to freeze and to the right of any column(s) you want to freeze)
- To lock multiple rows (starting with row 1), select the row below the last row you want frozen, click **Freeze Panes**
- To lock multiple columns, select the column to the right of the last column you want frozen, click **Freeze Panes**

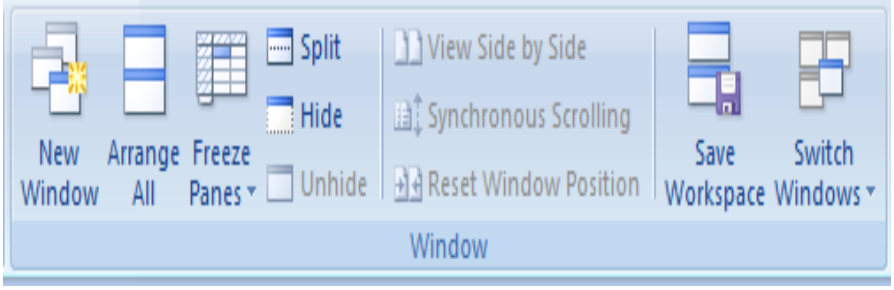
Step 4: To remove the frozen panes, click **Unfreeze Panes**

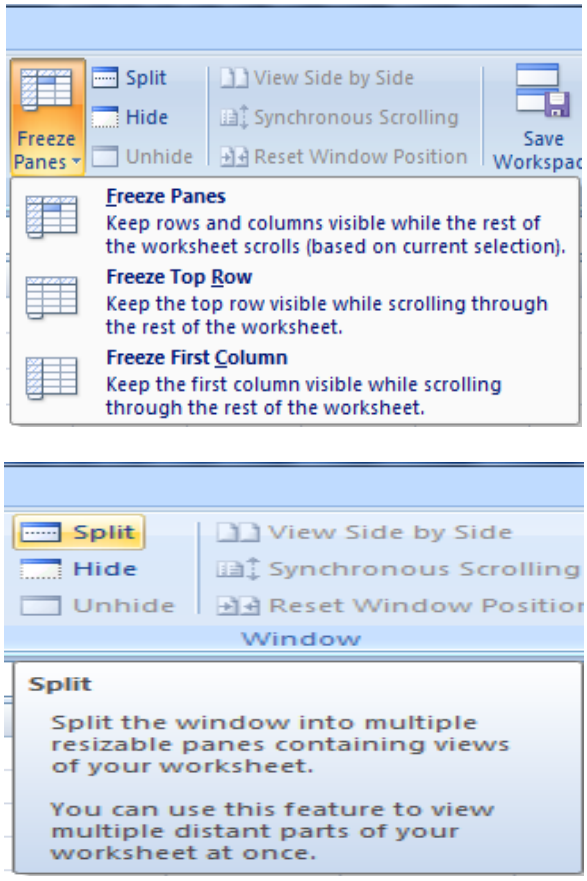
You can also split the worksheet window into separate panes and scroll the worksheet in each pane so that you can easily compare data from two separate worksheet locations. Splitting panes allows you to see multiple areas of a worksheet at once. To split a worksheet into panes use following steps:

Step 1: Select the cell where you want to split the worksheet (worksheet will be split above and to the left of the active cell creating four panes)

Step 2: Click the **Split** button in the **Window** group of **View** tab

The worksheet will split into sections that can be navigated individually without moving the other sections. You can also click and drag the panes to adjust the location of the split. Click the Split button again to remove the split.





1.39 SPELL CHECK

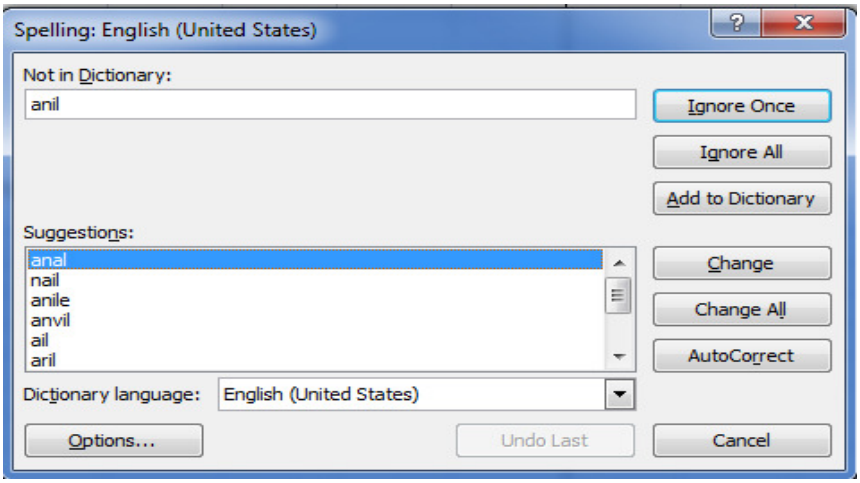
Excel includes a built-in spell checker that can find and get rid of spelling errors and typos in your worksheets. If you have a multiple-sheet workbook, you can select the sheets you want to check before you start the spell checker. Also, you can check the spelling of just a particular group of entries by selecting the cells first. To check the spelling in a worksheet, follow these steps:

Step 1: Click the **Spelling** in the **Proofing** group of **Review** tab (or press F7)
(Excel begins checking the spelling of text entries in the worksheet. When the program comes across an unknown word, it displays the Spelling dialog box. Excel suggests replacements for the unknown word shown in the **Not in Dictionary** text box with a likely replacement in the Suggestions list box. If that replacement is incorrect, you can scroll through the Suggestions list and click the correct replacement)

Step 2: Select one or more of the following dialog box options:

- **Ignore Once** or **Ignore All**: When Excel's spell check comes across a word its dictionary finds suspicious but you know is viable, click the Ignore Once button. If you don't want the spell checker to query you about this word again, click Ignore All
- **Add to Dictionary**: Click this button to add the unknown word to a custom dictionary so that Excel won't flag it again
- **Change**: Click this button to replace the word listed in the **Not in Dictionary** text box with the selected word in the Suggestions list box
- **Change All**: Click this button to change all occurrences of this misspelled word in the worksheet to the selected word in the Suggestions list box
- **AutoCorrect**: Click this button to have Excel automatically correct this spelling error with the selected suggestion in the Suggestions list box (by adding the misspelling and suggestion to the AutoCorrect dialog box)

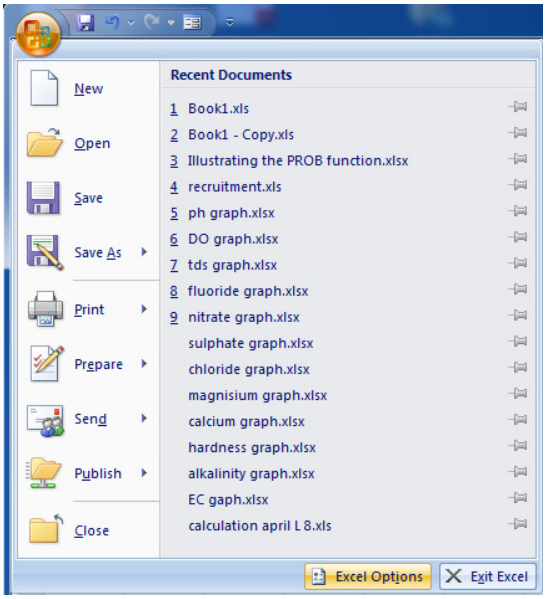
Step 3: Click OK when the spell check is complete



1.40 AUTOCORRECT

You can use the AutoCorrect feature to correct typos, capitalization errors, and misspelled words, as well as automatically insert symbols and other pieces of text. By default, AutoCorrect uses a standard list of typical misspellings and symbols, but you can modify the entries in this list. To modify the entries in this list you can open the AutoCorrect dialog box using following steps:

Step 1: Click **Office** button then click **Excel Options**
Step 2: Click **Proofing** and then click **AutoCorrect Options**
Step 3: Modify entries as required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Recent Documents
1 Book1.xls
2 Book1 - Copy.xls
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4 recruitment.xls
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Excel Options
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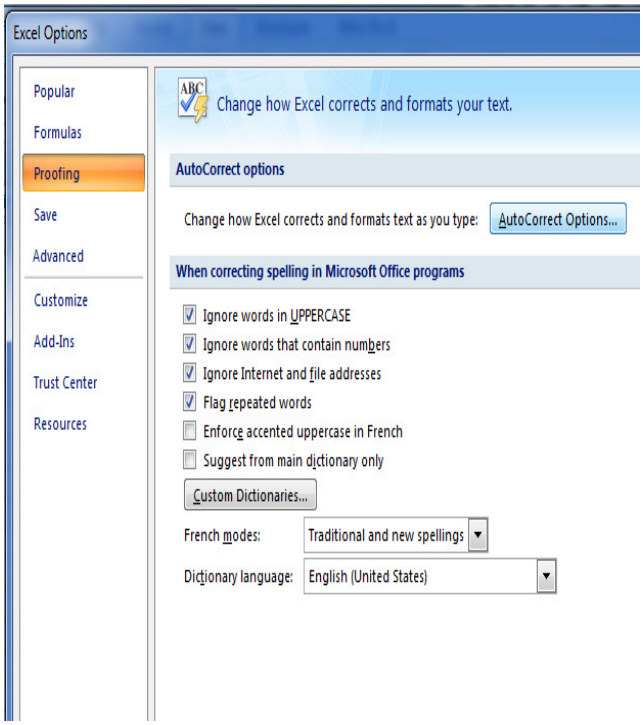
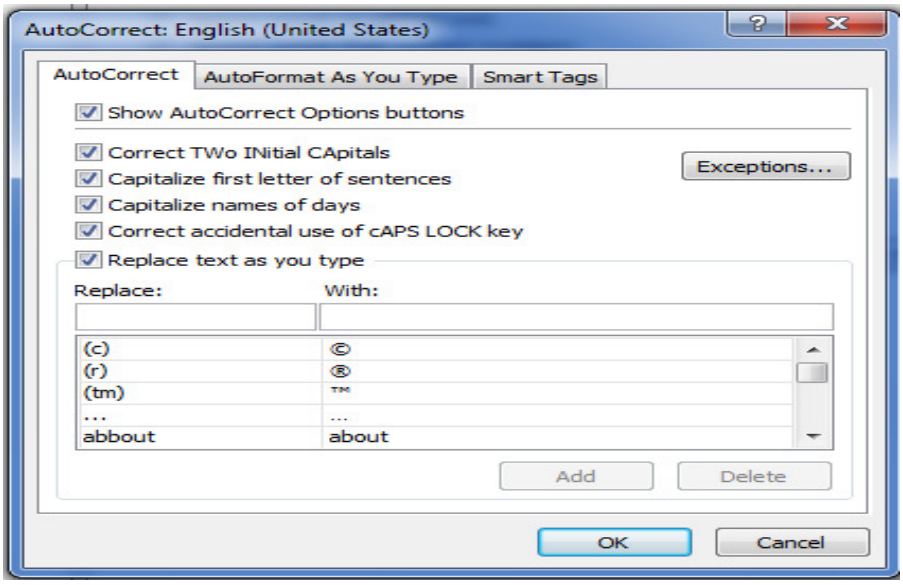

Excel Options
Popular
Formulas
Proofing
Save
Advanced
Customize
Add-Ins
Trust Center
Resources
Change how Excel corrects and formats your text.
AutoCorrect options
Change how Excel corrects and formats text as you type:
AutoCorrect Options...
When correcting spelling in Microsoft Office programs
Ignore words in UPPERCASE
Ignore words that contain numbers
Ignore Internet and file addresses
Flag repeated words
Enforce accented uppercase in French
Suggest from main dictionary only
Custom Dictionaries...
French modes:
Traditional and new spellings
Dictionary language:
English (United States)



1.41 TRACK CHANGES

You can use change tracking to log details about workbook changes every time that you save a workbook. This change history can help you identify any changes that were made to the data in the workbook, and you can then accept or reject those changes. Change tracking is especially useful when several users edit a workbook. It is also useful when you submit a workbook to reviewers for comments, and then want to merge the input that you receive into one copy of that workbook, incorporating the changes and comments that you want to keep.

When you turn on the Track Changes feature, every cell you edit will be highlighted with a unique border and indicator. Selecting a marked cell will show the details of the change. This allows you and other reviewers to see what's been changed before accepting the revisions permanently. To turn on change tracking for a workbook use following steps:

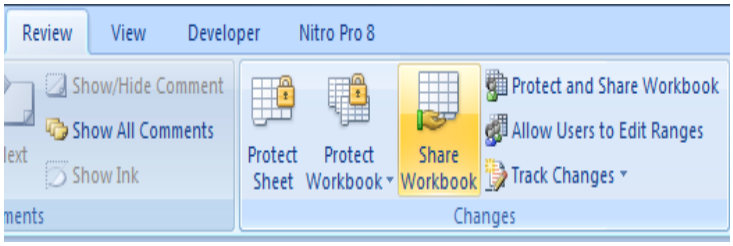
Step 1: Click **Share Workbook**, in the **Review** tab, of the **Changes** group

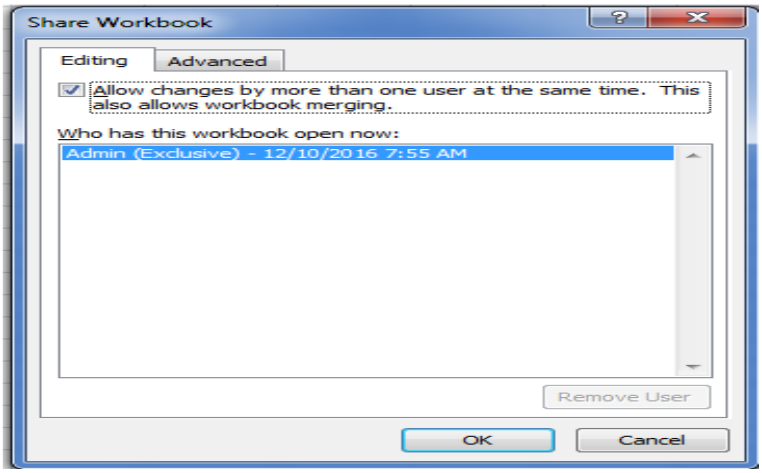
Step 2: On the **Editing** tab, select the **Allow changes by more than one user at the same time** check box

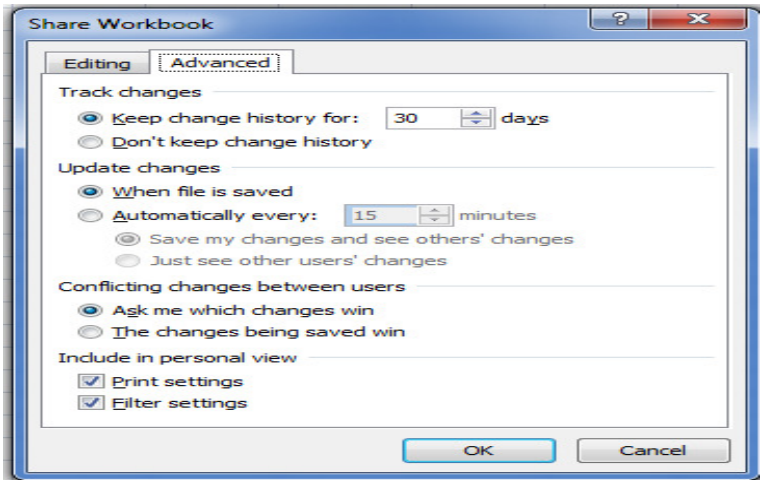
Step 3: Click the **Advanced** tab

Step 4: Under **Track changes**, click **Keep change history for** and, in the **days** box, type the number of days of change history that you want to keep

Step 5: Click Ok and, then to save the workbook, click Ok





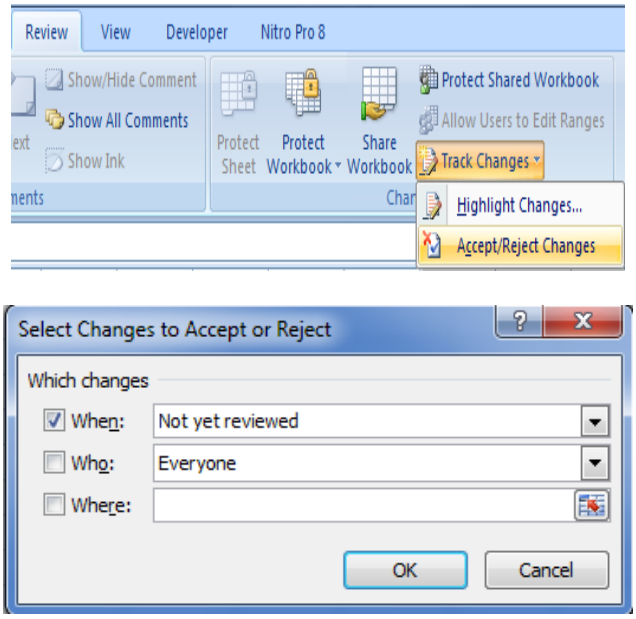


1.42 ACCEPT AND REJECT CHANGES

To accept and reject changes use following steps:

Step 1: On the **Review** tab, in the **Changes** group, click **Track Changes**, and then click **Accept or Reject Changes**

Step 2: If prompted to save the workbook, click Ok
Step 3: In the **Select Changes to Accept or Reject** dialog box, choose appropriate options
Step 4: Click Ok, and then review the information about each change in the **Accept or Reject Changes** dialog box
Step 5: To accept or reject each change, click **Accept** or **Reject**
Step 6: If prompted to select a value for a cell, click the value that you want, and then click **Accept**

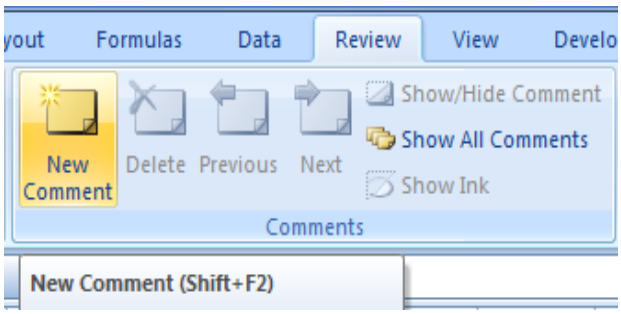


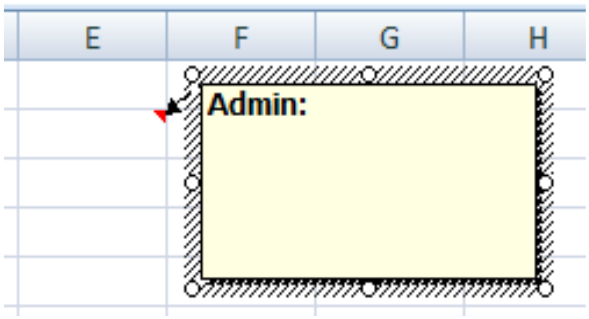
1.43 COMMENTS

Sometimes you may want to add a comment to provide feedback instead of editing the contents of a cell. Using comments can help you make a worksheet easier to understand by providing additional context for the data it contains. For example, you can use a comment as a note that provides information about data in an individual cell. You can also add a comment to a column heading to provide guidance on data that a user should enter. When a cell has a comment, a red indicator appears in the corner of the cell. When you rest the pointer on the cell, the comment appears. To add a comment to a cell use following steps:
Step 1: Select the cell that you want to add a comment to
Step 2: Click **New Comment** in the **Comments** group of the **Review** tab
Step 3: In the body of the comment, type the comment text

Step 4: Click outside the comment box, the comment box disappears, but the comment indicator remains, to keep the comment visible, do the following:

a. Select the cell
b. Click **Show/Hide Comment** in the **Comments** group of the **Review** tab, (you can also right-click the cell that contains the comment, and then click Show/Hide Comments)





IMPORTANT POINTS:

- Excel is a spreadsheet application developed by Microsoft.
- A spreadsheet is basically a matrix of rows and columns.
- Word is first and foremost a word processor, while Excel is primarily for numeric calculations.
- The primary objective of Excel is to perform basic and complex mathematical calculations.
- An Excel file is a workbook that can hold one or more worksheets.
- An Excel worksheet is a single spreadsheet that contains matrix of rows (designated by numbers) and columns (designated by letters).

- Sorting is a common spreadsheet task that allows you to easily reorder your data.
- You filter data to displays only the rows that meet criteria that you specify and hides rows that you do not want displayed.
- A header is a section of information that is printed above the body of the document, and a footer is a section of information that is printed below the body of the document.
- You can print a range of pages, by using appropriate options in Print Range section of Print dialog box.
- There are three types of data you enter in Excel: text, value (number), or formula.
- Excel autofills dates, months, and other established patterns of non-numerical data.
- Excel's Find and Replace feature is a very powerful tool that allows you to rapidly change the content of your worksheets.
- Use Find and Replace to locate and optionally replace text or values in a worksheet.
- To move to a specific cell of the worksheet, you can use the Go To command.
- Splitting or freezing panes allow you to hold sections of a worksheet in place so they are visible at all times whilst scrolling through the worksheet.

Practice Questions

Objective type questions:

Q1. A feature that displays only the data in column(s) according to specified criteria

a. Formula
b. Sorting
c. Filtering
d. Pivot

Q2. The process of arranging the items of a column in some sequence or order is known as:

a. Arranging
b. Autofill
c. Sorting
d. Filtering

Q3. How many sheets are there, by default, when we create a new Excel file?

a. 1
b. 3
c. 5
d. 10

Q4. Which of the following is not true regarding Conditional Formatting?

a. You can add more than one condition to check
b. You can set condition to look for Bold and apply Italics on them
c. You can apply Font, border and pattern formats that meets the specified conditions
d. You can delete any condition from Conditional Formatting dialog box if it is not required

Q5. One cell format can be copied to another cell by using?

a. Format Painter
b. Format Setting
c. Format Showing
d. Format Checking

Q6. Which symbol must all formula begin with?

a. =
b. +
c. (
d. @

Q7. Which key do you press to check spelling?

a. F3
b. F5
c. F7
d. F9

Very short answer type questions:

Q1. Does MS word have advanced formatting facilities?
Q2. By default, Excel provides how many worksheets in a workbook?
Q3. Which command is use to save the workbook?
Q4. Navigation buttons are presented in the …… corner of the Excel workbook.
Q5. Headers and footers are only displayed in ……. view and on the printed pages.

Q6. In excel, text entries and values are aligned to which side of the cell?
Q7. Which command is use to display the Go To dialog box
Q8. Which button is use to check the spelling of text entries in the worksheet?
Q9. Why do you hide rows/columns in Excel?

Short answer type questions:

Q1. What is Microsoft Excel?
Q2. Compare MS Word with MS Excel.
Q3. Define worksheet and workbooks.
Q4. What do you mean by labeling in Excel?
Q5. How you can add a new sheet in Excel?
Q6. What are the Navigation keys in MS Excel?
Q7. Discuss merge and split in Excel.
Q8. Explain the steps for creating Header and Footer in Excel.
Q9. What do you mean by sorting? Write down steps for sorting in Excel.
Q10. What is the benefit of using formula in Excel?
Q11. Write short note on Header and Footer.
Q12. What is 'Go to' command?

Essay type questions:

Q1. Explain information entering into Excel in detail.
Q2. What is track changes? Write down steps to turn on change tracking for a workbook.
Q3. What is the use of Find and Replace feature? Explain steps to perform Find and Replace operation?
Q4. Explain steps to insert cells, rows and columns in worksheet.
Q5. How you can set margins for headers and footers?
Q6. Explain filter and sort operation in details.
Q7. What is the difference between function and formula in Excel?
Q8. Explain locking rows and columns by splting panes and freezing panes.

Answers key for objective questions

Q1: c
Q2: c
Q3: b
Q4: b
Q5: a
Q6: a
Q7: c

Chapter 2
Formatting A Worksheet

There are many types of formatting that can be applied to MS excel sheet. Excel makes available numerous formatting options to create professional looking worksheets that display your data effectively. You can use number formats to display numbers in a certain way, for example, as dates, or as scientific format numbers. You can use cell formats to change the size of cells and to add colours and borders. You can use font formats to change the typeface and style of the characters in your worksheet.
There are three locations where the Excel 2007 formatting tools are available:

1) In the home tab
2) In the format cells dialog box
3) In the mini toolbar that appears when you right click a range or a cell

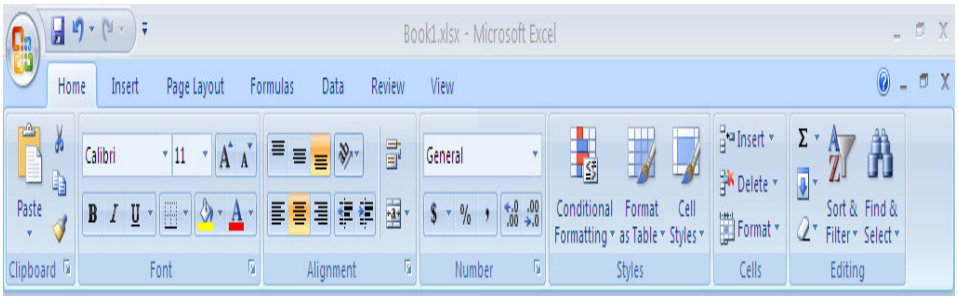
1) Home tab

Home tab provides the quick access to the most commonly used options with respect to the formatting requirements. The most commonly used formatting options show up on the Home tab in three groups:

1) The Font Group: The font group commands change the appearance of text within a cell or of the cell itself.
2) The Alignment Group: The alignment group commands change the position of text within a cell or cells.
3) The Number Group: The number group commands change the format of numbers and dates within a cell.

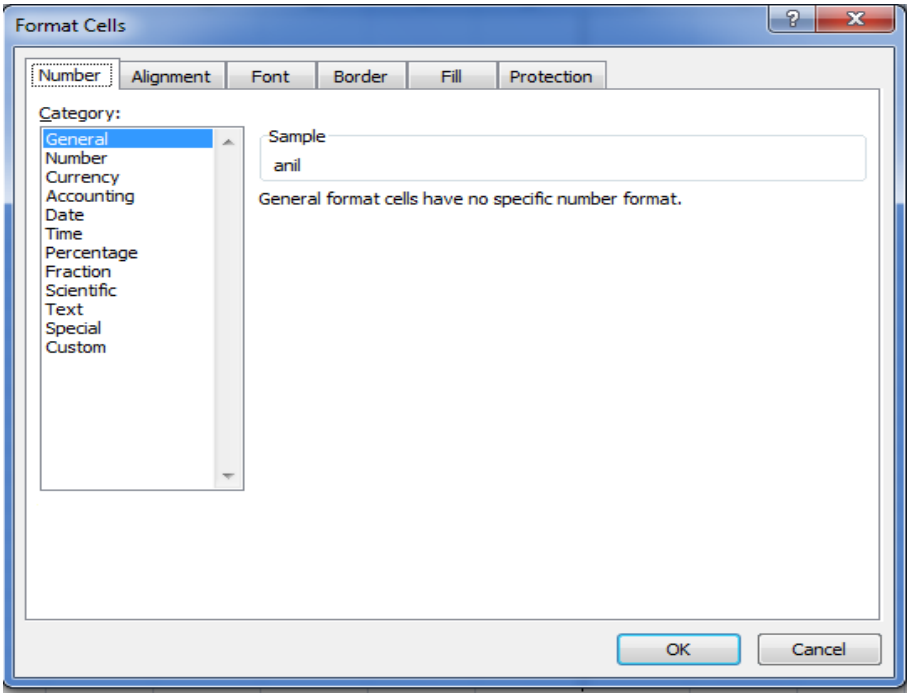
You can select a cell or a range and then use the tool as per the need like Font, Alignment or Number groups. To understand the proper use of such tools, only way is to use them and experience their effect. Formatting changes can be applied

to a whole worksheet, a range of cells within a worksheet, individual cells, and even text within a cell.



2) Format Cells dialog box

This dialog box allows to apply more or less any type of formatting style and number formatting. The formats selected from Format Cells Dialog box will be effective to the cells which are selected at the time. To use Format Cells dialog box, select the cell or a range to apply formatting. You can launch Format Cells dialog box by using (Ctrl+1) command, or by clicking the dialog box launcher in Home → Font, Home → Alignment, or Home → Number, or by choosing Format Cells from the shortcut menu after you Right-click the selected cell or range.

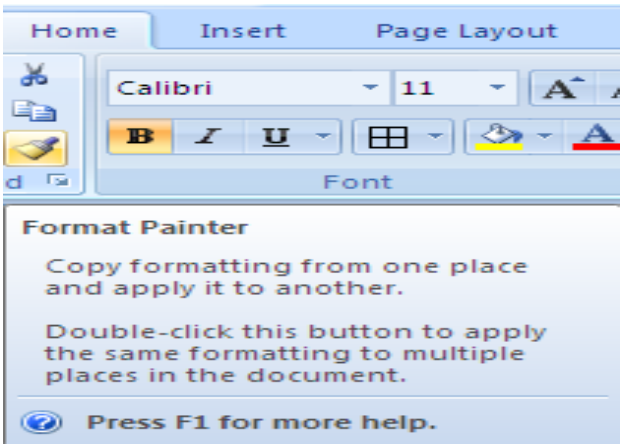


3) Mini toolbar

Shortcut menu and Mini toolbar gets displayed when you right click a cell or a range selection. Mini toolbar appears above or below the shortcut menu. The Mini toolbar contains controls for common formatting such as Font type, Font Size, Decrease Font, Increase Font, Font Color, Format Painter, Bold, Italic, Center, Borders, Merge And Center, Increase Decimal, Decrease Decimal, and Fill Color etc.

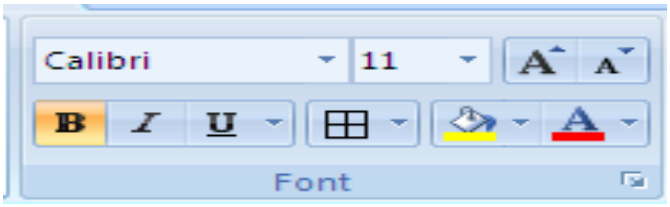
2.1 FORMAT PAINTER

Use the Format Painter to quickly copy formatting from one thing in a document to another. Just select the thing you like the look of, click Format Painter, and then click the thing you want to change to look the same. Format Painter picks up all the formatting from your first thing, whether it's a shape, cell, picture border, or piece of text, and applies it to the second.



2.2 FONT STYLES

There are four types of font styles as: Regular, Bold, Italic and Bold Italic. You can change font style for selected cells or ranges in a worksheet.



2.3 FONT SIZE

You can change font size for selected cells or ranges in a worksheet by choosing appropriate Font Size from Font group in Home tab.

2.4 ADDING BORDER AND COLOURS TO CELL

When you look at a blank worksheet, there are some thin lines that indicate where the cells are, without these lines it would be harder to identify a particular cell in the sheet. But these grid lines are only auxiliary lines; they are not written out unless you specifically request it. You can apply a border and colour to selected cell(s) using following steps:

Step 1: On the **Home** tab, in the **Cells** group, click **Format**

Step 2: Under **Protection**, Click **Format Cells,** to display the Format Cells dialog box

Step 3: Select the **Border** tab

Step 4: Choose **None**, **Outline**, or **Inside** in the Presets area, to specify the location for the border

Step 5: Choose any of the following options for the border:

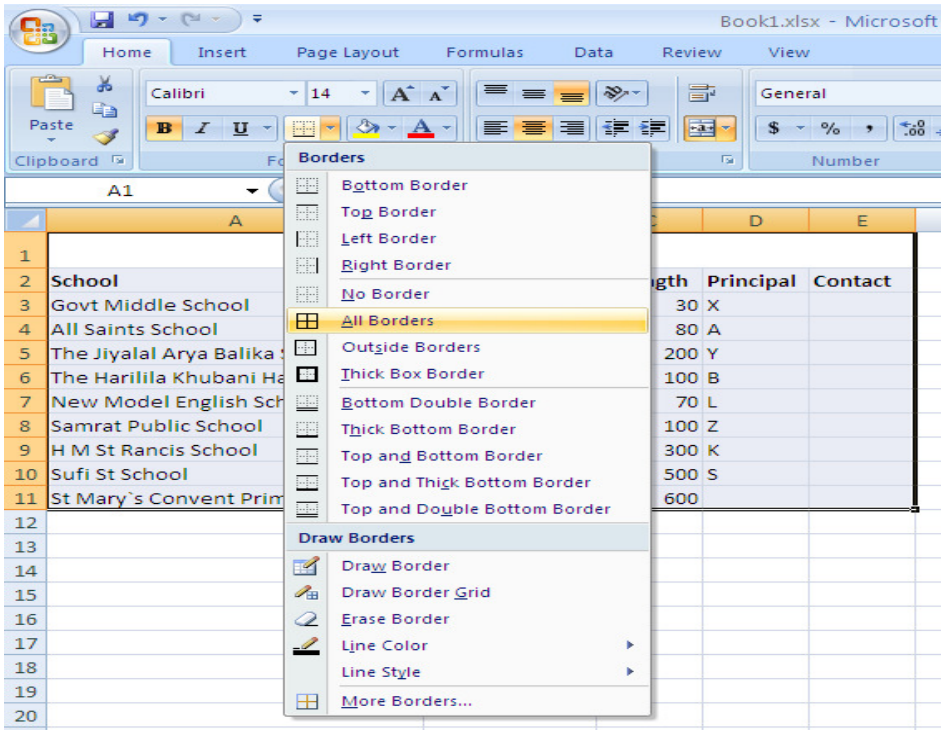
- In the Border area, click on any of the buttons to toggle its border
- Choose the border's line style in the Style area
- If necessary, select a colour for the border in the Color Palette

Step 6: Select the **Patterns** tab, and then choose any of the following options:

- Select a colour for the background of the selection in the Color palette
- If necessary, select a pattern for the background of the selection in the Pattern palette

Step 7: Choose OK to apply the border and colour

You can also apply border and color to the selected cell(s) using option of Borders menu in Font group on Home tab.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All Borders
Outside Borders
Thick Box Border
Bottom Double Border
Thick Bottom Border
Top and Bottom Border
Top and Thick Bottom Border
Top and Double Bottom Border
Draw Borders
Draw Border
Draw Border Grid
Erase Border
Line Color
Line Style
More Borders...
School
Principal
Contact
Govt Middle School
All Saints School
The Jiyalal Arya Balika
The Harilila Khubani Ha
New Model English Sch
Samrat Public School
H M St Rancis School
Sufi St School
St Mary`s Convent Prim
30 X
80 A
200 Y
100 B
70 L
100 Z
300 K
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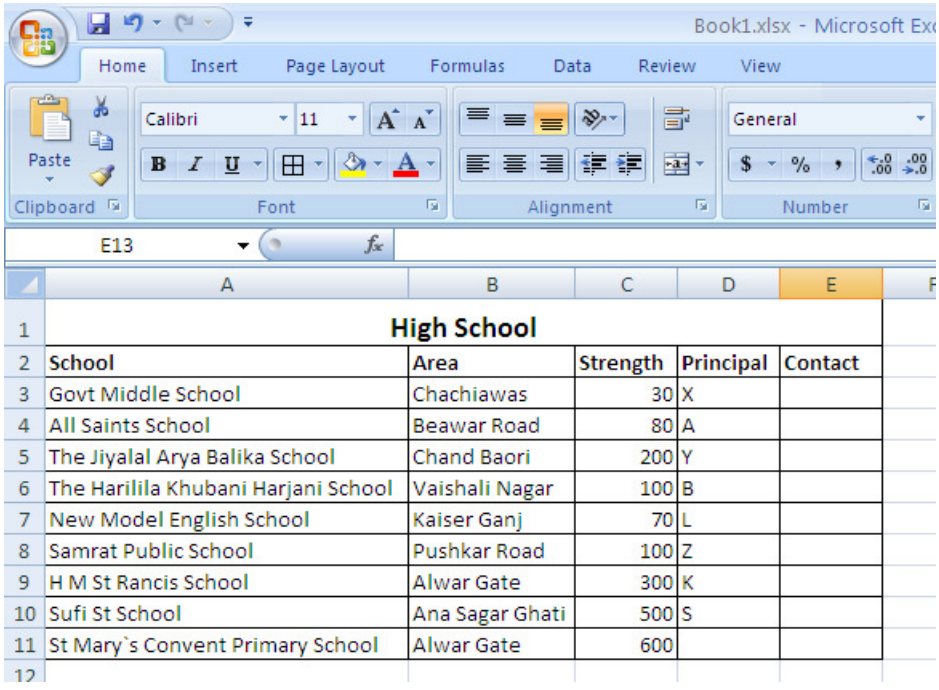
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K
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Ana Sagar Ghati
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S
St Mary`s Convent Primary School
Alwar Gate
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2.5 CHANGING ROWS AND COLOUMN WIDTH

Set the Row height

To set row(s) to specific height, select the row(s) that you want to change and use following steps:

Step 1: On the **Home** tab, in the **Cells** group, click **Format**
Step 2: Under **Cell Size**, Click **Row Height**
Step 3: In the **Row height** dialog box, type appropriate value that you want

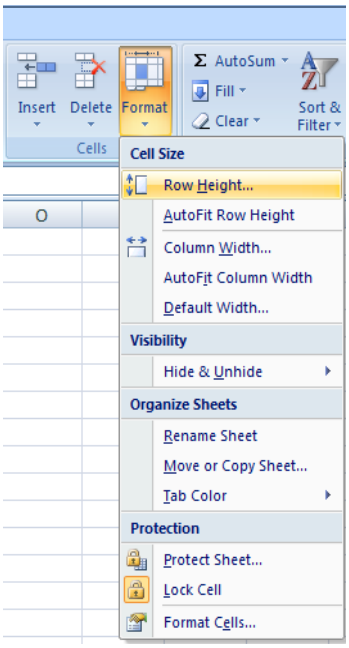
You can set row(s) height to fit the contents using **AutoFit Row Height** Under **Cell Size** of **Format** group in **Home** tab.

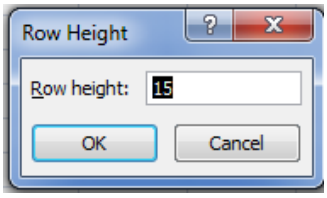
Set the Column Width

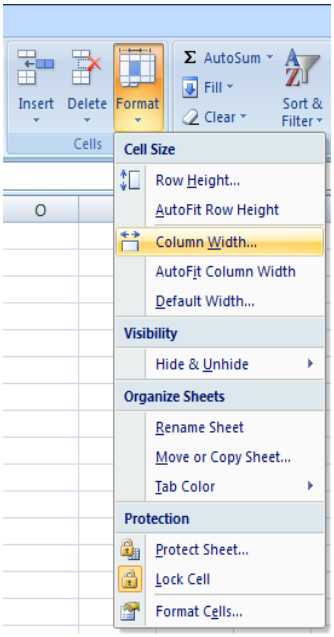
To set column(s) to specific width, select the column(s) that you want to change and use following steps:

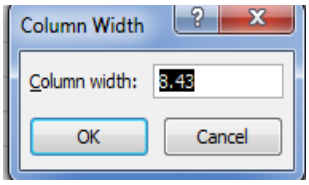
Step 1: On the **Home** tab, in the **Cells** group, click **Format**
Step 2: Under **Cell Size**, Click **Column Width**
Step 3: In the **Column width** dialog box, type appropriate value that you want

You can set column(s) width to fit the contents using **AutoFit Column Width** Under **Cell Size** of **Format** group in **Home** tab.





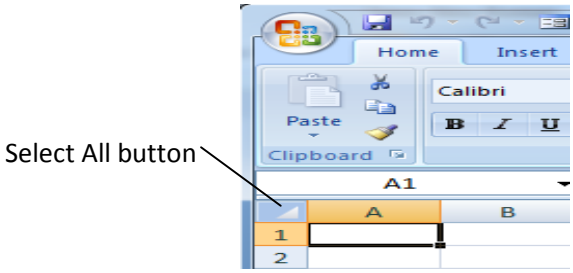




2.6 CHANGING ROWS AND COLOUMN WIDTH USING THE MOUSE

To change the height of rows by using the mouse use one of the following:

1) To change the row height of one row, drag the boundary below the row heading until the row is the height that you want.
2) To change the row height of multiple rows, select the rows that you want to change, and then drag the boundary below one of the selected row headings.
3) To change the row height for all rows on the worksheet, click the **Select All** button, and then drag the boundary below any row heading.
4) To change the row height to fit the contents, double-click the boundary below the row heading.



To change the width of columns by using the mouse use one of the following:

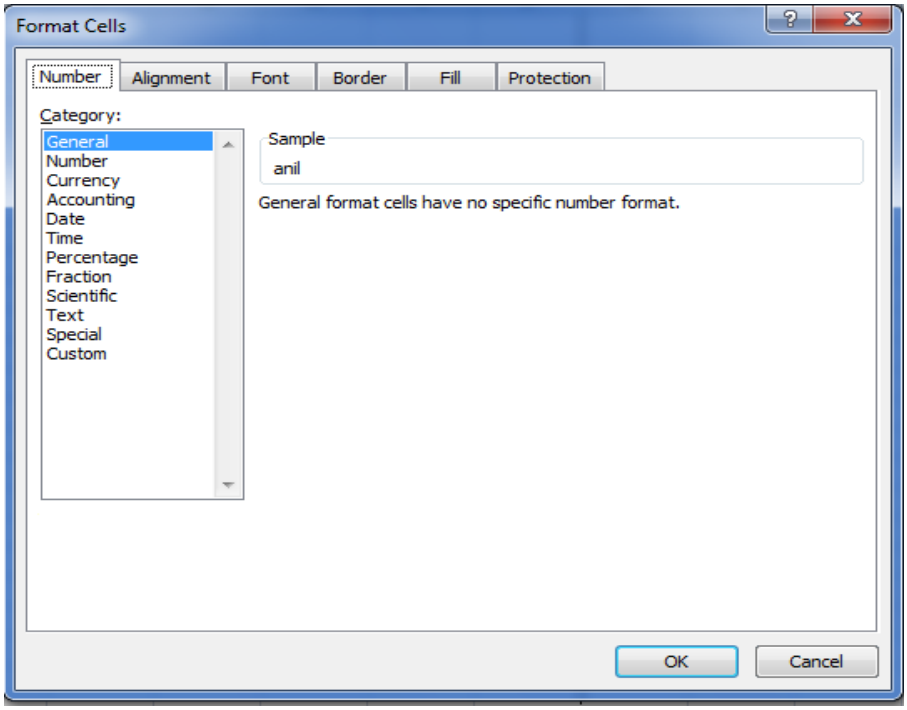
1) To change the width of one column, drag the boundary on the right side of the column heading until the column width changes to the desired size that you want.
2) To change the width of multiple columns, select the columns that you want to change, and then drag a boundary to the right of a selected column heading.
3) To change the width of columns to fit the contents, select the column or columns that you want to change, and then double click the boundary to the right of a selected column heading.
4) To change the width of all columns on the worksheet, click the **Select All** button, and then drag the boundary of any column heading.

2.7 APPLYING NUMBER FORMATS

In excel how a number is going to display in a cell, it depends on the format of that cell. Excel provides many options for displaying numbers as percentages, currency, dates, and so on. If these built-in formats do not meet your needs, you can customize a built-in number format to create your own. In order to apply a specific format to cell(s) use following steps:

Step 1: Select the cell(s) that you want to format
Step 2: Right-click and then select **Format Cells** from the popup menu
or go to **Number** group of **Home** tab
Step 3: Select **Number** tab from **Format Cells** dialog box
Step 4: Choose an appropriate Category and other options, then click ok

Select General if the cell contains text and number and if it does not have any specific number format. If you select Number Category you can represent numbers as integers, decimals with number of decimal as option etc. For example, if you want to restrict the number of decimals to 3, choose Number Category and then decimal places as 3.



2.8 CREATING CUSTOM NUMBER FORMATS

If a built-in number format does not meet your needs, you can create a new number format that is based on an existing number format and add it to the list of custom number formats. For example, if you're creating a spreadsheet that contains customer information, you can create a number format for telephone numbers. You can apply the custom number format to a string of numbers in a cell to format them as a telephone number. Custom number formats affect only the way a number is displayed and do not affect the underlying value of the number. Custom number formats are stored in the active workbook and are not available to new workbooks that you open.

Step 1: Right-click and then select **Format Cells** from the popup menu
or go to **Number** group of **Home** tab

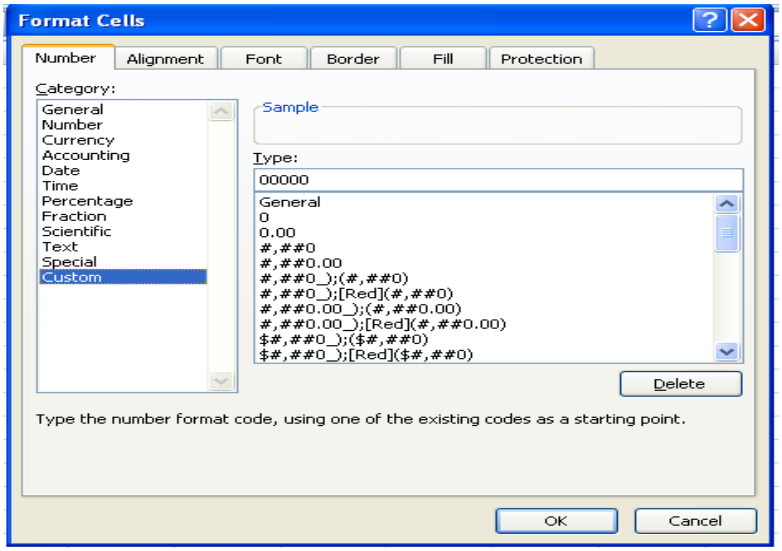
Step 2: Select **Number** tab from **Format Cells** dialog box

Step 3: Choose **Custom** Category

Step 4: In the **Type** list, select the built-in format that most resembles the one that you want to create

Step 5: In the **Type** box, modify the number format codes to create the exact format that you want

Step 6: When you have finished, click OK



2.9 ALIGN CELL CONTENTS

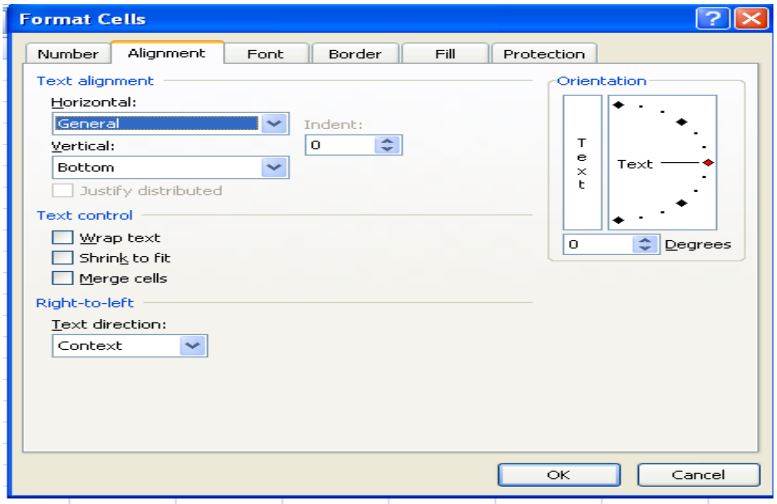
With Excel, **cell alignment** is how your text or numbers are positioned in the cell. Excel provides options to align text to the top, bottom, and middle of cells, as well as options to justify and distribute text vertically.

Step 1: Select the cell(s) that you want to format

Step 2: Right-click and then select **Format Cells** from the popup menu
or go to **Alignment** group of **Home** tab

Step 3: Select **Alignment** tab from **Format Cells** dialog box

Step 4: Choose appropriate options, then click ok

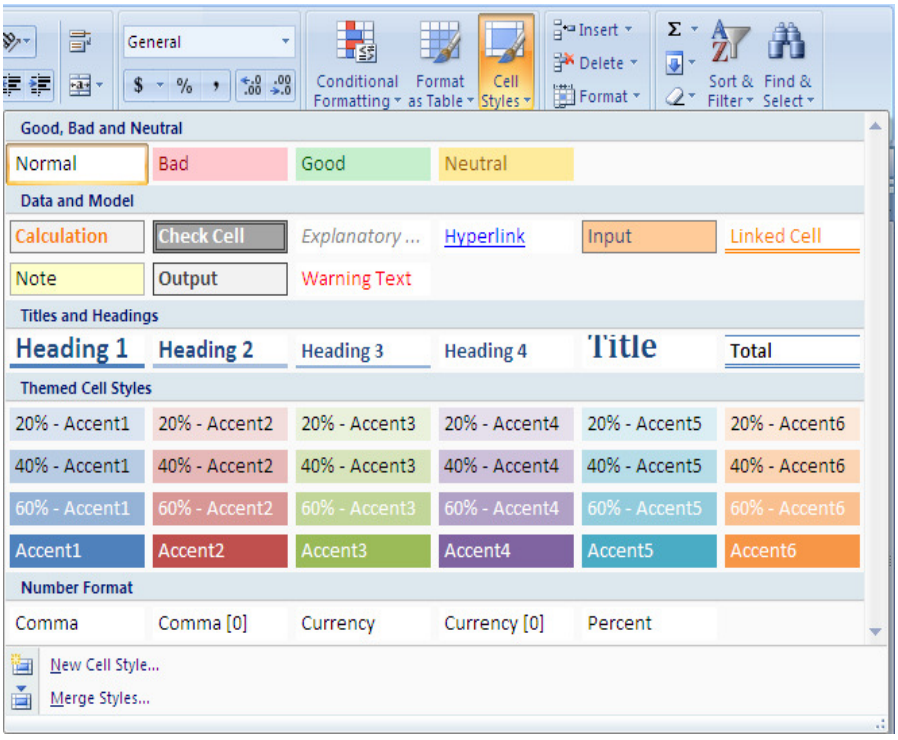


2.10 CELL STYLES

Excel 2007 provides cell styles to quickly format a cell by choosing from predefined styles. To apply several formats in one step, and to make sure that cells have consistent formatting, you can use a cell style. A cell style is a defined set of formatting characteristics, such as fonts and font sizes, number formats, cell borders, and cell shading. To prevent anyone from making changes to specific cells, you can also use a cell style that locks cells. Excel has several built-in cell styles that you can apply or modify. You can also modify or duplicate a cell style to create your own, custom cell style. Styles help to give a professional look to your worksheets. In Excel, all styles are cell styles. However, a defined style can be applied to an entire worksheet. Cell styles can include any of the formatting that can be applied to a cell using the options available.

Step 1: Select the cell(s) to apply a style on
Step 2: Go to **Styles** group of **Home** tab
Step 2: Click **Cell Styles**
Step 3: Click to desire **Cell Style**

You may try different cell styles and see the effect.



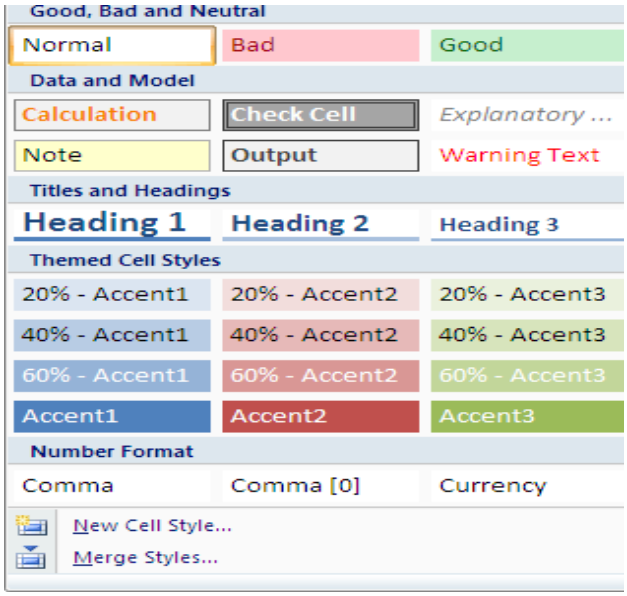
2.11 CREATING YOUR OWN CELL STYLES

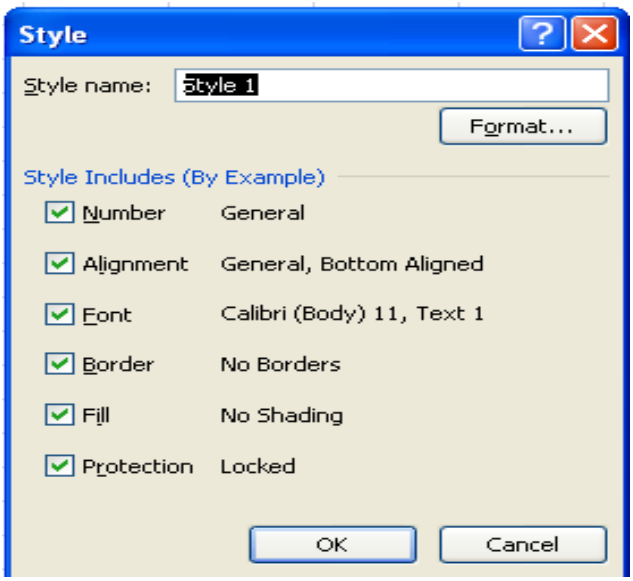
The built-in styles in Excel cannot cover every formatting need. You can easily create your own cell style as per your need. Use following steps to create your own cell style:

Step 1: Go to **Styles** group of **Home** tab
Step 2: Click **Cell Styles**
Step 3: Click to **New Cell Style**
Step 4: In the **Style name** box, type a name for the new style
Step 5: Click **Format,** the **Format Cells** dialog box will appear
Step 6: Set appropriate options for desired formatting, and then click OK
Step 7: In the **Style** dialog box, under **Style Includes** check appropriate boxes to choose the style formatting, and then click OK

Create a custom cell style based on an existing style

Step 1: On the **Home** tab, under **Format**, point to any style, and then click
Step 2: Hold down Control key, click the style that you want, and then click **Duplicate**
Step 3: In the **Style name** box, type a name for the new style
Step 4: Click **Format,** the **Format Cells** dialog box will appear
Step 5: Set appropriate options for desired formatting, and then click OK
Step 6: In the **Style** dialog box, under **Style Includes** check appropriate boxes to choose the style formatting, and then click OK





2.12 CONDITIONAL FORMATTING

Conditional formatting is more flexible, it allows you to format only a cell or range of cells, that meets certain criteria, or conditions. For example, you can have a cell appear bold only when the value of the cell is less than 100. When the value of the cell meets the format condition, the format you select is applied to the cell. If the value of the cell does not meet the format condition, the cell's default formatting is used. Here by "default formatting" mean the formatting that you set up using the normal formatting tools.

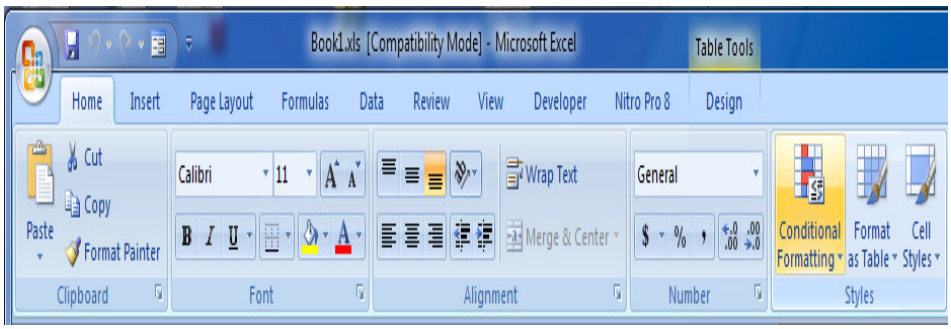
A cell can have up to 3 format conditions, each with its own formats, in addition to the default value of "no formatting". This allows you to have different formats depending on the value of the cell. For example, if the value was less than 100, you can display the text in red, but if the value is between 100 and 200, display the text in green. Let's say you have an inventory list, with multiple items and their corresponding quantity in stock. If the quantity in stock of an item reaches below 100 it's critical that you find out, so you can buy more units of that particular item. If you're unaware of conditional formatting, you might place the tip of your finger on your screen and start moving it downwards to see if there are any numbers in that column that is below 100. This is not a very effective method in a dataset with many rows. To apply conditional formatting use following steps:

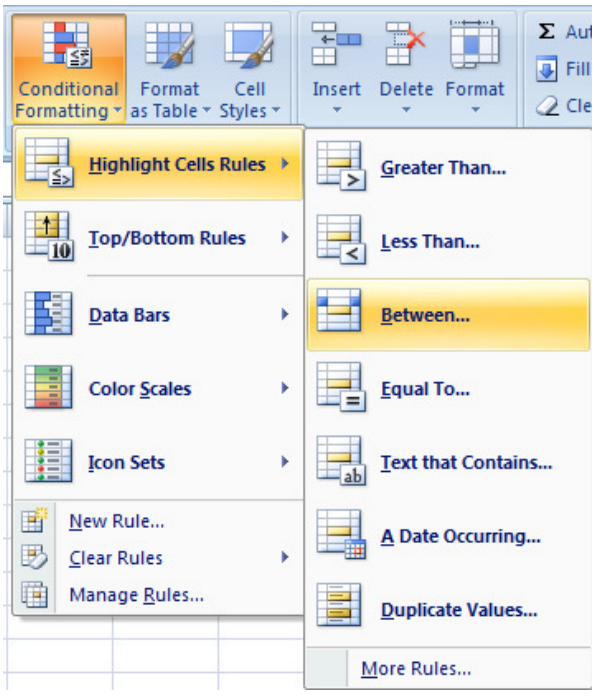
Step 1: Select the cell(s) to which you want to apply conditional formatting

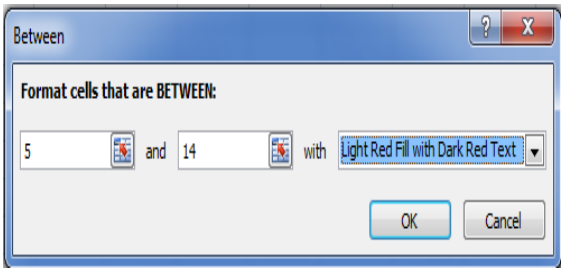
Step 2: Click the **Conditional Formatting** button in the **Styles** group of **Home** tab

Step 3: Point to desired option on drop down menu and select one of the options to apply it to the selected cells, A cascading menu will appear
Step 4: An additional dialog box may appear, depending on the option you choose
Step 5: If so, make the necessary choices, then click Ok

To remove conditional formatting, click the **Conditional Formatting** and select **Clear Rules**. A cascading menu appears; choose to clear rules from the entire sheet or clear rules from the selected cells.







Important Points:

- Excel makes available numerous formatting options to create professional looking worksheets that display your data effectively.
- Format Painter is use to quickly copy formatting from one thing in a document to another.
- There are four types of font styles as: Regular, Bold, Italic and Bold Italic.
- You can set row(s) height to fit the contents using AutoFit Row Height Under Cell Size of Format group in Home tab.
- To change the row height to fit the contents, double-click the boundary below the row heading.
- To change the width of columns to fit the contents, select the column or columns that you want to change, and then double click the boundary to the right of a selected column heading.
- If a built-in number format does not meet your needs, you can create a custom number format.
- With Excel, cell alignment is how your text or numbers are positioned in the cell.
- To apply several formats in one step, and to make sure that cells have consistent formatting, you can use a cell style.

Practice Questions

Objective type questions:

Q1. Format painter is use

a. To paint pretty pictures on your slides
b. To copy formatting from one object or piece of text and then apply it elsewhere
c. To change the background color of your slides
d. To paint pretty pictures on background of slides

Q2. On an Excel sheet the active cell in indicated by?

a. A dotted border
b. A dark wide border
c. A blinking border
d. By italic text

Q3. How are data organized in a spreadsheet?

a. Lines and spaces
b. Layers and planes
c. Rows and columns
d. Height and width

Q4. You can launch Format Cells dialog box in Excel by using command

a. Ctrl+1
b. Ctrl+5
c. Ctrl+2
d. Ctrl+3

Q5. There are …….. types of font styles in Excel

a. 8
b. 6
c. 4
d. 2

Q6. Which tab is not available in Format Cells dialog box?

a. Number
b. Font
c. Fill
d. Margins

Very short answer type questions:

Q1. What is the use of Format Painter?
Q2. Does custom number format affect the underlying value of the number?
Q3. Write the name of font styles in Excel.
Q4. What is cell style?
Q5. What is cell alignment?

Short answer type questions:

Q1. Write down steps for changing row height and column width?
Q2. What is the use of format cell dialog box?
Q3. What do you mean by freeze and unfreeze of rows?

Q4. What is conditional formatting?
Q5. Explain the number formats in Excel.

Essay type questions:
Q1. How you can apply number formats in excel?
Q2. What is the custom number formats? Explain the steps to create custom number formats.
Q3. Explain cell styles and steps to create your own cell style.
Q4. How you can add border and colors to cell, explain.
Q5. Write short note on worksheet formatting.

Answers key for objective questions

Q1: b
Q2: b
Q3: c
Q4: a
Q5: c
Q6: d

Chapter 3
Adding Elements to A Workbook

In this chapter you will learn how to add images, charts, formula and functions and perform mathematical calculations. Charts help us to quickly understanding the data by plotting the data in graphs. Formulas are used for simple addition, subtraction, multiplication and division as well as for complex calculations. To make a calculation, you must write a formula. Functions are built in formulas.

3.1 ADDING IMAGES

Follow these steps to add a picture, photo or graphic from an existing file:

Step 1: Click on **Insert** Tab

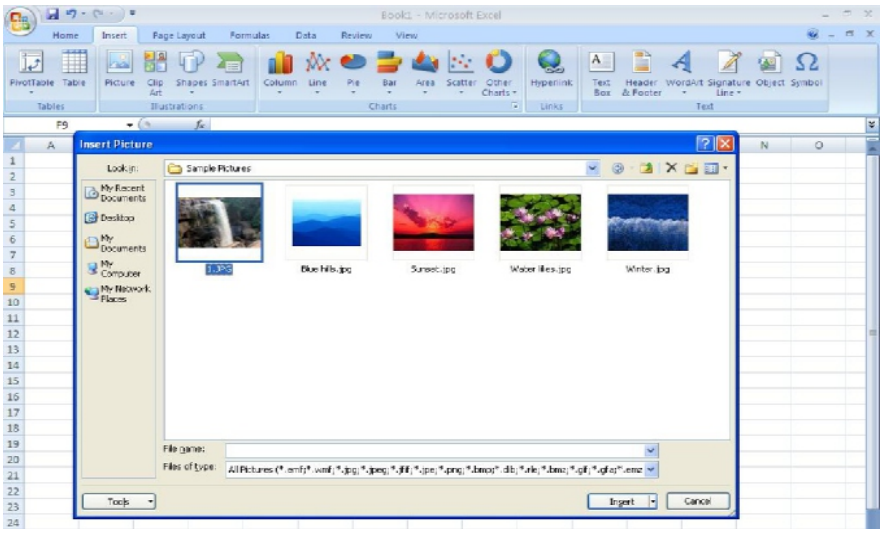
Step 2: From **Illustrations** Group, Click **Picture**

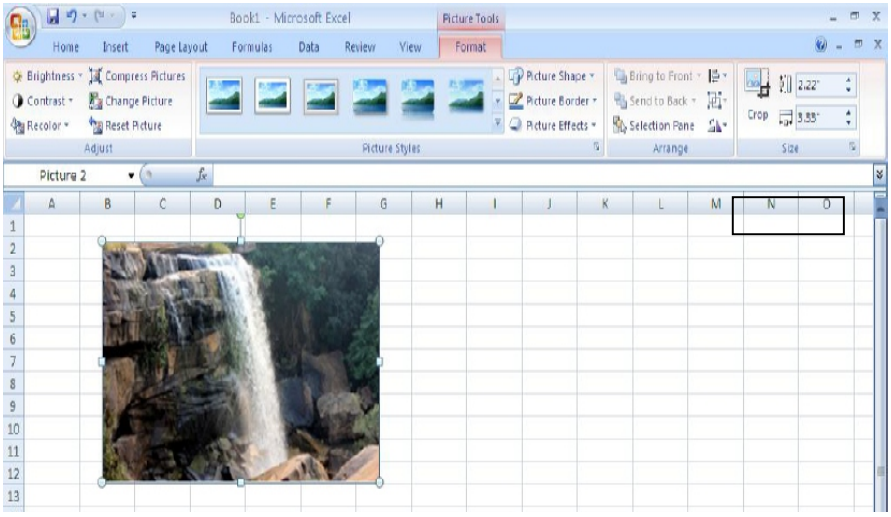
Step 3: Select a picture from the location of the picture (where you have stored the picture) and press enter or click on insert button

Step 4: The picture is added on the excel sheet

Step 5: Click on the picture to activate **Format** tab

Step 6: Use appropriate options to make necessary changes in the picture appearance





3.2 MODIFYING IMAGE

When an image is selected, Excel adds the Picture Tools Format tab to the Ribbon. Use the commands on the Picture Tools Format tab if you need to modify images in your worksheets. The Picture Tools Format tab is divided into four groups: Adjust, Picture Styles, Arrange, and Size. You can use options of Adjust group to modify image brightness, contrast, color, and to compress it. To modify orientation and style of images use the options of Picture Styles group. Click a thumbnail on the Picture Styles gallery to select a new orientation and style for the

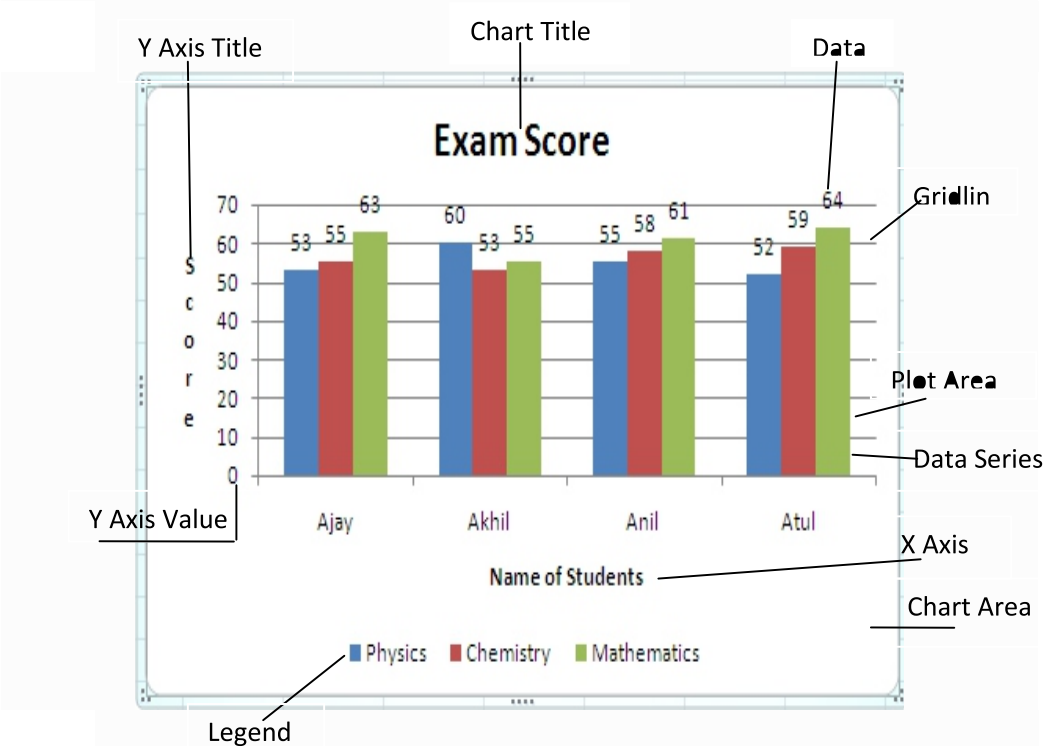
selected image. You can also modify Border shape of a selected image by using Picture Shape button's drop-down list. To modify Border color you can use Picture Border button's drop-down color list and to add picture effects use Picture Effects button's drop-down list.

3.3 CHARTS

Charts allow you to present data entered into the worksheet in a visual format using a variety of graph types. Numeric information is often easiest to understand when it is presented graphically in an excel chart. In Excel, you can represent numbers in a chart. The basic procedure for creating a chart is the same no matter what type of chart you choose. As you change your data, your chart will automatically update. To create a chart, you must first enter data into worksheets. In this section you will learn to create simple charts from the data.

Element of a chart

A chart has many elements. By default some elements are visible, others can be added as per requirement. You can also remove chart element that you do not want to display.



- **Chart Area**: Is the entire area that is reserved for accommodating the charts and other components such as titles, legends etc.
- **Plot Area**: Is the part of chart area which contains the chart
- **Chart Title**:A title is given to whole chart
- **Chart Axis Titles**:
  X-Axis Title - A title given to the X-axis data range.
  Y-Axis Title - A title given to the Y-axis data range.
- **Legends**: Are some sort of labels that identify different series that are being plotted in a chart. These labels are attached to a symbol or color or pattern, that is associated with series of chart.
- **Horizontal** (X) and **Vertical** (Y) **Axis**
- **Data Labels**:The values of the data series plotted.
- **Gridlines**: Displays lines at the major intervals on the category (x) axis and/or Y-axis

Excel chart wizard helps you to create charts in excel. You have to select data first before launching the chart wizard. Following are the steps to launch chart wizard:
Step 1: Goto **Charts** group of **Insert** tab
Step 2: Select **Chart** sub-type

3.4 TYPES OF CHARTS

MS Excel 2007 supports many types of charts to help you display data in different ways that are meaningful to your audience. You can create a new chart or can change the existing chart, from the variety of chart types and their subtypes. You can also create a combination chart using more than one chart type in your chart.

Column Charts

The Column Charts are very used to compare values across categories by using vertical bars. In a Column Chart, the vertical axis (Y-axis) always displays numeric values, and the horizontal axis (X-axis) displays time or other category.

Line Charts

Line charts can be used to display continuous data over time with respect to a common scale. Thus Line Charts are best suitable for displaying data trends. The horizontal (X) axis is used to represent time or other category data and the vertical (Y) axis represents numeric values.

Pie charts

As name the implies, pie charts are shaped like a pie, and are useful in a situation where one has to show the relative proportions or contributions to a whole. A Pie Chart can only display one series of data.

Bar Charts

A bar Chart is the horizontal version of a Column Chart, i.e., bar chart is like a column chart lying on its side. Bar Charts do tend to display and compare a large number of series better than the other chart types.

Area Charts

Area Charts are like Line Charts except that the area below the plot line is solid. Like Line Charts, Area Charts are used primarily to show trends over time or other category.

XY (Scatter) charts

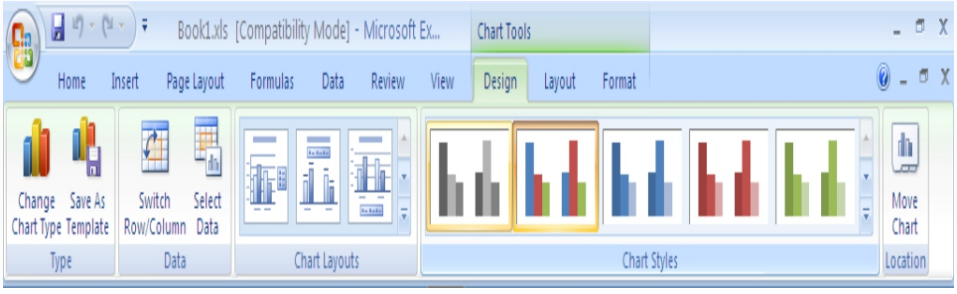
The purpose of a Scatter Chart is to observe how the values of two series compares over time or other category. The point of difference between XY charts and other types of charts is that in XY charts both axes display values i.e. they have no category axis. Such type of charts is generally used to show the relationship among two variables.

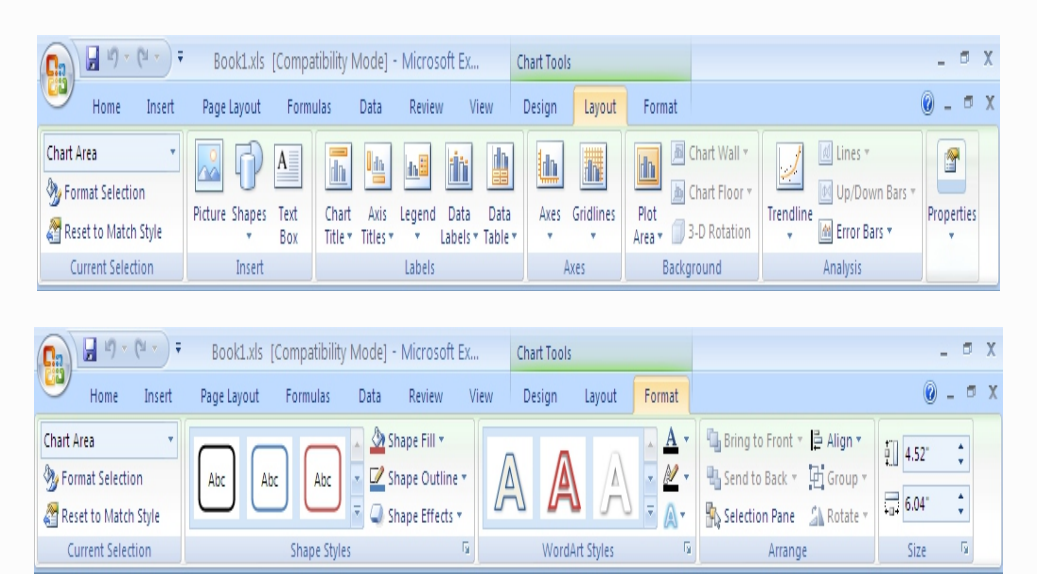
Other charts types

Excel offers other chart types, but the average user will not use this type of charts. Other available chart types in excel are: Stock, Surface, Doughnut, Bubble, and Radar.

3.5 CHART TOOLS

Whenever you click on some component of chart, you observe that the Chart Tools are displayed to the ribbon. Chart tools include three chart context tabs: Design, Layout, and Format. These tabs are called context tab, as these tabs only appear when you need them. These tabs become available when you create a new chart or when you click on a chart. You can also use these tabs to modify your chart. Design tab is used to modify the shape of chart. Layout tab, is used to add all sorts of elements related to chart or change the way they are shown in the chart. Format tab is used to apply special effects, such as the bevel effect etc.





3.6 CREATING CHARTS

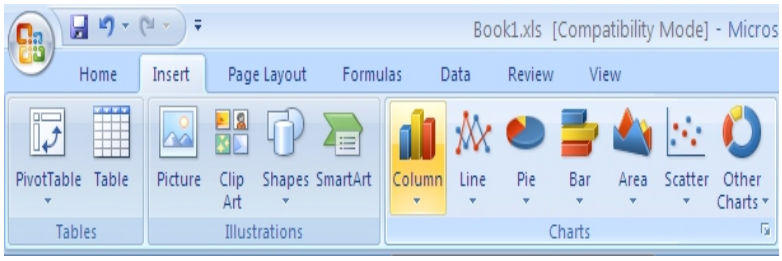
The basic procedure for creating a chart is the same no matter what type of chart you choose. As you change the data, your chart will automatically change. On the Insert tab, you can choose from the variety of chart types such as: line, pie, area, column etc. Use following steps to draw a Chart:

Step 1: First enter the data in the work sheet of which you want to plot the chart
Step 2: Select all the cells containing the data you want in your chart
Step 3: Click **Insert** tab
Step 4: Select a **Chart Type** from the chart group and sub type of chart
Step 5: Select the Title of the chart

a. To give a title to a chart, click on the chart. Now you can see layout tab available. Click on Layout tab
b. Choose(click) on chart title option available in the Label group

Step 6: Click on the chart title and write a title
Step 7: Similarly set other elements of chart

	A	B	C	D	E	F
1	Exam Scores					
2		Ajay	Akhil	Anil	Atul	
3	Physics	53	60	55	52	
4	Chemistry	55	53	58	59	
5	Mathematics	63	55	61	64	
6						


Book1.xls [Compatibility Mode] - Micros
Home
Insert
Page Layout
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Data
Review
View
PivotTable
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Clip Art
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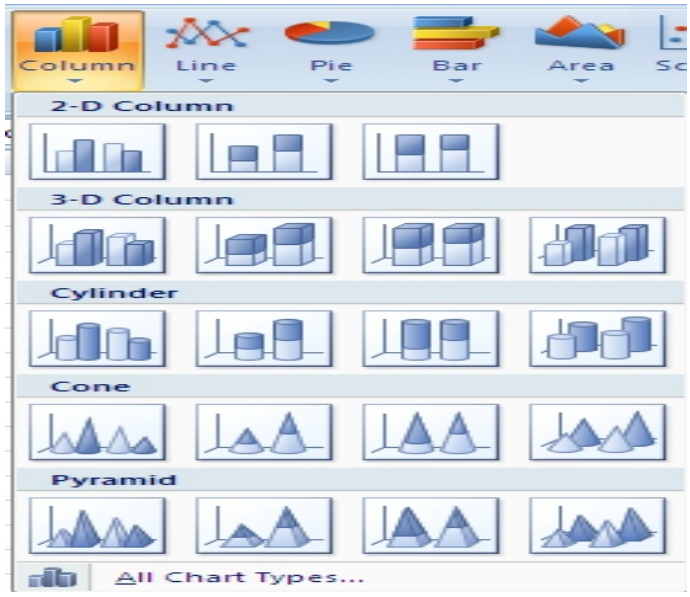
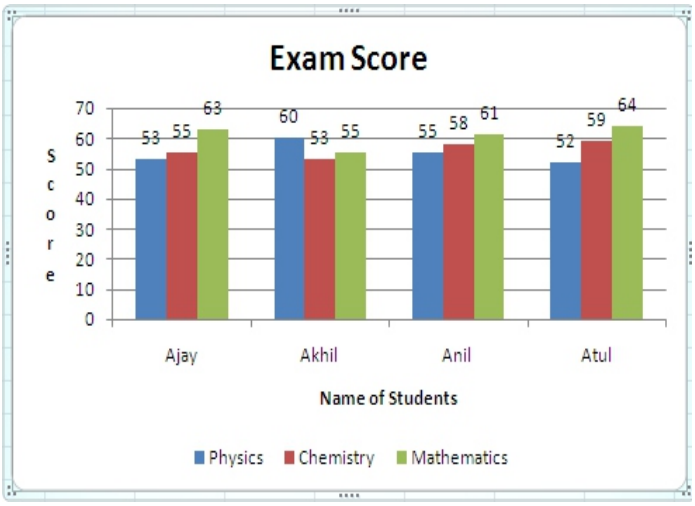
Bar
Area
Scatter
Other Charts
Tables
Illustrations
Charts


Column
Line
Pie
Bar
Area
2-D Column
3-D Column
Cylinder
Cone
Pyramid
All Chart Types...


Exam Score
Score
70
60
50
40
30
20
10
0
53
55
63
60
53
55
55
58
61
52
59
64
Ajay
Akhil
Anil
Atul
Name of Students
Physics
Chemistry
Mathematics

3.7 MODIFYING CHARTS

You can use chart context tabs to modify your chart. These tabs become available when you click on a chart. You can right click on an element of the chart for quick access to specific features with respect to that particular element e.g. if you right click on plot area, you will get Format Plot Area dialog box, similarly if you right click on any chart axis, you will get Format Axis dialog box. Using these format dialog boxes, you can modify your chart.

Modifying the chart Type

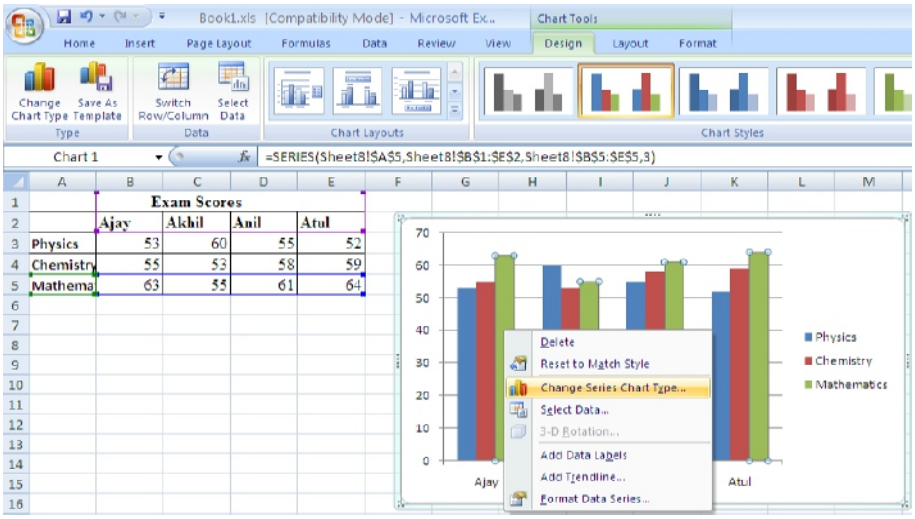
Excel provides many chart types to help you display data in a way that will best communicate its meaning. Use following steps to modify the chart type:

Step 1: Click the chart
Step 2: Select chart type from chart tab
Step 3: Choose appropriate type from chart type dialog box
Step 4: Click ok

Modifying the chart area

The chart area is the background of the sheet on which the chart is drawn. Use following steps to modify the chart area:

Step 1: Double click on chart area
Step 2: In the Format chart area dialog box, click the pattern tab and enter new settings to changes the border surrounding the chart area, its color, and any fill effects
Step 3: Click the Font tab and enter new settings to changes the font characteristics of the axis labels



Resizing the Chart

To resize the chart, click on its border and drag any of the eight black handles to change the size. Handles on the corners will resize the chart proportionally while handles along the lines will stretch the chart.

Delete a Chart

To delete a chart that has just been created, click the Excel Undo button. To delete an existing chart, select the chart and press the Delete key.

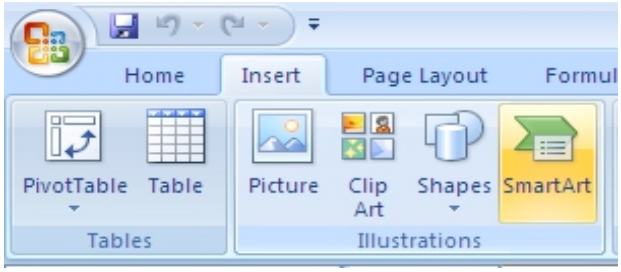
3.8 MOVING CHARTS

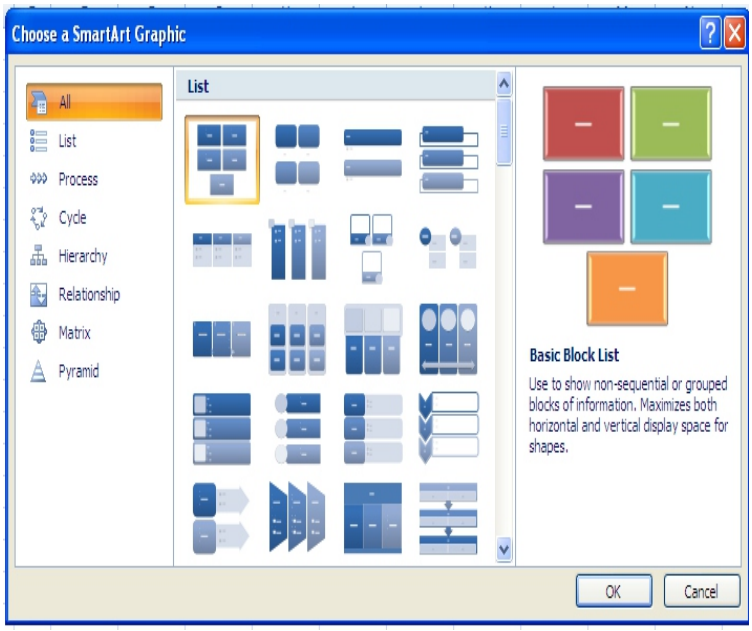
To move a chart to a different place on the worksheet, select the chart and drag it to the desired location. To move a chart to a new or different spreadsheet in the same workbook, select the chart, right-click, and select Move Chart. Move Chart dialog box will appear. Then choose the sheet or type in a new sheet name, and click OK. Elements within the chart such as the title and labels may also be moved within the chart. Click on the element which you want to move, and use the mouse to drag the element to move it.

3.9 ORGANIZATIONAL CHARTS

An organizational chart graphically represents the management structure of an organization, such as department managers and non-management employees within a company. By using a SmartArt graphic in MS excel, you can create an organizational chart and include it in your worksheet. To create an organizational chart quickly and easily, you can type or paste text in your organizational chart and then have the text automatically positioned and arranged for you. Use following steps to create an organizational chart:

Step 1: Go to the **Insert** tab, in the **Illustrations** group, click **SmartArt**
Step 2: Click **Hierarchy** on the **Choose a SmartArt Graphic** window
Step 3: Select the chart design to use and click OK
Step 4: Click on the word **Text** in the first shape and type the name or title of the corresponding employee. Repeat with the remaining shapes





You can add more shapes by right-clicking a related shape and clicking **Add Shape**. Choose **Add Shape Before** or **Add Shape After** to add another employee on the same level as the selected one. Choose **Add Shape Above**to add an employee one level up from the selected person or **Add Shape Below** to add someone who reports to the selected employee. To delete a shape, click on the border of the shape that you want to delete, and then press delete. Similarly, you can also apply colors, change line styles etc, using different available options.

3.10 SPARK LINE

A sparkline is a very small line chart that is typically drawn without axes or coordinates. Sparklines are small enough to be embedded in text or several sparklines may be grouped together as elements of a small multiple. Data presented in a row or column is useful, but patterns can be hard to spot at a glance. The context for these numbers can be provided by inserting sparklines next to the data.

Using following steps to create a sparkline:

Step 1: Select all the cells containing the data you want create sparkline for and go to **Insert** tab then click the **Charts** group

Step 2: Click the **Line** option and select the **2D** line chart

Step 3: Select the **Legend** and press delete key

Step 4: Select **Horizontal Axis** and **Vertical Axis** and press delete key

Step 5: Select the **horizontal grid lines** and press delete key
Step 6: Select the chart and drag the handles to the desired size

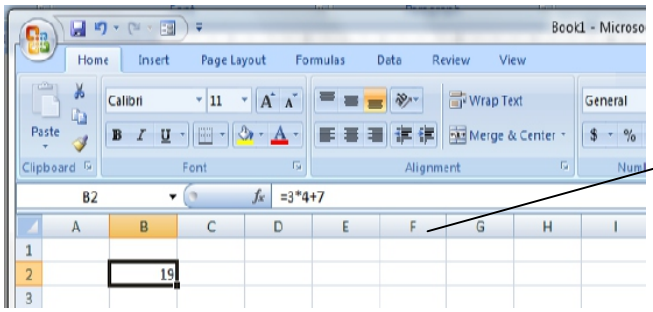
1	Exam Scores			
2	Ajay	Akhil	Anil	Atul
3	53	60	55	52
4	55	53	58	59
5	63	55	61	64
6	66	44	70	68
7	80	69	78	51
8	56	75	65	79
9	76	80	59	73
10	79	52	60	66
11				
12				

The sparkline in the above figure shows the scores that Ajay achieved in his tests. By looking at this sparkline, you can quickly figure out how Ajay's scores are going up and down along the time.

3.11 FORMULAS AND CALCULATIONS

DEFINITION AND EXPLANATION OF FORMULAS AND CALCULATIONS

Excel performs calculations using formulas and functions. A formula is a structured piece of text that tells Excel what it has to calculate. A function is a pre-written formula. When there is some change in the data, such formulas automatically calculate the updated results with no extra efforts on the part of the user. In excel a formula always starts with the 'equal to' = sign. It a sign that tells excel that what is in the cell is a formula and not a text or a number. 'Equal to' = sign can be followed by numbers, mathematical operators (like a + for addition, / for division, logical operator [<, >] etc) and build in excel functions. For example in the below figure, cell B2 contains a formula that multiplies 3 by 4 and then adds 7 to that result to come up with the answer 19.
=3*4+7



Here are some more examples of formulas that you can enter in a worksheet.

- **=A1+A2+A3+A4** Adds the values in cells A1, A2, A3, and A4.
- **=SUM(A1:A8)** Uses the SUM function to return sum of the values in A1 through A8.
- **=AVERAGE(A1:A10)** Uses the AVERAGE function to return average of the values from A1 through A10.
- **=TODAY()** Returns the current date.

After the formula is completely entered in the cell, it will display the result. Also, when you select or click on a cell which is having some formula, the formula will appear in the formula bar. If you want to change the formula, you can click on the Formula bar to edit it. Alternatively, you can press the F2 key or double click the cell for it. In Excel 2007, the formulas are available in the Formulas Tab. If you click on the Formulas tab, you can see the corresponding ribbon display with available formulas, as shown below.

3.12 MATHEMATICAL OPERATORS

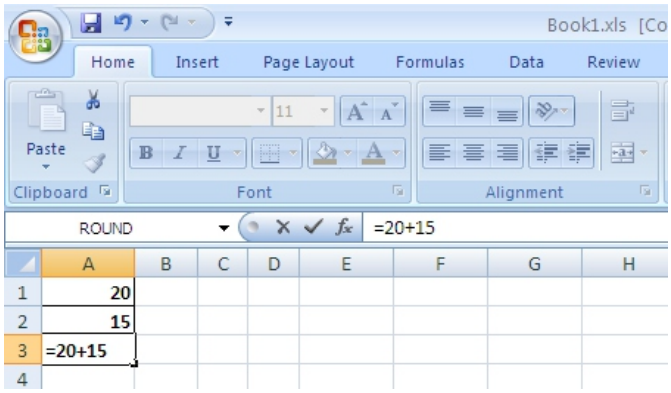
Mathematical operators play fundamental role to create a formula and calculation of data values in the spreadsheet. Basically operators specify the type of calculation that you want to perform on the elements of a formula, like addition, subtraction, multiplication or division. There is a default order in which calculations occur, but you can modify this default order of calculation as per your

requirement using parentheses. To change the order of calculation, enclose in parentheses the part of the formula to be calculated first. For example, the following formula produces 12 because Excel calculates multiplication before addition. This formula multiplies 2 by 3 and then adds 6 to the result.
=6+2*3

In contrast, if you use parentheses to change the syntax, Excel adds 6 and 2 together and then multiplies the result by 3 to produce 24.
=(6+2)*3

3.13 CREATEING A FORMULAS

To create a simple formula that adds two numbers use following steps:
Step 1: Click the cell where you want to insert the formula (A3, for example)
Step 2: Type the 'equal to' sign (=)
Step 3: Type the first number to be added (e.g., 20)
Step 4: Type the **addition sign (+)**
Step 5: Type the second number to be added (e.g., 10)
Step 6: Press **Enter** to complete the formula

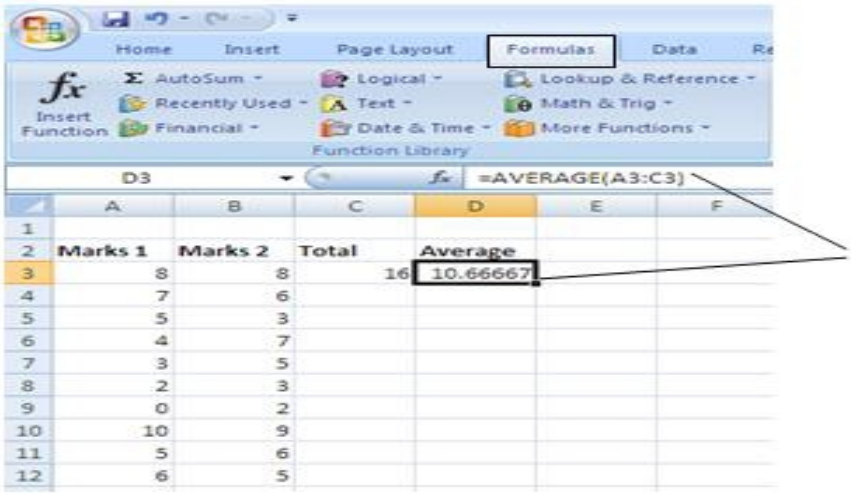


For creating a simple formula that adds the contents of two cells: in previous example type the cell addresses in place of first and second numbers. Alternatively, in place of typing the cell addresses yourself in the formula, you can click on the cell to be included in the formula.

3.14 CREATING FUNCTIONS

A predefined formula is called a function, which uses a specific value in a particular order to execute calculation. Functions enable you to add thousands of numbers together in an instant, calculate averages and many other things. All

functions have a function name. For example, the function that adds together numbers is called 'SUM' and the function that calculates averages is called 'AVERAGE'. Function name is followed by one or more arguments, which may be numbers or cell references. If there are more than one arguments in function, they are separated by semicolon ';'. Each function has a specific order, known as syntax that strictly followed for the function to work correctly. Following figure shows an example of 'AVERAGE' function with one argument i.e. the range of cells, A3 to C3.



3.15 REFERENCES

References are an important part of creating formulas in Excel. Cell references allows your formulas to update automatically if the value in a particular cell changes and can also assist you in updating formulas as cells are copied or moved. There are two types of cell references: relative and absolute. Relative and absolute references behave differently when copied and filled to other cells. Relative references change when a formula is copied to another cell. Absolute references, on the other hand, remain constant no matter where they are copied.

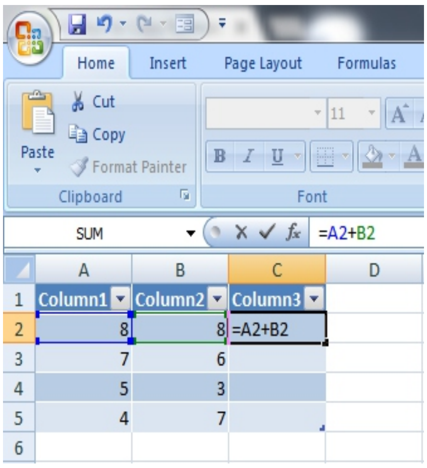
By default, a cell reference is relative, e.g., =A1. By adding a dollar sign ($) before either the column or row location or both, that reference becomes absolute. When adding dollar signs to cell references, only the portion of the reference directly following the dollar sign is absolute. To keep the entire cell reference constant, place a dollar sign before both the column and row location. e.g., =A1. Relative and absolute cell references can be used in all situations that require cell references, including cell ranges and formulas.

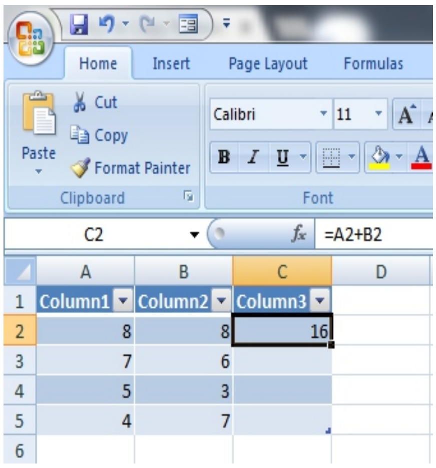
You can also create mixed references, in such references the column is absolute and the row is relative or vice versa. To create a mixed reference, you use the dollar sign in front of just the column letter or row number, e.g., =$A1.

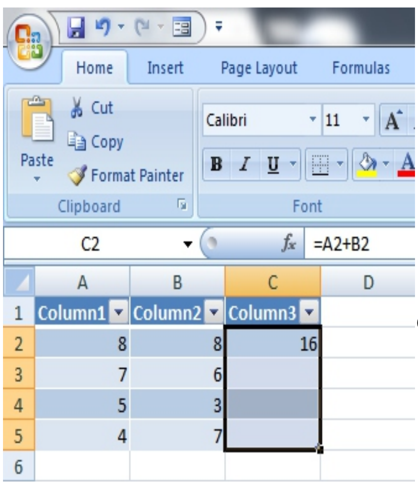
COPYING A FORMULA

Excel makes it easy to copy your formula across an entire row or column, but you don't always get the results you want. To copy a formula into multiple cells by dragging, use following steps:

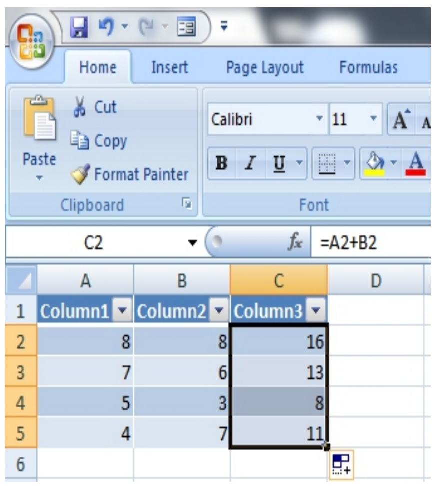
Step 1: Enter the formula into one cell
Step 2: Press enter to calculate the formula
Step 3: Click on the lower right corner of the cell to be propagated
Step 4: Hold and drag along the column or row you're copying to
Step 5: Double click the plus sign to fill the entire column







o



3.16 EXCEL FORMS

If your spreadsheet is too big to manage, and you constantly have to scroll back and forward just to enter data, then a Data Form could be very helpful. A data form provides a convenient means to enter or display one complete row of information in a range or table without scrolling horizontally. The data form displays all the columns so that you can see all the data for a row at one time. To create a data form use following steps:

Step 1: You must add labels to the top of each column in the range or table, since excel uses these labels to create fields on the form

Step 2: Select a cell in the range or table to which you want to add the form

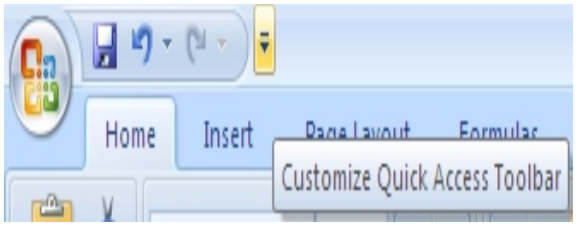
Step 3: Click **Form** button on the **Quick Access Toolbar**

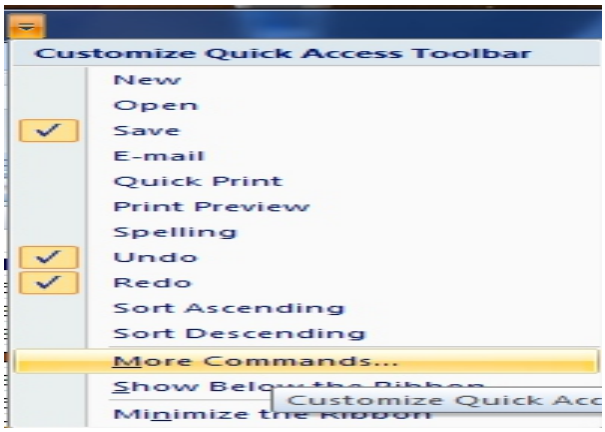
If **Form** button is not available on Quick Access Toolbar, then you can add it as follows:

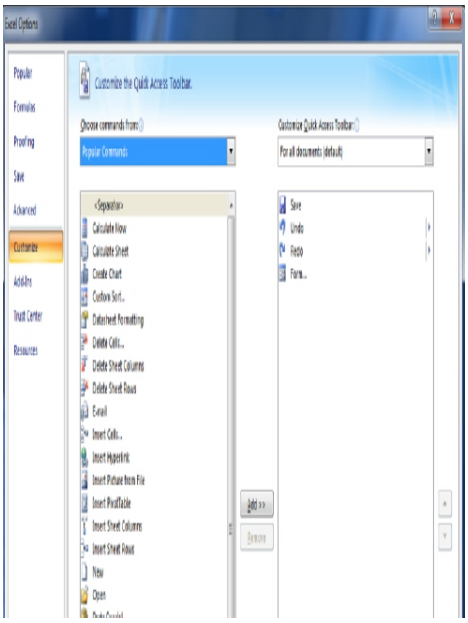
Step 1: Click on **Customize Quick Access Toolbar** and select **More Commands** from menu

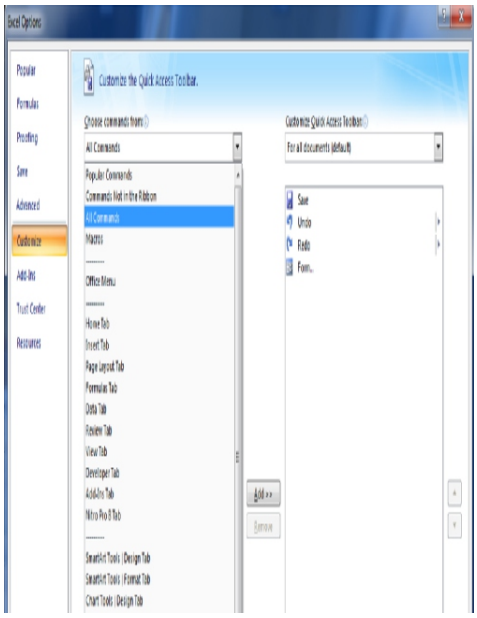
Step 2: Choose **All Commands** from **Choose commands from** drop down list, and then select **Form** in the below list,

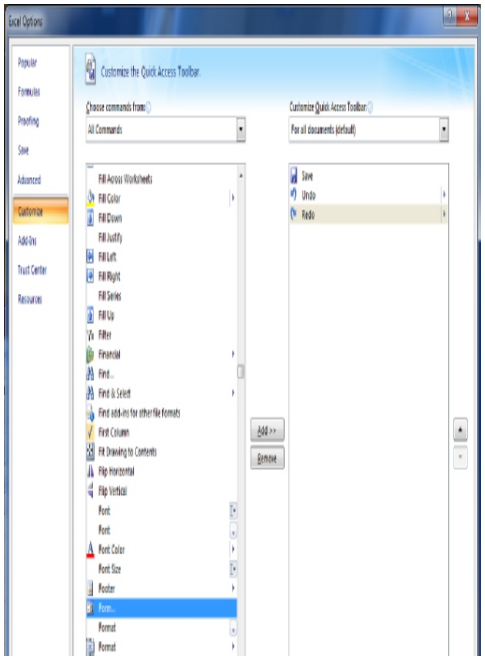
Step 3: Click **Add>>**, and then click ok (Form button will be added to Quick Access Toolbar)

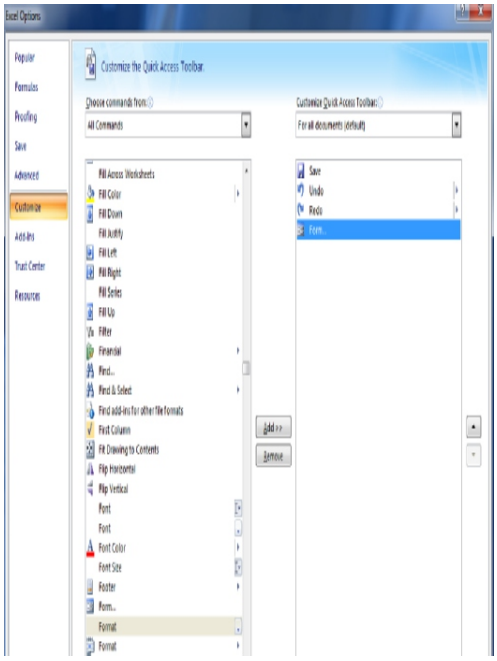


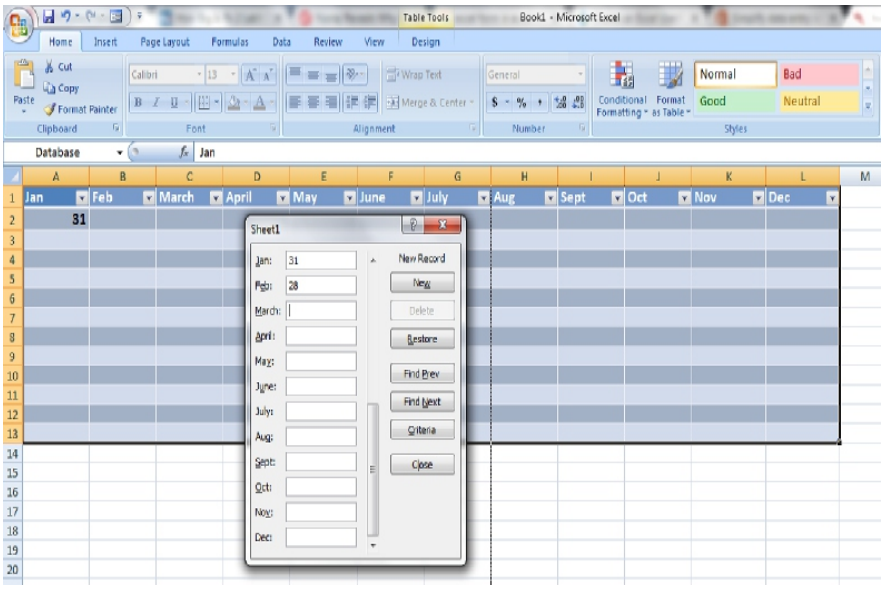












To start a new row in your spreadsheet, you just click the **New** button on the right. Click **Find Prev** or **Find Next**,or Press [Up Arrow or Down Arrow] to move to the desired row that you want to change or delete.

3.17 TABLES

In excel, basically everything is table except the diagram. Here by excel table we mean a defined region in the spreadsheet with a group of data. Excel Tables are used to analyze and manage a group of related data easily and quickly. It contains related data in a series of worksheet rows and columns that have been formatted as a table. The purpose of an Excel table is not so much to calculate new values but rather to store lots of information in a consistent manner, making it easier to format, sort, and filter worksheet data.

3.18 CREATING A TABLE

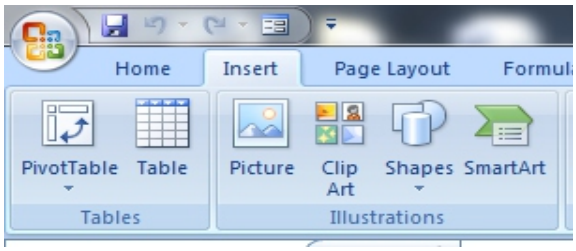
Use following steps to create a table:

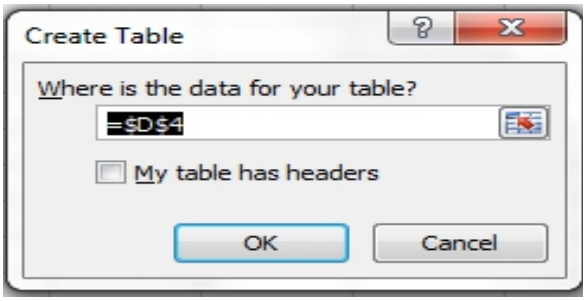
Step 1: Select the range of cells you want included in the table (cells can be empty or can contain data)

Step 2: Click **Table** in **Tables** group of **Insert** tab

Step 3: If the top row of the selected range contains data you want to use as table headers, check the **My table has headers** box

Step 4: Click ok





If you don't check the **My table has headers** box, table headers with default names like Column1 and Column2 are added to your table above its data. You can modify default header names at any time.

3.19 INSERTING ROWS AND COLUMNS INTO A TABLE

You can insert rows above a selected row and columns to the left of a selected column. You can also delete rows, and columns. For inserting rows and columns into a table use following steps:

Inserting Rows

Step 1: Select a row in table above which you want to insert a new row
Step 2: Right click on table row and select **Insert** from pop up
Step 3: Select **Table Rows Above**

Alternatively, select row and click **Insert** in the **Cells** group of **Home** tab and choose appropriate option from popup menu. If you select the bottom row of the table, then you will have one more option i.e. **Table Rows Below** to insert a row below the bottom row.

Inserting Columns

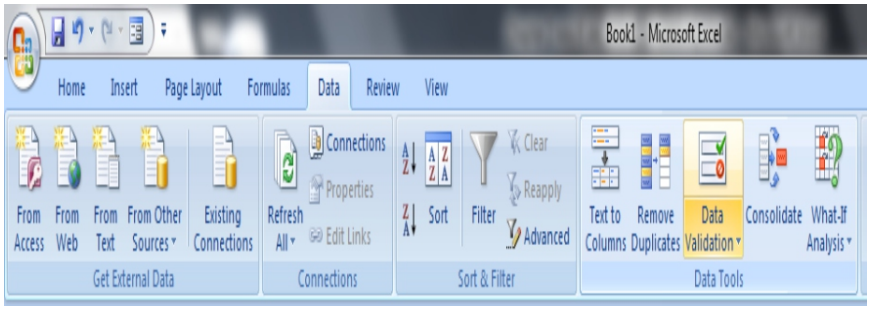
Step 1: Select a column in the table left of which you want to insert a new column
Step 2: Right click on table column and select **Insert** from pop up
Step 3: Select **Table Columns to the Left**

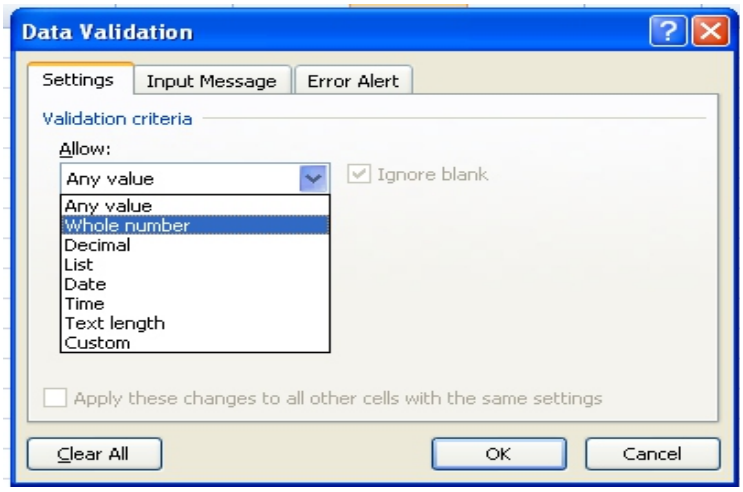
Alternatively, select column and click **Insert** in the **Cells** group of **Home** tab and choose appropriate option from popup menu. If you select the last column of the table, then you will have one more option i.e. **Table Columns to the Right** to insert a column right to the last column.

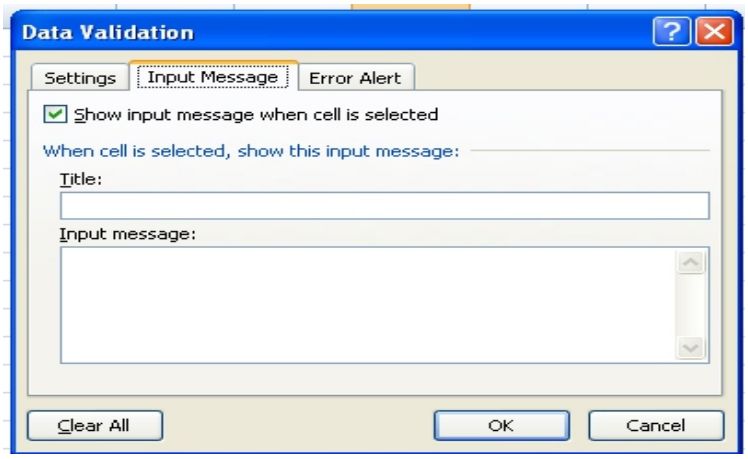
3.20 DATA VALIDATION

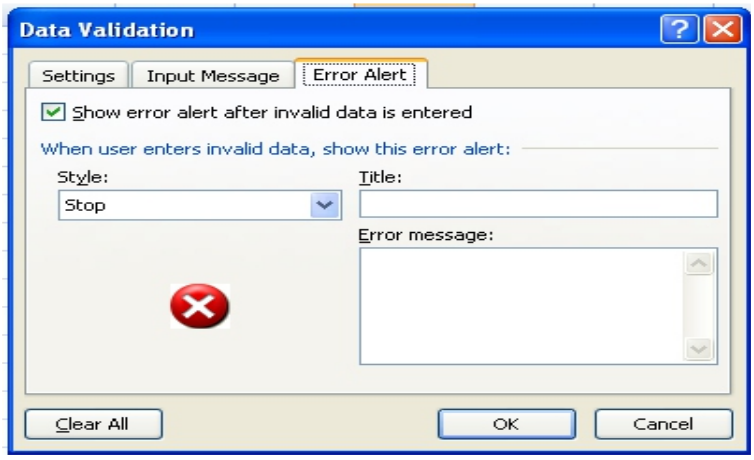
Through data validation you can restrict the type of data or the values that users enter into a cell. For example, we can use data validation to ensure that the user chooses one of the few given options, by creating a drop-down list. This kind of data validation allows you to build a powerful, fool-proof spreadsheet. Since users won't have to type in data manually, the spreadsheet will be faster to use, and there's a much lower chance that someone can introduce an error. Use following steps to add data validation to a cell or a range:

Step 1: Select one or more cells to validate
Step 2: Click **Data Validation** in the **Data Tools** group of **Data** tab
Step 3: On the Settings tab of **Data Validation** dialog box, select appropriate data validation type from **Allow** drop-down list
Step 4: Set parameters appropriately, as per your desired validation
Step 5: Use **Ignore blank** check box, to handle blank (null) values
Step 6: On the **Input Message** tab, choose whether to have Excel display an input message when the cell is selected
Step 7: On the **Error Alert** tab, choose whether to have Excel display an error alert after the user enters invalid data in the cell

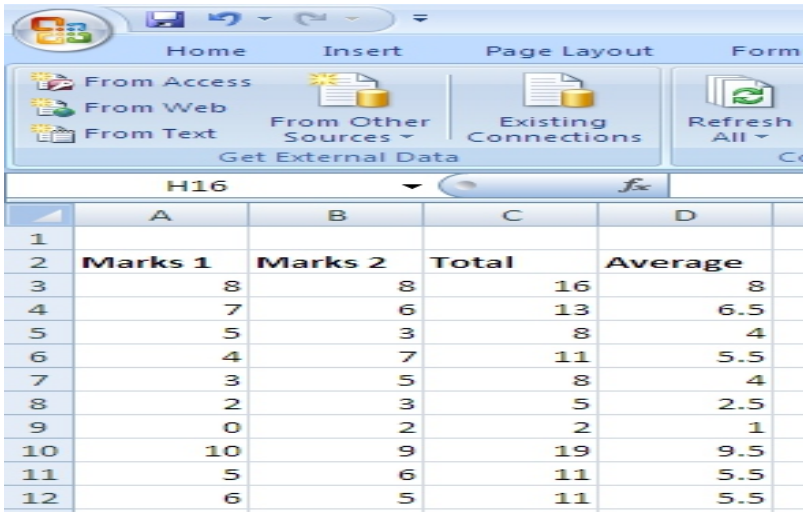



Data Validation
Settings
Input Message
Error Alert
Validation criteria
Allow:
Any value
Ignore blank
Any value
Whole number
Decimal
List
Date
Time
Text length
Custom
Apply these changes to all other cells with the same settings
Clear All
OK
Cancel

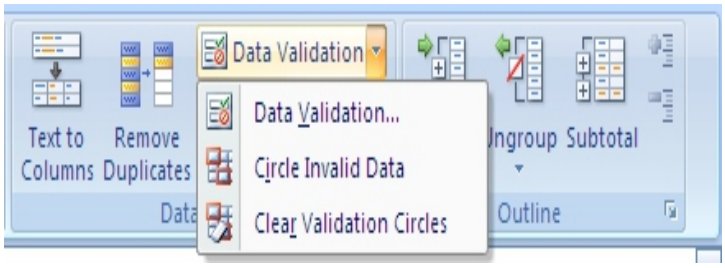

Data Validation
Settings
Input Message
Error Alert
Show input message when cell is selected
When cell is selected, show this input message:
Title:
Input message:
Clear All
OK
Cancel

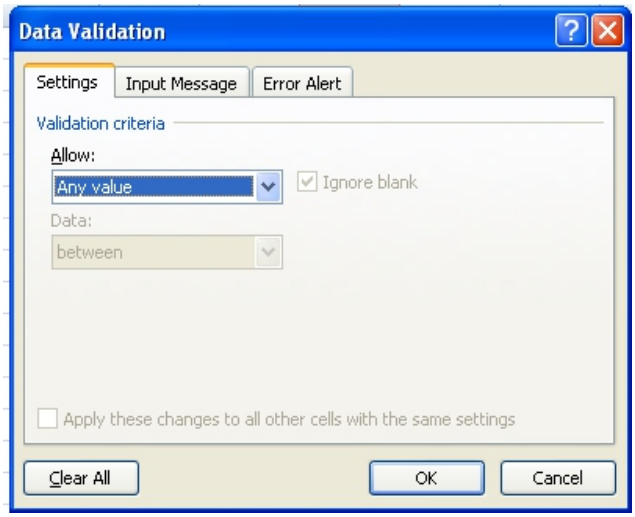

Data Validation
Settings
Input Message
Error Alert
Show error alert after invalid data is entered
When user enters invalid data, show this error alert:
Style:
Stop
Title:
Error message:
Clear All
OK
Cancel

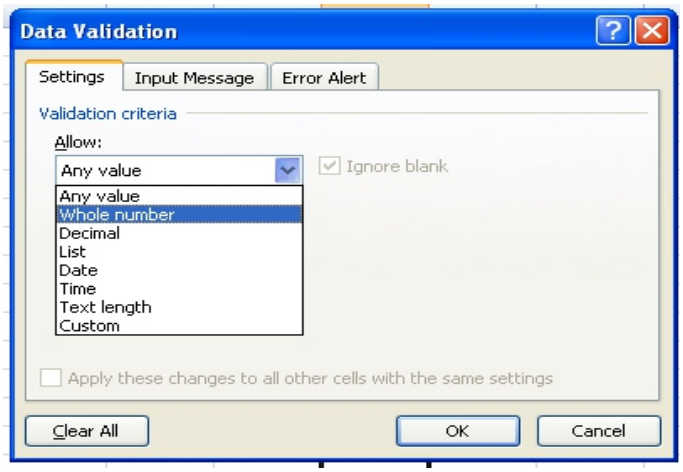
For example, to make sure user can enter marks between 0 and 20 only, the data validation can be applied as steps shown in following figures.

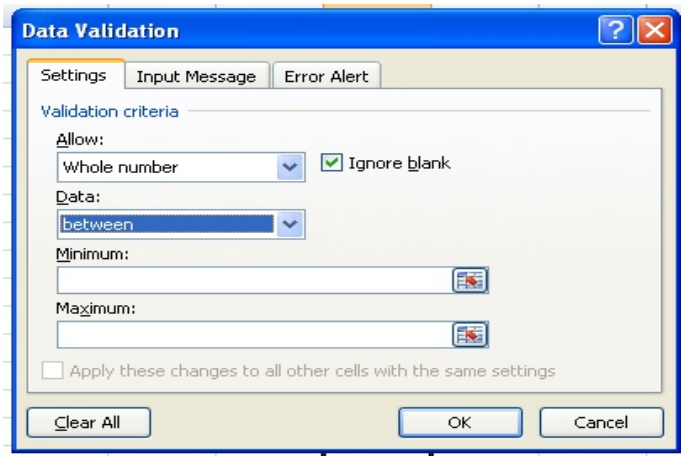


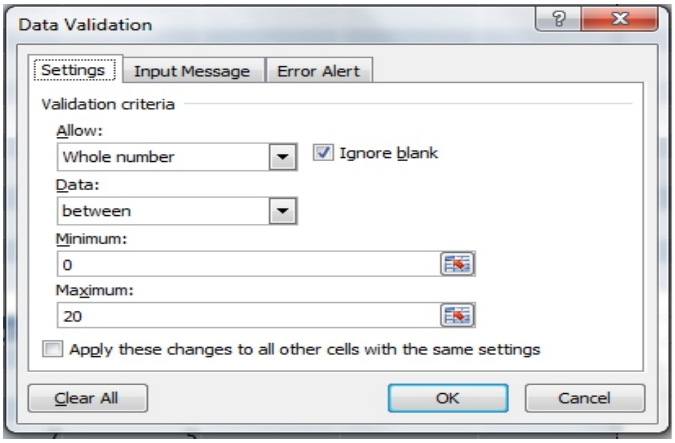
	A	B	C	D
1				
2	Marks 1	Marks 2	Total	Average
3	8	8	16	8
4	7	6	13	6.5
5	5	3	8	4
6	4	7	11	5.5
7	3	5	8	4
8	2	3	5	2.5
9	0	2	2	1
10	10	9	19	9.5
11	5	6	11	5.5
12	6	5	11	5.5






Data Validation
Settings
Input Message
Error Alert
Validation criteria
Allow:
Any value
Ignore blank
Any value
Whole number
Decimal
List
Date
Time
Text length
Custom
Apply these changes to all other cells with the same settings
Clear All
OK
Cancel


Data Validation
Settings
Input Message
Error Alert
Validation criteria
Allow:
Whole number
Ignore blank
Data:
between
Minimum:
Maximum:
Apply these changes to all other cells with the same settings
Clear All
OK
Cancel


Data Validation
Settings
Input Message
Error Alert
Validation criteria
Allow:
Whole number
Ignore blank
Data:
between
Minimum:
0
Maximum:
20
Apply these changes to all other cells with the same settings
Clear All
OK
Cancel

To remove data validation: select the cell or cells that contain the validation you want to delete, then go to **Data** tab and click **Data Validation** in **Data Tools** group then click **ClearAll** button in **Data Validation** dialog, and press ok.

3.21 FINDING INVALID ENTRIES AND AUDITING

You may want to audit your worksheets to look for invalid data entries that may cause inaccurate calculations or results. You can identify cells with data validation that contain invalid data by displaying a red circle around them so that you can easily find and correct any problems.

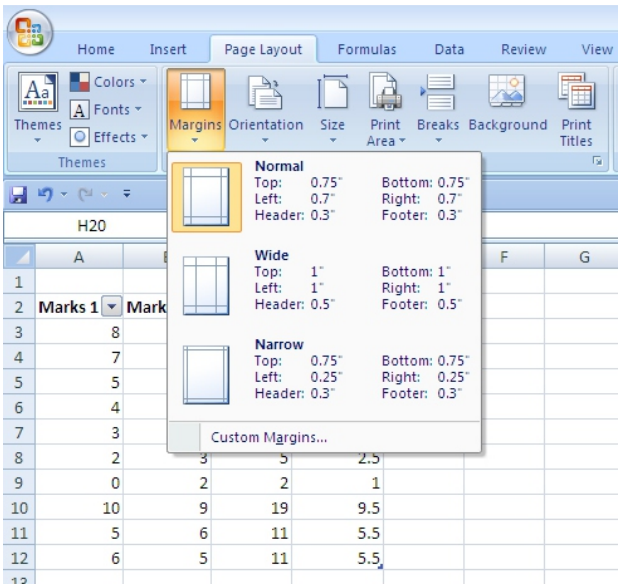
To circle invalid entries: On the **Data** tab, in the **Data Tools** group, click **Data Validation**, and then click **Circle Invalid Data**. All cells that don't meet their data validation criteria are circled. Excel displays a red circle around any cells that contain invalid data.

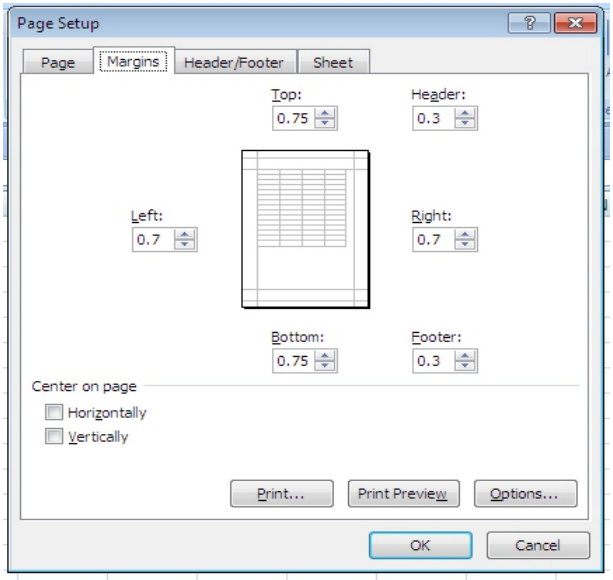
To hide validation circles: Either enter valid data in the cell or on the **Data** tab, in the **Data Tools** group, click **Data Validation**, and then click **Clear Validation Circles**.

3.22 PAGE MARGINS

In Excel, page margins are used to specify how much blank space should be left around the information in your worksheet. Margins are used to provide a visual border for your printed page and an area where the page can be held or bound. There are four margins you can specify: top, bottom, left, and right. Each margin refers to the distance from the edge of the paper to where the information in your worksheet can be printed. Thus, a one-inch top margin means there will be one inch of white space at the top of each page of your printout. There are three predefined margin settings. You can choose from them or you can also customize the margins as follow:

Step 1: Go to **Margins** option from **Page Setup** group of **Page Layout** tab
Step 2: Click **Margins** and select **Custom Margins**
Step 3: Set the page margins as required
Step 4: Enter values in the header and footer fields to indicate how far from the edge of the page header and footer should appear
Step 5: Check the boxes for centering horizontally or vertically on the page

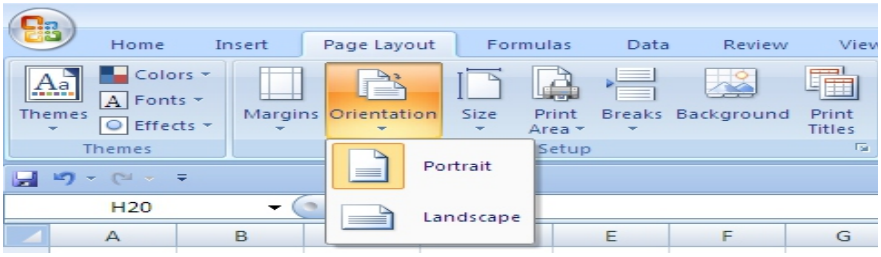




3.23 PAGE ORIENTATION

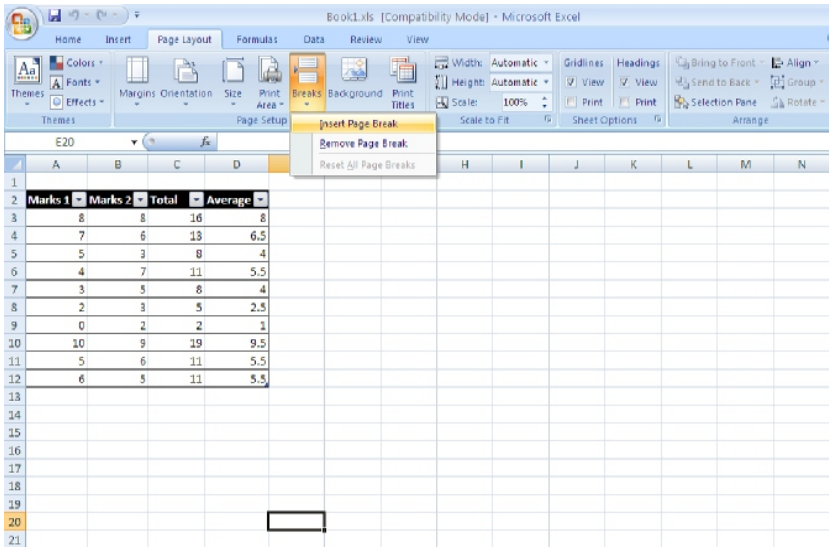
Excel offers two page orientation options: landscape and portrait. Landscape orients the page horizontally, while portrait orients the page vertically. Portrait is especially helpful for worksheets with a lot of rows, while landscape is best for worksheets with a lot of columns. By default, Excel prints worksheets in portrait

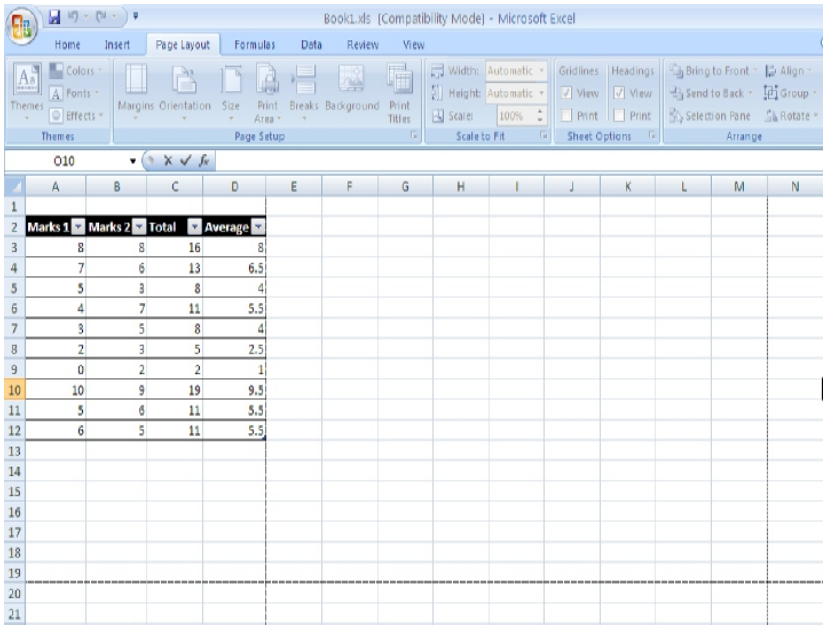
orientation. You can change the page orientation to landscape on a worksheet-by-worksheet basis. To change page orientation use following steps:
Step 1: Click **Orientation** in **Page Setup** group of **Page Layout** tab
Step 2: Choose either **Portrait** or **Landscape** from the drop-down menu



3.24 PAGE BREAKS

Page breaks are dividers that break a worksheet into separate pages for printing. Excel inserts automatic page breaks based on the paper size, margin settings, scale options, and the positions of any manual page breaks that you insert. To print a worksheet with the exact number of pages that you want, you can adjust the page breaks in the worksheet before you print it. To set page breaks, select the row you want to appear just below the page break by clicking the row's label. Then choose **Page LayoutPage Setup GroupBreaksInsert Page Break** . Excel will start a new page from the selected row. Once you have inserted the page breaks you can remove them by choosing the Remove Page Breaks option. By choosing **Reset All Page Breaks** option, it will reset your page to the way you saved it last.





3.25 SHARING WORKSHEETS AND WORKBOOKS

If you share a workbook, you can work with other people on the same workbook at the same time. The workbook should be saved to a network location where other people can open it. As the owner of the shared workbook, you can manage it by controlling user access to the shared workbook and resolving conflicting changes. You can keep track of the changes other people make and accept or reject those changes. When all changes have been incorporated, you can stop sharing the workbook.

The way that you choose to share data depends on many factors, including how you want others to view or work with the data. For example, do you want to keep sensitive or important information from being modified, or do you want to allow users to change and edit the data? Use following steps for sharing workbook:

Step 1: Click **Share Workbook,** in the **Changes** group of the **Review** tab

Step 2: In the Share Workbook dialog box, on the Editing tab, check the box which says **Allow changes by more than one user at the same time. This also allows workbook merging**

Step 3: On the **Advanced** tab, select the desired options you want to use for tracking and updating changes, and then click ok

Step 4: Do one of the following:

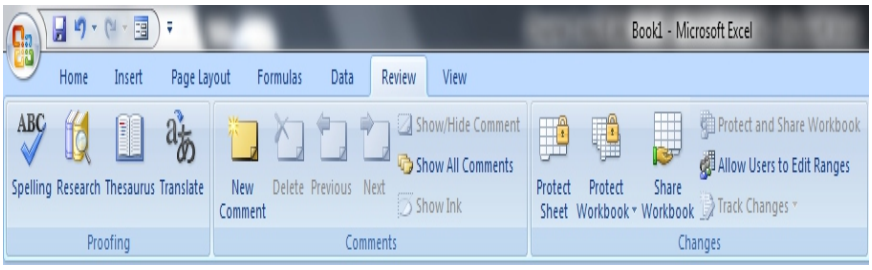
- If this is a new workbook, type a name in the File name box

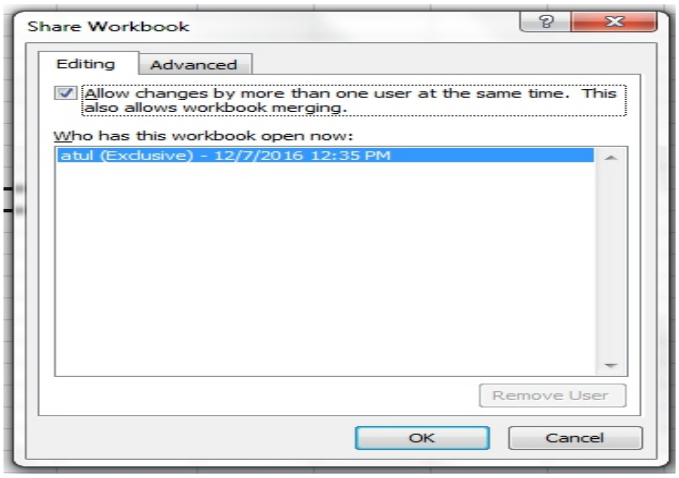
- If this is an existing workbook, click OK to save the workbook

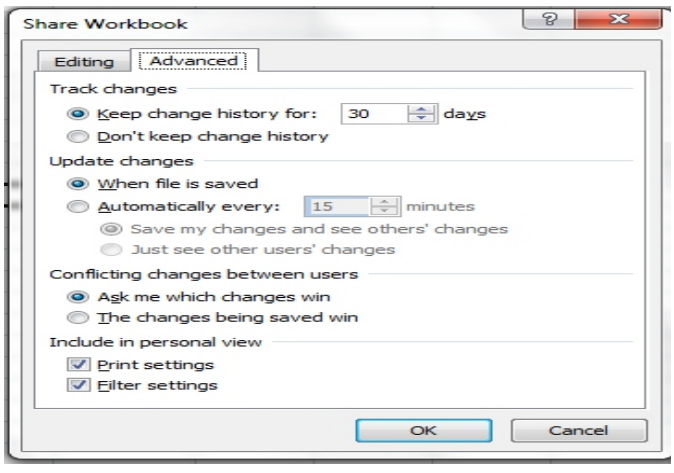
Step 5: If the workbook contains links to other workbooks or documents, verify the links and update any links that are broken

Step 6: Click the **Office** button and then click **Save**

Or use keyboard shortcut, Press CTRL+S to save the workbook







3.26 IMPORTING AND EXPORTING DATA

Although you can copy and paste data from and to Excel, like you can in almost every other program. Excel lets you take this one step further using its Import and Export features. These features are useful when you have to share data with programs that don't work directly with Excel. In this section you will learn how to import or export text files. There are two commonly used text file formats:

- Delimited text files (.txt), in which the TAB character typically separates each field of text
- Comma separated values text files (.csv), in which the comma character (,) typically separates each field of text

There are two ways to import data from a text file by using Excel: You can open the text file in Excel, or you can import the text file as an external data range. To export data from Excel to a text file, use the Save As command. In the following given steps, we assume that in the text file, TAB character separates each field of text. To import a text file (in which the TAB character typically separates each field of text by opening it in Excel, use following steps:

Step 1: On the **Office** button, click **Open**

Step 2: Select **Text Files** from the Open dialog box then Locate and double-click the text file that you want to open

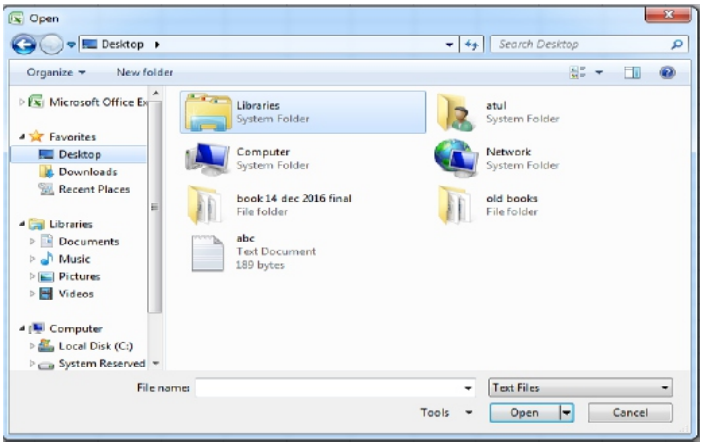
Step 3a: To import a .csv file, select the .csv file and click Open, That's all

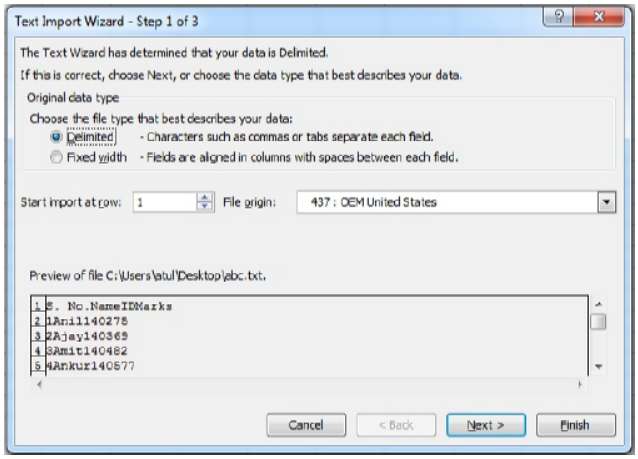
Step 3b: To import a .txt file, select the .txt file and click Open, Excel launches the Text Import Wizard

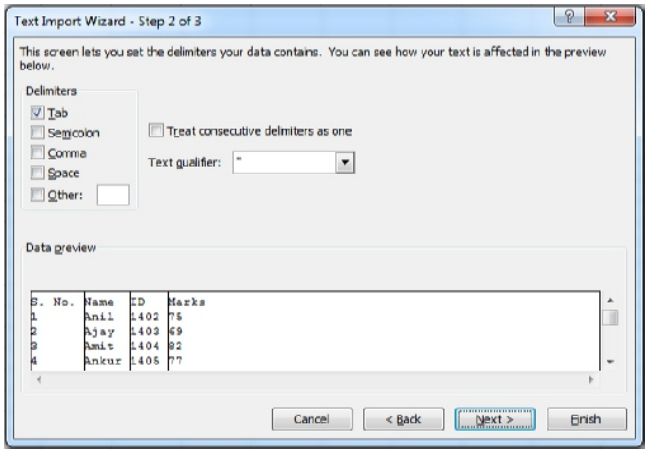
Step 4: Choose **Delimited** and click Next

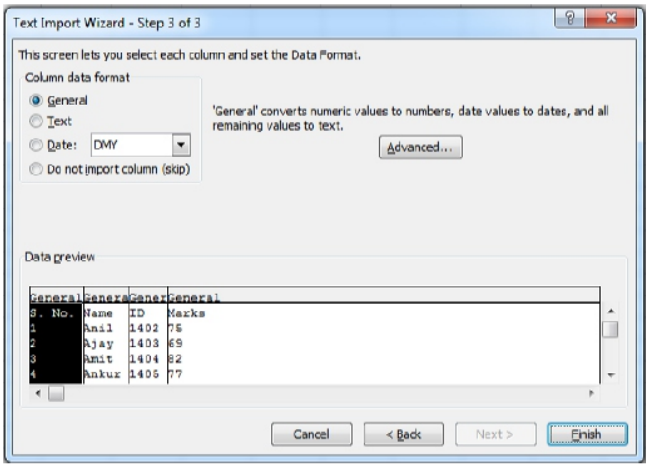
Step 5: Clear all the check boxes under Delimiters except for the Tab check box and click Next

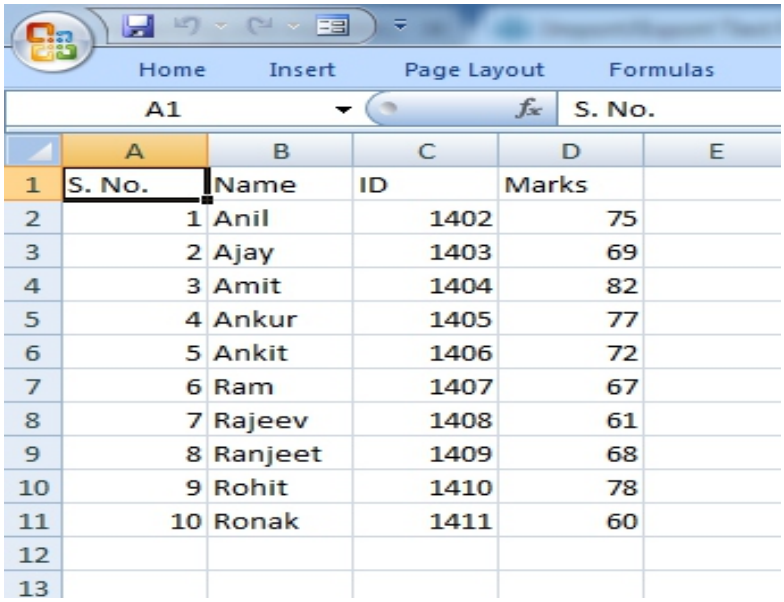
Step 6:Click **Finish.**




Text Import Wizard - Step 1 of 3
The Text Wizard has determined that your data is Delimited.
If this is correct, choose Next, or choose the data type that best describes your data.
Original data type
Choose the file type that best describes your data:
Delimited - Characters such as commas or tabs separate each field.
Fixed width - Fields are aligned in columns with spaces between each field.
Start import at row: 1
File origin: 437 : OEM United States
Preview of file C:\Users\atul\Desktop\abc.txt.
1 S. No.NameIDMarks
2 1Anil140275
3 2Ajay140369
4 3Amit140482
5 4Ankur140577
Cancel
< Back
Next >
Finish


Text Import Wizard - Step 2 of 3
This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.
Delimiters
Tab
Semicolon
Comma
Space
Other:
Treat consecutive delimiters as one
Text qualifier: "
Data preview
S. No. Name ID Marks
1 Anil 1402 75
2 Ajay 1403 69
3 Amit 1404 82
4 Ankur 1405 77
Cancel
< Back
Next >
Finish


Text Import Wizard - Step 3 of 3
This screen lets you select each column and set the Data Format.
Column data format
General
Text
Date: DMY
Do not import column (skip)
'General' converts numeric values to numbers, date values to dates, and all remaining values to text.
Advanced...
Data preview
General General General General
S. No. Name ID Marks
1 Anil 1402 75
2 Ajay 1403 69
3 Amit 1404 82
4 Ankur 1405 77
Cancel
< Back
Next >
Finish



	A	B	C	D	E
1	S. No.	Name	ID	Marks	
2	1	Anil	1402	75	
3	2	Ajay	1403	69	
4	3	Amit	1404	82	
5	4	Ankur	1405	77	
6	5	Ankit	1406	72	
7	6	Ram	1407	67	
8	7	Rajeev	1408	61	
9	8	Ranjeet	1409	68	
10	9	Rohit	1410	78	
11	10	Ronak	1411	60	
12					
13					

To import a text file by connecting to it, use following steps:

Step 1: Click the cell where you want to put the data from the text file

Step 2: On the **Data** tab, in the **Get External Data** group, click **From Text**

Step 3: Locate and double-click the text file that you want to import, Excel launches the Text Import Wizard

Step 4: Choose **Delimited** and click Next

Step 5: Clear all the check boxes under Delimiters except for the Tab check box and click Next

Step 6: Click **Finish**, the **Import Data** dialog box will appear

Step 7: In the **Import Data** dialog box, do the following:

- Optionally, click **Properties** to set refresh, formatting, and layout options for the imported data
- Under **Where do you want to put the data**?, do one of the following:
  1) To return the data to the location that you selected, click **Existing worksheet**
  2) To return the data to the upper-left corner of a new worksheet, click **New worksheet**

Step 8: Click OK

To export text files, use following steps:
Step 1: Open an Excel file
Step 2: On the **Office** button, click **Save As**
Step 3: Select Text (Tab delimited) or CSV (Comma delimited) from the drop-down list
Step 4: Click **Save**

Important Points:

- Charts allow you to present data entered into the worksheet in a visual format using a variety of graph types.
- Legends are some sort of labels that identify different series that are being plotted in a chart.
- Pie charts are useful in a situation where one has to show the relative proportions or contributions to a whole.
- Column Charts are used to compare values across categories by using vertical bars.
- The purpose of a Scatter Chart is to observe how the values of two series compares over time or other category.
- To display the formatting dialog box appropriate for a chart element, double click on it.
- To move a chart to a different place on the worksheet, select the chart and drag it to the desired location.
- By using a SmartArt graphic in Excel, you can create an organization chart and include it in your worksheet.
- A sparkline is a very small line chart that is typically drawn without axes or coordinates.
- A formula is a structured piece of text that tells Excel what it has to calculate.
- A predefined formula is called a function, which uses a specific value in a particular order to execute calculation.
- The purpose of an Excel table is to store lots of information in a consistent manner, making it easier to format, sort, and filter worksheet data.

Practice Questions

Objective type questions:

Q1.In order to edit a chart, you can

a. Click the chart object
b. Click and drag the chart object

c. Double click the chart object
d. None of above

Q2. Each excel file
a. can contain text and data
b. can be modified
c. can contain many sheets including worksheets and chart sheets
d. All of above

Q3. What do you use to create a chart?
a. Pie Wizard
b. Excel Wizard
c. Data Wizard
d. Chart Wizard

Q4.To insert a picture in Excel, use Picture option from
a. Illustrations Group
b. Arrange Group
c. Connections Group
d. Text Group

Q5.Which of the following is an absolute cell reference?
a. !A!1
b. A1
c. #a#1
d. A1

Q6. Which of the following options cannot be set in the page setup dialog box?
a. Printer selection
b. Vertical or horizontal placement
c. Orientation
d. Row and column titles

Very short answer type questions:
Q1. Excel chart wizard is used for?
Q2. Which Charts are best suitable for displaying data trends?
Q3. What is Legend?
Q4. Pie chart is useful in?
Q5.Define sparkline.

Short answer type questions:

Q1. What is importance of chart?
Q2. Explain the type of charts in Excel.
Q3.What are chart tools?
Q4. Write different ways to modify charts.
Q5. How cell reference is useful in the calculation?
Q6. What is function in Excel?
Q7. Explain table insertion in Excel.
Q8. What is data validation?

Essay type questions:

Q1. How you can create charts using Excel? Explain steps.
Q2. What is the use of chart? Explain the element of a chart.
Q3.Explain the organizational charts.
Q4. Explain functions in Excel.
Q5. Explain references in Excel.
Q6. What is Excel form? How you can create a data form in excel?
Q7. Write down the steps to add data validation to a cell or a range.
Q8. How you can share your worksheets and workbooks in Excel?
Q9. How you can import and export data in Excel?
Q10. What is sparkline? Write down the steps to create a sparkline.

Answers key for objective questions

Q1: c
Q2: d
Q3: d
Q4: a
Q5: b
Q6: c

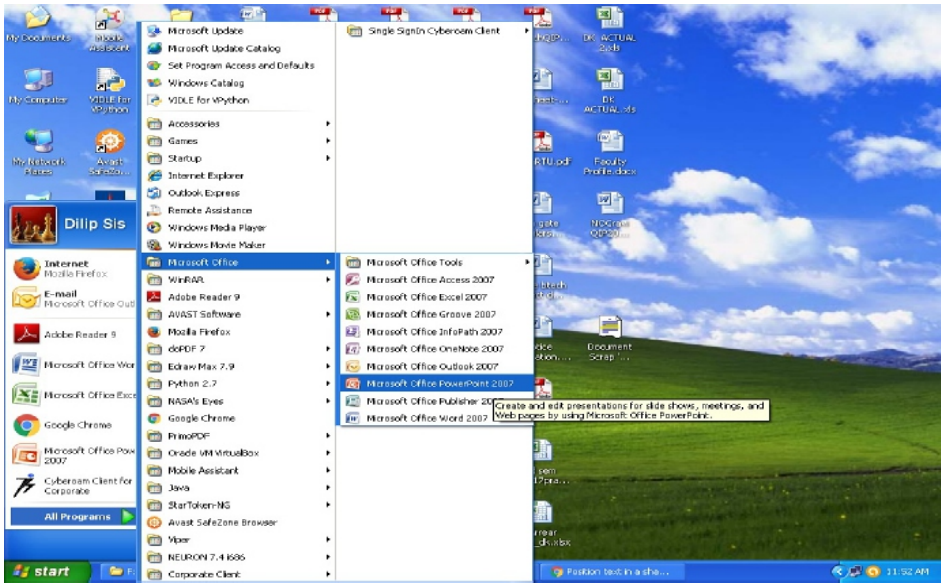
Chapter 4
MS Power Point

PowerPoint is a presentation software, which is a part of Microsoft Office Suite. It gives you the facility to create presentations that can incorporate graphs, charts, videos, and animation. A PowerPoint presentation is a collection of slides that can be used to create oral presentations. It is a complete presentation graphics package. It gives you everything you need to produce a professional-looking presentation. In this chapter, you will learn to create presentations using MS PowerPoint 2007.

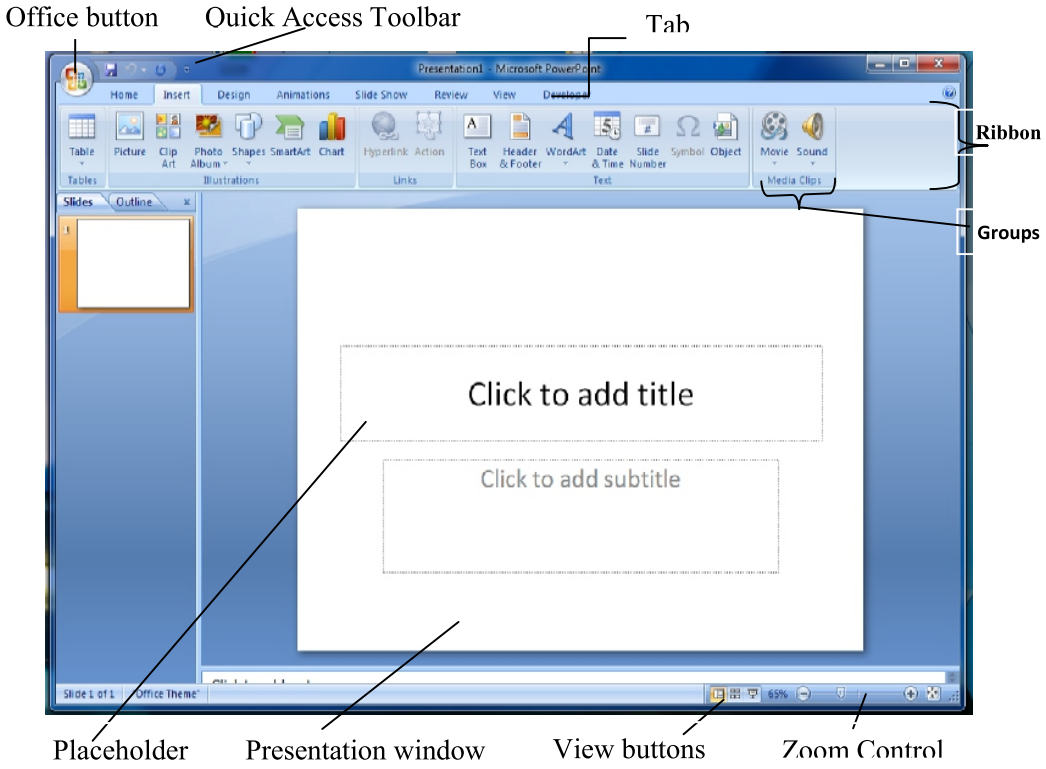
4.1 OPENING

You can start your PowerPoint program in different ways. One way is using Start button:

Step 1: Click on the **Start** button on the task bar at the bottom-left corner of the screen
Step 2: Click on **All Programs** option from the menu
Step 3: Select **Microsoft Office** from the list of programs
Step 4: Click on **Microsoft PowerPoint 2007**



This will launch the MS PowerPoint 2007 application and the following PowerPoint window will be shown.



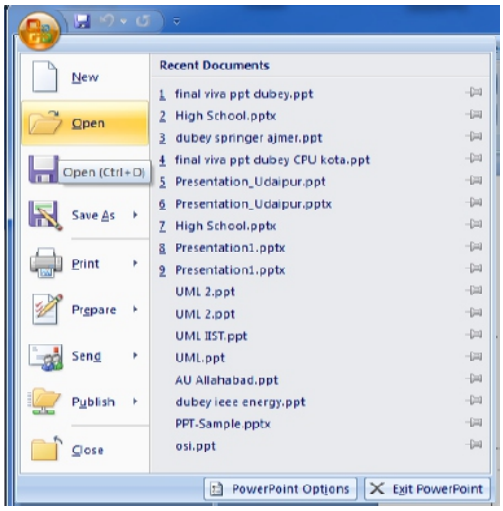
4.2 OPENING AN EXISTING PRESENTATION

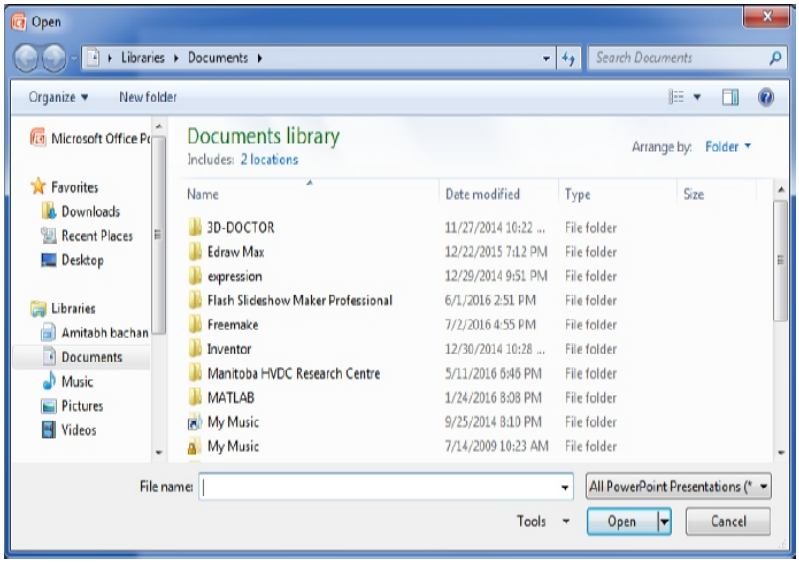
To open an existing power point, you can use following steps:

Step 1: Click on the **Office** button and then click **Open**

Alternatively, use Open command (Ctrl + O)

Step 2: In the Open dialog box, locate and double-click the power point file that you want to open



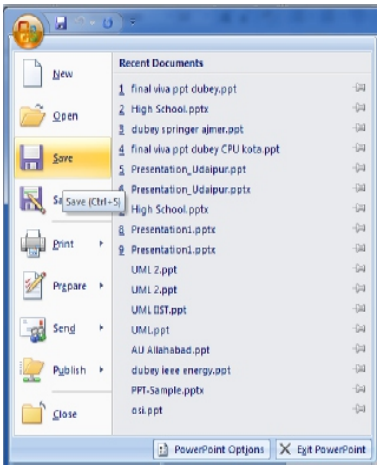


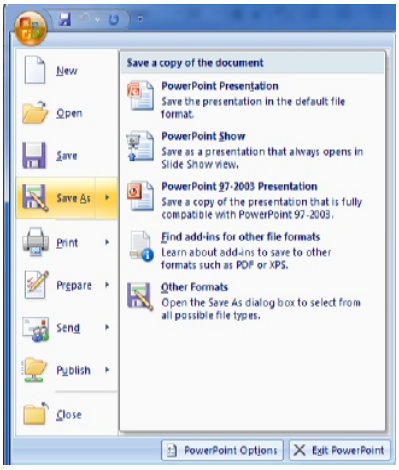
Alternatively you can go to window explorer and find out the file you want to open and double click on it.

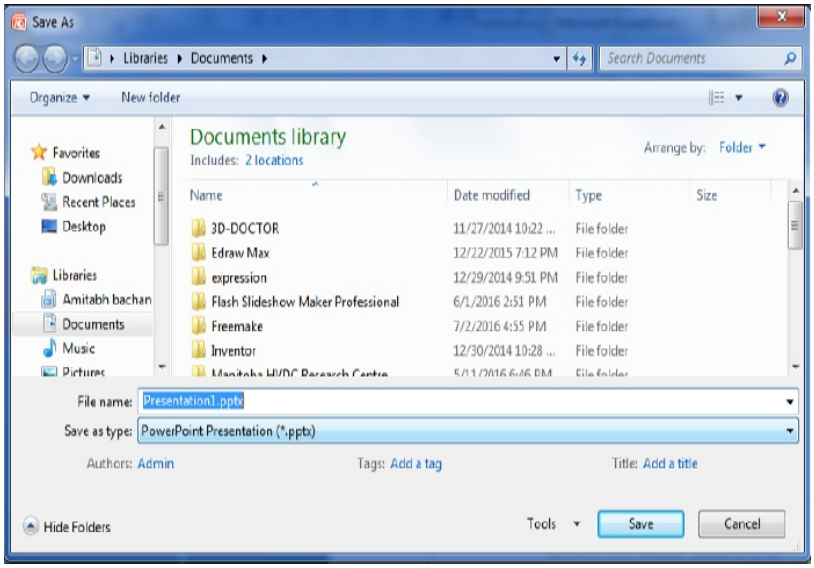
4.3 SAVING AND CLOSING A PRESENTATION

You can save your presentation slides as a file in a folder. You can save a presentation for the first time by using following steps:
Step 1: Click on the **Office** button and then click **Save**
Step 2: In the Dialog Box select the location where you want to save the file
Step 3: Type the file name
Step 4: Click on **Save**

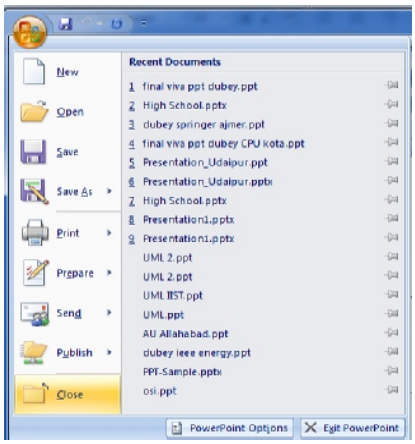
Alternatively, you can save your presentation slides by clicking on the **Save** icon at the top left corner or by using command (Ctrl + S).





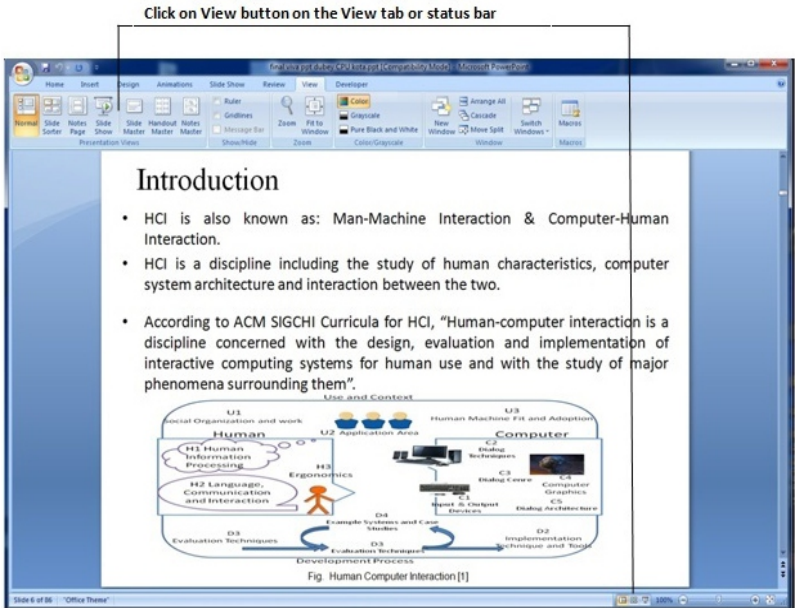


To close the current presentation slides file, select **Office** button and click **Close**. If the file contains any unsaved changes, you will be prompted to save the file before closing.



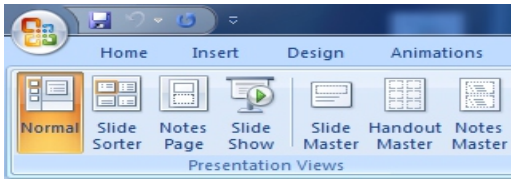
4.4 CHANGING VIEWS

PowerPoint has several views. It offers two places to change the view, the view buttons on the Status bar and the Ribbons view tab. The first two views are for creating your presentation and the last one is for presentation of slide show.



PowerPoint gives you four views in which you create and organize your presentation. As you create a presentation, you can switch among the four views as you work. The four PowerPoint views are:

1. Normal View
2. Slide Sorter View
3. Notes Page View
4. Slide Show View

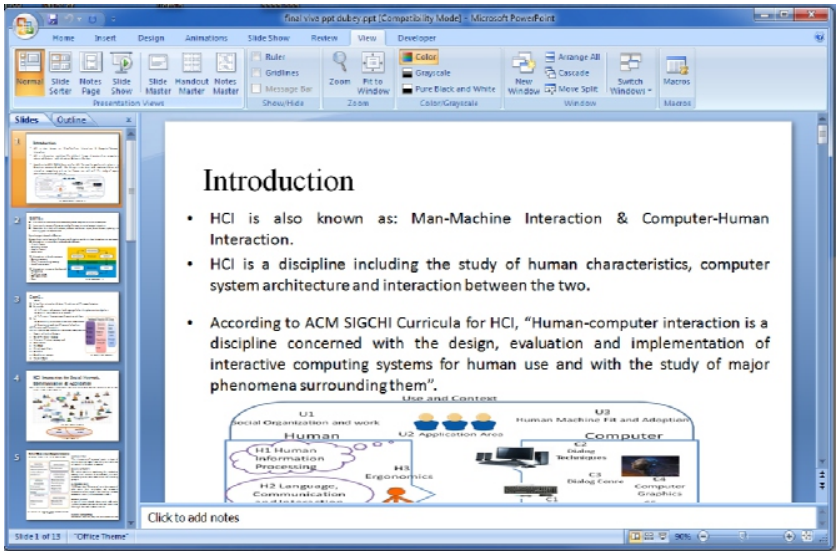


1. Normal View

To access Normal view, click on **Normal** view button from **Presentation View** group at **View** tab. The Normal View divides the screen into three sections:

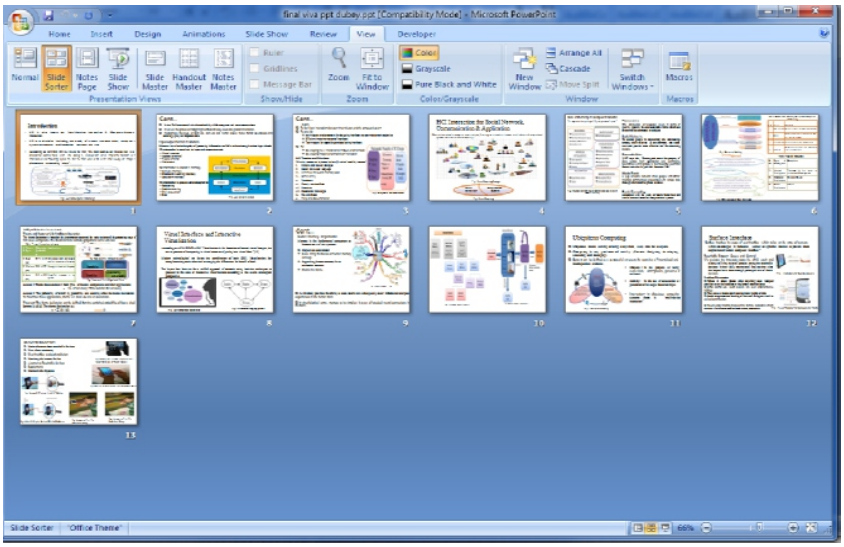
a. Main window (where the current slide is displayed)
b. Outline pane on the left
c. Notes pane at the bottom

This is where you will do most of your work. You can resize each pane by clicking its border and dragging it to the size that you want it to be. The Outline view shows all the titles, body text and support to move slides around within your presentation, also allow you to edit your text.



2. Slide Sorter View

To access Slide Sorter View, click on **Slide Sorter** view button from **Presentation View** group at **View** tab. As the name specify, a small image of each slide is visible in this view, and this view is helpful in ordering the slides and to add special effect (like transactions).



3. Slide Show View

To access Slide Show View, click on **Slide Show** view button from **Presentation View** group at **View** tab. This type of view is more applicable for monitoring the preview of presentation to make sure everything is proper and to deliver presentation to the audience.

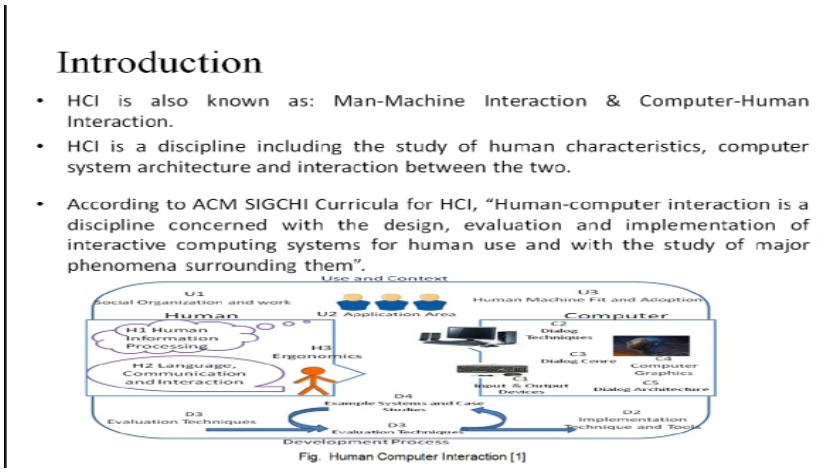
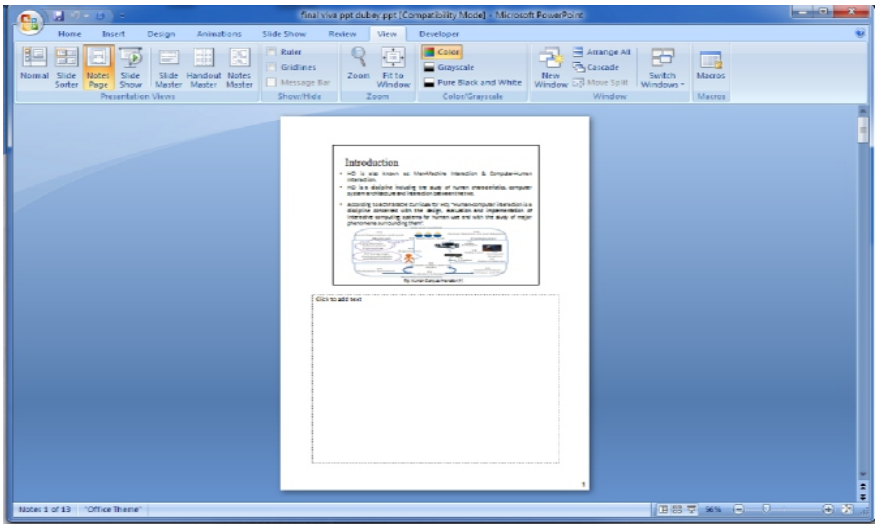


Fig. Human Computer Interaction [1]

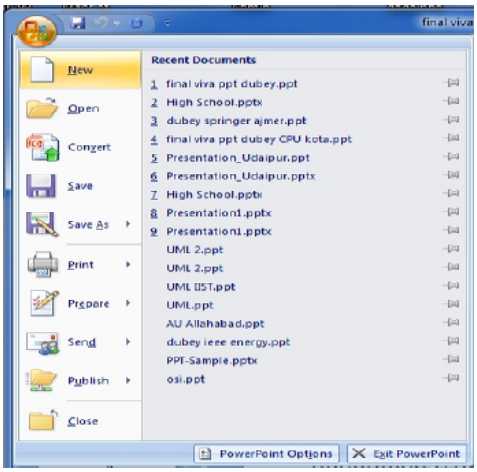
4. Notes Page View

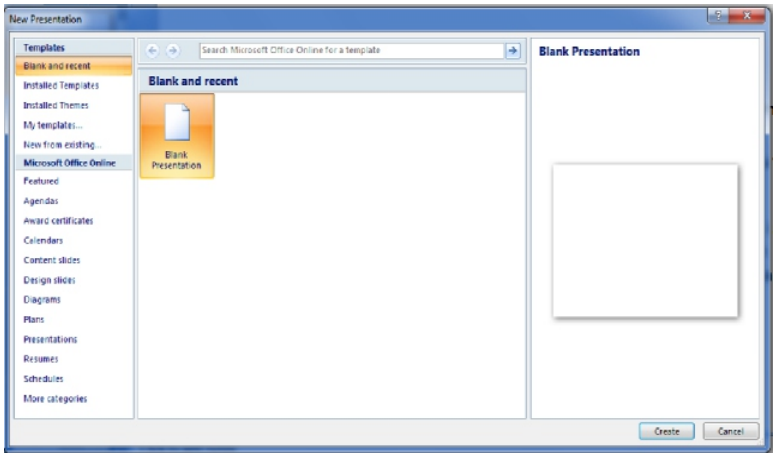
To access Note Page View, click on **Note Page** view button from **Presentation View** group at **View** tab. This view is used to create speaker's notes.

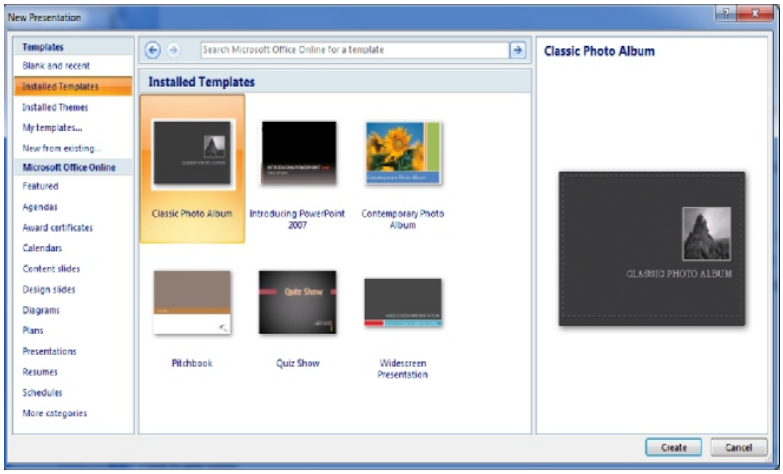


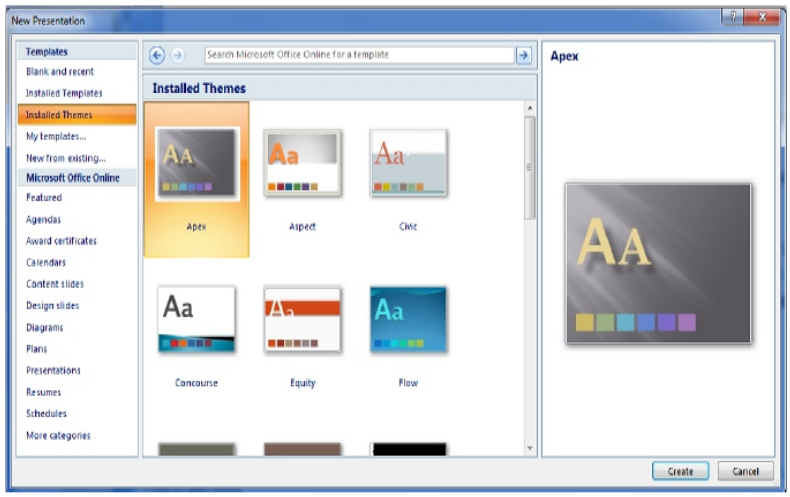
4.5 CREATING A NEW PRESENTATION

When you start your PowerPoint Program, you see a Blank presentation. You can also create a new blank presentation, by clicking on the **Office** button and click **New,** then select the **Blank Presentation**. You choose this option when you need to build a new presentation from scratch. You can also select available design templates and themes from **Installed Templates** and **Installed Themes** and then enter your own content.



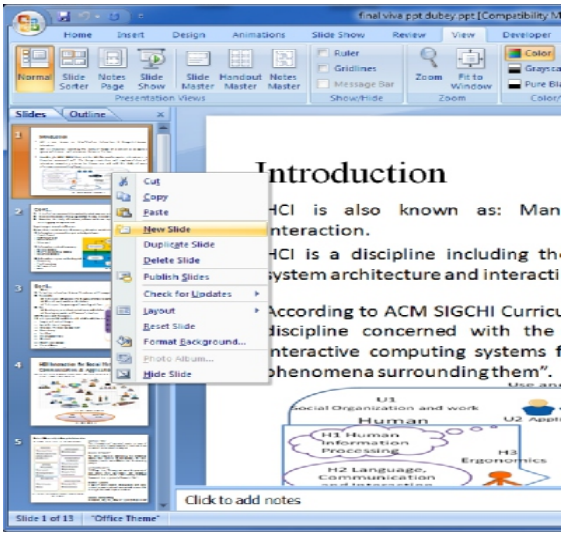

New Presentation
Templates
Blank and recent
Installed Templates
Installed Themes
My templates...
New from existing...
Microsoft Office Online
Featured
Agendas
Award certificates
Calendars
Content slides
Design slides
Diagrams
Plans
Presentations
Resumes
Schedules
More categories
Search Microsoft Office Online for a template
Blank and recent
Blank Presentation
Blank Presentation
Create
Cancel

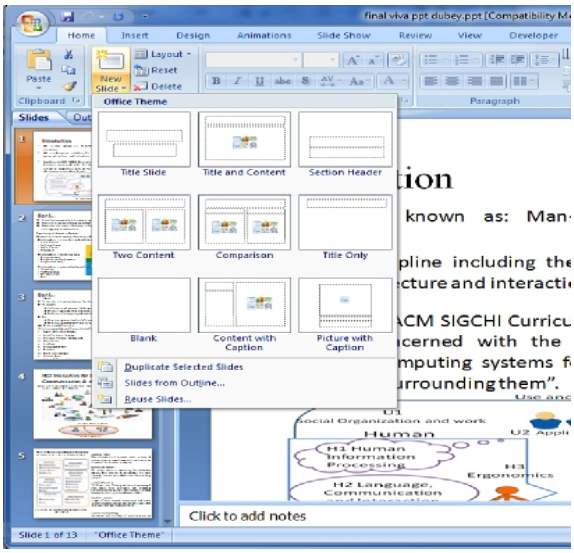

New Presentation
Templates
Blank and recent
Installed Templates
Installed Themes
My templates...
New from existing...
Microsoft Office Online
Featured
Agendas
Award certificates
Calendars
Content slides
Design slides
Diagrams
Plans
Presentations
Resumes
Schedules
More categories
Search Microsoft Office Online for a template
Installed Templates
Classic Photo Album
Introducing PowerPoint 2007
Contemporary Photo Album
Pitchbook
Quiz Show
Widescreen Presentation
Classic Photo Album
Create
Cancel


New Presentation
Templates
Blank and recent
Installed Templates
Installed Themes
My templates...
New from existing...
Microsoft Office Online
Featured
Agendas
Award certificates
Calendars
Content slides
Design slides
Diagrams
Plans
Presentations
Resumes
Schedules
More categories
Search Microsoft Office Online for a template
Installed Themes
Apex
Aspect
Civic
Concourse
Equity
Flow
Apex
Create
Cancel

4.6 ADDING A SLIDE

There are two ways to add a new slide. In each way, the slide that is currently selected is important as the new slide will be placed after the selected one. To select the slide, just click on it. You can select the slide in whichever view you happen to be using, whether it's Slides View or Outline View. Once you have selected a slide, click on **New Slide** in **Home** tab. Alternatively, in the **Outline** pane of **Normal** view, right click on the slide after which you want to add a new slide and Select **New Slide** from the pop-up menu.





4.7 CHANGING A SLIDE LAYOUT

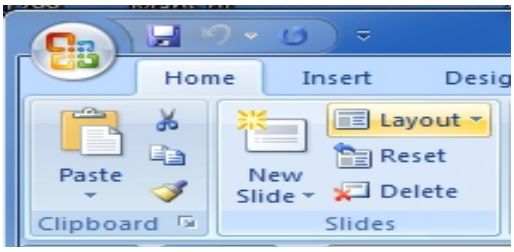
Slide layouts contain formatting, positioning, theme (colors, fonts, effects, and the background), and placeholders for all of the content that can appear on a slide. Placeholders are the containers in layouts that hold such content as text, tables, charts, SmartArt graphics, sounds, movies, pictures, and clip art. PowerPoint includes nine built-in slide layouts, or you can create custom layouts as per your needs.

Step 1: On the **View** tab, in the **Presentation Views** group, click **Normal**

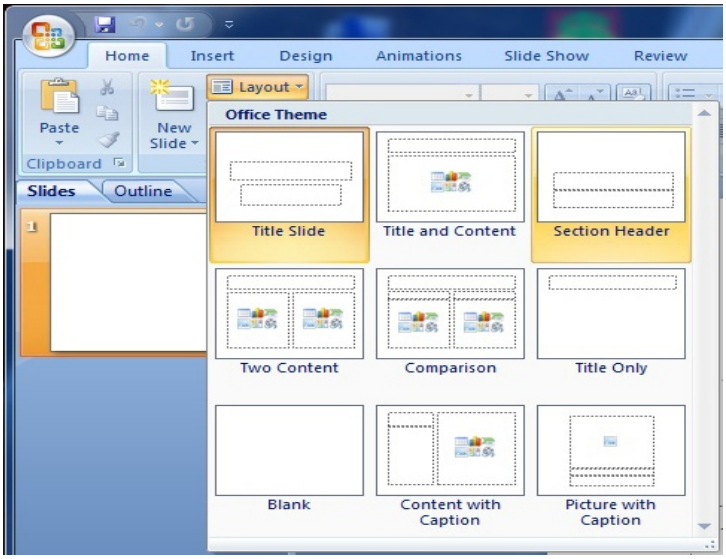
Step 2: In Normal view, in the pane that contains the Outline and Slide tabs, click the **Slides** tab

Step 3: Click the slide that you want to apply a layout to

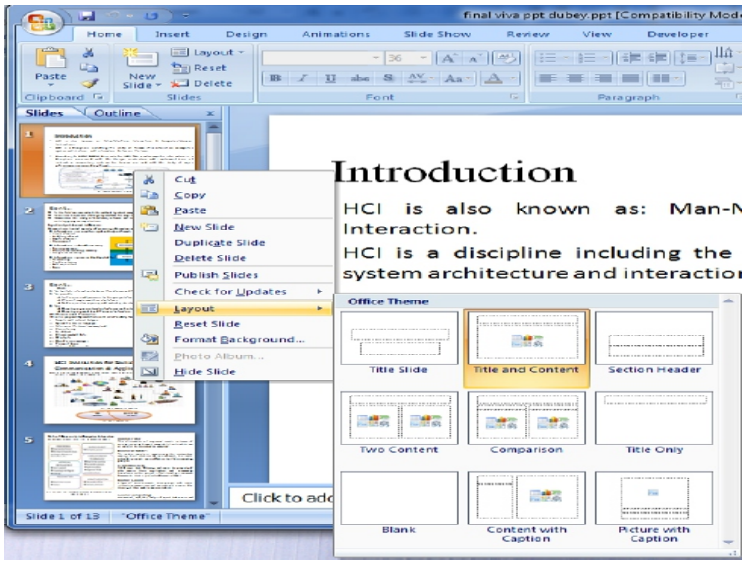
Step 4: On the **Home** tab, in the **Slides** group, click **Layout**, and then select the layout that you want



The following figure shows the slide layouts that are built-in to PowerPoint.



Alternatively, in the **Outline** pane of **Normal** view, right click the slide that you want to apply a layout to and select **Layout** from the pop-up menu.



4.8 ENTERING TEXT ON A SLIDE

The most common way to add text to a slide is to type it directly into any placeholder on the slide. However, if you are using a blank slide (without placeholders) or if you want to enter text outside placeholders, you can use a text box.

Adding text to a placeholder

As soon as you select a slide layout the new slide appears with dummy text (such as "Click to add title") in the placeholders. When you click inside a placeholder, the dummy text disappears, the cursor becomes a blinking line (|) and you can start typing.

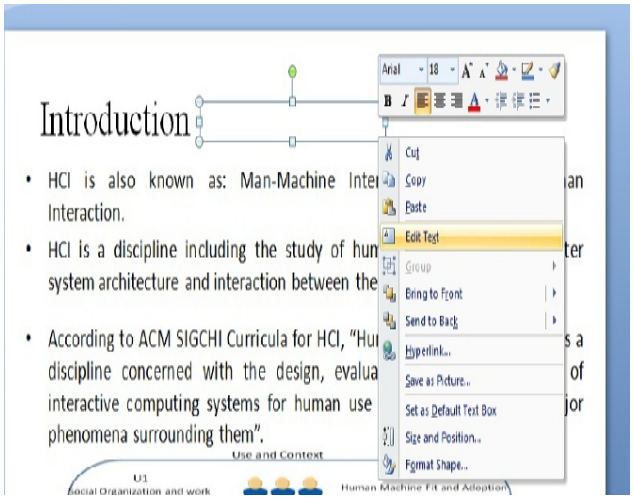
Adding text to a text box

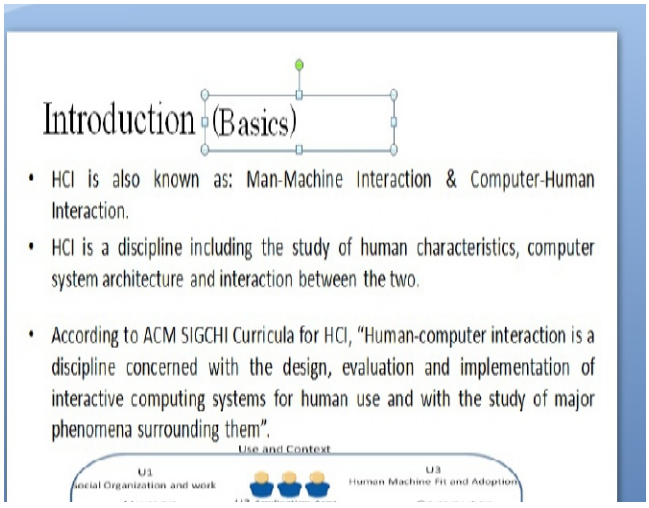
To add text anywhere on a slide (outside placeholders), use following steps:

Step 1: Click **Text Box**, in the **Text** group of **Insert** tab

Step 2: Click on slide where you want to place the text box

Step 3: To add text to a text box, click inside the text box, and then type or paste the text

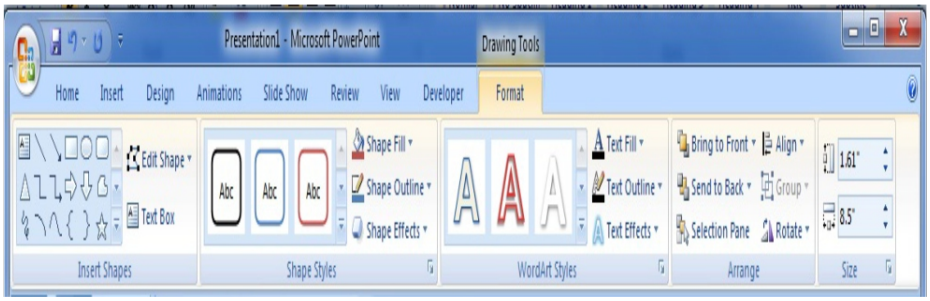




4.9 CHANGING TEXT FORMATS

To create a really impressive presentation, you will need to format your text appropriately. When we think of formatting, the text, color and font usually come to mind. However, there are other effects such as bold and italics, using WordArt and applying bullets to lists, numbers to sequential lists.

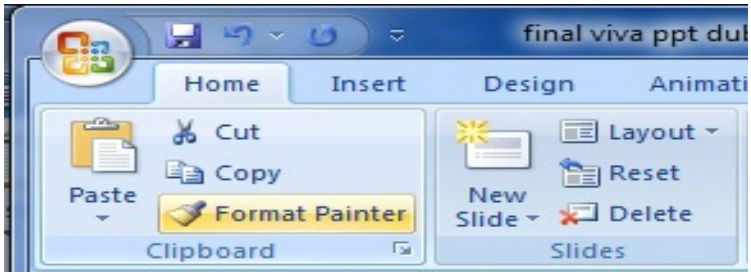
There are many ways using which you can format text in PowerPoint. One way is by using mini toolbar. The toolbar opens automatically when you select text. You can also format text by using different available options in **Format** tab. Or you can use various options available on **Font** group of **Home** tab.



4.10 USING THE FORMAT PAINTER

A handy feature on the standard toolbar for formatting text is the Format Painter. Use the Format Painter to quickly copy formatting from one thing in a slide to another. Just select the thing you like the look of, click Format Painter, and then

click the thing you want to change to look the same. Format Painter picks up all the formatting from your first thing, whether it's a shape, cell, picture border, or piece of text, and applies it to the second. To use Format Painter, click the Format Painter button in the clipboard group of Home tab. The pointer will change to a paintbrush icon, click and drag to select the text, shape, or picture you want to format, and then release the mouse button. The formatting will change accordingly. Also, to copy the formatting to more than one thing, double-click Format Painter instead of single-clicking it. Your copied formatting will be applied to everything you click until you press Esc key.



4.11 BULLETS

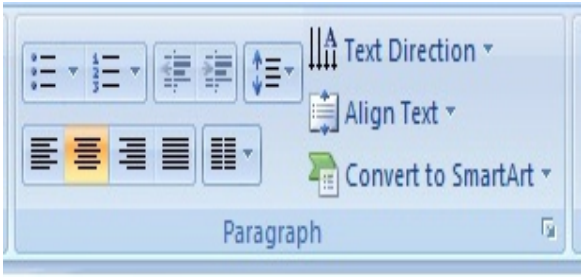
Bullets are useful to arrange text in the lists. Its handle unordered lists where each item is not significantly more important than others. To put up the bullets (or numbers) in your slide use following steps:

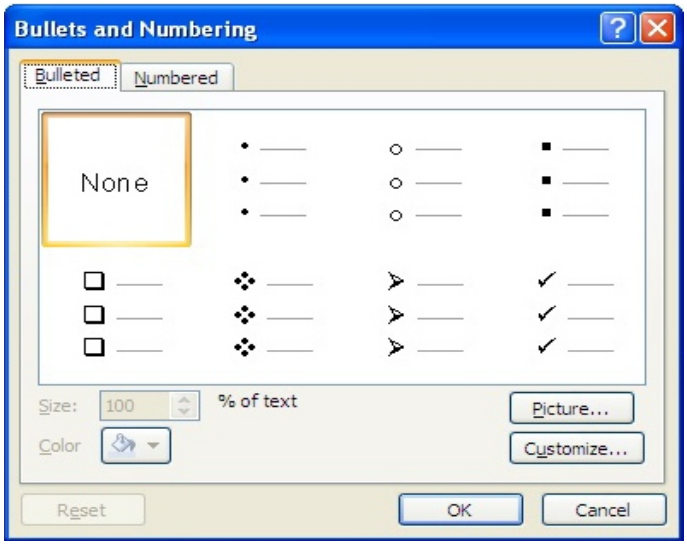
Step 1: On the **View** tab, in the **Presentation Views** group, click **Normal**

Step 2: On the left-hand side of the PowerPoint window, click a slide thumbnail that you want to add bulleted text to

Step 3: On the slide, select the lines of text in a text placeholder or table that you want to add bullets to

Step 4: On the **Home** tab, in the **Paragraph** group, click **Bullets** (click **Numbering** for adding numbers)





4.12 ALIGNMENTS TEXT

Horizontal alignment determines how the left and right edges of a paragraph fit between the left and right margins of a placeholder or text box, while vertical alignment determines the placement of the text within the placeholder or text box vertically. The alignment commands align the text within the placeholder or text box it is in, not across the slide. To change horizontal text alignment use following steps:

Step 1: Select the text you want to align

Step 2: Select one of the four **alignment options** in the **Paragraph** group from **Home** tab

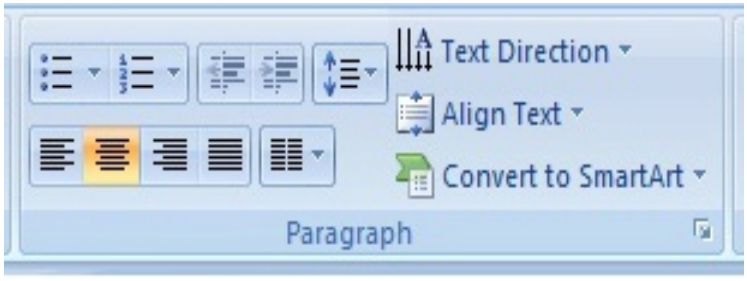
- **Align Text Left:** Aligns all of the selected text to the left margin
- **Center:** Aligns text an equal distance from the left and right margins
- **Align Text Right:** Aligns all of the selected text to the right margin
- **Justify:** Aligns text equally on both sides to the right and left margins; used by many newspapers and magazines

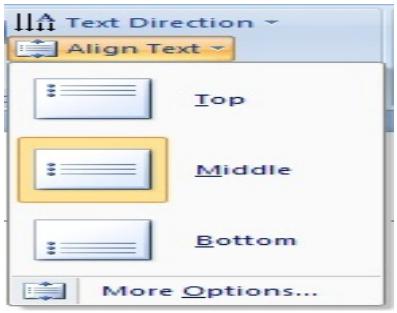
To change vertical text alignment use following steps:

Step 1: Select the text you want to modify

Step 2: Click the **Align Text** command in the **Paragraph** group from **Home** tab, A menu will appear

Step 3: Choose to align the text at the **Top**, **Middle**,or **Bottom** of the text box





4.13 USING TEMPLATES

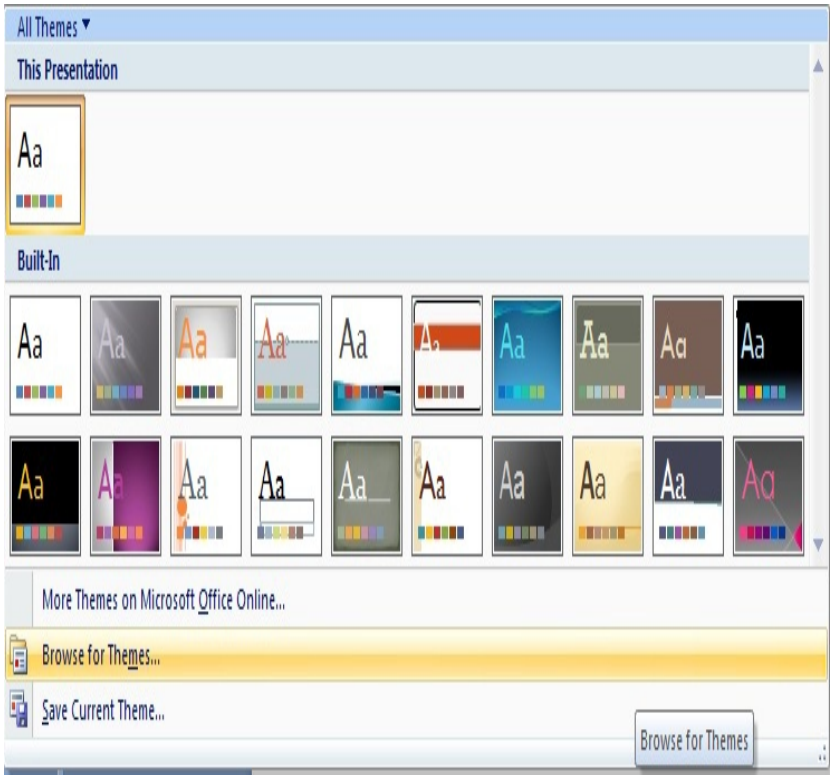
A PowerPoint template is a pattern or blueprint of a slide or group of slides that can contain layouts, theme colors, theme fonts, theme effects, background styles, and even content. You can create your own custom templates and store them, reuse them, and share them with others. Additionally, you can find many different types of free templates built-in to PowerPoint. To apply template to your presentation use following steps:

Step 1: Open your existing presentation

Step 2: Choose **Design** tab on the top

Step 3: Click the dropdown arrow to the left of **Effects**

Step 4: This will open the themes palette, Choose desired template and click Apply or select **Browse for Themes** at the bottom to choose template on your computer and click Apply

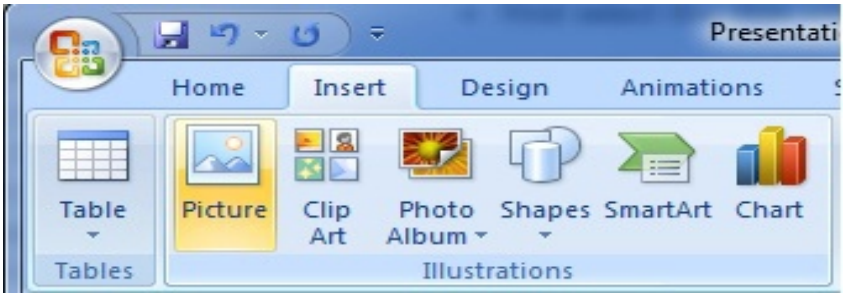


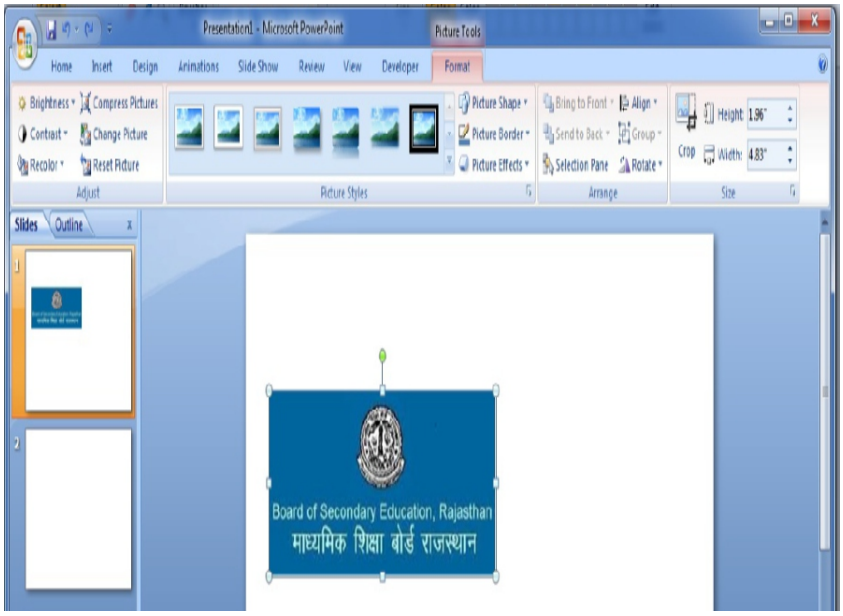
4.14 ADDING A PICTURE

Proper use of visuals can make your PowerPoint presentation very effective. Good visuals can keep your audience entertained and engaged. If you already have a picture file on your computer that you want to insert into a PowerPoint presentation, PowerPoint lets you insert the file. To add a picture in your slide use following steps:

Step 1: Select the slide where you want to add the picture
Step 2: Click **Picture** in **Illustrations** group of **Insert** tab
Step 3: Select the desired picture from the **Insert Picture** dialog box
Step 4: Click **Insert**

You can adjust the size, and location of your appeared picture on the slide by right clicking the picture and choose Format Picture from the shortcut menu.

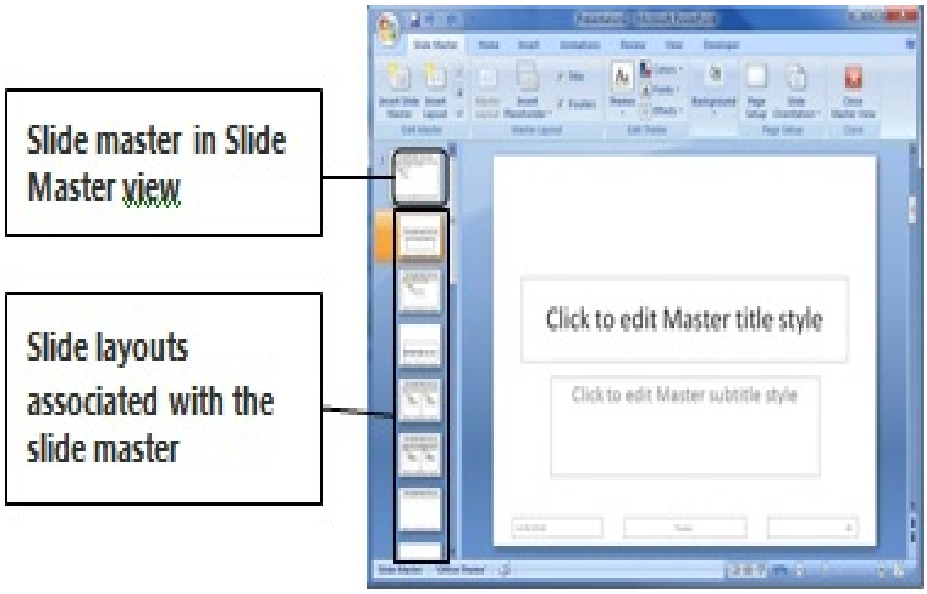


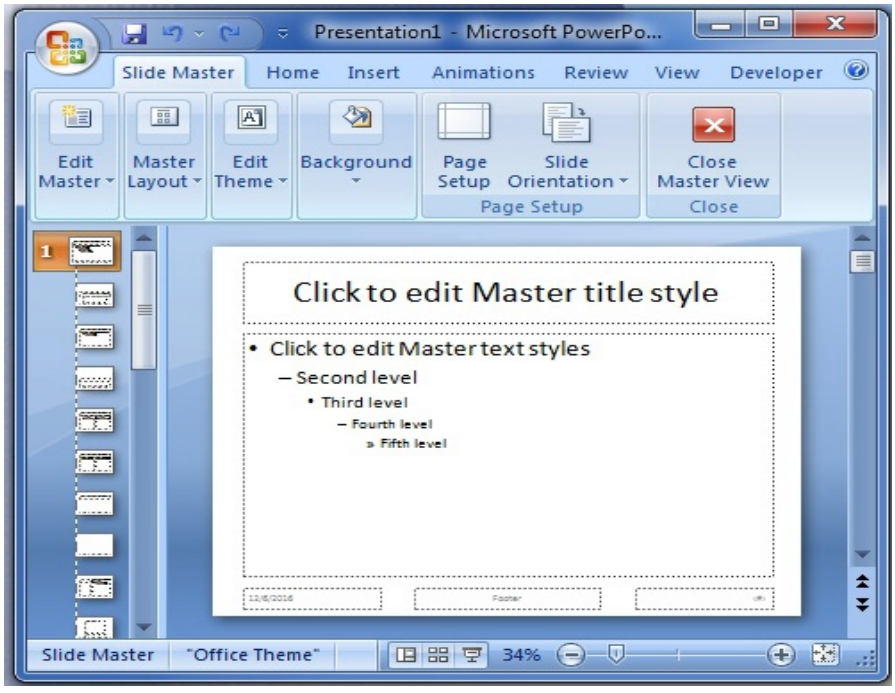


4.15 USING THE SLIDE MASTER

A slide master is the top slide in a hierarchy of slides that stores information about the theme and slide layouts of a presentation, including the background, color, fonts, effects, placeholder sizes, and positioning. When you want to give an overall format to a PowerPoint presentation, there's no need to format each individual slide. Not only is that time-consuming, it's also easy to be inconsistent and end up with different fonts or colors on some slides. First you can format your master slides the way you want, then use them as you're building your presentation to automatically give your entire presentation the same style. If you need to change formatting later, you can do it just as quickly by editing the master slides, and you'll still be able to apply formatting to individual slides if you required. The key benefit to modifying and using slide masters is that you can make universal style changes to every slide in your presentation. When you use a

slide master, you save time because you don't have to type the same information on more than one slide. The slide master is very helpful, when you have extremely long presentations with lots of slides.





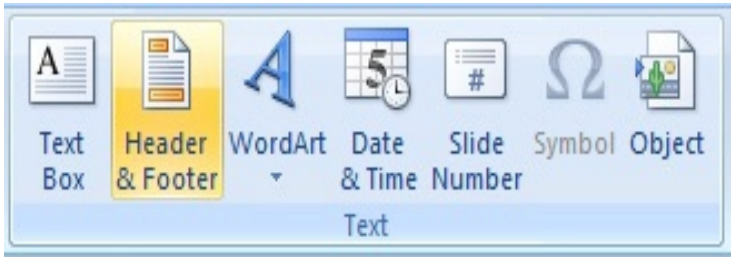
4.16 ADDING HEADERS, FOOTERS AND SPEAKER NOTES

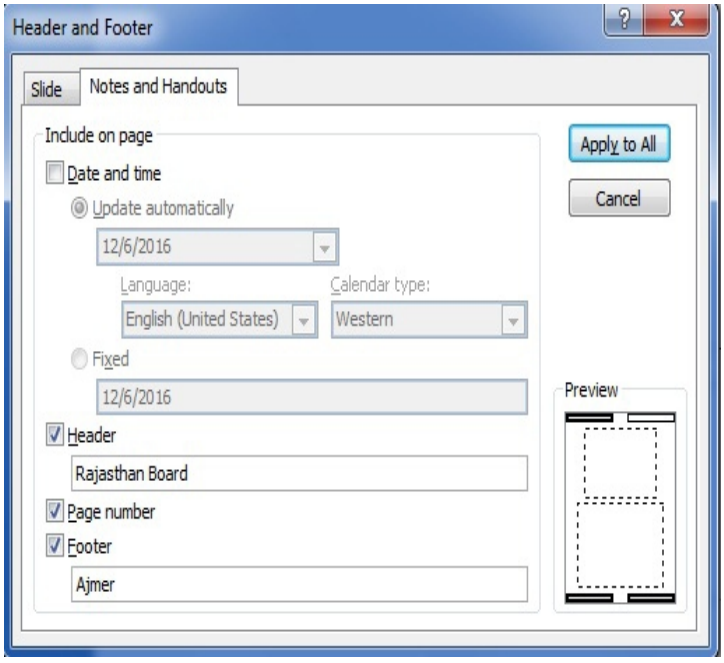
A header or footer is the text that appears at the top (header) or bottom (footer) of each slide in your presentation. This is a standard text or line of text that might include the company name, copyright or trademark symbols, time and date information, presenter name or even a page number. To add header and footer in your slide use following steps:

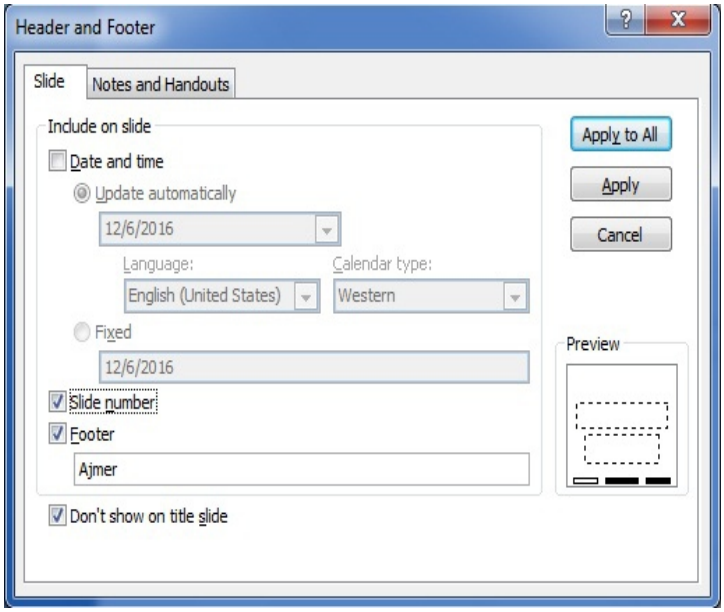
Step 1: Click **Header & Footer** in the **Text** group of **Insert** tab

Step 2: In the **Header and Footer** dialog box, on the Notes and Handouts tab, select the **Header** or **Footer** check box, or both, and then type the text that you want to appear in the center top (header) or center bottom (footer) of each notes page or handout

Step 3: Click **Apply to all**





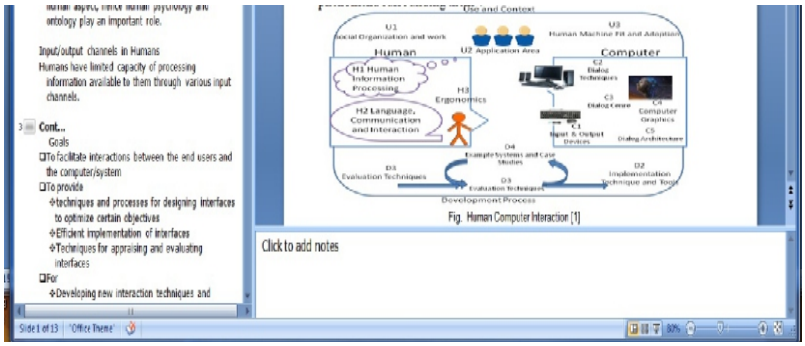


PowerPoint allows you to add notes to your slides called speaker notes, to help you deliver or prepare for your presentation. You can enter and view your speaker notes using the Notes Page view or the Notes pane. To add speaker notes in your slide use following steps:

Step 1: Click **Normal** in the **Presentation Views** group of **View** tab

Step 2: Select the slide you want to add notes to

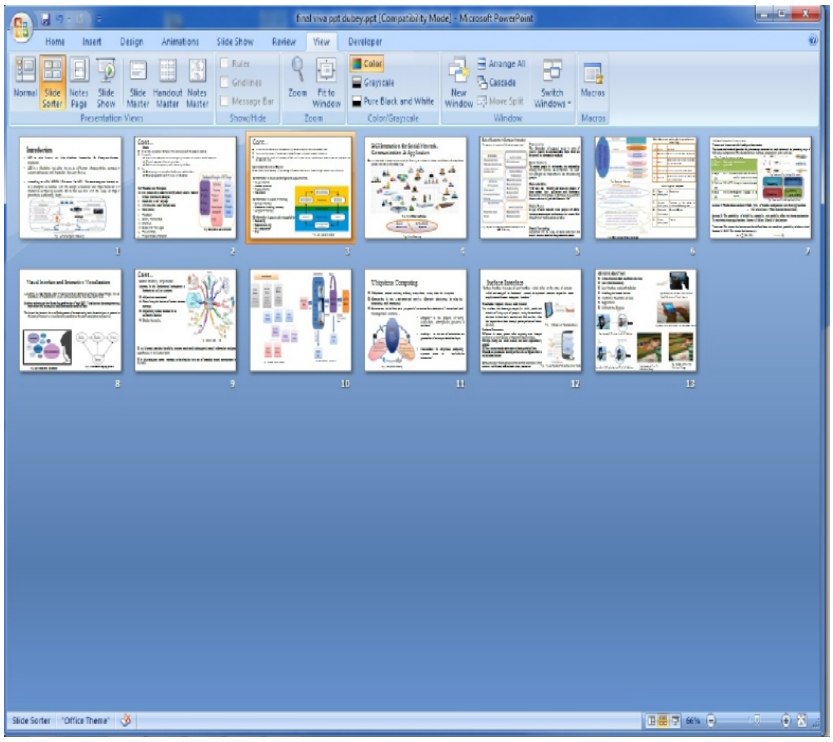
Step 3: In the notes pane, click where it says **Click to add notes** and type whatever notes you'd like to add.



4.17 ARRANGING SLIDES

In order to change the sequence of slides in a presentation, on the Slides tab of Normal view, click the slide that you want to move, and then drag it to the

location that you want. To select multiple slides, click a slide that you want to move, and then press and hold Ctrl while you click each of the other slides that you want to move. Alternatively, you can use Slide Sorter view.

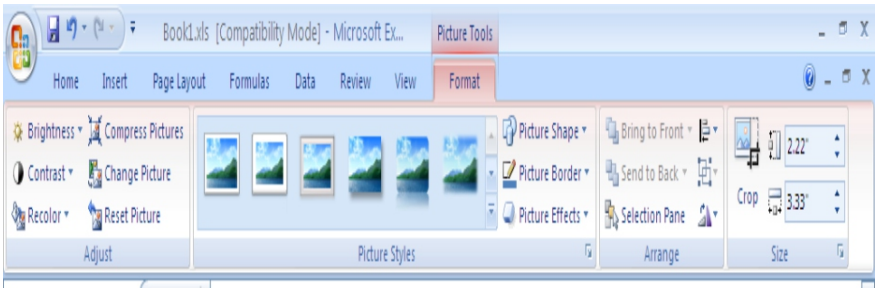


4.18 INTRODUCTION TO DRAWING TOOLS

PowerPoint provides the tools to draw your own figures. In PowerPoint you can create simple shapes and objects with the built in drawing tools, choose from the collection of ready-made shapes, combine simple shapes to create more complex ones, draw an object from scratch, and even add text to your drawings. You can also add formatting effects to your shapes, including resizing, rotating, 3D effects such as shadows and beveling, and changing the color of all or part of the shape. To see PowerPoint's built-in shapes, go to the **Insert tab** and under the **Illustrations group** click on the **Shapes button** to see the list. Click on your desired shape to draw it in your slide. To draw your own shapes you can use freehand drawing tools, Curve, Freeform and Scribble. Curve lets you draw shapes with curves; Freeform lets you draw shapes with both curves and angles; and Scribble lets you draw shapes and lines freehand. You can also combine these tools with other built-in shapes.

4.19 INSERTING AND FORMATTING PICTURE FILES

If you already have a picture file on your computer that you want to insert into a PowerPoint presentation: select the slide where you want to insert the picture file and click **Picture** in **Illustrations** group of **Insert** tab, then select appropriate picture file by using **Insert Picture** dialog box and click **Insert**. You can adjust the size, and location of your appeared picture on the slide, by clicking on the picture file and then selecting appropriate option from **Format** tab.



Format tab contains four groups to format the picture files.

1) The **Adjust** group gives you the ability to control the brightness, contrast, and color of the picture. You can also compress the picture and swap the current picture for another or remove the picture entirely.

2) The **Picture Styles** group gives you options for your picture's border, shape, and captions. You can use pre-defined picture styles from a picture style gallery, or you can format the picture's shape and border manually. The style gallery contains four different shapes each with six different border options that you can apply to your pictures.

3) The **Arrange** group allows you to set the text wrapping behavior around your picture, send the picture backwards or forwards relative to other objects on the page, group or ungroup the picture with other objects, align your picture on the page, and rotate the picture.

4) The **Size** group gives you control over the height and width of your pictures.

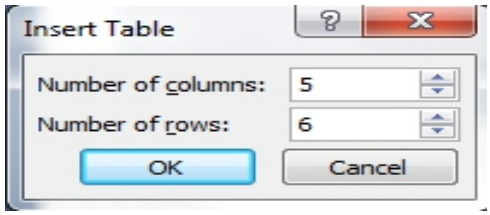
4.20 INSERT A TABLE

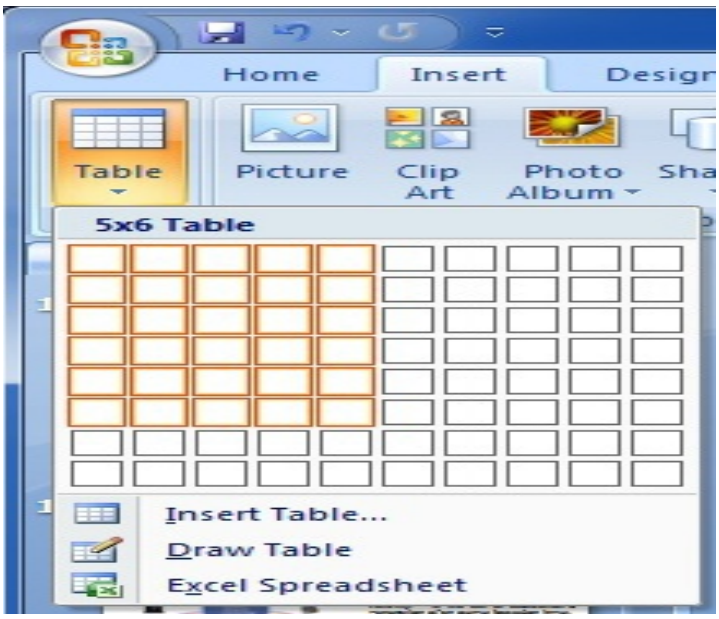
To insert a table in your slide use following steps:
Step 1: Select the slide where you want to insert the table
Step 2: Click **Table** in the **Tables** group of **Insert** tab
Step 3: Do one of the following:

- Move the pointer to select the number of rows and columns that you want to insert, and then click
- Click **Insert Table**, and then enter a number in the Number of columns and Number of rows lists

Step 4: Enter the number of rows and columns
Step 5: To add text to the table cells, click a **cell**,and then enter your text
Step 6: After enter text, click outside the table

To add a row at the end of a table, click the last cell of the last row, and then press TAB.

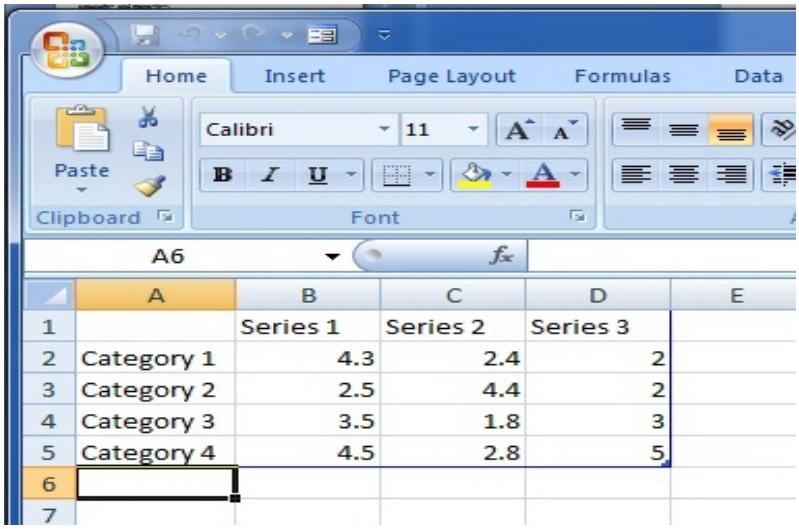


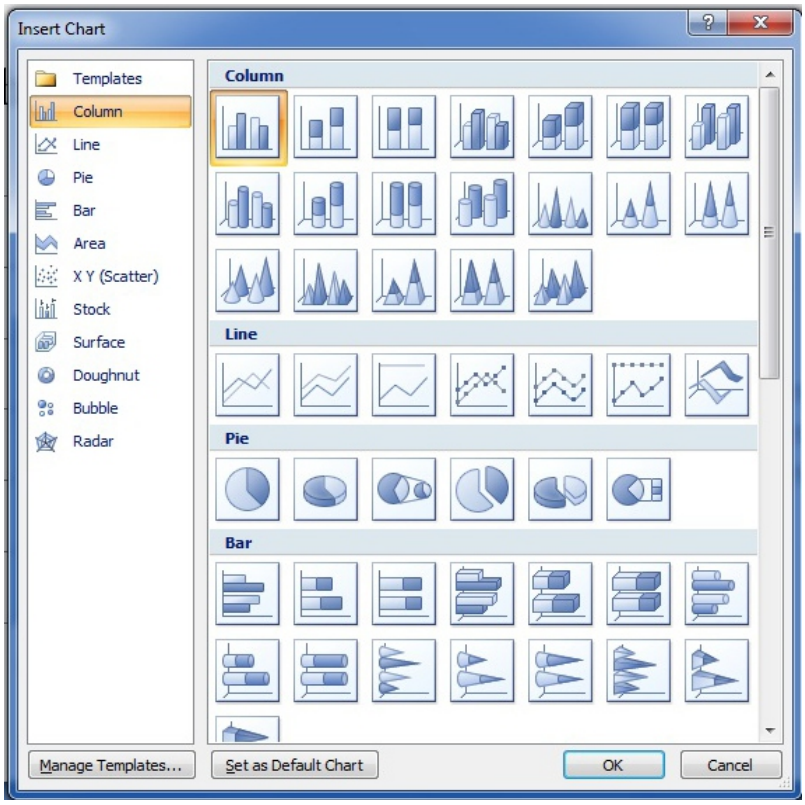


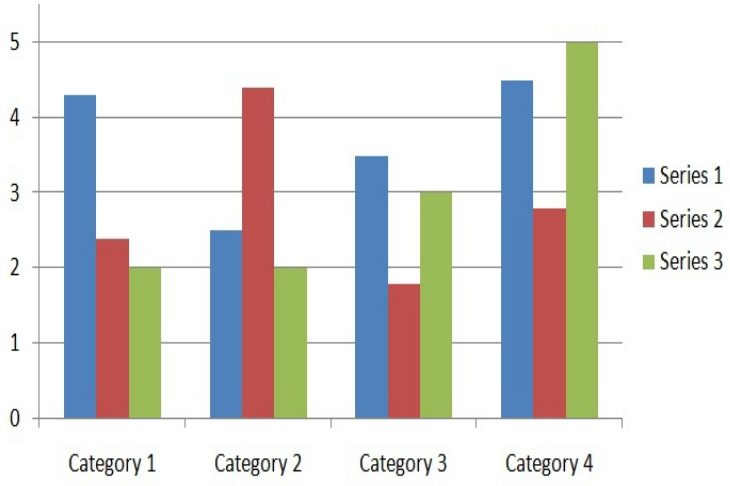
4.21 CHART

Charts allow you to present data entered into the worksheet in a visual format using a variety of graph types. You can include several different types of data charts and graphs in your PowerPoint presentation. To insert a chart in your slide use following steps:

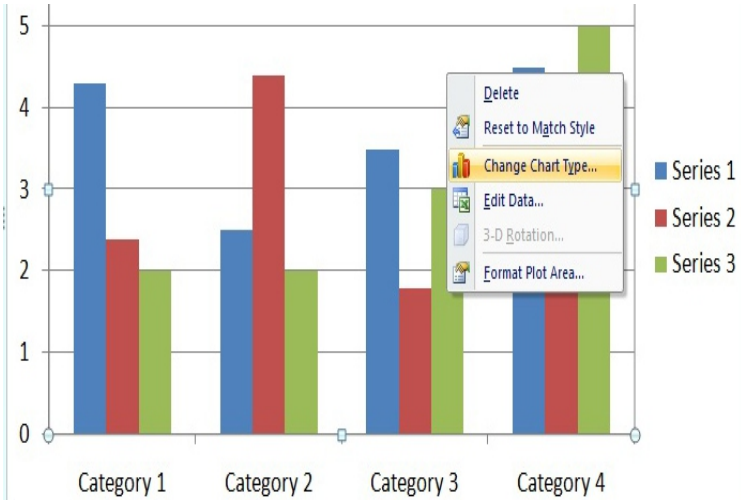
Step 1: Select the slide where you want to insert the chart
Step 2: Go to **Illustrations** group of **Insert** tab
Step 3: Click **Chart** and select Chart Type from **Insert Chart** dialog box
Step 4: Chart will appear on your slide, and Excel will open as a split screen with dummy data
Step 5: Add your data and labels to the Excel spreadsheet
Step 6: Close the worksheet


Home
Insert
Page Layout
Formulas
Data
Paste
Clipboard
Calibri
11
Font
A6
A B C D E
1 Series 1 Series 2 Series 3
2 Category 1 4.3 2.4 2
3 Category 2 2.5 4.4 2
4 Category 3 3.5 1.8 3
5 Category 4 4.5 2.8 5
6
7


Insert Chart
Templates
Column
Line
Pie
Bar
Area
X Y (Scatter)
Stock
Surface
Doughnut
Bubble
Radar
Column
Line
Pie
Bar
Manage Templates...
Set as Default Chart
OK
Cancel



To change the chart type you just **Right-click** on the chart you would like to change and select the desired chart type from **Chart Type dialog** box**.**To update the chart you just **Right-click** onthe chart you would like to update and click **Edit Data** in the popup menu and then update the data in the Excel spreadsheet.



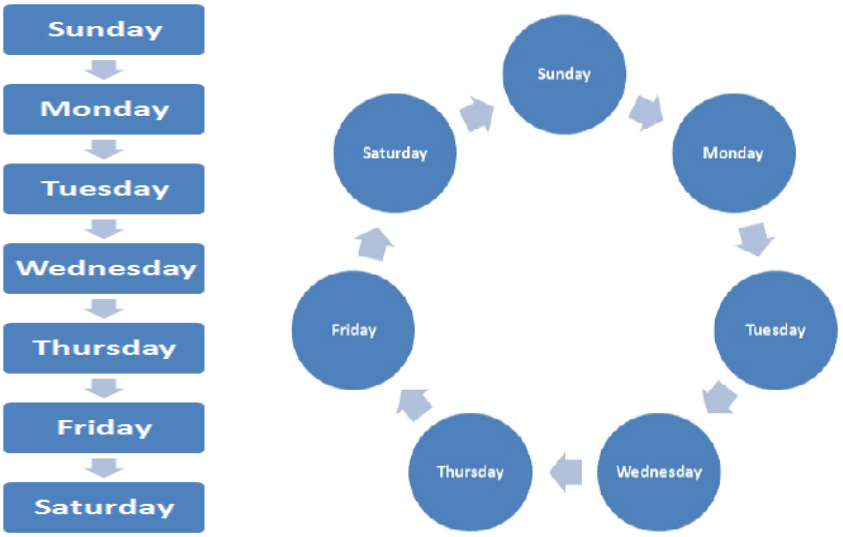
4.22 SMART ART

A SmartArt graphic is a visual representation of your information that you can quickly and easily create, to effectively communicate your message. With PowerPoint SmartArt, you can create List, Process, Cycle, Hierarchy, Relationship, Matrix, and Pyramid diagrams. The main idea behind SmartArt

diagrams is to represent bullet lists as a diagram of interconnected shapes. Although many different types of SmartArt diagrams are available, they all work the same way. The only real difference among the various SmartArt diagram types is how they graphically represent the bullets. For example, consider the following bullet list.

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

The following figure shows this list using two different types of SmartArt.



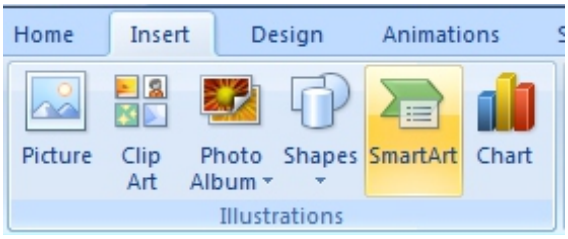
To insert a SmartArt diagram in your slide use following steps:

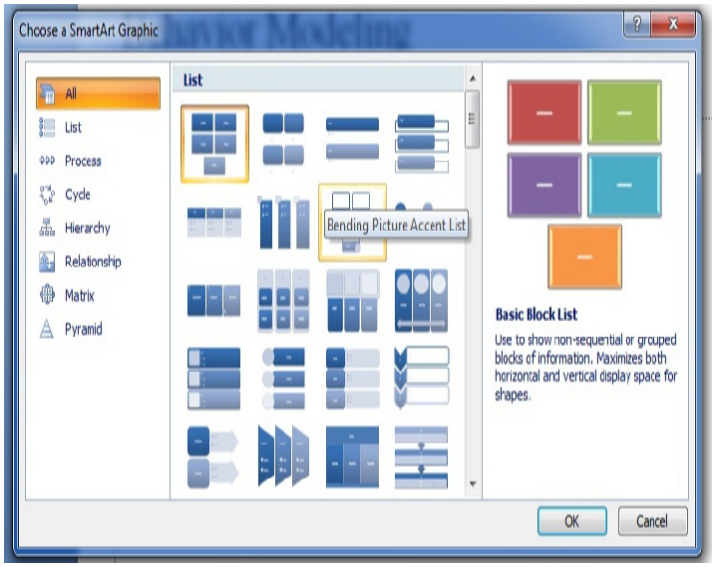
Step 1: Select the slide where you want to insert SmartArt diagram

Step 2: Go to **Illustrations** group of **Insert** tab

Step 3: Click **SmartArt** and select desired type from **Choose a SmartArt graphics** dialog box

Step 4: SmartArt diagram will appear on your slide, then click [Text] in the Text pane, and then type your text





4.23 HYPERLINK

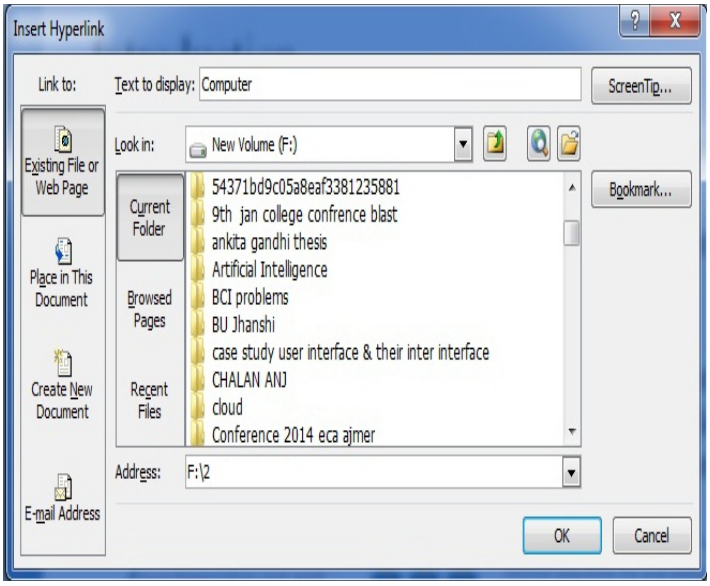
PowerPoint hyperlink is a text or a graphic that you click to quickly get to another PowerPoint slide, or different presentation, or a Word document or Excel spreadsheet. Your PowerPoint hyperlink may also lead to a page on the World Wide Web. To insert a hyperlink in your presentation use following steps:

Step 1: Select the text or graphic object that you want to make into a hyperlink

Step 2: On the **Insert** tab, in the **Links** group, click **Hyperlink**

Step 3: The **Insert Hyperlink** dialog box has four icons on the left side, as follows:

- Use **Existing File or Web Page** to link to another file in another application, or to a Web page on the Internet
- Use **Place in This Document** to link one part of your PowerPoint presentation to another part
- Use **Create New Document** to choose now or another time to edit the new document by clicking the appropriate button
- Use **E-mail Address** to link to an e-mail address



4.24 TRANSITION EFFECTS

Slide transitions are the similar to animation effects that occur when you move from one slide to the next slide during presentation. You can control the speed, add sound, and customize the properties of transition effects. Adding a transition will determine how a slide appears, not how it disappears. To apply a transition to one slide use following steps:

Step 1: Select the slide that you want to apply transition effects to

Step 2: Go to **Transition to This Slide** group from **Animations** tab

Step 3: Click the **More** drop-down arrow to display all available transition effects

Step 4: Click a slide transition effect

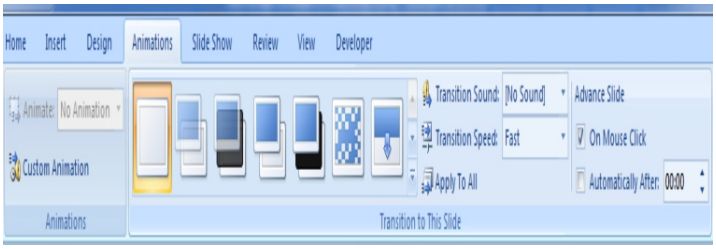
Step 5: To set the slide transition speed between the slides, in the **Transition To This Slide**group, click the arrow next to **Transition Speed** and then select the speed that you want

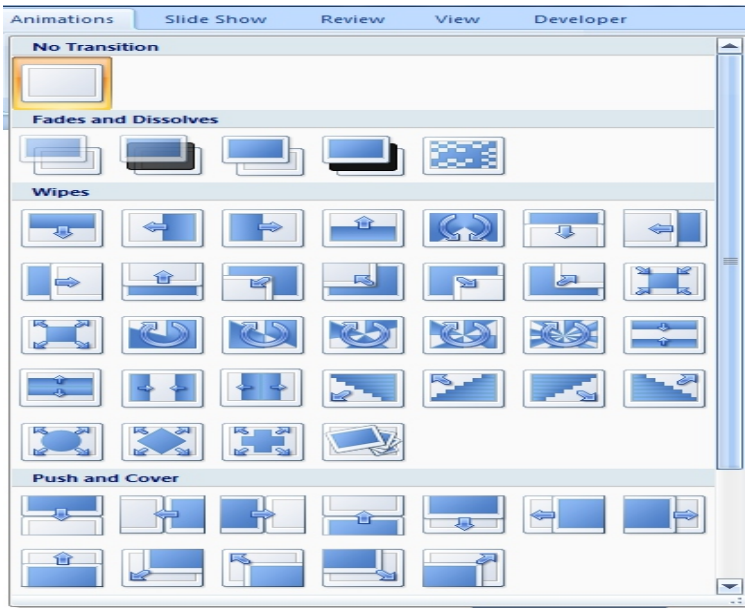
Step 6: To specify how long before the current slide advances to the next:

- To advance the slide when you click the mouse, on the **Animations** tab, in the **Transition To This Slide** group, select the **On Mouse Click** check box
- To advance the slide after a specified time, on the **Animations** tab, in the **Transition To This Slide** group, enter the number of seconds that you want in the **Automatically After** box

Step 7: Optional: To apply the same transition to your entire presentation, in the **Transition To This Slide** group, click **Apply to All**

Step 8: Optional: If you wish to add a sound effect to your transition, choose a built-in sound from the **Transition Sound** pull-down menu or choose "Other Sound" to use a sound from your computer





4.25 ANIMATION EFFECTS

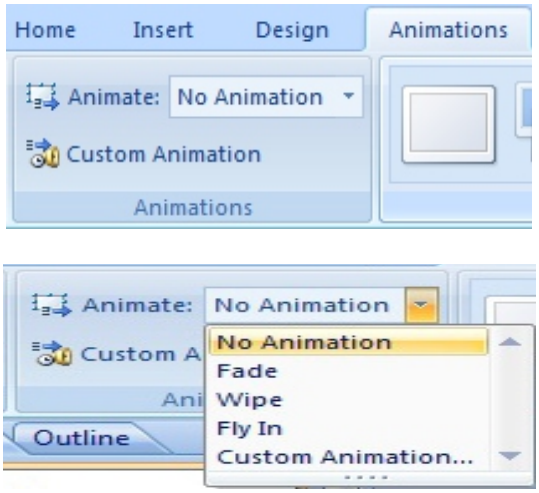
Animation is a great way to focus on important points, to control the flow of information, and to increase viewer interest in your presentation. You can apply

animation effects to a text or an object, such as a picture, shape, or SmartArt graphic. To apply a built-in animation effects to a text or an object use following steps:

Step 1: Select the text or object on the slide you want to animate

Step 2: Go to **Animations** group of **Animations** tab

Step 3: Select the animation effect that you want from the **Animate** list



You can also create and apply a custom animation. Custom animation allows you to have more control over your animations. For example, you can make text grow or shrink, spin or shimmer, and you can set an animation so that you hear the sound of applause when a picture is revealed. You can apply more than one animation, so you can make a line of text fly in with or without sound, and then make the text fly out. To apply custom animation effects to the text or object use following steps:

Step 1: Select the text or object on the slide you want to animate (hold down the Ctrl button while clicking to select more than one)

Step 2: Go to **Animations** group of **Animations** tab

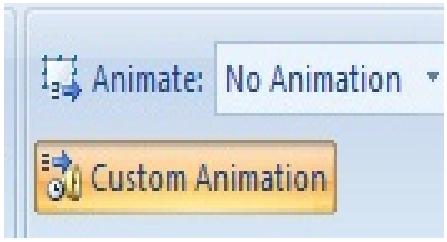
Step 3: Click **Custom Animation,** the **Custom Animation pane** opens

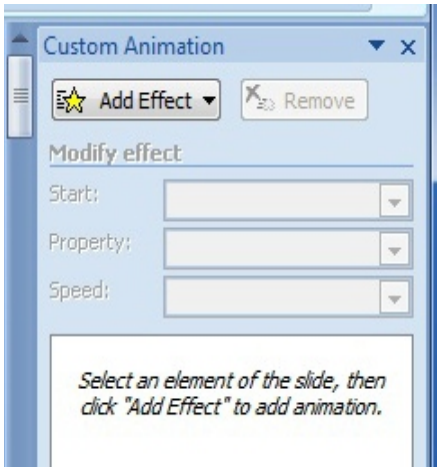
Step 4: From the **Add Effect** drop-down menu choose the kind of effect you want (Entrance, Emphasis, Exit, Motion Paths) and then the animation itself, you can choose **More Effects...** for more options

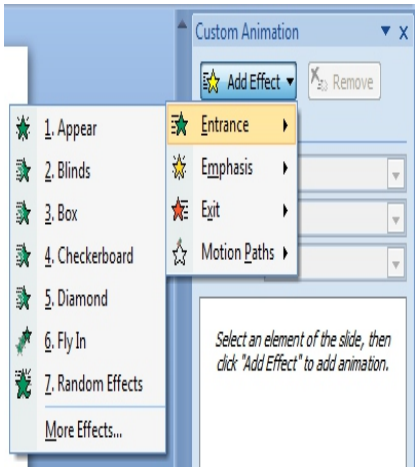
Step 5: To customize the speed, properties and timing of your animation, click on the effect you wish to modify on the **Custom Animation Pane**

Step 6: Once you have the animation you can modify selected, by using the options in the **Modify: [Effect]** section of the **Custom Animation Pane**

Step 7: Repeat steps 2 to 6 for as many animations as you would like to add







4.26 SOUND CLIP

You can add audio, such as music, or sound bites, to your PowerPoint presentation. To insert sound in your slide use following steps:

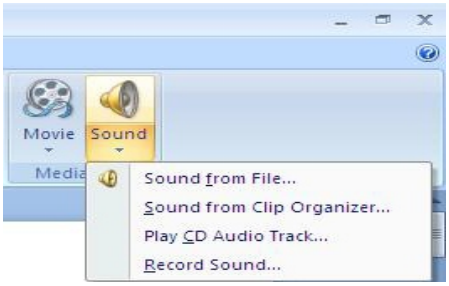
Step 1: Select the slide you want to add a sound to

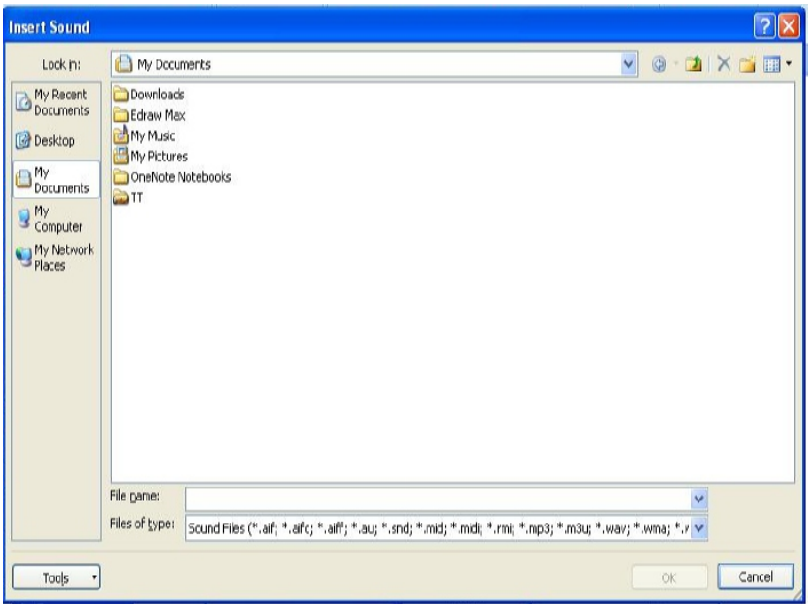
Step 2: Go to **Media Clips** group of **Insert** tab

Step 3: Click **Sound**

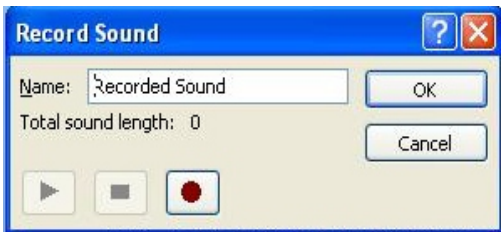
Step 4: Select appropriate option from drop down menu

- To add a sound from your computer or a network share, click **Sound from File**, locate the folder that contains the file, and then double-click the file that you want to add
- To add a sound from clip art, click **Sound from Clip Organizer**, locate the audio clip that you want in the **Clip Art** task pane, and then click to add it to the slide
- To play a sound from a CD running on your computer, click **Play CD Audio Track**, select starting and ending times and any other play options, and click OK
- To record and add your own audio, click **Record Sound**, and in the dialog box, click the **Record** button to begin speaking or playing your own audio


Movie
Sound
Media
Sound from File...
Sound from Clip Organizer...
Play CD Audio Track...
Record Sound...


Insert Sound
Look in:
My Documents
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
Downloads
Edraw Max
My Music
My Pictures
OneNote Notebooks
TT
File name:
Files of type:
Sound Files (*.aif; *.aifc; *.aiff; *.au; *.snd; *.mid; *.midi; *.rmi; *.mp3; *.m3u; *.wav; *.wma; *.r
Tools
OK
Cancel


Insert CD Audio
Clip selection
Start at track:
1
time:
00:00
seconds
End at track:
1
time:
00:00
seconds
Play options
Loop until stopped
Sound volume:
Display options
Hide sound icon during slide show
Information
Total playing time: 00:00
File: [CD Audio]
OK
Cancel



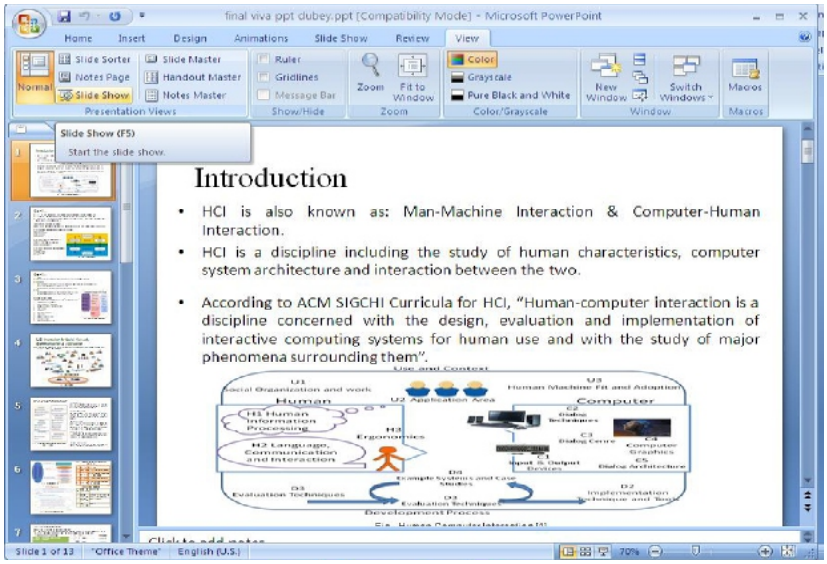
4.27 RUNNING A SLIDE SHOW

PowerPoint can show your presentation on your computer's own monitor, a projector, or an external monitor such as LCD display. There are following different ways to start your slide show from the first slide:

- Click **Slide Show** in the **Presentation Views** group of **View** tab
- Press **[F5]**
- In the bottom right hand corner of the screen, next to the zoom slider, click on the small slideshow button

Apart from this, you can also go to the Slide Show tab, in the Start Slide Show group and choose from one of the following options:

- Click **From Beginning** to start the show from the first slide
- Click **From Current Slide** to start from the slide you have active
- Click **Custom Slide Show**, then **Custom Shows**... to bring up the **Custom Shows dialog,** click **New** and choose the slides you want to use in your show and the order



4.28 CREATING A CUSTOM SHOW

To create custom slide show use following steps:

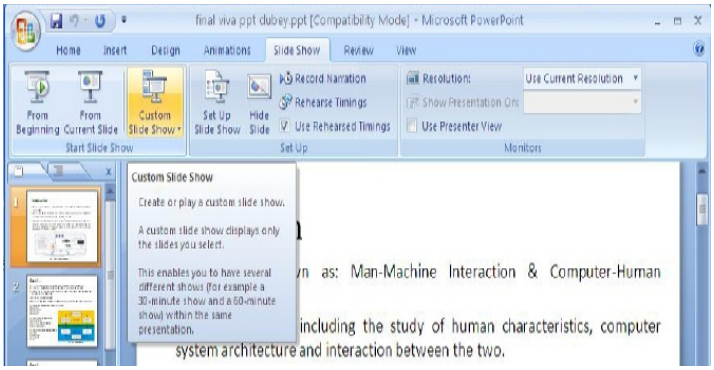
Step 1: On the **Slide Show** tab, in the **Start Slide Show** group, click the arrow next to **Custom Slide Show**, and then click **Custom Shows**

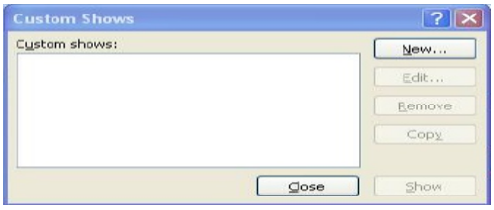
Step 2: In the **Custom Shows** dialog box, click **New**

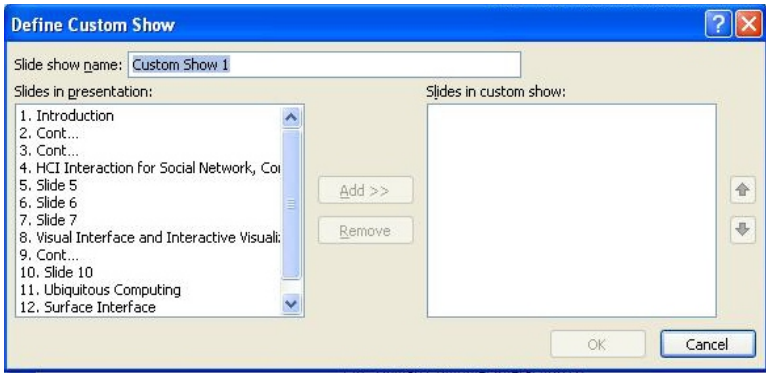
Step 3: Under **Slides in presentation**, and choose the slides you want to include in the custom show, and then click **Add**

Step 4: To change the order in which slides appear, under **Slides in custom show**, click a slide, and then click one of the arrows to move the slide up or down in the list

Step 5: Type a name in the **Slide show name** box, and then click OK







Important Points:

- A PowerPoint presentation is a collection of slides that can be used to create oral presentations.
- To open an existing power point, you can use the Open command (Ctrl + O).
- To close the current presentation file, select Office button and click Close.
- PowerPoint gives you four views in which you create and organize your presentation.
- To add a new slide, click on New Slide in Home tab.
- Placeholders are the containers in layouts that hold content as text, tables, charts, SmartArt graphics, sounds, movies, pictures, and clip art.
- Bullets are useful to arrange text in the lists.
- A PowerPoint template is a pattern or blueprint of a slide or group of slides that can contain layouts, theme colors, theme fonts, theme effects, background styles, and even content.
- A slide master is the top slide in a hierarchy of slides that stores information about the theme and slide layouts of a presentation, including the background, color, fonts, effects, placeholder sizes, and positioning.
- PowerPoint hyperlink is a text or a graphic that you click to quickly get to another PowerPoint slide, or different presentation, or a Word document or Excel spreadsheet.

Practice Questions

Objective type questions:

Q1.Which of the following should you use if you want all the slide in the presentation to have the same "look"?

a. the slide layout option
b. add a slide option
c. outline view
d. apresentation design template

Q2. Special effects used to introduce slides in a presentation are called

a. effects
b. custom animations
c. transitions
d. present animations

Q3.Which of the following is not one of PowerPoint's views?

a. Slide show view

b. Slide view
c. Presentation view
d. Outline view

Q4.Which PowerPoint view works best for adding slide transitions?
a. Slide show view
b. Slide sorter view
c. Slide view
d. Notes view

Q5. Format painter is use
a. To paint pretty pictures on your slides
b. To copy formatting from one object or piece of text and then apply it elsewhere
c. To change the background color of your slides
d. To paint pretty pictures on background of slides

Q6.Which option allows you to select line, curve, freeform or scribble tools?
a. Create effect
b. Insert motion path
c. Draw custom path
d. All of the above

Q7. Objects on the slide that hold text are called
a. Placeholders
b. Object holders
c. Auto layouts
d. Text holders

Q8. The PowerPoint view that displays only text (title and bullets) is
a. Slide show
b. Slide sorter view
c. Notes page view
d. Outline view

Q9.A file which contains readymade styles that can be used for a presentations is called
a. Auto style
b. Template
c. Wizard
d. Pre-formatting

Q10.What happens if you edit an image inserted in PowerPoint?

a. The original file that was inserted is not changed
b. The original file that was inserted is changed
c. The original file is changed when you save presentation
d. None of above

Very short answer type questions:

Q1.APowerPoint presentation is a collection of …. that can be used to create oral presentations.
Q2.PowerPoint offers how many places for view buttons to change the view?
Q3.In which view, small image of each slide is visible?
Q4.Which type of view is more applicable for monitoring the preview of presentation?
Q5.Which presentation view is used to create speaker's notes?
Q6. What are the key benefits of slide masters?

Short answer type questions:

Q1.How can you add header and footer in a Power Point presentation?
Q2.Explain slide layout.
Q3.Explain the use of speaker notes in Power Point presentation.
Q4. What is PowerPoint hyperlink?
Q5. Explain transition effects.

Essay type questions:

Q1.What is a PowerPoint template? Explain the steps to apply a template to your presentation.
Q2.Explain different views in Power Point Presentation.
Q3. Explain text formatting in Power Point presentation.
Q4.Explain the importance of slide master in Power Point presentation.
Q5. Differentiate between transition effects and animation effects.

Answers key for objective questions

Q1: d
Q2: c
Q3: c
Q4: b
Q5: b

Q6: c
Q7: a
Q8: d
Q9: b
Q10: a

Chapter 5
MS Picture Manager

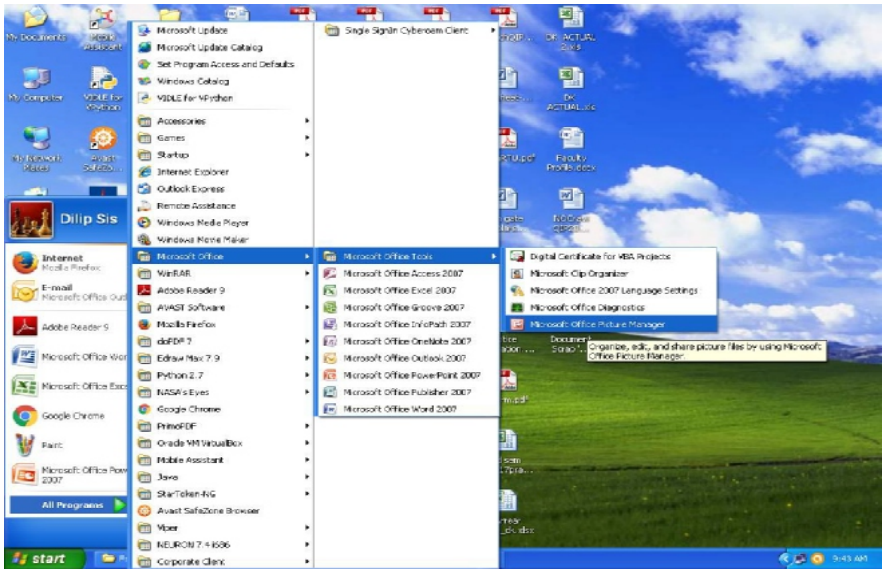
Microsoft Office Picture Manager is a software program included with Microsoft Office suite starting with the 2003 version through the 2010 version. It is no longer included with Office 2013 or later. It replaced Microsoft Photo Editor, which had been included with the Microsoft Office suite since Office 97 up to Microsoft Office XP. With Microsoft Office Picture Manager you can easily browse/organize your photos, crop, resize, rotate, flip, convert images between various formats and make changes to color, brightness, hue, contrast and saturation, including automatic adjustments. It has easy-to-use features such as one-click image compression, and resizing to a user's own choice. It does not however, offer any sort of actual drawing or text-editing tools. You can start your Picture Manager program in different ways. One way is using Start button as follows:

Step 1: Click on the **Start** button on the task bar at the bottom-left corner of the screen

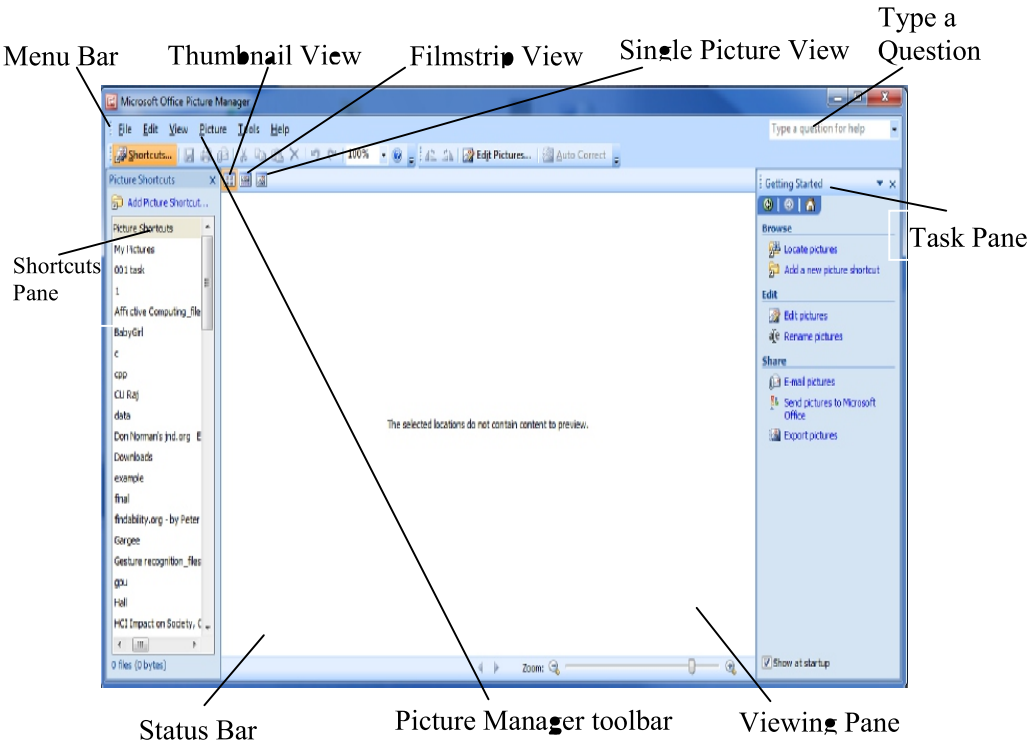
Step 2: Click on **All Programs** option from the menu

Step 3: Select **Microsoft Office** from the list of programs

Step 4: Click **Microsoft Office Tools** and then click on **Microsoft Picture Manager**



This will launch the Microsoft Picture Manager application and the following Picture Manager window will be shown.



5.1 OPEN A PICTURE

Microsoft Office Picture Manager can help you find pictures stored on your computer or a network location, and Office Picture Manager will automatically create picture shortcuts so that you can access your pictures more easily. It has Locate Pictures feature that enables you to find your pictures with powerful search. When you open Picture Manager, it automatically displays the My Pictures folder and any subfolders on your computer. You can add additional Picture Shortcuts to the list so that you can access any images on your computer. To open and edit an image in MS Picture Manager, use following steps:

Go to Start, All Programs, Microsoft Office Tools, and click Microsoft Office Picture Manager

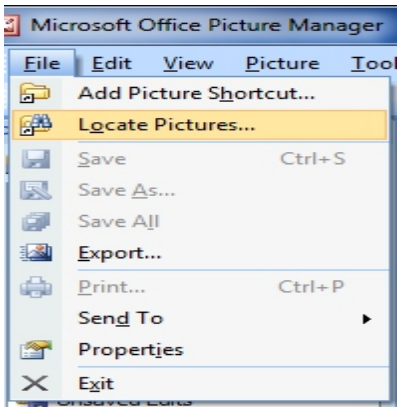
Step 1: Click on **Add Picture Shortcut**

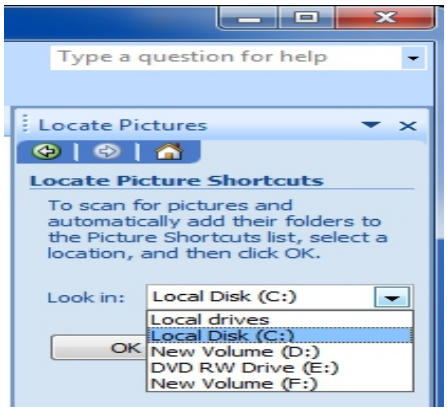
Step 2: Browse to locate the folder that contains your images

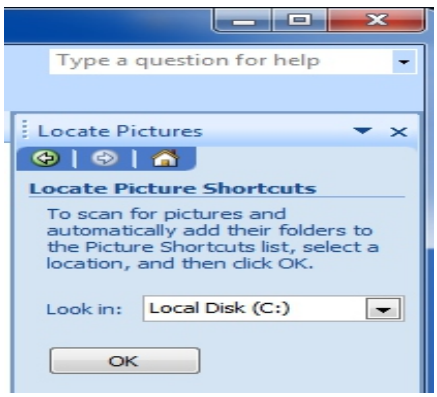
Step 3: Click on **Add**

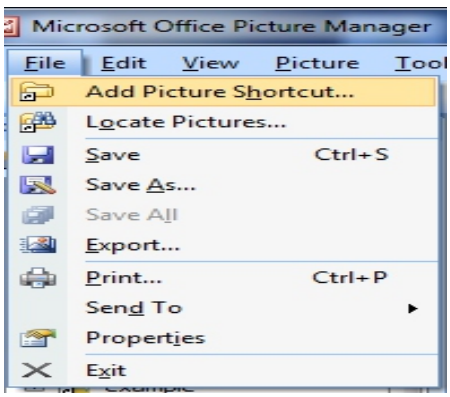
Step 4: The new folder will appear in the list

Step 5: Double click the image you want to open









5.2 FIND THE PROPERTIES OF PICTURE

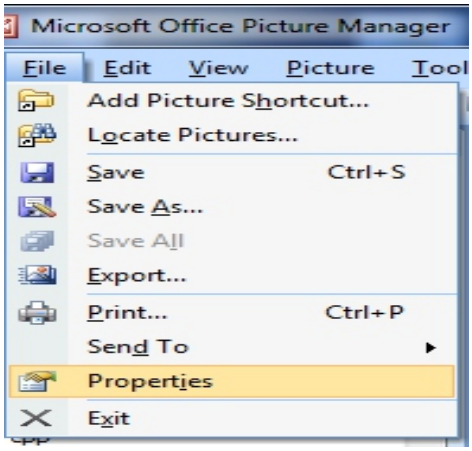
Properties of picture include its type, dimensions, size, created and last modified time, location etc. You can find out picture properties by using following steps:

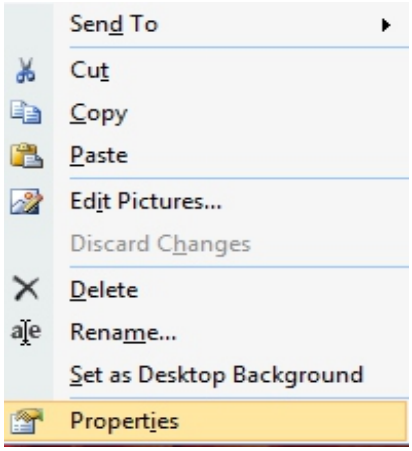
Step 1: Select the picture of which you want to know the properties

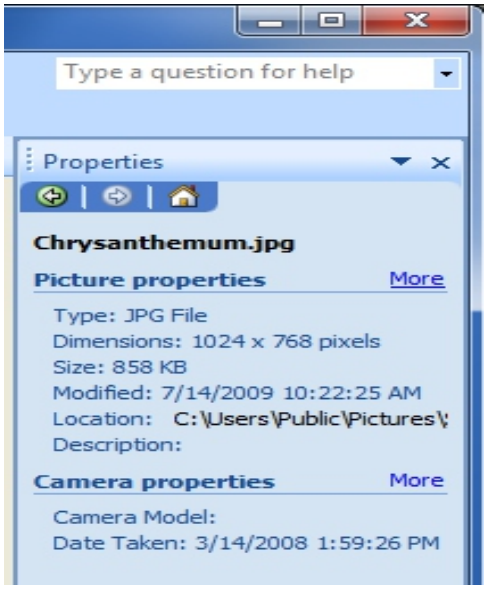
Step 2: Click **Properties** in **File** menu

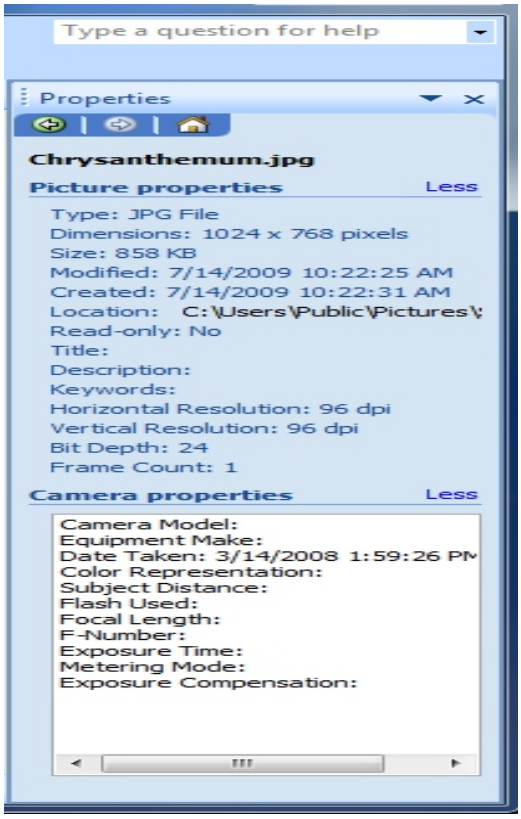
Alternatively, right click on picture and click on **Properties** in the popup menu

Step 3: At the right of the screen, Properties of picture will be visible









5.3 AUTO CORRECT

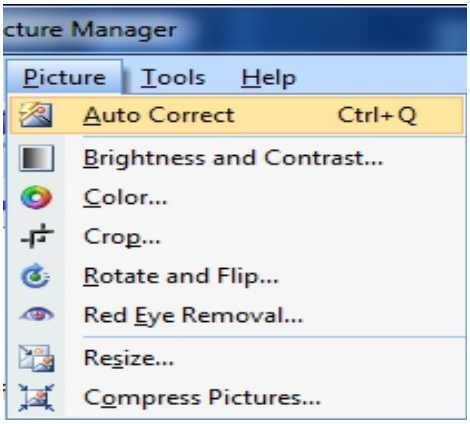
Auto Correct feature of Picture Manager will automatically adjust your colors, brightness (the lightness/darkness of the picture overall), and contrast (the difference between the lights and darks in the picture). There may not be a huge change made to the picture depending on your particular picture. If the photo does not look correct after using Auto Correct, you can undo the Auto Correction. To auto correct picture use following steps:

Step 1: Select the picture that you want to auto correct

Step 2: Click **Auto Correct** in **Picture** menu, to see the values that Picture Manager recommends

Step 3: If the photo does not look correct after using Auto Correct, You can undo the Auto Correction by clicking on Edit > Undo or Ctrl-Z

Alternatively, Right click on the photo that you want to auto correct, then in the popup menu click the Edit Pictures, Click **Auto Correct** in the Edit Pictures menu that appears on the left or you can use auto correct short cut command [Ctrl +Q].



5.4 BRIGHTNESS AND CONTRAST ENHANCEMENT

Brightness is the attribute of visual perception where a source appears to be reflecting light. It is also known as the amount of energy output by a source of light relative to source. The difference between maximum and minimum pixel intensity in derived by Contrast. To adjust brightness and contrast of picture use following steps:

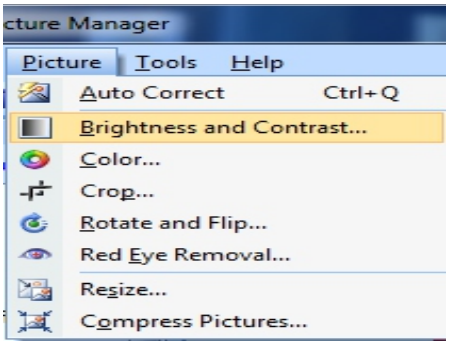
Step 1: Select the picture you want to adjust brightness and contrast

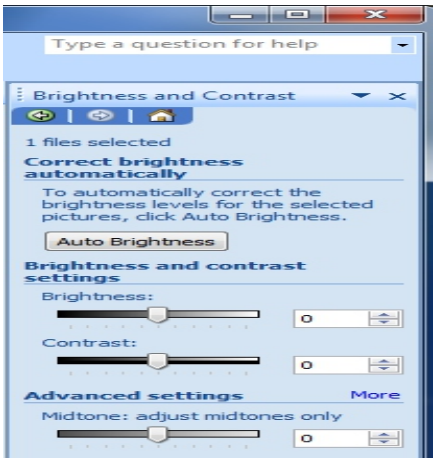
Step 2: Click **Brightness and Contrast** in **Picture** menu

Step 3: At the right of the screen, click the **Brightness and Contrast** link

Step 4: To automatically correct the brightness level for selected picture, click **Auto Brightness** button (Often it makes an over-correction, If you don't like the results you can always undo)

Step 5: In Advance setting, where Milestone, Highlight, and shadow option is visible you can manually adjust them as acquired





5.5 COLOR ENHANCEMENT

Color enhancement increases the saturation range of the colors in picture. You can automatically correct the color balance for the selected pictures, by clicking **Enhance Color** button shows in right hand side of screen. You can also use Hue and saturation settings to set Amount, Hue, and Saturation. To enhance the color of picture use following steps:

Step 1: Select the picture you want to color enhancement

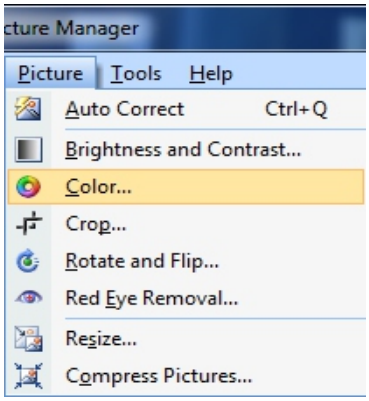
Step 2: Click **Color** in **Picture** menu

Step 3: At the right of the screen, click the **Color** link

Step 4: Click the **Enhance Color** button, then click inside the image on an area that should be white, (software will automatically adjust the color balance)

Step 5: After that, if you wish, you can fine-tune the adjustment:

- Use the Amount slider to adjust the degree to which you apply the correction
- Use the Hue slider to tint the overall color bias in the image
- Use the Saturation slider to decrease or increase the color intensity of the entire image



5.6 CROP SETTINGS

Cropping is an easy yet important step to consider when editing photos. You can use the cropping tools to trim and remove unwanted, to improve framing, accentuate subject matter or to change aspect ratio. To apply the crop setting on picture use following steps:

Step 1: Select the picture you want to crop

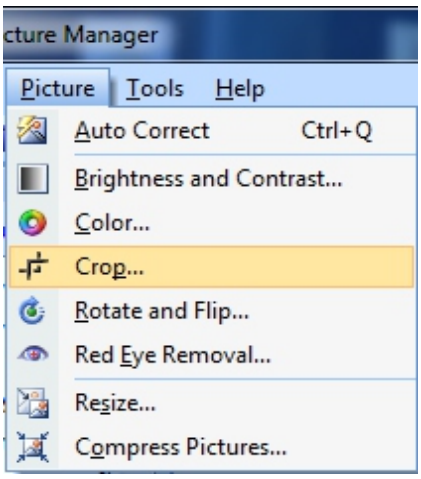
Step 2: Click **Crop** from **Picture** tab

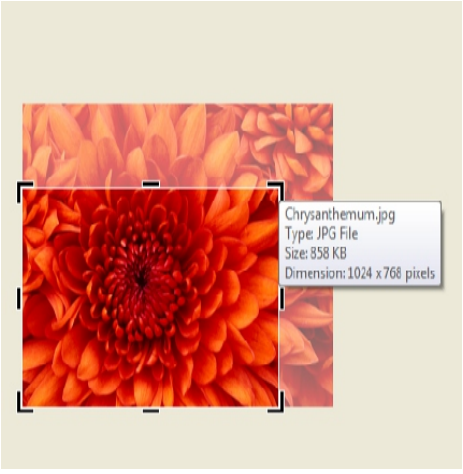
Step 3: At the right of the screen, click the **Crop** link

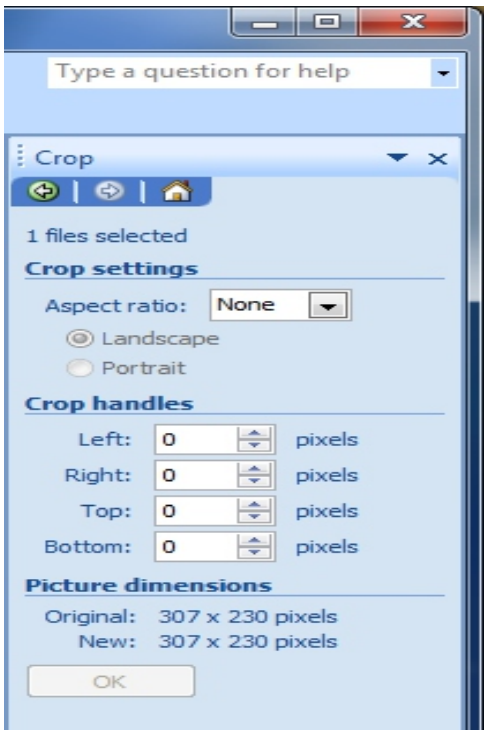
Step 4: Edges and corners will appear around the image, Drag these cropping handles to change the picture to the dimensions you want

- Adjust from the corners to preserve proportions
- Adjust from the sides to change the proportions
- Drag from inside the image to move the crop box
- If you would like to crop to a standard aspect ratio such as 4 x 6, or 5 x 7, under Crop Settings, make a selection from the drop-down Aspect Ratio menu

Step 5: When you are satisfied with your selection click "OK"







5.7 ROTATE AND FLIP SETTINGS

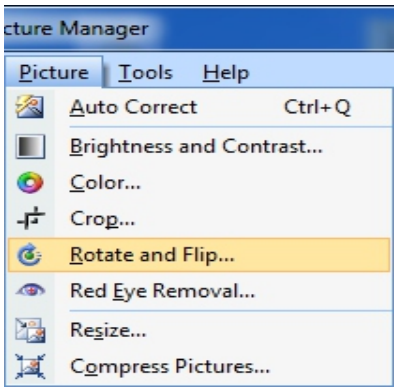
Rotation has three options as: **Rotate Left**, **Rotate Right**, and rotate **By degree**. You can perform many times rotation as acquired by click these options. Flip option is used to make changes the direction of picture. Flip have two options as: **Flip horizontal**, **Flip vertical**. To apply the Rotate and Flip setting on picture use following steps:

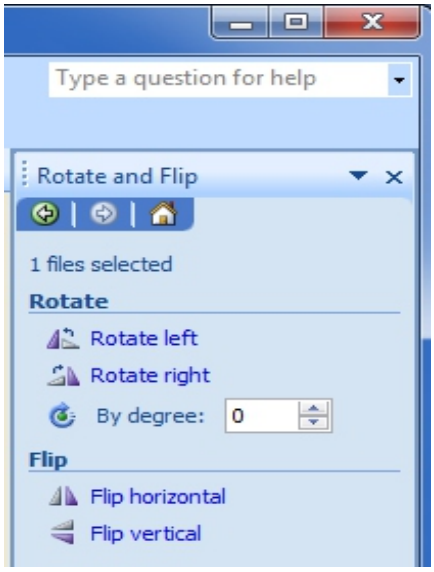
Step 1: Select the picture you want to rotate and flip

Step 2: Click **Rotate and Flip** in **Picture** menu

Step 3: Do one of the following:

- To rotate the picture, click **Rotate left** or **Rotate right**, as required (If you click the option more than once, the picture will continue to rotate in the same direction)
- Click the up arrow in the **By degree** box to rotate the picture to the right, or click the down arrow in the **By degree** box to rotate the picture to the left, you can also type a value in the **By degree** box to rotate the picture a specific number of degrees
- To flip the picture, Click **Flip horizontal** or **Flip vertical** as required





5.8 RESIZE SETTINGS

One problem you normally face during uploading a picture on web page or attaching it to email or when using picture from your digital camera, is the size of the picture. The dimensions are often too large, and the physical size is also too large to use it in presentations and documents. You can resize and compress your pictures so that the overall size of your presentations and documents is manageable. To resize the picture use following steps:

Step 1: Select the picture you want to resize

Step 2: Click **Resize** in **Picture** menu

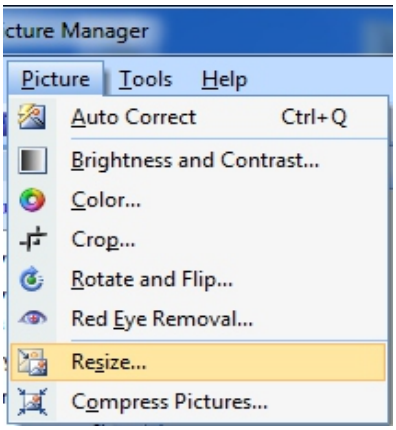
Step 3: At the right of the screen, under **Change Picture Size**, click **Resize**
(The Size setting summary at the bottom of the Resize task pane lets you compare the original and new size)

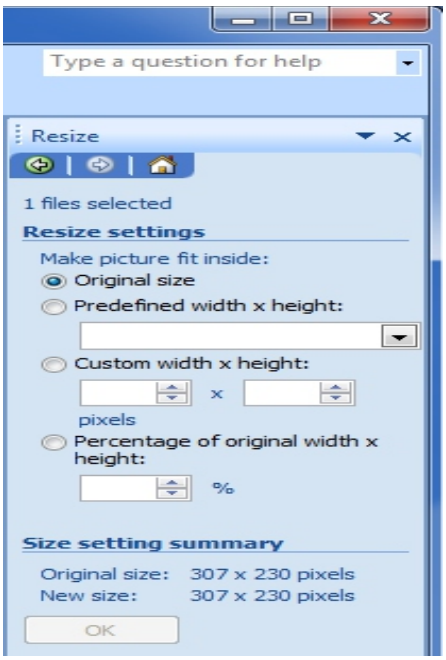
Step 4: Choose a method (other than original size) and make settings:

- The **Predefined width x height** menu provides typical sizes as may be found on the web or in documents for print
  Documents: Fits within 1024 x 768 pixels best for placing an image in a Word doc or PPT presentation
  Web Pages:Fits within 448 x 336 pixels for on-screen display on Web Pages or in E-mails compressed to load quickly
  E-mail messages: Fits within 160 x 160 pixels for thumbnail display, best for faster loading and for small file size

- **Custom width x height** lets you enter pixel dimensions (enter just the new height or width, Aspect ratio will be preserved, as indicated in the Size setting summary at the bottom of the resize task pane)
- **Percentage of original** scales the image by percent

Step 5: Once you have entered the new dimensions, click **ok** to resize the image





5.9 COMPRESS SETTINGS

Picture compression is use to reduce the size of picture in bytes of a graphics file without degrading the quality of the picture to an unacceptable level. The Compress pictures command simultaneously resizes the image using standard built-in sizes, and compresses the image data so that it takes up less disk space. To compress the picture use following steps:

Step 1: Select the picture you want to compress

Step 2: Click **Compress Picture** in **Picture** menu

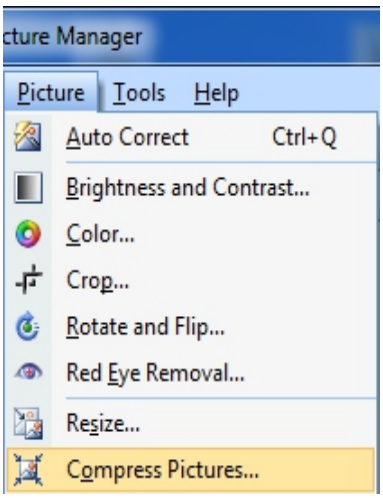
Step 3: At the right of the screen, under **Compress Picture** , click **Compress for** (The Size setting summary at the bottom of the Resize task pane lets you compare the original and new size)

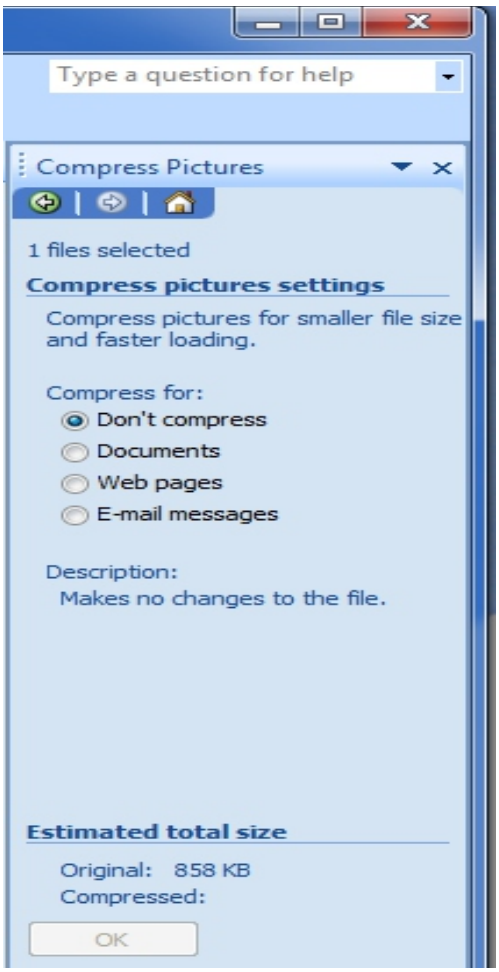
Step 4: Choose option to **Compress for**:

- **Don't Compress:** to remain the same size of picture
- **Documents**: Fits within 1024 x 768 pixels best for placing an image in a Word doc or PPT presentation

- **Web Pages**:Fits within 448 x 336 pixels for on-screen display on Web Pages or in E-mails compressed to load quickly
- **E-mail messages**: Fits within 160 x 160 pixels for thumbnail display, best for faster loading and for small file size

Step 5: Once you have entered the new dimensions, click **ok** to resize the image





Important Points:

- Using Microsoft Office Picture Manager, you can easily browse/organize your photos, crop, resize, rotate, flip, convert images between various formats and make changes to color, brightness, hue, contrast and saturation, including automatic adjustments.

- Auto Correct feature of Picture Manager will automatically adjust your colors, brightness, and contrast.
- Properties of picture include its type, dimensions, size, created and last modified time, location etc.
- Brightness is the attribute of visual perception where a source appears to be reflecting light.
- Color enhancement increases the saturation range of the colors in picture.
- Cropping is use to trim and remove unwanted to improve framing, accentuate subject matter or change aspect ratio.
- Rotation has three options as: Rotate Left, Rotate Right, and rotate By degree.
- Flip option is use to make changes the direction of picture.
- Flip have two options as: Flip horizontal, Flip vertical.

Practice Questions

Objective type questions:

Q1.Which is not an option in compress settings?

e. Documents
f. Web pages
g. Original size
h. E-mail messages

Q2.How many options does Flip setting have in MS picture manager?

a. 7
b. 2
c. 4
d. 8

Q3.Which option is not available in Rotation setting of MS picture manager?

a. Rotate Left
b. Rotate Right
c. By degree
d. By angle

Q4.Flip option is use to make

e. changes the direction of picture
f. changes the size of picture
g. changes the overall size of picture
h. changes the physical size of picture

Q5.Auto correct short cut command is

a. Ctrl +C
b. Ctrl +Q
c. Ctrl +K
d. Ctrl +A

Very short answer type questions:

Q1. What is the Contrast of a picture?
Q2.What do you mean by picture brightness?
Q3.Why we use flip option?
Q4.What Color enhancement does?
Q5. What Auto Correct feature of Picture Manager does?

Short answer type questions:

Q1. What are the usages of Microsoft Office Picture Manager?
Q2.Why you use Hue slider in MS Picture Manager?
Q3. How you can open a picture in MS Picture Manager?
Q4.What are properties of picture? How you can find the properties of picture in Picture Manager?
Q5. Why we use resize settings in MS picture manager?

Essay type questions:

Q1. Explain Auto correct feature of Picture Manager.
Q2.How you can enhance the brightness and contrast of picture in MS Picture Manager?
Q3.Explain color enhancement in detail.
Q4. What is a crop setting? Explain the need of crop settings.
Q5.Explain the purpose of rotate and flip settings.
Q6. Why we use compress settings? Write down the steps to compress a picture.

Answers key for objective questions

Q1: c
Q2: b
Q3: d
Q4: a
Q5: b

Chapter 6
Introduction to Cyber Crime & Cyber Law

Cyber crime encompasses any criminal act dealing with computers and networks. Additionally, cyber crime also includes traditional crimes conducted through the Internet. For example; hate crimes, telemarketing and Internet fraud, identity theft, and credit card account thefts are considered to be cyber crimes when the illegal activities are committed through the use of a computer and the Internet. Cyber crimes can involve criminal activities that are traditional in nature, such as theft, fraud, forgery, defamation and mischief, all of which are subject to the Indian Penal Code. The abuse of computers has also given birth to a gamut of new age crimes that are addressed by the Information Technology Act, 2000.

6.1 CYBER LAW

Cyber law Provides legal recognition to electronic documents and a framework to support e-filing and e-commerce transactions and also provides a legal framework to mitigate, check cyber crimes. We can categorize Cyber crimes in two ways:

The Computer as a Target:-Using a computer to attack other computers. e.g. Hacking, Virus/Worm attacks, DOS attack etc.

The computer as a weapon:-Using a computer to commit real world crimes. e.g. Cyber Terrorism, IPR violations, Credit card frauds, EFT frauds, Pornography etc.

6.2 TECHNICAL ASPECTS OF CYBER CRIME

(i) Unauthorized access & Hacking

Access means gaining entry into, instructing or communicating with the logical, arithmetical, or memory function resources of a computer, computer system or

computer network. Unauthorized access would therefore mean any kind of access without the permission of either the rightful owner or the person in charge of a computer, computer system or computer network. Every act committed towards breaking into a computer and/or network is hacking. Hackers write or use ready-made computer programs to attack the target computer. They possess the desire to destruct and they get the kick out of such destruction. Some hackers hack for personal monetary gains, such as to stealing the credit card information, transferring money from various bank accounts to their own account followed by withdrawal of money.

(ii) Virus and Worm attack

A program that has capability to infect other programs and make copies of itself and spread into other programs is called virus. Programs that multiply like viruses but spread from computer to computer are called as worms.

(iii) E-mail related crimes

Email spoofing

Email spoofing refers to email that appears to have been originated from one source when it was actually sent from another source.

Email Spamming

Email "spamming" refers to sending email to thousands and thousands of users - similar to a chain letter. Sending malicious codes through email. E-mails are used to send viruses, Trojans etc through emails as an attachment or by sending a link of website which on visiting downloads malicious code.

Email bombing

E-mail "bombing" is characterized by abusers repeatedly sending an identical email message to particular address.

(iv) Exploit

An exploit is a piece of software, a chunk of data, or a sequence of commands that takes advantage of a bug or vulnerability in order to cause unintended or unanticipated behaviour to occur on computer software, hardware, or something electronic (usually computerized). Such behaviour frequently includes things like gaining control of a computer system, allowing privilege escalation, or a denial-of-service (DoS or related DDoS) attack.

Denial of Service attacks

Flooding a computer resource with more requests than it can handle. This causes

the resource to crash thereby denying access of service to authorized users. For e.g.

attempts to "flood" a network, thereby preventing legitimate network traffic
attempts to disrupt connections between two machines, thereby preventing access to a service
attempts to prevent a particular individual from accessing a service
attempts to disrupt service to a specific system or person.

Types of DoS

There are three basic types of attack:

1. Consumption of limited resources like NW bandwidth, RAM, CPU time. Even power, cool air, or water can affect.
2. Destruction or Alteration of Configuration Information
3. Physical Destruction or Alteration of Network Components

Distributed DoS

A distributed denial of service (DoS) attack is accomplished by using the Internet to break into computers and using them to attack a network. Hundreds or thousands of computer systems across the Internet can be turned into zombies and used to attack another system or website.

(v) Pornography

The Pornography is describing or showing sexual acts in order to cause sexual excitement through books, films, etc. This would include pornographic websites, pornographic material produced using computers and use of internet to download and transmit pornographic videos, pictures, photos, writings etc. Pornography delivered over mobile phones is now a burgeoning business, “driven by the increase in sophisticated services that deliver video clips and streaming video, in addition to text and images.”

(vi) Cyber Terrorism

Targeted attacks on military installations, power plants, air traffic control, banks, trail traffic control, telecommunication networks are the most likely targets. Others like police, medical, fire and rescue systems etc.

Cyber terrorism is an attractive option for modern terrorists for several reasons given below.

1. It is cheaper than traditional terrorist methods.
2. Cyber terrorism is more anonymous than traditional terrorist methods.
3. The variety and number of targets are enormous.
4. Cyber terrorism can be conducted remotely, a feature that is especially appealing to terrorists.

5. Cyber terrorism has the potential to affect directly a larger number of people.

(vii) Banking/Credit card related crimes

In the corporate world, Internet hackers are continuously looking for opportunities to compromise company's security in order to gain access to confidential banking and financial information. Use of stolen card information or fake credit/debit cards are common.

(viii) E-commerce/ Investment Frauds

Sales and Investment frauds. An offering that uses false or fraudulent claims to solicit investments or loans, or that provides for the purchase, use, or trade of forged or counterfeit securities. Merchandise or services that were purchased or contracted by individuals online are never delivered. The fraud attributable to the misrepresentation of a product advertised for sale through an Internet auction site or the non-delivery of products purchased through an Internet auction site. Investors are enticed to invest in this fraudulent scheme by the promises of abnormally high profits.

(ix) Defamation

Defamation can be understood as the intentional infringement of another person's right to his good name. Cyber Defamation occurs when defamation takes place with the help of computers and / or the Internet. E.g. someone publishes defamatory matter about someone on a website or sends e-mails containing defamatory information to all of that person's friends. Information posted to a bulletin board can be accessed by anyone.

(x) Identity Theft

Identity theft occurs when someone appropriates another's personal information without their knowledge to commit theft or fraud. Identity theft is a vehicle for perpetrating other types of fraud schemes.

(xi) Breach of Privacy and Confidentiality

Privacy

Privacy refers to the right of an individual/s to determine when, how and to what extent his or her personal data will be shared with others. Breach of privacy means unauthorized use or distribution or disclosure of personal information like medical records, sexual preferences, financial status etc.

Confidentiality

It means non disclosure of information to unauthorized or unwanted persons. In addition to Personal information some other type of information which useful for

business and leakage of such information to other persons may cause damage to business or person, such information should be protected. Generally for protecting secrecy of such information, parties while sharing information forms an agreement about procedure of handling of information and to not to disclose such information to third parties or use it in such a way that it will be disclosed to third parties. Many times party or their employees leak such valuable information for monitory gains and causes breach of contract of confidentiality.

6.3 COMPUTER VIRUSES

Computer viruses are computer programs that, when opened, put copies of themselves into other computers' hard drives without the users' consent. Creating a computer virus and disseminating it is a cyber crime. The virus may steal disk space, access personal information, ruin data on the computer or send information out to the other computer user's personal contacts. The most common way for a virus to infect a computer is by way of an email attachment. An example would be if you received an email with an attachment. You open this attachment, and the virus immediately spreads through your computer system. In some cases, if the virus is opened by a computer on a system network, such as your place of employment, the virus can immediately be spread throughout the network without needing to be sent via email. There are numerous reasons that a person would create a virus to send out to another computer or computers. It may be to steal information or money, or to demonstrate the flaws that the other computer system has.

6.4 SOCIAL ENGINEERING

Social engineering is the art of manipulating people so they give up confidential information. The types of information these criminals are seeking can vary, but when individuals are targeted the criminals are usually trying to trick you into giving them your passwords or bank information, or access your computer to secretly install malicious software–that will give them access to your passwords and bank information as well as giving them control over your computer. Criminals use social engineering tactics because it is usually easier to exploit your natural inclination to trust than it is to discover ways to hack your software. For example, it is much easier to fool someone into giving you their password than it is for you to try hacking their password (unless the password is really weak). Security is all about knowing who and what to trust. Knowing when, and when not to, to take a person at their word; when to trust that the person you are communicating with is indeed the person you think you are communicating with. When to trust that a website is or isn’t legitimate, when to trust that the person on

the phone is or isn't legitimate; when providing your information is or isn't a good idea.

6.5 PHISHING

Phishing is a form of fraud in which the attacker tries to learn information such as login credentials or account information by masquerading as a reputable entity or person in email, IM or other communication channels. Typically a victim receives a message that appears to have been sent by a known contact or organization. An attachment or links in the message may install malware on the user's device or direct them to a malicious website set up to trick them into divulging personal and financial information, such as passwords, account IDs or credit card details. Phishing is popular with cyber criminals, as it is far easier to trick someone into clicking a malicious link in a seemingly legitimate email than trying to break through a computer's defences. Although some phishing emails are poorly written and clearly fake, sophisticated cybercriminals employ the techniques of professional marketers to identify the most effective types of messages. To make phishing messages look like they are genuinely from a well-known company, they include logos and other identifying information taken directly from that company's website. The malicious links within the body of the message are designed to make it appear that they go to the spoofed organization. The use of subdomains and misspelled URLs (typo squatting) are common tricks, as is homograph spoofing. URLs created using different logical characters to read exactly like a trusted domain.

6.6 SOFTWARE PIRACY

Software piracy is the unauthorized copying, reproduction, use, or manufacture of software products. On average, for every authorized copy of computer software in use, at least one unauthorized or "pirated" copy is made. Software piracy harms everyone in the software community including you, the end user. Piracy results in higher prices for duly licensed users, reduced levels of support, and delays in the funding and development of new products, causing the overall selection and quality of software to suffer. Piracy harms all software publishers, regardless of their size. Software publishers spend years developing software for the public to use.

Software piracy also harms the local and national economies. Fewer legitimate software sales result in lost tax revenue and decreased employment. Software piracy greatly hinders the development of local software communities. If software publishers cannot sell their products in the legitimate market, they have no

incentive to continue developing programs. Many software publishers won't enter markets where the piracy rates are too high, because they will not be able to recover their development costs.

Types of Software Piracy

It seems that illegal software is available anywhere, to anyone, at any time. The following are some of the methods by which illegal copies of software circulate among computer users.

SOFTLIFTING

The most common type of piracy, softlifting, (also called softloading), means sharing a program with someone who is not authorized by the license agreement to use it. A common form of softlifting involves purchasing a single licensed copy of software and then loading the software onto several computers, in violation of licensing terms. On college campuses, it is rare to find a software program that has *not* been softloaded. People regularly lend programs to their roommates and friends, either not realizing it's wrong, or not thinking that it's a big deal. Softlifting is common in both businesses and homes.

HARD DISK LOADING

Often committed by hardware dealers, this form of piracy involves loading an unauthorized copy of software onto a computer being sold to the end user. This makes the deal more attractive to the buyer, at virtually no cost to the dealer. The dealer usually does not provide the buyer with manuals or the original CDs of the software.

RENTING

Renting involves someone renting out a copy of software for temporary use, without the permission of the copyright holder. The practice, similar to that of renting a video from Blockbuster, violates the license agreement of software.

OEM UNBUNDLING

Often just called "unbundling," this form of piracy means selling stand-alone software originally meant to be included with a specific accompanying product. An example of this form of piracy is someone providing drivers to a specific printer without authorization.

COUNTERFEITING

Counterfeiting means producing fake copies of software, making it look authentic. This involves providing the box, CDs, and manuals, all designed to look as much like the original product as possible. Microsoft products are the ones most commonly counterfeited, because of their widespread use. Most commonly, a

copy of a CD is made with a CD-burner, and a photocopy of the manual is made. Counterfeit software is sold on street corners, and sometimes unknowingly sold even in retail stores. Counterfeit software is sold at prices far below the actual retail price.

ONLINE PIRACY

The fastest-growing form of piracy is Internet piracy. With the growing number of users online, and with the rapidly increasing connection speeds, the exchange of software on the Internet has attracted an extensive following.

6.7 INTELLECTUAL PROPERTY

Intellectual property (IP) refers to creations of the mind, such as inventions, literary and artistic works, designs and symbols, names and images used in commerce. IP is protected in law by, for example, patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create. By striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish.

TYPES OF INTELLECTUAL PROPERTY

COPYRIGHT

Copyright is a legal term used to describe the rights that creators have over their literary and artistic works. Works covered by copyright range from books, music, paintings, sculpture and films, to computer programs, databases, advertisements, maps and technical drawings.

PATENTS

A patent is an exclusive right granted for an invention. Generally speaking, a patent provides the patent owner with the right to decide how - or whether - the invention can be used by others. In exchange for this right, the patent owner makes technical information about the invention publicly available in the published patent document.

TRADEMARKS

A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises. Trademarks date back to ancient times when craftsmen used to put their signature or "mark" on their products.

INDUSTRIAL DESIGNS

An industrial design constitutes the ornamental or aesthetic aspect of an article. A

design may consist of three-dimensional features, such as the shape or surface of an article, or of two-dimensional features, such as patterns, lines or color.

GEOGRAPHICAL INDICATIONS

Geographical indications and appellations of origin are signs used on goods that have a specific geographical origin and possess qualities, a reputation or characteristics that are essentially attributable to that place of origin. Most commonly, a geographical indication includes the name of the place of origin of the goods.

6.8 MAIL BOMBS

A mail bomb is the sending of a massive amount of e-mail to a specific person or system. A huge amount of mail may simply fill up the recipient's disk space on the server or, in some cases, may be too much for a server to handle and may cause the server to stop functioning. Mail bombs not only inconvenience the intended target but they are also likely to inconvenience everybody using the server. Senders of mail bombs should be wary of exposing themselves to reciprocal mail bombs or to legal actions.

Important Points:

- Cyber crime encompasses any criminal act dealing with computers and networks
- Cyber Crime that are addressed by the Information Technology Act, 2000.
- Cyber crimes is of two types.(i) The Computer as a Target (ii) The computer as a weapon
- DDOS stands for Distributed Denial of Service.
- Confidentiality means non disclosure of information to unauthorized or unwanted persons.
- Virus is a computer program file capable of attaching to disks or other files and replicating itself repeatedly.
- Social engineering is the art of manipulating people so they give up confidential information
- Phishing is a form of fraud in which the attacker tries to learn confidential information
- Software piracy is the unauthorized copying, reproduction, use, or manufacture of software products.
- Apatent is an exclusive right granted for an invention.
- A mail bomb is the sending of a massive amount of e-mail to a specific person or system.

Practice Questions

Objective type questions:

Q1. Firstly cyber crime Information Technology Act associated with which year

a. 1999
b. 2000
c. 2001
d. 1998

Q2. What are the method of software piracy

a. Softlifting
b. Hard Disk Loading
c. Counterfeiting
d. All of these

Q3.DoS stands for

a. Distributed Denial of Service
b. Denial of Service
c. Denial Denial of Service
d. None

Q4.Computer Virus infects

a. Human Being
b. Animals
c. Computer
d.None of these

Very short answer type questions:

Q1. What is the Full form of DDoS?
Q2. Define copyright.
Q3. Define Softlifting**.**
Q4. Define Identity Theft.
Q5. Define Exploit**.**

Short answer type questions:

Q1. What is Cyber Crime?
Q2. Define Virus.
Q3. Name some Antivirus Software**.**
Q4. What is Intellectual Property?
Q5. What is patent?
Q6. What is online piracy?

Q7. What is Cyber Terrorism?
Q8 Explain Denial of Service attack.

Essay type questions:
Q1. Explain Phishing in details.
Q2.Explain the different types of Software Piracy.
Q3. Explain the different types of Intellectual property.

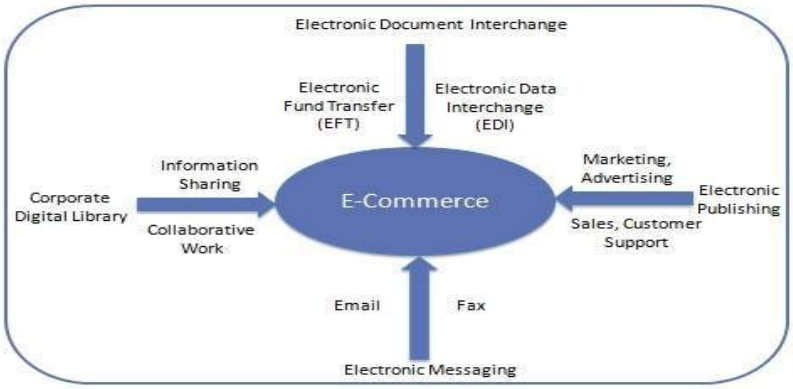
Answers key for objective questions

Q1: b
Q2: d
Q3: b
Q4: c

Chapter-7
E-Commerce/E-Business

E-Commerce or Electronics Commerce is a methodology of modern business which addresses the need of business organizations, vendors and customers to reduce cost and improve the quality of goods and services while increasing the speed of delivery. E-commerce refers to paperless exchange of business information using following ways.

- Electronic Data Exchange (EDI)
- Electronic Mail (e-mail)
- Electronic Bulletin Boards
- Electronic Fund Transfer (EFT)
- Other Network-based technologies



7.1 FEATURES

E-Commerce provides following features

Non-Cash Payment E-Commerce enables use of credit cards, debit cards,

smart cards, electronic fund transfer via bank's website and other modes of electronics payment.

24x7 Service availability E-commerce automates business of enterprises and services provided by them to customers are available anytime, anywhere. Here 24x7 refers to 24 hours of each seven days of a week.

Advertising / Marketing E-commerce increases the reach of advertising of products and services of businesses. It helps in better marketing management of products / services.

Improved Sales Using E-Commerce, orders for the products can be generated anytime, anywhere without any human intervention. By this way, dependencies to buy a product reduce at large and sales increases.

Support E-Commerce provides various ways to provide pre sales and post sales assistance to provide better services to customers.

Inventory Management Using E-Commerce, inventory management of products becomes automated. Reports get generated instantly when required. Product inventory management becomes very efficient and easy to maintain.

Communication improvement E-Commerce provides ways for faster, efficient, reliable communication with customers and partners.

TRADITIONAL COMMERCE V/S E-COMMERCE

S. No.	Traditional Commerce	E-Commerce
1	Heavy dependency on information exchange from person to person.	Information sharing is made easy via electronic communication channels making little dependency on person to person information exchange.
2	Communication/ transaction are done in synchronous way. Manual intervention is required for each communication or transaction.	Communication or transaction can be done in asynchronous way. Electronics system automatically handles when to pass communication to required person or do the transactions.
3	It is difficult to establish and maintain standard practices in traditional commerce.	A uniform strategy can be easily established and maintain in e-commerce.

4	Communications of business depends upon individual skills.	In E-Commerce or Electronic Market, there is no human intervention.
5	Unavailability of a uniform platform as traditional commerce depends heavily on personal communication.	E-Commerce website provides user a platform where all information is available at one place.
6	No uniform platform for information sharing as it depends heavily on personal communication.	E-Commerce provides a universal platform to support commercial / business activities across the globe.

E-Commerce advantages can be broadly classified in three major categories:

- Advantages to Organizations
- Advantages to Consumers
- Advantages to Society

7.2 ADVANTAGES TO ORGANIZATIONS

- Using E-Commerce, organization can expand their market to national and international markets with minimum capital investment. An organization can easily locate more customers, best suppliers and suitable business partners across the globe.
- E-Commerce helps organization to reduce the cost to create process, distribute, retrieve and manage the paper based information by digitizing the information.
- E-commerce improves the brand image of the company.
- E-commerce helps organization to provide better customer services.
- E-Commerce helps to simplify the business processes and make them faster and efficient.
- E-Commerce reduces paper work a lot.
- E-Commerce increased the productivity of the organization. It supports "pull" type supply management. In "pull" type supply management, a business process starts when a request comes from a customer and it uses just-in-time manufacturing way.

7.3 ADVANTAGES TO CUSTOMERS

- 24x7 support: Customer can do transactions for the product or enquiry about any product/services provided by a company anytime, anywhere from any location. Here 24x7 refers to 24 hours of each seven days of a

week.

- E-Commerce application provides user more options and quicker delivery of products.
- E-Commerce application provides user more options to compare and select the cheaper and better option.
- A customer can put review comments about a product and can see what others are buying or see the review comments of other customers before making a final buy.
- E-Commerce provides option of virtual auctions.
- Readily available information. A customer can see the relevant detailed information within seconds rather than waiting for days or weeks.
- E-Commerce increases competition among the organizations and as result organizations provides substantial discounts to customers.

7.4 ADVANTAGES TO SOCIETY

- Customers need not to travel to shop a product thus less traffic on road and low air pollution.
- E-Commerce helps reducing cost of products so less affluent people can also afford the products.
- E-Commerce has enabled access to services and products to rural areas as well which are otherwise not available to them.
- E-Commerce helps government to deliver public services like health care, education, social services at reduced cost and in improved way.

E-Commerce disadvantages can be broadly classified in two major categories:

- Technical disadvantages
- Non-Technical disadvantages

7.5 TECHNICAL DISADVANTAGES

- There can be lack of system security, reliability or standards owing to poor implementation of e-Commerce.
- Software development industry is still evolving and keeps changing rapidly.
- In many countries, network bandwidth might cause an issue as there is insufficient telecommunication bandwidth available.
- Special types of web server or other software might be required by the vendor setting the e-commerce environment apart from network servers.
- Sometimes, it becomes difficult to integrate E-Commerce software or

website with the existing application or databases.

- There could be software/hardware compatibility issue as some E-Commerce software may be incompatible with some operating system or any other component.

7.6 NON-TECHNICAL DISADVANTAGES

- Initial cost: The cost of creating / building E-Commerce application in-house may be very high. There could be delay in launching the E-Commerce application due to mistakes, lack of experience.
- User resistance: User may not trust the site being unknown faceless seller. Such mistrust makes it difficult to make user switch from physical stores to online/virtual stores.
- Security/ Privacy: Difficult to ensure security or privacy on online transactions.
- Lack of touch or feel of products during online shopping.
- E-Commerce applications are still evolving and changing rapidly.
- Internet access is still not cheaper and is inconvenient to use for many potential customers like one living in remote villages.

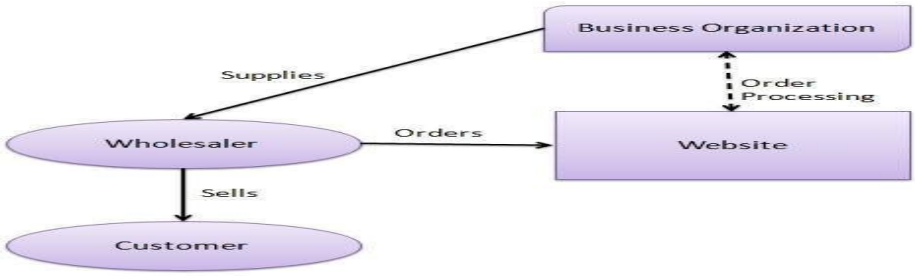
7.7 E-COMMERCE BUSINESS MODELS

E-Commerce or Electronics Commerce business models can generally categorized in following categories.

- Business - to - Business (B2B)
- Business - to - Consumer (B2C)
- Consumer - to - Consumer (C2C)
- Consumer - to - Business (C2B)
- Business - to - Government (B2G)
- Government - to - Business (G2B)
- Government - to - Citizen (G2C)

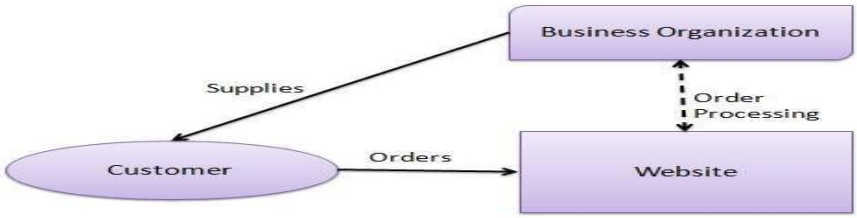
BUSINESS - TO - BUSINESS (B2B)

Website following B2B business model sells its product to an intermediate buyer who then sells the product to the final customer. As an example, a wholesaler places an order from a company's website and after receiving the consignment, sells the end product to final customer who comes to buy the product at wholesaler's retail outlet.



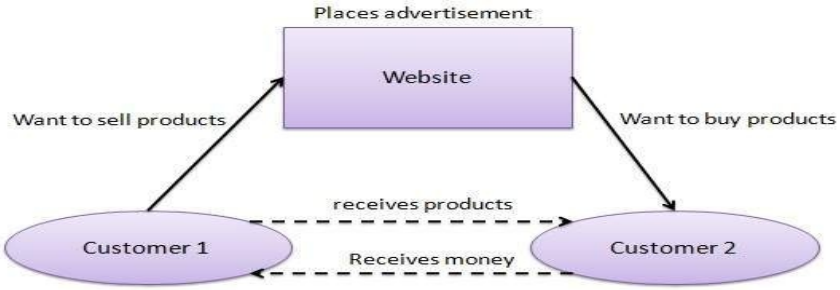
BUSINESS - TO – CONSUMER (B2C)

Website following B2C business model sells its product directly to a customer. A customer can view products shown on the website of business organization. The customer can choose a product and order the same. Website will send a notification to the business organization via email and organization will dispatch the product/goods to the customer.



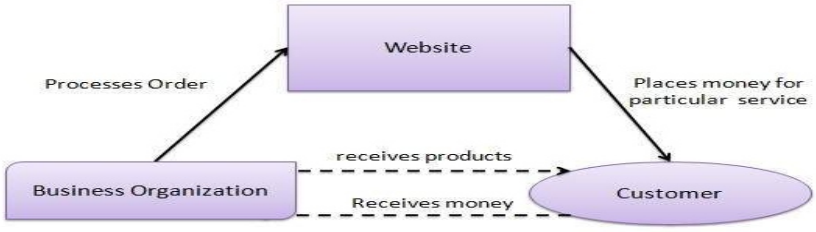
CONSUMER - TO - CONSUMER (C2C)

Website following C2C business model helps consumer to sell their assets like residential property, cars, motorcycles etc. or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.



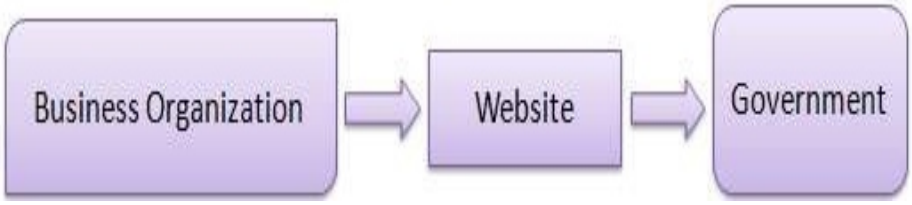
CONSUMER - TO - BUSINESS (C2B)

In this model, a consumer approaches website showing multiple business organizations for a particular service. Consumer places an estimate of amount he/she wants to spend for a particular service. For example, comparison of interest rates of personal loan/ car loan provided by various banks via website. Business organization who fulfills the consumer's requirement within specified budget approaches the customer and provides its services.



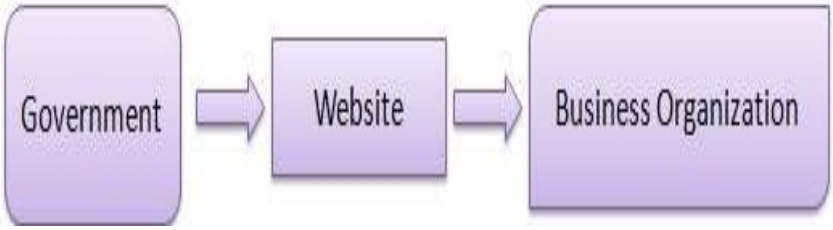
BUSINESS - TO - GOVERNMENT (B2G)

B2G model is a variant of B2B model. Such websites are used by government to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



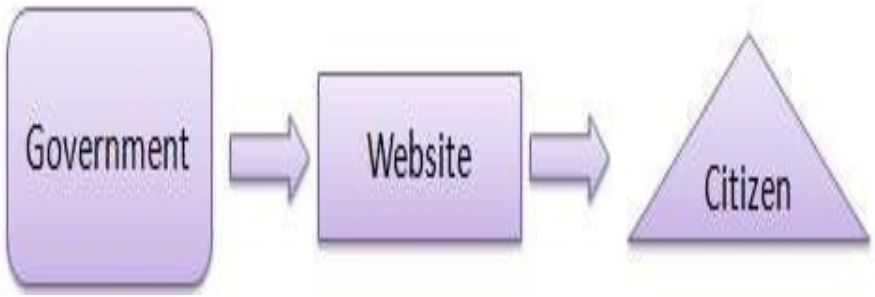
GOVERNMENT - TO - BUSINESS (G2B)

Government uses B2G model website to approach business organizations. Such websites support auctions, tenders and application submission functionalities.



GOVERNMENT - TO - CITIZEN (G2C)

Government uses G2C model website to approach citizen in general. Such websites support auctions of vehicles, machinery or any other material. Such website also provides services like registration for birth, marriage or death certificates. Main objectives of G2C website are to reduce average time for fulfilling people requests for various government services.



7.8 THE SIX COMPONENTS OF A MARKETING PLAN FOR SMALL BUSINESS

Small businesses create products and services that serve the needs and wants of their target markets. To reach their target marketing, small business owners have to put together marketing plans that outline how they'll inform, educate and remind potential customers and current customers about their products and services. There are six components each small business owner's marketing plan should include, regardless of industry.

DESCRIBE THE BUSINESS

A portion of your marketing plan should describe the type of business you run, including a listing of the products and services you offer potential customers. You can discuss which industry your business is a part of and provide details on the industry's growth over the years, your market share and marketing trends.

OUTLINE TARGET MARKET

Before you can begin marketing your product or service, you have to know the type of customers you're trying to attract to your business. Outline your target market by listing characteristics such as age, income, education level, geographic local, marital status, lifestyle, hobbies and interests. This information will help you pinpoint the most effective media to use when you're marketing to your target clients.

LIST THE COMPETITION

Whether you operate a small candy store or a beauty salon, you likely have competitors who offer products and services that are similar to what your business provides. Identify who your competition is, by name, whether they're online or offline. List the types of products and services they offer, the types of customers they target and take note of the tactics they use to attract and retain customers. This information can help you as you develop your own marketing strategies and tactics.

7.9 PERFORM SWOT ANALYSIS

A SWOT analysis will help you identify the strengths, weaknesses, threats and opportunities your business faces as you set out to market your products and services. Strengths might include your staff's expertise or the technology you use to create your product, while weaknesses might include your limited budget. Opportunities might include your company being the only one in your area offering a product or a service, while a threat might include substitutes that exist in the market.

LIST GOALS AND TACTICS

An effective marketing plan outlines the goals a company would like to accomplish. Whether you want to introduce your product to a new market, grab a 20 percent share of the market or use social media to increase word-of-mouth marketing, your business goals will help drive the tactics you use to advertise your business. Tactics might include hosting an in-store event, setting up social media profiles, working with a publicist to create a press release, creating a contest or implementing a cause marketing effort.

CREATE YOUR BUDGET

Accomplishing your marketing goals and implementing your marketing tactics requires a budget. Your marketing budget should outline what percentage of your profits, or overall business budget, you plan to dedicate to funding marketing activities for your business. You may elect to split your budget between online and print advertising, participating in trade shows, direct marketing and sponsorship opportunities. Advertising author Roy Williams suggests determining your minimum and maximum marketing budget by taking 10 to 12 percent of your projected gross sales and then multiplying each by the markup on your average client transaction. Then, deduct your annual rent cost, if applicable, from those figures. The final figures represent the minimum and maximum range of your annual marketing budget.

Developing a business plan without knowing the basic elements can be challenging. You need to structure your document in a way that persuades potential lending institutions and investors to finance your business. There are six key elements in a standard business plan. However, there are no strict guidelines on form, descriptions or details contained in each component of the plan. Business and industry goals, knowledge of market needs and operational strength are factors considered in a business plan tailored for success.

TRANSMITTAL LETTER

The transmittal letter for a business plan is similar to a cover letter accompanying a resume. Potential investors read a well-constructed transmittal letter as the introduction to the business plan. It contains all the components necessary to seek funding and is a succinct introduction that encourages reading the entrepreneur's position.

7.10 BUSINESS PHILOSOPHY AND VISION

The statement of the business philosophy and vision might also address organizational goals, industry knowledge and what sets the business apart from other similar enterprises. If this business endeavour is in an industry new to the entrepreneur, this section can also address how successful the business will be based on the research conducted.

EXECUTIVE SUMMARY

Another key element is the executive summary, which gives a snapshot of the entire business plan. A carefully written executive summary can explain nearly everything about the business plan in three pages or less. As the title suggests, it summarizes the business plan, thus, it's usually constructed after the final draft of a business plan.

BUSINESS DETAILS

Operational details such as workforce planning, production schedules, marketing and feasibility studies and business policies and procedures comprise this extensive section. "Entrepreneur" magazine states this section discusses logistics of the organization, such as the various responsibilities of the management team, the tasks assigned to each division within the company, and capital and expense requirements related to the operations of the business. Another way to describe this section is as a presentation of a pre-opening SWOT analysis of the organization. Conducting a SWOT analysis involves looking at the strengths, weaknesses, opportunities and threats in an objective manner.

FINANCIAL DETAILS

Lending institutions and potential investors are especially interested in how their funds will be used. Consequently, one entire section of a business plan is devoted to an explanation of budget, allocations, projections, return on investment, revenue base and income. Your banker or investors will also want to know how much money you intend to leave in the business as retained earnings and how much additional debt or equity financing you'll need. A well-constructed section about the financial aspects of a new business can convince investors why they should finance the business.

DOCUMENTATION AND ATTACHMENTS

Supporting materials are the final important element in a business plan. Careful attention paid to attaching all required documentation substantiates information contained in the business plan. To demonstrate solvency and business proficiency, potential business owners submit evidence of personal financial stability and resumes describing professional backgrounds that qualify them to operate the organization.

Important Points:

- E-commerce refers to paperless exchange of business information.
- Electronics Commerce mainly consist of seven business models
- A SWOT analysis will help you identify the strengths, weaknesses, threats and opportunities your business faces as you set out to market your products and services.
- Security & Privacy are the big issue for E-Business
- E-Commerce reduces paper work a lot and increases the transparency.
- E-Commerce gives advantages to organization, consumer and society.

Practice Questions

Objective type questions:

Q1. E- commerce stands for

a. Electric commerce
b. Electron Commerce
c. Electronic Commerce
d.None of these

Q2.G2C Stands for

a. Consumer to Government
b.Government to Cost
c. Government to Consumer

d. None

Q3. EDI stands for
a. Electronic Data Exchange
b. Electronic Data Internet
c. Electronic Data Transfer
d.None

Q4.Which is not the feature of E-commerce
a. 24 X 7 Service
b. Cash Payment
c. Marketing
d.None of these

Very short answer type questions:
Q1. Define E-Commerce.
Q2. Full form of E-mail.
Q3. Full form of B2B.
Q4. What is G2B?
Q5. Define SWOT Analysis.

Short answer type questions:
Q1. What is Traditional Business?
Q2.Define Electronic Fund Transfer
Q3.Explain the role of Government in E-Business.
Q4.Explain Inventory Management in E-commerce.
Q5. What are E-Commerce advantages to consumers**?**
Q6. What are E-Commerce advantages to society?

Essay type questions:
Q1.Explain the Six Component of small Business.
Q2. Discuss the different features of E-commerce.
Q3.Explain the difference between traditional v/s E-Business.
Q4. Explain the Different Business model of E-Commerce

Answers key for objective questions

Q1: c Q2: c
Q3: a Q4: b

Chapter-8
E-Business Security, Privacy, and Legal Requirements

There are several strategies that can help you to reduce the risks by which you and your customers face when doing business online. Be aware of these risks and take steps to deal with them before they become problems.

PROTECTING YOUR CLIENTS

It is important to earn consumer trust online because your customers want to be protected against fraud. Make use of security certifications and encryption technologies that make your website safer to use, and display any accompanying logos signifying that your website is safe. Immediately notify your client of any breaches in security. Your clients want to protect their privacy, so avoid asking them for more information than required. When you send electronic messages to your customers, be sure that you are compliant with the requirements

8.1 SECURITY

Just as you would protect your physical business, you need to ensure the online security of your operations and your customers.

- Get Cyber Safe-Protect your business: Learn how to protect your business and safeguard private information.
- Payment Card Industry Security Standards Council: If you handle debit and credit cards in your business, learn about applying information security best practices.

8.2 INTRANET AND EXTRANET SECURITY SYSTEMS

Fortunately, there are a variety of techniques available to address these security

holes within Extranets and Intranets. Before choosing a particular technology, however, it is important to understand the full range of issues that security systems should address:

a. **Authentication**
Ensuring that entities sending messages, receiving messages, or accessing systems are who they say they are, and have the privilege to undertake such actions.

b. **Privacy**
Enabling only the intended recipient to view an encrypted message.

c. **Content Integrity**
Guaranteeing that messages have not been altered by another party since they were sent.

d. **Non-Repudiation**
Establishing the source of a message so that the sender cannot later claim that they did not send the message.

e. **Ease of use**
Ensuring that security systems can be consistently and thoroughly implemented for a wide variety of applications without unduly restricting the ability of individuals or organizations to go about their daily business

8.3 BENEFITS OF THE INTRANET AND EXTRANET

Once up and running, Intranets and Extranets reduce costs and improve operations in many ways, including:

a. **Reducing costs of distributing information**
Intranets make it faster and easier to distribute policies, procedures, and company news to employees; Extranets make it easy and inexpensive to distribute online catalogs and price lists

b. **Lowering administrative costs**
The interactive capabilities of the Intra/Extranet allow users to complete many tasks themselves that once required administrative assistance.

c. **Improving collaboration**
Users become more productive by using the Intra/Extranet to form virtual, online teams. These virtual teams can collaborate without the expense of frequent travel

or the delays of sending information via the postal service. Within an organization, the Intranet can flatten hierarchies, giving more employees access to the information they need to make strategic decisions. Extranets allow businesses to collaborate more closely with each other as well. For example, Extranets can be used to integrate the supply chain, replacing expensive and proprietary systems such as electronic data interchange.

8.4 TYPES OF SECURITY RISKS ENCOUNTERED ON AN INTRANET AND EXTRANET

Intranet and Extranet security breaches can take a variety of forms. For example,

- An unauthorized person, such as a contractor or visitor, might gain access to a company's computer system.
- An employee or supplier authorized to use the system for one purpose might use it for another. For example, an engineer might break into the HR database to obtain confidential salary information.
- Confidential information might be intercepted as it is being sent to an authorized user. For example, an intruder might attach a network sniffing device to the network. While sniffers are normally used for network diagnostics, they can also be used to intercept data coming over the wire.
- Users may share documents between geographically separated offices over the Internet or Extranet, or telecommuters accessing the corporate Intranet from their home computer can expose sensitive data as it is sent over the wire.
- Electronic mail can be intercepted in transit.

8.5 FIREWALLS AND THEIR EVOLUTION

A firewall is a network security device that grants or rejects network access to traffic flows between an untrusted zone (e.g., the Internet) and a trusted zone (e.g., a private or corporate network). The firewall acts as the demarcation point or "traffic cop" in the network, as all communication should flow through it and it is where traffic is granted or rejected access. Firewalls enforce access controls through a positive control model, which states that only traffic defined in the firewall policy is allowed onto the network; all other traffic is denied (known as "default deny").

8.6 TYPES OF FIREWALL

PROXY FIREWALL

An early type of firewall device, a proxy firewall serves as the gateway from one

network to another for a specific application. Proxy servers can provide additional functionality such as content caching and security by preventing direct connections from outside the network. However, this also may impact throughput capabilities and the applications they can support.

Stateful inspection firewall

Now thought of as a "traditional" firewall, a stateful inspection firewall allows or blocks traffic based on state, port, and protocol. It monitors all activity from the opening of a connection until it is closed. Filtering decisions are made based on both administrator-defined rules as well as context, which refer to using information from previous connections and packets belonging to the same connection.

Unified threat management (UTM) firewall

A UTM device typically combines, in a loosely coupled way, the functions of a stateful inspection firewall with intrusion prevention and antivirus. It may also include additional services and often cloud management. UTMs focus on simplicity and ease of use.

Next-generation firewall (NGFW)

Firewalls have evolved beyond simple packet filtering and stateful inspection. Most companies are deploying next-generation firewalls to block modern threats such as advanced malware and application-layer attacks. According to Gartner, Inc.'s definition, a next-generation firewall must include:

- Standard firewall capabilities like stateful inspection
- Integrated intrusion prevention
- Application awareness and control to see and block risky apps
- Upgrade paths to include future information feeds
- Techniques to address evolving security threats

8.7 COMMON FIREWALL FILTERING TECHNIQUES

Firewalls are used to protect both home and corporate networks. A typical firewall program or hardware device filters all information coming through the Internet to your network or computer system. There are several types of firewall techniques that will prevent potentially harmful information from getting through:

Packet Filter

Looks at each packet entering or leaving the network and accepts or rejects it based on user-defined rules. Packet filtering is fairly effective and transparent to users, but it is difficult to configure.

Application Gateway
Applies security mechanisms to specific applications, such as FTP and Telnet servers. This is very effective, but can impose a performance degradation.

Circuit-level Gateway
Applies security mechanisms when a TCP or UDP connection is established. Once the connection has been made, packets can flow between the hosts without further checking.

Proxy Server
Intercepts all messages entering and leaving the network. The proxy server effectively hides the true network addresses.

In practice, many firewalls use two or more of these techniques in concert. A firewall is considered a first line of defense in protecting private information. For greater security, data can be encrypted.

8.8 CRYPTOGRAPHY

Cryptography is closely related to the disciplines of cryptology and cryptanalysis. Cryptography includes techniques such as microdots, merging words with images, and other ways to hide information in storage or transit. However, in today's computer-centric world, cryptography is most often associated with scrambling plaintext (ordinary text, sometimes referred to as cleartext) into ciphertext (a process called encryption), then back again (known as decryption). Individuals who practice this field are known as cryptographers.

Cryptography concerns itself with the following four objectives:
1) **Confidentiality** -the information cannot be understood by anyone for whom it was unintended.

2) **Integrity** -the information cannot be altered in storage or transit between sender and intended receiver without the alteration being detected

3) **Non-repudiation** -the creator/sender of the information cannot deny at a later stage his or her intentions in the creation or transmission of the information

4) **Authentication** -the sender and receiver can confirm each other's identity and the origin/destination of the information.

8.9 DIGITAL SIGNATURE

Digital signatures are the public-key primitives of message authentication. In the physical world, it is common to use handwritten signatures on handwritten or typed messages. They are used to bind signatory to the message. Similarly, a digital signature is a technique that binds a person/entity to the digital data. This binding can be independently verified by receiver as well as any third party. Digital signature is a cryptographic value that is calculated from the data and a secret key known only by the signer. In real world, the receiver of message needs assurance that the message belongs to the sender and he should not be able to repudiate the origination of that message. This requirement is very crucial in business applications, since likelihood of a dispute over exchanged data is very high.

8.10 VIRTUAL PRIVATE NETWORK (VPN)

A VPN or Virtual Private Network is a network connection that enables you to create a secure connection over the public Internet to private networks at a remote location. With a VPN, all network traffic (data, voice, and video) goes through a secure virtual tunnel between the host device (client) and the VPN provider's servers, and is encrypted. VPN technology uses a combination of features such as encryption, tunnelling protocols, data encapsulation, and certified connections to provide you with a secure connection to private networks and to protect your identity.

VPN connections technically give you all the benefits of a Local Area Network (LAN), which is similar to that found in many offices but without requiring a hard-wired connection. Early VPNs were often set up to give individual employees secure remote access to their company networks, hence the name "virtual private network". By connecting to the company's network, an individual employee can access all the company's resources and services as if the employee were inside the company. Since then, VPNs have evolved to provide the same level of secure communication between any device on the internet. Today, using VPN is increasingly popular among consumers as a means to protect their privacy online, secure their browsing sessions, and get unrestricted access to content or websites that are otherwise blocked or censored.

8.11 TYPES OF VPN

VPNs differ by architecture, purpose of usage, and accessibility. Two basic types of accessibility are **site-to-site VPN** and **remote access VPN**.

Site-to-site VPNs are used in the corporate environment. A site-to-site VPN ensures the safe encrypted connection of two or more local area networks (LANs) of the same company or of different companies. It means two geographically separated offices are virtually bridged together into a single LAN and users can access data throughout this network.

Remote Access VPNs connect an individual computer to a private network. This type of VPN can be divided again into two groups:

- Corporate VPNs

  Corporate VPNs allow business travellers and telecommuters to connect to their company networks and remotely access resources and services on the networks. When a user connects his/her device to the company's VPN, the VPN thinks that the user's computer is on the same local network as the VPN.

- Personal VPNs

  Personal VPNs provide consumers with the same private and secure connection as the corporate VPNs. However, personal VPNs are not used to connect to private networks to access private resources.

Security is an essential part of any transaction that takes place over the internet. Customer will lose his/her faith in e-business if its security is compromised. Following are the essential requirements for safe e-payments/transactions

Confidential
Information should not be accessible to unauthorized person. It should not be intercepted during transmission.

Integrity
Information should not be altered during its transmission over the network.

Availability
Information should be available wherever and whenever requirement within time limit specified.

Authenticity
There should be a mechanism to authenticate user before giving him/her access to required information.

Non-Repudiability
It is protection against denial of order or denial of payment. Once a sender sends a message, the sender should not able to deny sending the message. Similarly the

recipient of message should not be able to deny receipt.

Encryption
Information should be encrypted and decrypted only by authorized user.

Auditability
Data should be recorded in such a way that it can be audited for integrity requirements.

8.12 MEASURES TO ENSURE SECURITY

Major security measures are following:-

Encryption
It is a very effective and practical way to safeguard the data being transmitted over the network. Sender of the information encrypt the data using a secret code and specified receiver only can decrypt the data using the same or different secret code.

Digital Signature
Digital signature ensures the authenticity of the information. A digital signature is a e-signature authenticated through encryption and password.

Security Certificates
Security certificate is unique digital id used to verify identity of an individual website or user.

Important Points:

- A firewall is a network security device that grants or rejects network access to traffic flows between an untrusted zone (e.g., the Internet) and a trusted zone (e.g., a private or corporate network)
- The proxy server effectively hides the true network addresses.
- Cryptography is closely related to the disciplines of cryptology and cryptanalysis
- Digital signatures are the public-key primitives of message authentication.
- Cryptography concerns with Confidentiality, Integrity, Non-repudiation and Authentication
- A VPN or Virtual Private Network is a network connection that enables you to create a secure connection over the public Internet to private networks at a remote location.

- Security certificate is unique digital id used to verify identity of an individual website or user.

Practice Questions

Objective type questions:

Q1. Essential requirements for safe E-payment
a. Confidential
b. Integrity
c. Authenticity
d. All of these

Q2. UTM Stands for
a. Universal threat management
b. Unified threat management
c. Unified threshold management
d. None

Q3. NGFW stands for
a. New-general firewall
b. Next-general firewall
c. Next-generation firewall
d. None

Very short answer type questions:

Q1. Define Digital Signature.
Q2. Define Intranet.
Q3. Define Content Integrity.
Q4. Define Privacy.
Q5. What is the use of Proxy Server?
Q6. What is the full form HTTP?

Short answer type questions:

Q1.What is the purpose of Encryption?
Q2. Why security is required in E-commerce?
Q3. What is Extranet and it's use?
Q4. What is Authentication?
Q5. What is the use of proxy firewall?
Q6 What is Cryptography?

Essay type questions:

Q1. What is VPN ? Explain it's type.
Q2. What is Firewall ? Explain it's uses.
Q3. Explain Firewall filtering techniques.
Q4. Explain the benefits of Extranet and Intranet.

Answers key for objective questions

Q1: d
Q2: b
Q3: c

Chapter-9
E-Commerce Payment System

E-Commerce or Electronics Commerce sites use electronic payment where electronic payment refers to paperless monetary transactions. Electronic payment has revolutionized the business processing by reducing paper work, transaction costs, labour cost. Being user friendly and less time consuming than manual processing, helps business organization to expand its market reach / expansion.

9.1 MODES OF ELECTRONIC PAYMENTS

Some of the modes of electronic payments are following.

- Credit Card
- Debit Card
- Electronic Fund Transfer (EFT)
- Mobile Wallet

CREDIT CARD

Payment using credit card is one of most common mode of electronic payment. Credit card is small plastic card with a unique number attached with an account. It has also a magnetic strip embedded in it which is used to read credit card via card readers. When a customer purchases a product via credit card, credit card issuer bank pays on behalf of the customer and customer has a certain time period after which he/she can pay the credit card bill. It is usually credit card monthly payment cycle. Following are the actors in the credit card system.

- The card holder - Customer
- The merchant - seller of product who can accept credit card payments.
- The card issuer bank - card holder's bank

- The acquirer bank - the merchant's bank
- The card brand - for example, visa or mastercard etc

DEBIT CARD

Debit card, like credit card is a small plastic card with a unique number mapped with the bank account number. It is required to have a bank account before getting a debit card from the bank. The major difference between debit card and credit card is that in case of payment through debit card, amount gets deducted from card's bank account immediately and there should be sufficient balance in bank account for the transaction to get completed. Whereas in case of credit card there is no such compulsion. Debit cards free customer to carry cash, cheques and even merchants accepts debit card more readily.

ELECTRONIC FUND TRANSFER

It is a very popular electronic payment method to transfer money from one bank account to another bank account. Accounts can be in same bank or different bank. Fund transfer can be done using ATM (Automated Teller Machine) or using computer. Now a day, internet based EFT is getting popularity. In this case, customer uses website provided by the bank. Customer logins to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account. Customer's bank transfers amount to other account if it is in same bank otherwise transfer request is forwarded to ACH (Automated Clearing House) to transfer amount to other account and amount is deducted from customer's account. Once amount is transferred to other account, customer is notified of the fund transfer by the bank.

Mobile Wallet

Mobile wallets are essentially digital versions of traditional wallets that someone would carry in their pocket. While there are many variations, usually they can hold digital information about credit and debit cards for making payments, store coupons and loyalty programs, specific information about personal identity and more. Many companies are jumping into the mobile payments space— on both the paying and receiving sides of the transaction—and new innovators are continuously changing the industry just like freecharge, paytm, jio money, SBI buddy etc.

Example: State Bank Buddy

Use State Bank Buddy and have the freedom to send money to Anyone, pay bills, recharge mobile/ DTH, book movie/ flight/bus tickets 24x7 on the move. Anytime Anywhere.

State Bank Buddy has the following features:

i. Load money into your wallet
ii. Transfer money with your contacts on phonebook or Facebook
iii. Recharge your mobile/DTH and pay bills
iv. Shop online and book movies, flights and hotels
v. Transfer money instantly to your bank account

9.2 THIRD-PARTY PAYMENT PROCESSOR

Many businesses have their own merchant accounts with merchant services providers. When their clients walk through the door and make a purchase, these businesses can process a payment directly through their own account and be done. However, for some businesses those are just starting out, this isn't always the most economical method of taking payments. This is where a third-party payment processor comes into play. An example of a third-party payment processor is PayU, ccAvenue, Citrus pay etc. You are able to sign up and start accepting payments the very same day.

9.3 PAYMENT GATEWAY

A payment gateway is an e-commerce service that processes credit/debit card payments for online stores. Payment gateways facilitate these transactions by transferring key information between payment portals such as web-enabled mobile devices/websites and the front end processor/bank. Payment gateways fulfill a vital role in the ecommerce transaction process, authorizing the payment between merchant and customer. Popular payment gateways include PayPal, PayU, Citrus etc.

How payment gateways work

When a customer places an order from an online store, the payment gateway performs several tasks to finalize the transaction:

- **Encryption**: The web browser encrypts the data to be sent between it and the vendor's web server. The gateway then sends the transaction data to the payment processor utilized by the vendor's acquiring bank.

- **Authorization Request**: The payment processor sends the transaction data to a card association. The credit card's issuing bank views the authorization request and "approves" or "denies."

- **Filling the Order**: The processor then forwards an authorization pertaining to the merchant and consumer to the payment gateway. Once the gateway

obtains this response, it transmits it to the website/interface to process the payment.

9.4 TRADITIONAL MARKETING

Marketing activities continue to evolve from traditional strategies to non-traditional methods that involve the Internet. Both traditional and non-traditional marketing have advantages and disadvantages. A small business can benefit from integrating both approaches to market its products. Traditional marketing activities typically involve advertising, publicity, sales, merchandising and distribution.

9.5 EXAMPLES OF TRADITIONAL ADVERTISING

NEWSPAPERS

Newspapers are one of the oldest areas in which to place advertisements. The effect must be gathered before the consumer turns the page or the usefulness of the advertisement is gone forever. Most newspapers have a readership that consists mostly of local people to your area, however, there are a few national newspapers. Consider your target market and which newspaper they are most likely to read prior to purchasing newspaper advertisements.

MAGAZINES

Magazines are more long-term versions of advertising medium, as opposed to newspapers. While the magazine is most likely published monthly, many keep their magazines for several months and read them more than once. Additionally, magazines are more typically passed off to others than newspapers, so there is a much higher chance that your advertisement will be seen. The high gloss and color content of a magazine, versus a newspaper, makes it a desirable form of advertising.

RADIO

Radio is another traditional form of advertising. Radio signals can reach a large area, and commercials span 30 to 60 seconds, which makes them an attractive advertising option. The major drawback to radio advertisements is the ability for the listener to simply turn the station or turn off the radio to avoid hearing them. With print advertising, if the person's eye is caught by the advertising, they are likely going to read them. However, if the radio is not on, the listener certainly will not hear the advertisement.

9.6 INTERNET MARKETING

Internet marketing, or online marketing, refers to advertising and marketing efforts that use the Web and email to drive direct sales via electronic commerce, in addition to sales leads from Web sites or emails. Internet marketing and online advertising efforts are typically used in conjunction with traditional types of advertising such as radio, television, newspapers and magazines.

SPECIALIZED AREAS OF INTERNET MARKETING

Internet marketing can also be broken down into more specialized areas such as Web marketing, email marketing and social media marketing:

Web marketing
Includes e-commerce Web sites, affiliate marketing Web sites, promotional or informative Web sites, online advertising on search engines, and organic search engine results via search engine optimization (SEO).

Email marketing
Involves both advertising and promotional marketing efforts via e-mail messages to current and prospective customers.

Social media marketing
Involves both advertising and marketing (including viral marketing) efforts via social networking sites like Facebook, Twitter, YouTube etc.

9.7 PROTECTION OF PRIVACY AND INTELLECTUAL PROPERTY

The Policy is a comprehensive document that lays down seven objectives which have been elaborated with actionable steps to be undertaken by the identified nodal ministry/ department towards achieving the objectives.

IPR Awareness: Outreach and Promotion
To create public awareness about the economic, social and cultural benefits of IPRs among all sections of society.

Generation of IPRs
To stimulate the generation of IPRs.

Legal and Legislative Framework
To have strong and effective IPR laws, which balance the interests of rights owners with larger public interest.

Administration and Management
To modernize and strengthen service-oriented IPR administration.

Commercialization of IPRs
Get value for IPRs through commercialization.

Enforcement and Adjudication
To strengthen the enforcement and adjudicatory mechanisms for combating IPR infringements.

Human Capital Development
To strengthen and expand human resources, institutions and capacities for teaching, training, research and skill building in IPRs.

Important Point

- Mobile wallets are essentially digital versions of traditional wallets that someone would carry in their pocket.
- Payment gateways fulfill a vital role in the e-commerce transaction process, authorizing the payment between merchant and customer.
- Merchant Software is helps merchants to communicate with potential customers and financial institutions in secure manner.
- Referral marketing, also known as word of mouth, relies on customers to spread information about products or services.
- Internet marketing, or online marketing, refers to advertising and marketing efforts that use the Web and email to drive direct sales via electronic commerce.
- Social media marketing involves both advertising and marketing (including viral marketing) efforts via social networking sites like Facebook, Twitter, YouTube etc.

Practice Questions

Objective type questions:
Q1.Modes of Electronic payment
a. Credit Card / Debit Card
b. Mobile Wallet
c. Electronic fund transfer
d. All of these

Q2.Radio comes under
a. Traditional marketing
b. Social Media Marketing
c. Internet Marketing
c. None

Q3. Facebook comes under
a. Traditional marketing
b. Social Media Marketing
c. Internet Marketing
d. None

Q4 IPR stands for
a. Internet property right
b.Intellectual property right
c. Intellectual price right
d.None

Very short answer type questions:
Q1. Define Email marketing.
Q2. Define Web marketing
Q3. What is Payment Gateway**?**
Q4. What is the use of credit card?
Q5. What is the use of authorization in payment gateway?

Short answer type questions:
Q1. What is Internet Marketing?
Q2. What is Mobile Wallet?
Q3. What is Electronic Payment System?
Q4. Give the names of two mobile wallets.
Q5. Difference between payment through mobile wallet and Debit Card.
Q6. Why social marketing is important in business?
Q7. Difference between debit and credit card payment.

Essay type questions:
Q1. Explain Social Marketing in Detail.
Q2. What are the latest ways of Marketing?
Q3.Explain the various methods of E-payment.
Q4. Differentiate between traditional and new methods of marketing.
Q5. Steps to use SBI buddy wallet in detail.

Answers key for objective questions

Q1: d
Q2: a
Q3: b
Q4: b

Chapter 10
Application and System Software

10.1 DEFINITION OF COMPUTER DATA

The Latin word "data" is the plural of "datum", and nowadays □data□ is most commonly used as a singular word. Data is a collection of raw facts, such as symbols, numbers, and words. Data is measured, collected, reported, and analyzed, sometimes it can be visualized using graphs or images. Data are collected together for reference or analysis. Data can exist in a variety of forms such as numbers or text on pieces of paper, as bits and bytes stored in electronic memory, or as facts stored in a person's mind. Computer Data is represented as quantities, characters, or symbols on which operations are performed by a computer, stored and recorded in files and folders on memory device and transmitted in the form of digital electrical signals.

10.2 INFORMATION

Information is well defined collection of data.
Data vs. Information - Data are simply facts or figures, it may understand as a bit of information, but not information itself. When data are processed, interpreted, organized, structured or presented so as to make them meaningful or useful, they are called information. Information provides context for data. Computers typically read data, but it is not necessarily something that a computer actually understands. Through the use of formulas, programming scripts, or software applications, a computer can turn data into information that a human can understand. Below is an example of the same data and information and how they differ.

Example of Data
Ramesh Kumar, 775 Vijay Circle, JUC, RJ342001

Example of Information
Ramesh Kumar
775, Vijay Circle
Jodhpur City, Rajasthan 342001

As you can see in the above example, if you only looked at the data, you may be able to understand some of the text on the line, but it isn't really understandable for any one. That same information, when broken out into readable text and even slightly formatted, becomes much more useful and any one can understand that it contact information for Ramesh Kumar.

10.3 COMPUTER INSTRUCTION

Instruction is collection of information, it is also known as of a direction or order in general words. A computer instruction is set of information given to a computer processor by a computer program. At the lowest level, each instruction is a sequence of 0s and 1s that describes a physical operation the computer is to perform (such as "Add") and, depending on the particular instruction type. At the higher level, each instruction is written in high level language similar to the general purpose English language. The size or length of an instruction varies according to type of computer system. For example: -

```
a=3;
b=4;
c=a+b;
```

10.4 COMPUTER PROGRAM

A computer program is a well define set of instructions that performs a specific task, when executed by a computer. Everything a computer does is done by using a computer program. A computer requires programs to function, and typically executes the program's instructions in a central processing unit. A computer program is usually written by a programmer in a computer programming language, such as BASIC, C, or Java. Once it is written, the programmer uses a translator to turn it into a machine language that the computer can understand. There are two well-known translator, Compiler and interpreter.

The translators (either Compilers or Interpreter) transform an entire program from one language to another. Interpreters execute a program sequentially, translating

at each step while compiler can execute an entire program to a machine language. Debugger executes a program piecemeal and monitor various circumstances, enabling the programmer to check whether the operation of the program is correct or not. Some examples of computer programs (As a collection of programs, software):

- A web browser like Mozilla Firefox, internet explorer and Google crome can be used to view web pages on the Internet.
- An office suite can be used to write documents or spreadsheets.
- Video games are computer programs.

A computer program is stored as a file on the computer's hard drive. When the user runs the program, the file is read by the computer, and the processor reads the data in the file as a list of instructions. Then the computer does what the program tells it to do. There are also bad programs, called malware, written by people who want to do bad things to a computer. Some are spyware, trying to steal information from the computer. Some try to damage the data stored on the hard drive. Some others send users to web sites that offer to sell them things. Some are computer viruses. Computers are supplied with various programs designed primarily to assist the user to run jobs or optimize system performance. This collection of programs, called the operating system, is as important to the operation of a computer system as its hardware.

10.5 SOFTWARE: APPLICATION AND SYSTEM SOFTWARE

Computer can be understood by two main components: hardware and software. Computer hardware performs all the computation and calculation. Software instructs the hardware what to do and how to do. A computer is useless unless it has a number of set of programs (i.e. Software) to enable easy use of the computer hardware. The term "software" was first proposed by Alan Turing. In computer science and software engineering, computer software is collection of computer programs, libraries and related data. Without software a computer will remain just a metal body. Computer hardware and software require each other, they cannot be use separately. Computer software may be categorized into two broad categories, such as application software or system software. Application Software are designed for specific application, such as school management software, library management system, game software etc. Application software is directly use by the user and facilitates user□s requirements. To develop application software, the programmer does not need to control the basic circuitry of a computer. Instead the programmer needs instructions that make it easy to input data, produce output, do calculations and store and retrieve information. Programming languages that are suitable for such application programs support these instructions; there are many

languages available for developing application program/software. Examples of an application software include a word processor, a spreadsheet, an accounting application, a web browser, a media player, an aeronautical flight simulator, a console game or a photo editor.

System software/programs are designed to make the computer easier to use, such as operating system, language translator and device driver etc. System software directly operates the computer hardware to provide basic functionality needed by users and other software, and to provide a platform for running application software. To develop system software, the programmer needs instruction to control the computer□s circuitry. C and C++ languages are widely used to develop system software. System software can be divided as:

- Operating systems
- Device drivers
- Utilities
- Translators (Compiler and Interpreter)

Operating Systems

Operating system is a type of system software, its main work is to control and manage the computer hardware for example memory, processor and input-output related work. It is a collection of essential softwares that manage resources and provides common services for other software that runs "on top" of them.

Device Drivers

Device driver operates or controls a particular type of device that is attached to a computer. Each device needs at least one corresponding device driver. For connecting a printer to a computer, a printer device driver is required.

Utilities

Utilities are computer programs which are designed to assist users in the maintenance and care of their computers.

Translators (Compiler and Interpreter)

Mainly Programs and Software□s are designed in high level languages which are similar to natural languages so programmer can prepare software easily and efficiently. High level languages are converted in machine languages with the help of compiler or Interpreter. Compiler and Interpreter can also tell errors in program so programmer can improve.

10.6 USES AND EXAMPLES OF APPLICATION SOFTWARE AND SYSTEM SOFTWARE

In information technology, an application software is a computer program designed to help people perform an activity. An application software thus differs from an operating system (which runs a computer), it is a utility (which performs maintenance or general-purpose chores), and a programming tool (with which computer programs are created). Depending on the activity for which it was designed, an application software can manipulate text, numbers, graphics, or a combination of these elements. Some application software packages focus on a single task, such as word processing; others, called integrated software include several applications. Application software, or simply applications, are often called productivity programs or end-user programs because they enable the user to complete tasks such as creating documents, spreadsheets, databases, and publications, doing online research, sending email, designing graphics, running businesses, and even playing games. Application software is specific to the task it is designed for and can be as simple as a calculator application or as complex as a word processing application. When you begin creating a document, the word processing software has already set the margins, font style and size, and the line spacing for you. But you can change these settings, and you have many more formatting options available. For example, the word processor application makes it easy to add colour, headings, and pictures or delete, copy, move, and change the document's appearance to suit your needs.

System software programs directly related to the computer hardware and perform tasks associated with controlling and utilizing computer hardware. System software includes device drivers, operating systems, servers, utilities, and window systems. System software is responsible for managing a variety of independent hardware components, so that they can work together harmoniously. System program controls the execution of programs, manage the storage & processing resources of the computer & perform other management & monitoring function.

10.7 PROPRIETARY SOFTWARE AND OPEN SOURCE SOFTWARE (OSS)

Proprietary Software

The term proprietary is derived from the Latin word proprieties meaning property. Proprietary software is a computer software licensed under the exclusive legal rights of the copyright holder. Proprietary software is developed by a person or firm (usually the one that developed it) who has rights of using existing or

developing new tools to create new software. There are almost always major restrictions on its use, and its source code is almost always kept secret. Source code is the form in which a program is originally written by a human using a programming language and prior to being converted to machine code which is directly readable by a computer's CPU (central processing unit). It is necessary to have the source code in order to be able to modify or improve a program. A proprietary software developer sells or provides his creation under some concrete conditions which should be followed in order to avoid any legal issues. In general, these concrete conditions involves usage using software with a purchased license, within the permitted boundaries, no modification allowed, no further re-distributions and no reverse engineering to applied. The main identity of proprietary software is that its source code is always kept secret from outside world. Thus, the internal structure of proprietary software is not exposed. The restrictions on proprietary software are generally imposed through a document called EULA (End-user license agreements) to which users are supposed to agree before using the software. It works just like a contract of usage conditions between the user and vendor. If a user is found indulged in activities leading to the breaking of copyright conditions, the selling authority has the right to impose legal actions against the misusing personal. Some Unix-like operating systems are also proprietary. Among the most popular are AIX (developed by IBM), HP-UX (developed by Hewlett-Packard), QNX (developed by QNX Software Systems) and Solaris (developed by Sun Microsystems).

Open Source Software (OSS)

Software, whose source code is published and made available to the public, enabling anyone to copy, modify and redistribute the source code without paying royalties or fees. Open source code develops through community cooperation. These communities are composed of individual programmers, users as well as very large companies. Some examples of open source initiatives are GNU/Linux, Eclipse, Apache, Mozilla etc.

The licence usually permits users to collaboratively use, change and improve software to redistribute it. Open source software is software whose license guarantees (1) freedom to access and modify its source code, (2) freedom to redistribute and reuse the software, (3) freedom to use the software in any way you want, but also in some circumstances.

10.8 FOUNDATION OF THE OPEN SOURCE SOFTWARE

Why is it called Open Source Software? Open: collaboration is open to all and Source: source code is freely shared. The term "open source" refers to codes

(Programs) that people can modify and share because its design is publicly accessible. The term originated in the context of software development to designate a specific approach to creating computer programs. Open source software is software with source code that anyone can inspect, modify, and enhance. "Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software□a "program" or "application"□works.

Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly. "Open source" doesn't just mean something is free of charge. Open source software programmers can charge money for the open source software they create or to which they contribute. Open source technology and open source thinking both benefit programmers and non-programmers. Early inventors built much of the Internet itself on open source technologies and anyone using the Internet today benefited from open source software. OSS have powerful implications:

- Encourage reuse
- Enable innovation
- Flexibility
- Easier integration
- Drives down price of software to zero
- No vendor or service monopoly, it means no reason to hide defects and security vulnerabilities
- No single-vendor means diversity of support and services choice
- Sustained competition is a customer benefit
- Lower barriers to entry
- Widens participation

10.9 COMPARISON BETWEEN OSS AND PROPRIETARY SOFTWARE

Some software has source code that only the person, team, or organization who created it and maintains exclusive control over it can modify. People call this kind of software "proprietary" or "closed source" software. Only the original authors of proprietary software can legally copy, inspect, and alter that software. And in order to use proprietary software, computer users must agree that they will not do anything with the software that the software's authors have not expressly permitted. Microsoft Office and Adobe Photoshop are examples of proprietary software.

While Open source software is different. Its authors make its source code available to others who would like to view that code, copy it, learn from it, alter it, or share it. LibreOffice and the GNU Image Manipulation Program are examples of open source software. As they do with proprietary software, users must accept the terms of a license when they use open source software. The legal terms of open source licenses differ dramatically from those of proprietary licenses. Open source licenses affect the way people can use, study, modify, and distribute software. In general, open source licenses grant computer users permission to use open source software for any purpose they wish.

10.10 REASONS FOR ADOPTION OF OPEN SOURCE SOFTWARE

People prefer open source software to proprietary software for a number of reasons, including:

Control
Many people prefer open source software because they have more control over it. They can examine the code to make sure it's not doing anything they don't want it to do, and they can change parts of it they don't like. Users who aren't programmers also benefit from open source software, because they can use this software for any purpose they wish.

Training
Other people like open source software because it helps them become better programmers. Because open source code is publicly accessible, students can easily study it as they learn to make better software.

Security
Some people prefer open source software because they consider it more secure and stable than proprietary software. Because anyone can view and modify open source software, someone might spot and correct errors or omissions that a program's original authors might have missed. And because so many programmers can work on a piece of open source software without asking for permission from original authors, they can fix, update, and upgrade open source software more quickly than they can proprietary software.

Stability
Many users prefer open source software to proprietary software for important long-term projects. Because programmers publicly distribute the source code for open source software, users relying on that software for critical tasks.

10.11 ADVANTAGES AND DISADVANTAGES OF OSS

Advantages

- The acquisition cost, development and implementation contract costs of OSS are likely to be lower than for proprietary software. So, the most remarkable strength of the OSS is costs saving. Using OSS can save both license and development costs.
- Data transferability; with open source code and a move towards open data formats, there are greater opportunities to share data across interoperable platforms
- Increased opportunities for reuse.
- Another advantage of widely used OSS packages is the generally high quality of the software.
- Potential for fast cycle time of releases and bug fixes.

Disadvantages

- If the source code is made available to the wider community, it is also vulnerable to threats from the hacker community.
- Support and maintenance costs may outweigh those of the proprietary package. A full assessment of the total cost of ownership along with the proposed supplier will help to mitigate this risk.
- Open source solutions may require additional development to enable integration with an existing proprietary environment.
- Some open source solutions may never work well with established proprietary products.

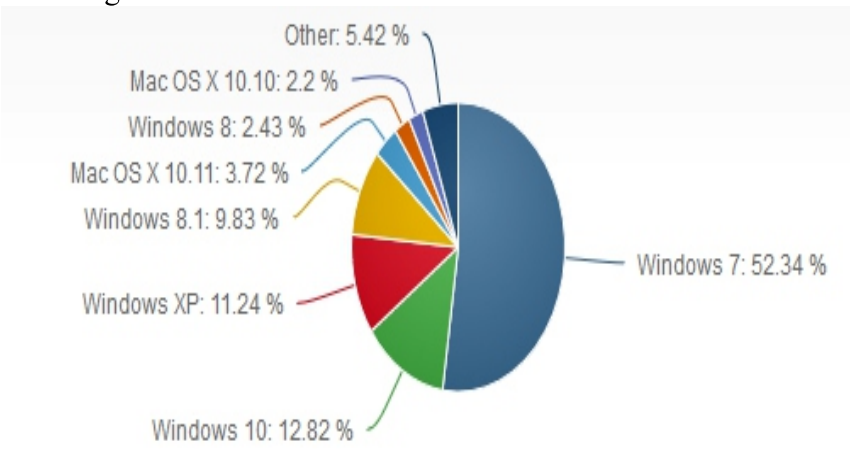
10.12 OPERATING SYSTEM: MICROSOFT WINDOW, LINUX, OPEN OFFICE

Operating system is a type of System software its s main work is to control and manage the computer hardware for example memory, processor and input-output related work. Which are essential collections of software that manage resources and provides common services for other software that runs "on top" of them.

10.13 MICROSOFT WINDOWS OPERATING SYSTEM

Windows is a type of operating systems, which is formally called Microsoft Windows. We look at the history of Microsoft's Windows operating systems (Windows OS) from 1985 to present day. Windows dominates the personal computer world, running, by some estimates, more than 90 % of all personal computers the remainder running Linux and Mac-operating systems.

Windows provides a graphical user interface (GUI), virtual memory management and multitasking.



Windows OS Distribution

The detailed history of MS-DOS and Windows operating systems designed for personal computers (PCs):

MS-DOS (Microsoft Disk Operating System)

Originally developed by Microsoft for IBM, MS-DOS was the standard operating system for IBM-compatible personal computers. The initial versions of DOS were very simple and resembled another operating system called CP/M. Subsequent versions have become increasingly sophisticated as they incorporated features of minicomputer operating systems.

Windows 1.0 2.0 (1985-1992)

Introduced in 1985, Microsoft Windows 1.0 was named due to the computing boxes, or "windows" that represented a fundamental aspect of the operating system. Instead of typing MS-DOS commands, windows 1.0 allowed users to point and click to access the windows. In 1987 Microsoft released Windows 2.0, which was designed for the designed for the Intel 286 processor. This version added desktop icons, keyboard shortcuts and improved graphics support.

Windows 3.0 3.1 (1990 1994)

Windows 3.0 was released in May, 1900 offering better icons, performance and advanced graphics with 16 colours designed for Intel 386 processors. Windows 3.0 included Program Manager, File Manager and Print Manager and games. Microsoft released Windows 3.1 in 1992 with advanced graphics.

Windows 95 (August 1995)
Windows 95 was released in 1995 and was a major upgrade to the Windows operating system. This OS was a significant advancement over its precursor Windows 3.1. In addition to sporting a new user interface, Windows 95 also includes a number of important internal improvements. Perhaps most important, it supports 32-bit applications, which means that applications written specifically for this operating system should run much faster. Although Windows 95 can run older Windows and DOS applications, it has essentially removed DOS as the underlying platform. Other important features in this operating system are the ability to automatically detect and configure installed hardware (plug and play).

Windows 98 (June 1998)
Windows 98 offers support for a number of new technologies, including FAT32, AGP, MMX, USB, DVD, and ACPI. Its most visible feature, though, is the Active Desktop, which integrates the Web browser (Internet Explorer) with the operating system.

Windows ME - Millennium Edition (September 2000)
The Windows Millennium Edition, called "Windows Me" was an update to the Windows 98 core and included some features of the Windows 2000 operating system. This version also removed the "boot in DOS" option.

Windows NT 31. - 4.0 (1993-1996)
Windows NT (New Technology) is a 32-bit operating system that supports preemptive multitasking. There are actually two versions of Windows NT: Windows NT Server, designed to act as a server in networks, and Windows NT Workstation for stand-alone or client workstations.

Windows 2000 (February 2000)
Often abbreviated as "W2K," Windows 2000 is an operating system for business desktop and laptop systems to run software applications, connect to Internet and intranet sites, and access files, printers, and network resources. Microsoft released four versions of Windows 2000: Professional (for business desktop and laptop systems), Server (both a Web server and an office server), Advanced Server (for line-of-business applications) and Data centre Server (for high-traffic computer networks).

Windows XP (October 2001)
Windows XP was made with new graphical user interface and a more stable and reliable environment than previous versions of Windows, released in 2001. Windows XP comes in two versions, Home and Professional. Microsoft focused

on mobility for both editions, including plug and play features for connecting to wireless networks. Windows XP is one of Microsoft's best-selling products.

Windows Vista (November 2006)

Windows Vista offered advancement in reliability, security, ease of deployment, performance and manageability over Windows XP. New in this version was capabilities to detect hardware problems before they occur, security features to protect against the latest generation of threats, faster start-up time and low power consumption of the new sleep state. In many cases, Windows Vista is noticeably more responsive than Windows XP on identical hardware.

Windows 7 (October 2009)

Windows 7 was released in conjunction with Windows Server 2008 R2, Windows 7's server counterpart. Enhancements and new features in Windows 7 include multi-touch support, Internet Explorer 8, improved performance and start-up time. It can share digital photos with the help of media file and it can give permission for virtual backup.

Windows 8 (August 2012)

Windows 8 was released on August. 1, 2012 and is a completely redesigned operating system that's been developed from the ground up with touchscreen use in mind as well as near-instant-on capabilities that enable a Windows 8 PC to load and start up in a matter of seconds rather than in minutes.

Windows 10

Before Windows 10 releasing in 2014 its beta version is released. Microsoft claims Windows 10 features fast start up and resume, built-in security and the return of the Start Menu in an expanded form. For example, Tablet, PC., Smartphone can also update Windows 10.

Microsoft Operating Systems for Servers and Mobile Devices

Aside from operating systems designed for use on personal computers (PCs) and laptops, Microsoft has also developed operating systems for services, hand-held devices, and mobile phones.

Windows Server (March 2003)

Windows Server is a series of Microsoft server operating systems. Windows servers are more powerful versions of their desktop operating system counterparts and are designed to more efficiently handle corporate networking, Internet/intranet hosting, databases, enterprise-scale messaging and similar functions.

Windows Home Server (January 2007)

Announced in January 2007, Windows Home Server (WHS) is a "consumer server" designed to use with multiple computers connected in the home. Home Server allows you to share files such as digital photos and media files, and also allows you to automatically backup your home networked computers.

Windows CE (November 2006)

A version of the Windows operating system designed for small devices such as personal digital assistants (PDAs) (or Handheld PCs in the Microsoft vernacular). The Windows CE graphical user interface (GUI) is very similar to Windows 95 so devices running Windows CE should be easy to operate for anyone familiar with Windows 95.

Windows Mobile (April 2000)

A mobile operating system for smartphones and mobile devices from Microsoft based on the Windows CE kernel and designed to look and operate similar to desktop versions of Microsoft Windows.

10.14 LINUX

Just like Windows XP, Windows 7, Windows 8, and Mac OS X, Linux is an operating system. An operating system is software that manages all of the hardware resources associated with your desktop or laptop. To put it simply the operating system manages the communication between your software and your hardware. Without the operating system the software wouldn t function. Linux is a different type of operating system which have security function means this operating system is secure from Virus so for commercial purpose Linux based system used. Linux is a free open-source operating system based on Unix. Linux is:

- Free
- Unix Like
- Open Source
- Network operating system

Linux is a kernel. A kernel provides access to the computer hardware and control access to resources such as:

- Files and data.
- Running programs.
- Loading programs into memory.
- Networks.
- Security and firewall

- Other resources etc.

A Brief History of Linux

In 1991 Linus Torvalds was studying UNIX at a university, where he was using a special educational experimental purpose operating system called Minix (a small version of UNIX to be used in the academic environment). However, Minix had its limitations and Linus felt he could create something better. Therefore, he developed his own version of Minix, known as Linux. Linux was Open Source right from the start.

Linux is a kernel developed by Linus. The kernel was bundled with system utilities and libraries from the GNU project to create a usable operating system. Sometimes people refer to Linux as GNU/Linux because it has system utilities and libraries from the GNU project. Linus Torvalds is credited for creating the Linux Kernel, not the entire Linux operating system.

Difference between Unix and Linux

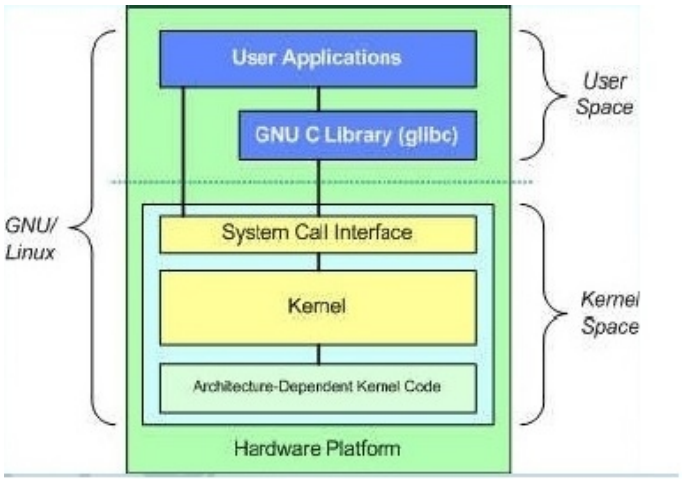
Linux is an open source, free to use operating system widely used for computer hardware and software, game development, tablet PCS, mainframes etc. Unix is an operating system commonly used in internet and PCs by Solaris, Intel, HP etc. Unix, which is an operating system developed in the 1970s at Bell Labs by Ken Thompson, Dennis Ritchie□s. Unix and Linux are similar in many ways, and in fact, Linux was originally created to be similar to Unix. Both have similar tools for interfacing with the systems, programming tools, files system layouts, and other key components. However, Unix is not free. Over the years, a number of different operating systems have been created that attempted to be □Unix-like□ or □Unix-compatible,□ but Linux has been the most successful, far surpassing its predecessors in popularity.

Components Of Linux System

Linux Operating System has primarily three components

Kernel

Kernel is the core part of Linux. It is responsible for all major activities of this operating system. It is consists of various modules and it interacts directly with the underlying hardware. Kernel provides there quire abstraction to hide low level hardware details to system or application programs.



System Library

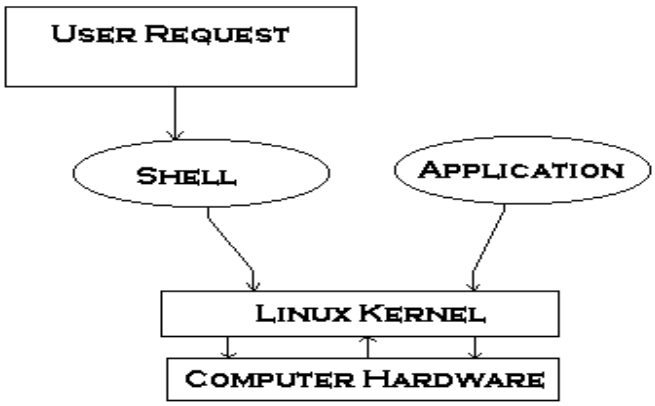
System libraries are special functions or programs using which application programs or system utilities accesses Kernel's features.

System Utility

System Utility programs are responsible to do specialized, individual level task.

Kernel Mode

Kernel component code executes in a special privileged mode called kernel mode with full access to all resources of the computer. This code represents a single process, executes in single address space and do not require any context switch and hence is very efficient and fast.



Linux System Architecture

Linux System Architecture is consists of following layers**:**

Hardware layer

Hardware consists of all peripheral devices (RAM/ HDD/ CPU etc).

Kernel

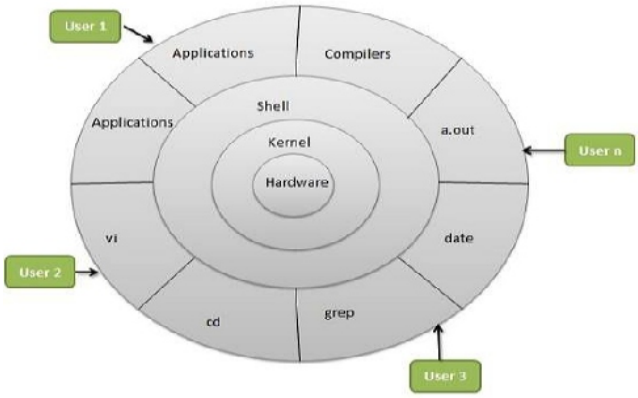
Core component of Operating System, interacts directly with hardware.

Shell

An interface to kernel, hiding complexity of kernel's functions from users. Takes commands from user and executes kernel's functions.

Utilities

Utility programs giving user most of the functionalities of an operating systems.



Basic Features of Linux Operating System

Following are some of the important features of Linux Operating System.

Portable

Portability means software□s can work on different types of hardware□s in same way. Linux kernel and application program supports their installation on any kind of hardware platform.

Open Source

Linux source code is freely available and it is community based development project. Multiple teams work in collaboration to enhance the capability of Linux operating system and it is continuously evolving.

Multi-User
Linux is a multiuser system means multiple users can access system resources like memory/ ram/ application programs at same time.

Multiprogramming
Linux is a multiprogramming system means multiple applications can run at same time.

Hierarchical File System
Linux provides a standard file structure in which system files/ user files are arranged.

Shell
Linux provides a special interpreter program which can be used to execute commands of the operating system.

Security
Linux provides user security using authentication features like password protection/controlled access to specific files/ encryption of data.

10.15 OPEN OFFICE

OpenOffice.org (OOo), commonly known as OpenOffice, is an open-source office suite. It is an open-sourced version of the earlier Star Office, which Sun Microsystems acquired in 1999 for internal use. Sun open-sourced the software in July 2000 as a competitor to Microsoft Office, releasing version 1.0 on 1 May 2002. Apache OpenOffice is the leading open-source office software suite for word processing, spreadsheets, presentations, graphics, databases and more. It is available in many languages and works on all common computers.

Important points:
- Software - A program consists of the step by step instruction that tell the computer how to do its work.
- Software is often divided into two types: Application software and system software.
- Example of application software are word processor, spreadsheet, database and presentation software etc.
- Example of system software are Operating system, Language translator and Utility software.
- Proprietary software is software that is owned by an individual or a company.

- Open source software is generally free software that you can use in your business.
- Operating system provides interface between software and hardware.
- Microsoft windows is the most popular operating system.
- Microsoft windows mainly used for personal computer and provides graphical user interface.
- Linux is free open source operating system based on Unix.
- Open office is an open source office suite.

Practice Question

Multi choice question

Q. 1. Software that allows your computer to interact with the user, applications, and hardware is called

A. application software
B. system software
C. word processor
D. database software

Q. 2. In order for a computer to understand a program, it must be converted into machine language by a(n)___.

A. operating system
B. device driver
C. utility
D. language translator

Q. 3. GUI stands for

A. gruella universal interface
B. graphical user interface
C. graphic uninstall/ install
D. general utility interface

Q. 4. _____is the most widely used operating system.

A. Windows
B. UNIX
C. Mac OS
D. Linux

Q. 5. This operating system is most popular with graphic designers and those who work in multimedia.

A. Windows Vista
B. Mac OS
C. Linux
D. UNIX

Q. 6. Which of the following is system software?
A. Operating system
B. Compiler
C. Utilities
D. All of the above

Q. 7. The list of coded instructions is called
A. Computer Program
B. Algorithm
C. Flowchart
D. Utility Program

Q. 8. Source code is available to view, modify and redistribute in
A. Open Source
B. Closed Source
C. Proprietary
D. Licensed

Q. 9. This operating system was originally designed to run on minicomputers used in a network environment.
A. Linux
B. Windows
C. UNIX
D. Mac OS

Very short type questions

Q. 1. What is computer data?
Q. 2. Write definition of software.
Q. 3. Write examples of application software.
Q. 4. Write examples of system software.
Q. 5. Write definition of system software.
Q. 6. Write definition of operating system.
Q. 7. What is open source software?
Q. 8. What is proprietary software?
Q. 9. What is Linux operating system?
Q. 10. Write example of operating system.

Short type question

Q. 1. Explain system software with example.
Q. 2. Explain any example of application software.
Q. 3. Explain difference between proprietary software and open source software.
Q. 4. Explain foundation of open source software.
Q. 5. Write any two advantages and disadvantages of Open source software.
Q. 6. Explain any two version of Microsoft windows operating system.
Q. 7. What is kernel mode in Linux OS?
Q. 8. Write features of Linux operating system.

Essay type questions-

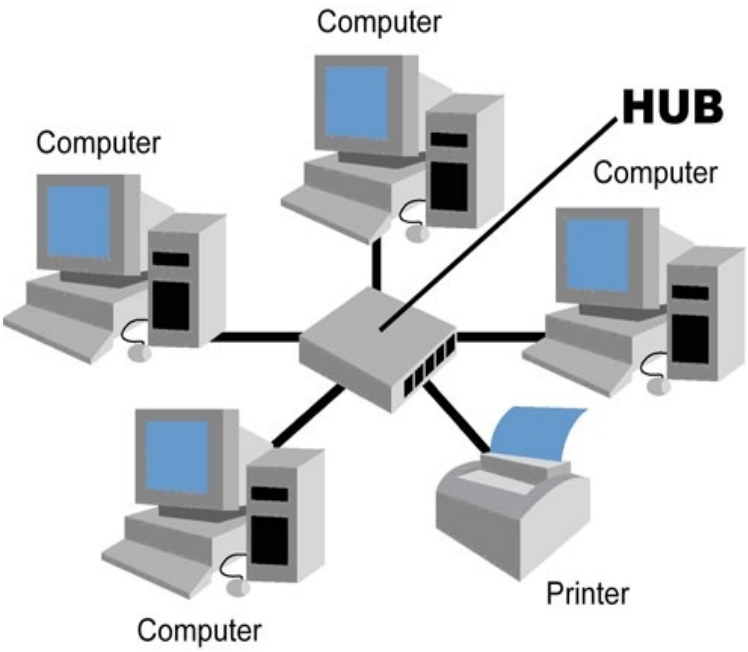
Q. 1. Explain uses and example of system software.
Q. 2. Explain Proprietary software in detail.
Q. 3. Explain reasons for adoption of open source software.
Q. 4. Explain Microsoft Windows operating system for PCs.
Q. 5. Explain component of Linux System.
Q. 6. What is function of Linux Kernel?
Q. 7. What is open office in detail?

Answer key for objective questions-

1. B
2. D
3. B
4. A
5. C
6. D
7. A
8. A
9. A

Chapter 11
Basics of Computer Network

A Computer Network is formed by connecting two or more than two computing devices with each other with the help of any medium. The connecting medium may be wired or wireless such as coaxial cable, twisted pair, fiber optic cables etc. The computing devices may be Computers, printer, scanner, mobile phones etc.



11.1 OBJECTIVES OF COMPUTER NETWORK

Transmission of Information

The basic goal of any computer network is to transmit information from one place to another. eg. Sending emails, File Transfer, display of content on web etc.

Resource sharing

A computer network facilitates *sharing of resources* which in turn reduces total cost of the network. It aims to provide program, data and hardware to everyone on the network without any regard to the physical location of the user as well as the resource.

High Reliability

Often the reliability of any computer network is appreciably high. It is generally achieved by replicating the data on two or more machines and in the case of unavailability (failure of hardware or any other reason), the other copies can be used.

Distributed Processing

A computer network also facilitates distributed processing of tasks with a variety of computer systems that deploy more than one computer (or processor) to run an application. It may also involve *parallel processing* in which a single computer uses more than one *CPU* in order to execute programs.

11.2 COMPONENTS OF COMPUTER NETWORK

- Computing devices such as Computer, Printer or Scanner etc.
- LAN Card
- Medium
- Software
- Switch or Hub

Computing Devices

These are the devices like **Computer, Printer or Scanner** which are used in various user applications.

LAN Card

A Network Interface Controller (NIC) is a computer hardware component which is used to connect a computing device to a network. It is also known as a network interface card, network adapter, LAN adapter or physical network interface. Earlier network interface controllers were commonly plugged into a computer bus

as extension but due to the low cost and ubiquity of the Ethernet the new computer systems have network interface built into the motherboard.

Medium

Generally medium is of two types:

A) Guided medium
B) Unguided medium

Guided Medium: In this type of medium the path from sender to receiver path is already known. eg. Copper cables, Fiber cables. Cable is a way of transmission media to transmit communication signals. The wired network topology uses various special type of cables to connect computers on a network, like:

i) **Twisted pair wire:** It is generally classified as Category 1, 2, 3, 4, 5, 5E, 6 and 7. Category 5E, 6 and 7 are called high-speed cables because of their capacity to transmit at the speed of 1Gbps or more.

ii) **Coaxial cable:** It provides high data transmission speed but it is more expensive than twisted-pair cable. It resembles like TV installation cable.

iii) **Fiber-optic cable:** Fiber-optic cable has highest data transmission rate cable as compared to the other cable types. It uses light beam

through glass bound fibers to transmit data at high speed. Its major disadvantage is its high cost.

Unguided medium: The path between sender to receiver is unknown in this type of medium. eg. of unguided media is air.

Software

A software is used to help set up, manage, and/or monitor computer networks. Various networking software applications are available to manage as well as monitor networks of all sizes ranging from a small home network to the largest enterprise level networks.

Switch or Hub

Hub is a device which acts like a distribution center and splits a network connection into multiple computers. On receiving a request from a computer, the network or a specific computer sends the request to the hub through a cable. On receiving the information, the hub will transmit it to the entire network. Now it is the responsibility of each computer in the network to check whether the broadcast data is for them or not. Currently Hubs are being replaced by Switches and Routers which prove to be more advanced communication devices as compared to Hubs.

11.3 ADVANTAGES AND DISADVANTAGES OF COMPUTER NETWORK

Advantages

- Any type of data can be transmitted very easily and quickly from one place to another on the network. The data may be pictures, sounds, or any other form of data.
- The expensive resources such as printers or phone lines to the internet can be shared by all the computers on the network without having the necessity to buy an individual peripheral for each computer.
- The same data can be accessed by everyone on the network thereby avoiding the problem where some users may have older information than others.

Disadvantages

- Initial network setup may be expensive and complicated.
- Security is a critical issue in networks. Since many different people have the ability to use information from other computers, security and integrity of data plays an important role. Also protection against hackers and viruses adds more complexity and expense.
- After set up, network maintenance is a full-time job which requires network administrators and technicians to be employed.

11.4 APPLICATION OF NETWORKS

Marketing and sales

Computer Networks are being widely used by the Marketing professionals for collecting exchange and analyzing data relating to customer needs and product development cycles. The extensive use of networks in Teleshopping, online reservation for railways, hotels, theatres, airlines etc. clearly mark the importance of Networks in Sales domain.

Financial services

With the increase in online banking activities which enable a user to transfer money without going to bank, the network plays an important role. Eg. Credit history searches, foreign exchange, investment services and electronic fund transfer (EFT),

Manufacturing

The prevalence of automation in many aspects of manufacturing, including the manufacturing processes itself augments the need of networks. Computer Aided Design (CAD) and computer Assisted manufacturing (CAM) are the two aspects

that uses network to provide essential services allowing multiple users to work simultaneously on a project.

Electronic Messaging

E-mails provide the most efficient means to transfer the messages between two and more users in a network. The information may be in the form of text, picture and audio or video.

Directory Services

It is used to speed up the world wide search operation by facilitating a list of files to be stored in central location E.g. Google, Britannica, Yahoo and many more search engines.

Information Services

The various information services like Bulletin Boards and data bank also use networks.

Electronic Data Exchange (EDI)

Computer Networks facilitate EDI thereby allowing business information such as purchase orders and services to be transferred without the use of paper.

Teleconferencing

It allows people at different locations to participate in any kind of discussion without the participant being in the same location. It includes:

- **Text Conferencing**: In this the participant communicates by typing through keyboard and computer monitors.

- **Voice Conferencing**: The participants at number of varied locations communicate simultaneously through using phones (talk).

- **Video Conferencing**: The participants enjoy the experience of talking as well as seeing each another.

Cellular Telephone

Enables wireless phone communication even while travelling through long distance.

11.5 LOCAL AREA NETWORK

A local area network (LAN) is a computer network interconnecting computers which lie within a limited area such as an office building, residence, school, university campus etc. and has its network equipment and interconnecting devices locally managed. Ethernet and Wi-Fi are amongst the two most common transmission technologies in use for local area networks. With the increasing demand and increased use of computers in universities and research labs in the late 1960s generated the need to provide high-speed interconnections between computer systems. Ethernet was developed at Xerox PARC in 1973–1975. The historical technologies include ARCNET, Token ring, and AppleTalk.

11.6 WIDE AREA NETWORK

A wide area network (WAN) may be defined as a telecommunications network or computer network extending over a large geographical area. Leased telecommunication circuits are often used to establish Wide area networks. The Internet may be considered a WAN. Various entities like business, education and government agencies use wide area networks to communicate data among buyers and suppliers, staff, students, clients from various geographical locations.

11.7 INTERNET

Brief history of Internet

Internet often called “network of networks”. Internet is an informal term for the world-wide communication network of computers. The internet is a means used to transmit information quickly between computers around the world. It is comprised of millions of smaller domestic, academic, business, and government networks and websites, which collectively carry many different kinds of information and services. United States by the "United States Department of Defense Advanced Research Projects Agency" (DARPA) developed the internet and it was first connected in October, 1969. It was then called ARPANET. ISP (Internet Service Providers) charge money to access the internet. But at the same time some services are free on the internet.

Future of the Internet

- The use of Internet will be so effortlessly interwoven into daily life of people that it will become invisible like flowing like electricity through machine.
- With the spread of the Internet global connectivity will be enhanced, fostering more positive relationships among societies.
- The Internet of Things, artificial intelligence and big data will make people more aware of their world and their own behavior.

- Implementation of augmented reality and wearable devices to monitor and give quick feedback on daily life and support personal health.
- The Internet will soon become “the Internets” and access, systems and principles will be renegotiated.

An Internet-enabled nation will bring new revolution in education and will spread more opportunities with the need of less money to be spent on buildings and teachers.

Applications of Internet

Search engine
It can be used to search anything and everything. Most popular search engines are Google and Yahoo.

Shopping
Shopping has become easier with the advent of internet. You can buy or sell online.

Communication
This is a major role of the internet. It helps people to communicate either with the use of social networking websites or through e mails. Even chatting is a major use of the internet.

Job search
Nowadays, many people search for their jobs online as it is quicker and there is a larger variety of job vacancies present.

Hobbies
Those who are having certain hobbies can try to improve on it by reading up on many aspects of their hobby.

Research
Research papers are present online which helps in the researcher doing a literature review.

Studying
Now right from kinder garden children are exposed to internet and computers. They find many useful things to learn on the internet (though with supervision). Up to doctorate level education people rely on internet for their education. Online educational books have even reduced the need for a library.

11.8 DIFFERENT WAYS TO ACCESS THE INTERNET

Internet access is the process that enables individuals and organizations to connect to the Internet using computer terminals and mobile devices, sometimes via computer networks. Once connected to the Internet, users can access Internet services, such as email and the World Wide Web. Internet accessing methods are broadly classified into two categories:

1. **Hardwired Broadband Access**
   i. Dial-up Access and Multilink dial-up
   ii. Integrated Services Digital Network (ISDN)
   iii. Leased lines
   iv. Digital subscriber line (DSL, ADSL, SDSL, and VDSL)
   v. Fiber to the home (FTTH) and Power line internet.

2. **Wireless Broadband Access**
   i. Satellite broadband
   ii. Mobile broadband
   iii. Wi-MAX (Wireless Microwave Access)
   iv. Wireless ISP

11.9 SERVICES ON INTERNET

The internet offers many useful things such as electronic mail, online chat, file transfer etc to name a few. The most used service on the internet is the World Wide Web (which is also called the "Web"). The Web contains websites, wikis, blogs, searches etc. Webpages on the internet can be seen and read by anyone (unless the page needs a password, or it is blocked). The second most widely used application of the internet is to send and receive e-mail. E-mail enjoys privacy since it is private and goes from one user to another. Instant messaging (such as AIM or ICQ) is similar to email, allowing two or more people to chat with each other much faster.

11.10 COMMUNICATION ON INTERNET

As discussed above, the World Wide Web, or the Internet, is a series of connected networks that connect computers across the world together. This network allows different kinds of communication methods. Voice over IP, or VoIP, refers to programs like Skype that allow people to communicate using audio and video over the Internet. Social media sites like Facebook are another example of Internet communication. These sites allow people to post messages and then respond to the messages over others in a long network from one computer to another. Internet

forums also facilitate communication by letting someone create a thread, which others then respond to in a long chain. Many websites such as blogs also allow people to post comments to communicate that way. Chat rooms are among some of the oldest examples of communication on the Internet along with forums. Today, most popular internet communication method is Instant Messaging for example WhatsApp, Facebook messenger, Hike etc. are example of popular instant messaging application. Even before graphic user interfaces, such as AOL, it was possible to communicate over the Internet in text form only when the Internet was mostly a collection of connected college and government computers.

11.11 INTERNET PROTOCOL

Internet Protocols are the set of rules to govern communications. Different applications have different protocols. Following are the various protocols with their functionality.

HTTP

HTTP is the Hyper Text Transfer Protocol. It is used to access web. HTTP functions as a request–response protocol in the client–server computing model. A web browser, for example, may be the client and an application running on a computer hosting a website may be the server. The client submits an HTTP request message to the server. The server, which provides resources such as HTML files and other content, or performs other functions on behalf of the client, returns a response message to the client. The response contains completion status information about the request and may also contain requested content in its message body.

FTP

FTP is the File Transfer Protocol. It is used to transfer file from local computer to remote computer or vice-versa. FTP is a client-server protocol that relies on two communications channels between client and server: a command channel for controlling the conversation and a data channel for transmitting file content. Clients initiate conversations with servers by requesting to download a file. Using FTP, a client can upload, download, delete, and rename, move and copy files on a server. A user typically needs to log on to the FTP server, although some servers make some or all of their content available without login, also known as anonymous FTP.

SMTP

Simple Mail Transfer Protocol (SMTP) is an Internet standard for electronic mail (email) transmission. Although electronic mail servers and other mail transfer agents use SMTP to send and receive mail messages, user-level client mail applications typically use SMTP only for sending messages to a mail server for relaying. For retrieving messages, client applications usually use either IMAP or POP3. SMTP communication between mail servers uses port 25. Mail clients on the other hand, often submit the outgoing emails to a mail server on port 587. For security, SMTP connections secured by SSL (Secure Socket Layer), known as SMTPS.

TELNET

Telnet is a protocol that allows you to connect to remote computers (called hosts) over a TCP/IP network (such as the Internet). Using telnet client software on your computer, you can make a connection to a telnet server (i.e., the remote host). Once your telnet client establishes a connection to the remote host, your client becomes a virtual terminal, allowing you to communicate with the remote host from your computer. In most cases, you'll need to log into the remote host, which requires that you have an account on that system. Occasionally, you can log in as guest or public without having an account. Telnet clients are available for all major operating systems. Such as Windows, Mac OS, Linux, UNIX etc. In most of the operating systems command line telnet are available To use, command line telnet client, go to their respective command lines (i.e., the Terminal application in Mac OS, the shell in Unix or Linux, or the DOS prompt in Windows), and then enter:

telnet host port

Replace *host* with the address of the service, and *port* with the port number on which the service runs (e.g., 80 for http).

11.12 INTRANET

An Intranet is a private network accessible only to an organization's staff. Generally a wide range of information and services from the organization's internal IT systems are available that would not be available to the public from the Internet. A company-wide intranet can constitute an important focal point of internal communication and collaboration, and provide a single starting point to access internal and external resources. In its simplest form an intranet is established with the technologies for local area networks (LANs) and wide area networks (WANs). There are several advantages of intranet as local area network or public network. Some of them are:

- Cost-effective
- Business operations and management
- Enhance collaboration
- Cross-platform capability
- Supports a distributed computing architecture
- Web publishing
- Built for one audience
- Every user has the ability to view the same information within the Intranet
- Immediate updates
- Time, Communication etc.

IMPORTANT POINTS

- A Computer Network is formed by connecting two or more than two computing devices with each other with the help of any medium.
- Network Interface Controller (NIC) is a computer hardware component which is used to connect a computing device to a network.
- A Wide Area Network (WAN) may be defined as a telecommunications network or computer network extending over a large geographical area.
- A Local Area Network (LAN) is a computer network interconnecting computers which lie within a limited area such as an office building, residence, school, university campus etc.
- Internet Protocols are the set of rules to govern communications.
- HTTP is the Hyper Text Transfer Protocol. It is used to access web.
- FTP is the File Transfer Protocol. It is used to transfer file from local computer to remote computer or vice-versa.
- Telnet is a protocol that allows you to connect to remote computers (called hosts) over a TCP/IP network (such as the Internet).
- An Intranet is a private network accessible only to an organization's staff.

Practice Questions

Objective type questions:

Q1. What is the port number that is used by SMTP when communicating?

A. 25 B. 35
C. 60 D. 80

Q2. What is the full form of DSL?

A. Digital Service Line B. Data Subscriber Line
C. Digital Subscriber Line D. Data Service Lookup

Q.3 Which one of the following use of wireless broadband?

A. Leased Lines
B. Mobile Broadband
C. Dial up Access
D. Fiber to the Home

Q.4 Which one of the following is a type of medium?
A. Switch
B. Guided Medium
C. LAN Card
D. Software

Very Short Answer type questions:

Q1. How computer network is formed?
Q2. What are the connecting mediums for computer networks?
Q3. What are the main computing devices used for networking?
Q4. What do you mean by transmission of information?
Q5. What is the main functionality of resource sharing?
Q6. What is distributed processing?
Q7. Write down the names of five computer network components?
Q8. What is guided medium?
Q9. Give example of guided medium?
Q10. Write down any two advantages of computer networks?
Q11. Write any four advantages of intranet?

Short answer type questions:

Q.1 What is Computer network? Explain with diagram.
Q.2 What are the main objectives of computer network?
Q.3 Describe various applications of networks?
Q.4 Describe various components of a computer network?
Q.5 What are pros and cons of a computer network?
Q.6 Explain in brief? (i.) LAN (ii.) WAN
Q.7 Define the term Internet? What are basic applications of Internet?
Q.8 What are the main services of Internet and Explain how communication is done through internet?
Q.9 Explain the term Internet Protocol (IP)? What are different internet protocol? Explain in brief.
Q.10 Define following:
i. TELNET
ii. Intranet

Essay type questions:

Q.1 Explain objectives of computer network and component of computer network in detail ?
Q.2 Explain Internet Protocol, Telnet, Intranet in detail ?

Answer key for objective type questions:

1. A
2. A
3. B
4. B

Chapter 12
Web & Electronic mail

12.1 WWW (WORLD WIDE WEB)

The World Wide Web is basically an information space where the documents and the web resources are identified by the Uniform Resource Locators (URLs) having interlinks known as hyperlinks which can be accessed via Internet. . English scientist Tim Berners-Lee invented the World Wide Web in 1989. He wrote the first web browser computer program in 1990 while employed at CERN in Switzerland. Web pages are primarily text documents formatted and annotated with Hypertext Markup Language (HTML). In addition to formatted text, web pages may contain images, video, audio, and software components.

12.2 WEBSITES

A website is a collection of web pages that are the documents that are accessed through the Internet. A web page can contain any type of information, and can include text, colour, graphics, animation and sound. A web site may be accessible via a public Internet Protocol (IP) network, such as the Internet, or a private local area network (LAN), by referencing a uniform resource locator (URL) that identifies the site. Generally, people look at websites for two primary reasons:

- To find information they need. Like for finding the latest stock quotes, for getting the address of the nearest Thai restaurant.
- To complete a task. Visitors may want to buy the latest best-seller, download a software program, or participate in an online discussion about a favourite hobby.

Websites have many functions and can be used in various fashions; a website can be a personal website, a commercial website for a company, a government website or a non-profit organization website.

12.3 WEB BROWSERS

A Web Browser is a software application used to locate, retrieve and display content on the World Wide Web, including Web pages, images, video and other files. As a client/server model, the browser is the client run on a computer that contacts the Web server and requests information. The Web server sends the information back to the Web browser which displays the results on the computer or other Internet-enabled device that supports a browser. The first web browser was invented in 1990 by Sir Tim Berners-Lee. Berners-Lee is the director of the World Wide Web Consortium (W3C), which oversees the Web's continued development, and is also the founder of the World Wide Web Foundation. His browser was called World Wide Web and later renamed Nexus. The first commonly available web browser with a graphical user interface was Erwise.

In 1993, browser software was further innovated by Marc Andreessen with the release of Mosaic, "the world's first popular browser" which made the World Wide Web system easy to use and more accessible to the average person. Microsoft responded with its Internet Explorer in 1995, also heavily influenced by Mosaic, initiating the industry's first browser war.

Mostly major web browsers have these user interface elements in common

- Back and forward buttons to go back to the previous resource and forward respectively.
- Arefresh or reload button to reload the current resource.
- A stop button to cancel loading the resource. In some browsers, the stop button is merged with the reload button.
- Ahome button to return to the user's home page.
- An address bar to input the Uniform Resource Identifier (URI) of the desired resource and display it.
- A search bar to input terms into a web search engine. In some browsers, the search bar is merged with the address bar.
- Astatus bar to display progress in loading the resource and also the URI of links when the cursor hovers over them, and page zooming capability.
- The viewport, the visible area of the webpage within the browser window.
- The ability to view the HTML source for a page.

12.4 INTERNET EXPLORER

Internet Explorer (formerly Microsoft Internet Explorer and Windows Internet Explorer, commonly abbreviated IE or MSIE) is a discontinued series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems, starting in 1995. It was first released as part of the add-on package Plus! for Windows 95 that year. Later versions were available as free downloads, or in service packs, and included in the original equipment manufacturer (OEM) service releases of Windows 95 and later versions of Windows. Other famous web browsers are Google Chrome developed by Google, Mozilla Firefox by open source community and also safari, opera etc.

12.5 THE URL ADDRESS

URL is the abbreviation of Uniform Resource Locator. It is the global address of documents and other resources on the World Wide Web. For example, www.webopedia.com is a URL. A URL is one type of Uniform Resource Identifier *(*URI**)**. The generic term for all types of names and addresses that refer to objects on the World Wide Web.

URL is divided into two parts:
The first part of the URL is called a *protocol* identifier and it indicates what protocol to use, and the second part is called a resource name or resource identifier and it specifies the IP address or the domain name where the resource is

located. The protocol identifier and the resource name are separated by a colon and two forward slashes. For example:

http://www.webopedia.com/

For example, in the above URL first part http:// is a protocol identifier and the second part www.webopedia.com/ is the resource name where resource is located.

12.6 SURFING THE INTERNET

Search on Internet

Internet search engines are a big part of how we find things online. You can get the most out of them by learning how they work, and how to use them quickly and effectively. The challenge is to ask your question the right way, so that you don't end up overwhelmed with too many search results, underwhelmed with too few, or simply unable to locate the material that you need. As with most skills, practice makes perfect! Before doing a search, it's important to define your topic as completely and succinctly as possible. Write down exactly what information you're looking for, why you're looking for it, and what you're not looking for. This will help you to discover the best keywords for your search.

Keywords

Search engines don't read sentences the way people do: instead, they look for the key words in your query in the websites they search. In other words, you're not asking a search engine a question, you're asking it to look for websites where those words appear. In order to use a search engine or database effectively, therefore, you need to be able to choose the best combination of key words. Most search engines work best if you provide them with several keywords. So how do you determine which keywords will work best? Think about what you're searching to determine the essential key words. For instance, if you're just looking for a recipe for peanut butter cookies, you can write peanut butter cookie recipe. But if you're looking for a recipe that doesn't use flour, you can write peanut butter cookie recipe flourless (the order of the words doesn't matter) and if you want a flourless recipe that uses natural peanut butter you can write peanut butter cookie recipe flourless natural.

Now you have your keywords. How do you enter them into the search engine?

1. **Use of Phrases**: Your most powerful keyword combination is the phrase. Phrases are combinations of two or more words that must be found in the documents you're searching for in the EXACT order shown. You enter a

phrase - such as “peanut butter” - into a search engine, within quotation marks. Most search engines allow you to use quotation marks or square brackets to do a phrase search as in “peanut butter” or [peanut butter].

2. **Limiting your search**: If you find that you’re getting results that aren’t what you’re looking for, you can use a minus sign to exclude results that include a certain word or phrase. So if you want recipes that use peanut butter but aren’t cookie recipes, you could use “peanut butter” recipe –cookie (the minus sign has to be directly before the word you want excluded, with no space in between). You can also limit your search by type, time or country. Most search engines have tabs at the top that let you choose between websites, images, videos, news stories, and so on. Many also have advanced search tools that let you limit your search to just one country, a certain time (the last day, week, month, year, or a range you specify).

3. **Searching within a site**: If there’s a particular site that you know is reliable, most search engines will let you limit your search to just them. Just add the web address at the end of your search string, like this: peanut butter cookie recipe flourless natural site: **www.epicurious.com**. (Make sure not to put a space between sites: and the web address).

4. **Uploading and Downloading**: Uploading means data is being sent from your computer to the Internet. Examples of uploading include sending email, posting photos on a social media site and using your webcam. Even clicking on a link on a web page sends a tiny data upload. Downloading means your computer is receiving data from the Internet. The File Transfer Protocol (FTP) is the Internet protocol for downloading and uploading files and a number of special applications can furnish FTP services for you. (However, if you are downloading through a Web page, the FTP request is set up for you by the Web page. You are usually asked where you want the downloaded file placed on your hard disk, and then the downloading transmission takes place.) When you send an attached file with an e-mail note, this is just an attachment, not a download or an upload. In practice, many people use "download" and "upload" rather indiscriminately so you just have to understand the context. For example, if someone says to you "Download (or upload) such--and-such a file to me by e-mail," They clearly mean "Send it to me as an attachment."

12.7 CHATTING ON INTERNET

Online chat may refer to any kind of communication over the Internet that offers a real-time transmission of text messages from sender to receiver. Chat messages are generally short in order to enable other participants to respond quickly. Thereby, a feeling similar to a spoken conversation is created, which distinguishes chatting from other text-based online communication forms such as Internet forums and email. Online chat may address point-to-point communications as well as multicast communications from one sender to many receivers and voice and video chat, or may be a feature of a web conferencing service. The first online chat system was called Talkomatic, created by Doug Brown and David R. Woolley in 1973 on the PLATO System at the University of Illinois. It offered several channels, each of which could accommodate up to five people, with messages appearing on all users' screens character-by-character as they were typed. Talkomatic was very popular among PLATO users into the mid-1980s. In 2014, Brown and Woolley released a web-based version of Talkomatic.

The first online system to use the actual command "chat" was created for The Source in 1979 by Tom Walker and Fritz Thane of Dialcom, Inc. The first transatlantic Internet chat took place between Oulu, Finland and Corvallis, Oregon in February 1989. The first dedicated online chat service that was widely available to the public was the CompuServe CB Simulator in 1980, created by CompuServe executive Alexander "Sandy" Trevor in Columbus, Ohio. Ancestors include network chat software such as UNIX "talk" used in the 1970s.

12.8 CONFERENCING ON INTERNET

Conferencing brings together groups of people to share their experiences, knowledge, and expertise. Traditional conferences have required that people share the same physical space, time. With the advent of technology, and telecommunications, conferences no longer require a shared physical space, but still require a coordinated time for participants to meet. This activity introduces you to the basics of Internet conferencing, the types of conferencing tools available, background on how conferencing is supported on the Internet, and links to more information.

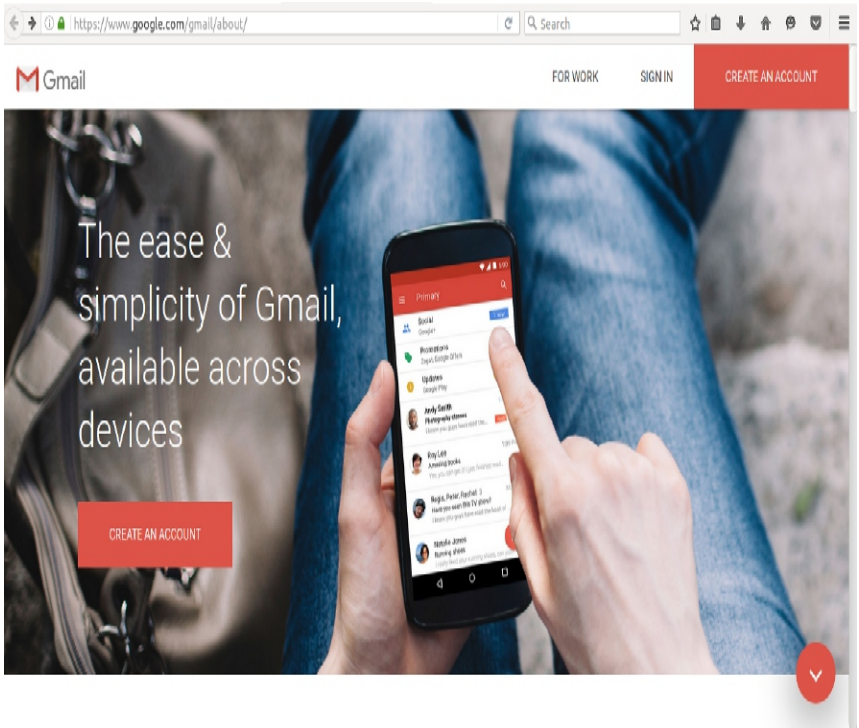
12.9 E-MAIL OR ELECTRONIC MAIL

E-mail or Electronic mail is process of sending digital message from one computer user to another computer user on a network. Email operates across computer networks (i.e. Internet). Unlike earlier email systems, Today's e-mail systems are based on *store-and-forward* model. In which Email servers accept,

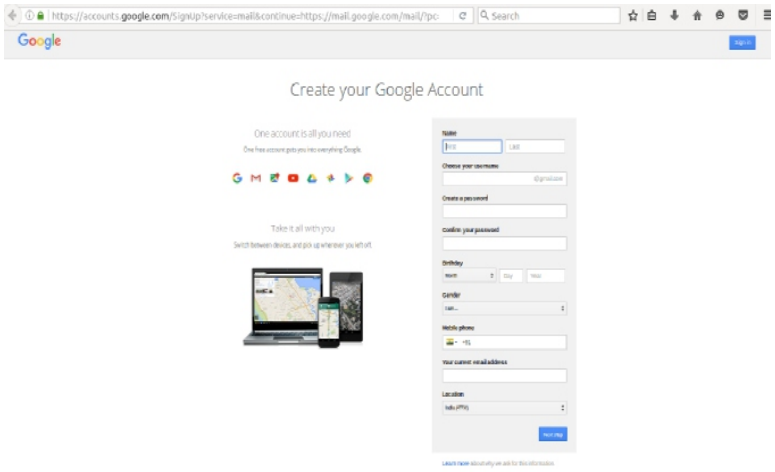
forward, deliver, and store messages. Originally communication is in only ASCII text. But what if one wants to send some images or other stuff rather than text? Thus for doing this Multipurpose Internet Mail Extension (MIME) is used. It provides facility of carrying text along with multimedia content. Nowadays lot of mail services are in working like as Gmail, Yahoo mail, Rediffmail, Microsoft Outlook etc. We can send Email by creating mail account on selected mail services. Now the question arises that how can we use mail services? And how to create a mail account to access those services? Detailed step by step procedure given below with appropriate diagrams:

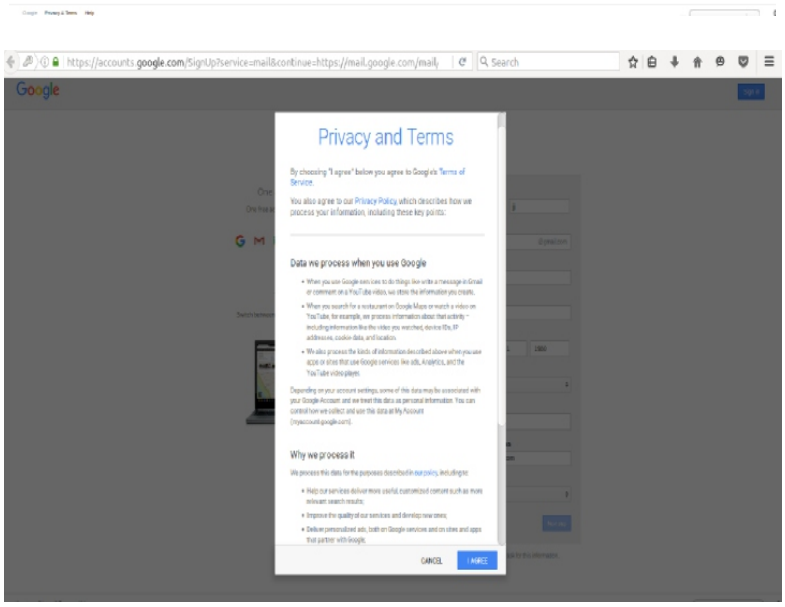
How to Create an E-Mail account:

1. For creation of an email account first type the URL address of that mail service provider on address bar. For example, creating a Gmail account we need to type https://mail.google.com/. Following webpage will be displayed. Then click "CREATE AN ACCOUNT" option on displayed web page.



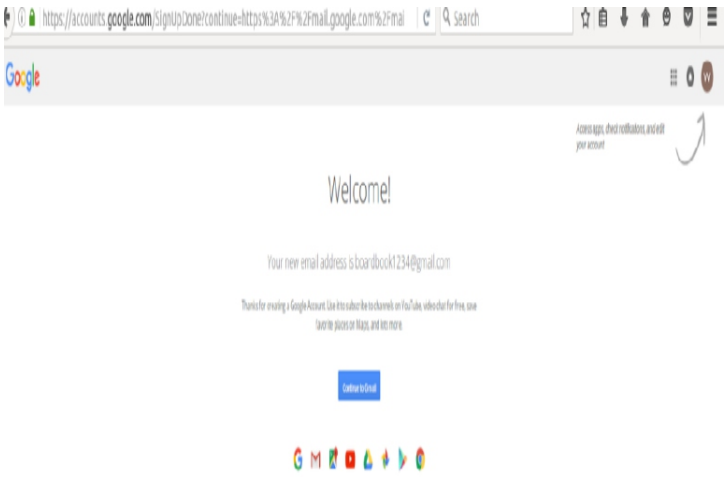
2. After clicking on “CREATE AN ACCOUNT” option following page will be displayed. In this page you can fill up all basic information about you.





3. After filling all the require values in text boxes click on “Next Step” then following page will be displayed.

4. Clicking on “I AGREE” button or accepting Privacy and Terms following page will be displayed.



5. By clicking on “Continue to Gmail” Gmail system will appear. This is the one time process. It is called Sign Up process. After it a unique id is generated called email id and a password generated by user itself at the time of signup process.

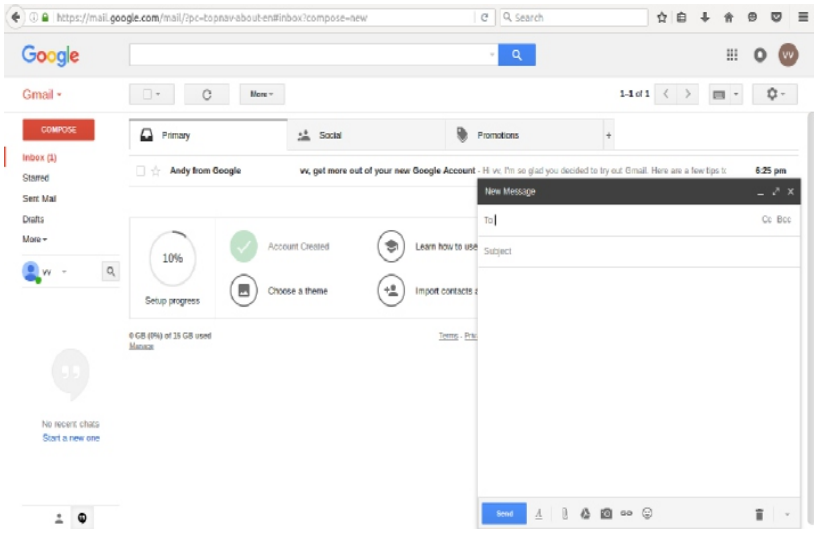
After it user can directly access its account by entering its email id and password. This mail service has many options for performing various mail activities.

- Compose
- Inbox
- Starred
- Sent Mail
- Drafts
- More

Compose

By using compose feature a user can write new mail. Clicking on compose button a new message window will open. In front of “To” we need to mention mail ids of recipients. In the “Subject” field user need to mention the title of the message. If user want to send copy of this mail to any other recipient we can use “Cc” option. A carbon copy, or "Cc'd" message is an e-mail that is copied to one or more recipients. Both the main recipient (whose address is in the "To:" field) and the Cc'd recipients can see all the addresses the message was sent to. When a message is blind carbon copied, neither the main recipient nor the Bcc'd recipients can see

the addresses in the "Bcc:" field. This prevents the e-mail addresses from being captured by someone in the list who might use them for spamming purposes.



Inbox

We can have all the receive mails in this folder. By default all the mails are arranged by latest date and time in this folder. We can also delete unwanted mail by selecting one or more mail by clicking on check button and then delete button.

Starred

When we star emails in Gmail, we mark them as important.

Sent Mail

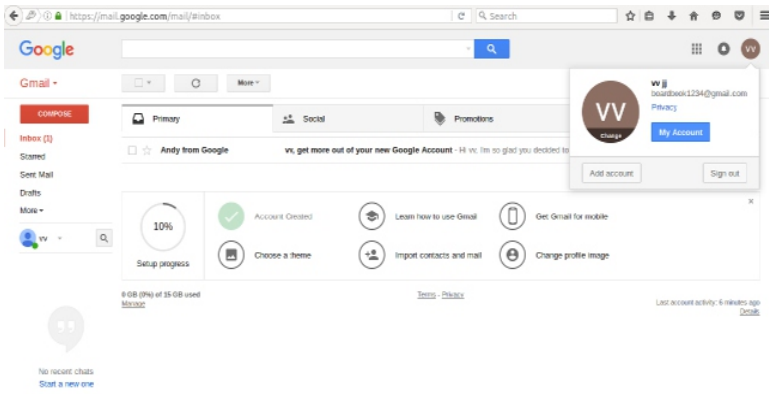
Sent mail shows the list of all messages which we have sent to other users.

Drafts

As you compose an email, Gmail saves it automatically as a draft just about continuously this is perfect to avoid accidental data loss.

More

It consists of other options like Chats, All mails, Spam and Bin.



12.10 TYPES OF E-MAIL SERVICES

Many different types of mail services and service providers provided to a client categorized mainly three parts:

1) **Web based mail**
Many email providers have a web-based email client (e.g. Gmail, Outlook.com and Yahoo! Mail). This allows users to log in to the email account by using any compatible web browser to send and receive their email.

2) **POP3 mail services**
The Post Office Protocol 3 (POP3) is a mail access protocol used by a client application to read messages from the mail server. Received messages are often deleted from the server. POP supports simple download-and-delete requirements.

3) **IMAP mail servers**
The Internet Message Access Protocol (IMAP) provides features to manage a mailbox from multiple devices. Small portable devices like smartphones are increasingly used to check email while travelling, and to make brief replies, larger devices with better keyboard access being used to reply at greater length.

12.11 USES OF MAIL SERVICES

Uses of mail services are categorized into mainly two parts:

1) **Business and Organizational use**
Email has been widely accepted by business, governments and non-governmental organizations in the developed world. Via using a web based mail service and

POP3 mail service any business personnel or organization can be connected to any of its employee through email.

2) **Personal use**

Personal use is also divided into two types in terms of accessing the mail service.

Desktop

Any user can access its mail account through web browsers on an internet enabled desktop computer.

Mobile

User can also access its mail account using through internet enabled smartphone or laptops. Various available smartphone applications increase accessibility to medium for users who are out of their home and unable to access their desktop computers. While at earlier time, email is provided mainly for desktop applications but after smartphone revolution in 21st century increases popularity as well as accessibility to email.

Today, there are 1.4 billion people worldwide use email provided by various mail services provider and 50 billion non spam emails sent daily.

12.12 BASIC ISSUES OF EMAIL

Email attachment size limitation

Email messages may have one or more attachments, which are additional files that are appended to the email. Some typical attachments include various documents like word file, pdf files, plain text files and scanned images of documents. In theoretical manner, there are no restriction or limitation to attachment size, but in practical implementation email clients, servers and ISP's implements various limitations on size typically 25 MB or less. Thus it's a huge drawback for users who wants to send some large documents.

Information overload

It's the problem in which a user can get so many emails and spam email in their email accounts. It led user towards dissatisfaction and increasing stress. Also it affects the ubiquity of workers.

Spam

Email "spam" is the term used to describe unsolicited bulk email**.** The volume sent is very high and increasingly consists not of advertisements for products, but malicious content or links.

Malware

A range of malicious email types exist. These range from various types of email scams, including "social engineering" scams such as phishing, email bombardment and email worms.

Email spoofing

Email spoofing generally means creating a spoof of an email so that receiver thinks that it is come from the user that it wants to be but in real it's not happening.

Privacy concerns

Last but not least issue is about security of users email and email account. A mail service provider ensures about security of its users. It includes secure transmission of email over internet and don't let give permission to unauthorized user to access anyone's email. Thus the security parameters kept very high by email service provider agency.

IMPORTANT POINTS

- The World Wide Web is basically an information space where the documents and the web resources are identified by the Uniform Resource Locators (URLs).
- A website is a collection of web pages that are the documents that are accessed through the Internet.
- A Web Browser is a software application used to locate, retrieve and display content on the World Wide Web, including Web pages, images, video and other files.
- URL is the abbreviation of **U***niform* **R***esource* **L***ocator*. It is the global address of documents and other resources on the World Wide Web.
- Post Office Protocol 3 (POP3) is a mail access protocol used by a client application to read messages from the mail server.

Practice Questions

Objective type questions:

Q.1 Which is the first web browser available with graphical user interface?

A. Erwise
B. Chrome
C. Opera
D. Firefox

Q.2 On which system, first online chat system is developed?

A. UNIX B. Plato
C. Open Source D. Windows

Q.3 Which one of the following is a type of famous mail service?

A. Chromium B. Firefox
C. Google Drive D. Outlook

Q.4 Which one of the following is a type of mail activity?

A. Inbox B. My Account
C. To D. Privacy

Q.5 Which one of the following is a type of mail service?

A. Message based B. Internet mail service
C. Proxy based D. Web based mail

Very Short answer type questions:

Q1. Who invented WWW? Give the brief definition of it?
Q2. How is a website accessed?
Q3. Why people are looking for websites? Give two reasons?
Q4. Write down any five famous browsers name?
Q5. What are the main elements in web browsers are common?
Q6. What is URL? How it is different from URI?
Q7. Write down basic steps for surfing the internet?
Q8. What is Email? On which model Emails are based?
Q9. What are the main activities of email?
Q10. Give the names of most famous email service providers?

Short answer type questions:

Q.1 What is WWW? Explain in brief?
Q.2 Define website and web browser? What are main components in web browsers?
Q.3 Describe the process of surfing the internet?
Q.4 How chatting and conferencing happens on internet? Explain in brief?
Q.5 What is URL? Briefly explain its various parts?
Q.6 Explain Email or Electronic mail?
Q.7 Describe the process of creating an email account?
Q.8 What are various types of mail services?
Q.9 Describe various uses and benefits of Email?
Q.10 What are *five* basic issues regarding email services?

Essay type questions:

Q.1 Describe the various uses of email services along with different types in detail?

Q.2 Explain chatting and conferencing on internet and also explain internet surfing in detail?

Answer key for objective type questions:

1. A
2. B
3. D
4. A
5. D

Chapter 13
Virus and Antivirus

13.1 VIRUS

A Computer Virus or Virus is a piece of code which is capable of copying itself and typically has a detrimental (i.e. harmful) effect, such as corrupting the system or destroying data. A kind of malicious software program or "malware" that, when executes, replicates itself by reproducing (copying its own source code) or influences other computer programs by modifying them or deleting them. Virus insert malicious code into existing documents, programs or OS, and then spreads itself by various means. Over 90% of viruses spread through various attachments on emails or any external attachment such as USB, cable etc. The term computer virus was first described by Fred Cohen in 1985. Viruses generally perform some type of harmful activity on host computers (also known as infected host computer). Some common destructive activities are acquisition of hard disk space or central processing unit (CPU) time, accessing private information (e.g. credit card numbers, PIN), corrupting data, displaying biased or humorous messages on the user's screen, spamming e-mail contacts, logging their keystrokes, or even sometimes rendering the entire computer system useless.

13.2 ANTI-VIRUS

Antivirus or anti-virus software (often abbreviated as AVS), also known as anti-malware software, is a computer software used to prevent, detect and remove malicious software issues and viruses (distributed via e-mails, USB or Flash drive) for implementing security.

Unlike virus, an antivirus software is a program (just like any other program in computer) that is used to detect and prevent from harmful loading of web pages from the internet and also detect an unauthorized transmission between USB or flash drive and a computer.

13.3 VIRUS PROTECTION SOFTWARE

There are many virus protection software's available in the market today and working successfully. Mostly software's are made and available for Windows operating system and also for others like Android and so on but Linux does not need any anti-virus software program. Because the security for Linux is very strong. But most of the virus attacks are done from Linux based system. Some of the most commonly used Anti-Virus software programs are as follows:

- Quick Heal Antivirus
- Norton Antivirus
- AVG Internet Security
- Avast Antivirus
- K7 Total Security
- Kaspersky Antivirus
- Bit-defender and Macafee etc.

These Antivirus software programs are available in both free and paid versions in terms of their features. In free version of a program less features are available while in the paid version full support and premium features are available.

13.4 PROTECTION OF THE COMPUTER FROM VIRUS

There are numerous ways to protect and remove malware or virus from our computers. No one method is enough to ensure your computer is secure. The more layers of defense, the harder for hackers to use your computer. These are some of the critical steps to protect your computer:

- Install Firewall
- Install Antivirus Software
- Install Anti-Spyware Software
- Use Complex and Secure Passwords
- Check on the Security Settings of the Browser

Install Firewall

A firewall acts as a security guard. Generally firewalls are of two types: Software Firewall and Hardware Firewall. Each serves similar purpose but different in a different way. A firewall is the primary step to provide security to the computer. It

builds a barrier between the computer and any unauthorized program trying to approach the system through the Internet. For systems at home, the firewall must be turned on permanently. It alerts you in case of any unauthorized efforts to access your system.

Install Antivirus Software

Antivirus is also one of the means to protect the computer. It is software that facilitates to guard the computer system from any unauthorized access or software that may harm the system. The unauthorized software may be viruses, key loggers, Trojans etc. They might harm the system in any ways like slowing down the processing speed of computer system, deleting important files and accessing personal information (Account details, Pin etc). To ensure proper safety of the system, antivirus software must be installed and updated periodically to prevent the system from further attack of newly created viruses. Certain antivirus software like Antivirus for Windows 8 software includes advanced features such as email protection, identity theft and blocking of pop-ups.

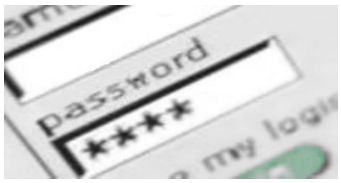
Install Anti-Spyware Software

Spyware is a kind of software program that gathers someone's personal information or information related to an organization without their consent with an intent to redirected the information to a third party for malicious activities. Spyware are difficult to be removed due to their specialized designing. Anti-Spyware software is specially designed to combat the harms of spyware. It offers real time protection. It scans all the information entering the system and helps in blocking the threat once detected. Eg. Comodo Free Antivirus comes with spyware protection built in.

Use Complex and Secure Passwords

The foremost task in maintaining system security is to have strong and complex passwords. Complex passwords pose difficulties for the hackers to hit the correct

password. An ideal password must have at least 8 characters in length and include a combination of numbers, letters that are both upper and lower case and includes a special character. Hackers employ certain tools to break easy passwords in few minutes.



Check on the Security Settings of the Browser

Some newer versions of browsers provide built in security and privacy settings that you should review and set to the level according to your desired level of security. Recent browsers give you features like not to track your movements, increasing your privacy and security.

13.5 UPDATING THE SOFTWARE

Generally most of the new antivirus programs (programs or computers purchased after the year 2000) provide the facility for users to update their antivirus program through the software. In order to update the antivirus program, Open it and look for "Update", "Check for updates", "Live Update", or something similar.

IMPORTANT POINTS

- A Computer Virus or Virus is a piece of code which is capable of copying itself and typically has a detrimental (i.e. harmful) effect, such as corrupting the system or destroying data.
- Antivirus or anti-virus software (often abbreviated as AVS), also known as anti-malware software.
- A firewall acts as a security guard.
- Spyware is a kind of software program that gathers someone's personal information or information related to an organization without their consent with an intent to redirected the information to a third party for malicious activities.
- The foremost task in maintaining system security is to have strong and complex passwords.

Practice Questions

Objective type questions:

Q.1 Which one of the following is an antivirus software?

A. Virus protector
B. Quick Heal
C. VMware
D. HCL

Q.2 By whom the term virus is described?

A. Fred Cohen
B. Jonty Rhodes
C. Jon Nuemann
D. Fred Stark

Q.3 In which year the term virus is described?

A. 1982
B. 1992
C. 1985
D. 1986

Very short answer type questions:

Q1. Give the definition of computer virus?
Q2. What are the various mediums for spreading computer viruses?
Q3. What is an Anti-virus software program?
Q4. Write down the names for 5 most commonly used AVS programs?
Q5. Give the names of basic steps for protecting computer from viruses?
Q6. What are different types of firewall? Write down short definitions foreach?

Short answer type questions:

Q.1 How to update software? Explain in brief?
Q.2 Explain about virus protection software with example?
Q.3 Give various difference between virus and antivirus?
Q.4 How could a computer antivirus provides protection? Explain any two methods in brief?

Essay type questions:

Q.1 Explain methods of protection from virus in detail?
Q.2 Explain virus and antivirus in detail?

Answer key for objective type questions:

1. B
2. A
3. C

Chapter 14
Internet

14.1 TYPE OF INTERNET ACCESS

ISPs provide Internet access, employing a range of technologies to connect users to their network. Available technologies have ranged from computer modems with acoustic couplers to telephone lines, to television cable (CATV), wireless Ethernet (Wi-Fi), and fiber optics. For users and small businesses, traditional options include copper wires to provide dial-up, DSL, typically asymmetric digital subscriber line (ADSL), cable modem or Integrated Services Digital Network (ISDN) (typically basic rate interface). Using fiber-optics to end users is called Fiber to The Home or similar names.

14.2 ONLINE SERVICES

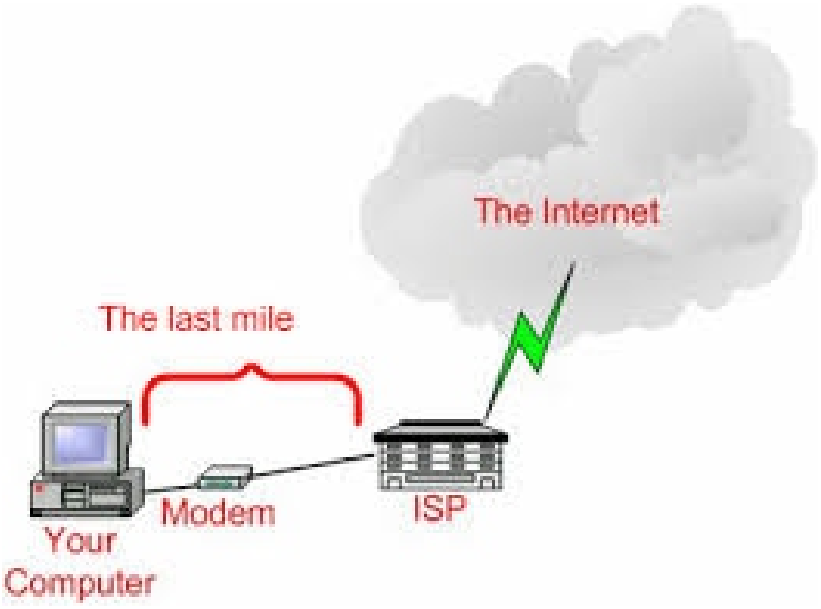
Online services are those services provided by various companies such as Google, Microsoft, and Yahoo etc. through ISP (Internet Service Provider) over the internet. Some popular online services provided by various providers are:
Gmail, YouTube, Google Drive etc. by Google.
Microsoft Outlook, Hotmail, Live services by Microsoft.
Yahoo mail and also other online services.

14.3 INTERNET SERVICES PROVIDER

An Internet service provider (ISP) is a company or organization that provides services for accessing and using the Internet. These organization may be in many forms, such as commercial, community-owned, non-profit, or otherwise privately

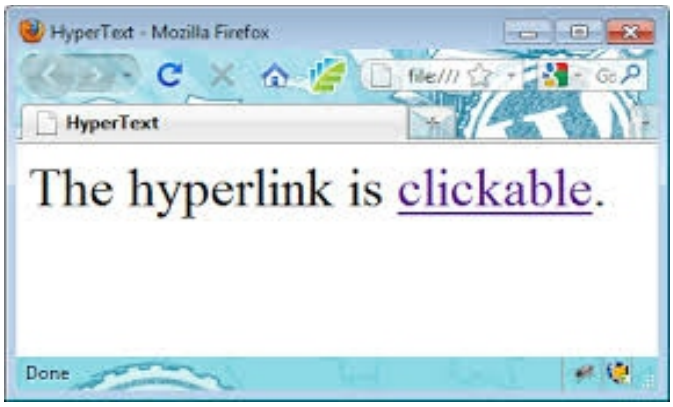
owned. In 1989, the first ISPs were established in Australia and the United States. In Brooklyn, Massachusetts, The World became the first commercial ISP in the US. Its first customer was served in November 1989. Following are the some Internet Service Provider in India

- BSNL
- Reliance
- Airtel
- Idea
- Vodafone etc.



14.4 HYPERTEXT AND HYPERLINKS

Hyperlinks and Hypertexts are used in order to send your reader to a site that might help them better understand the topic you are talking about. Unlike the typical printed book, which is read sequentially from beginning to end, hypertext is inherently nonlinear. It is comprised of many interlinked chunks of self-contained text. Readers are not bound to a particular sequence, but can browse through information intuitively by association, following their interests by following a highlighted keyword or phrase in one piece of text to bring up another, associated piece of text. Figure illustrates this difference.



14.5 FAVORITES OR BOOKMARKS

All modern web browsers include bookmark features. Bookmarks are called favorites or Internet shortcuts in Internet Explorer. Bookmarks or Favorites are used to save the link of useful web pages while accessing the internet. It makes the browsing on internet simple.

14.6 COOKIES

An HTTP cookie (also called web cookie, Internet cookie, browser cookie or simply cookie) is a small piece of data sent from a website and stored on the user's computer by the user's web browser while the user is browsing. Cookies were designed to be a reliable mechanism for websites to remember information (such as items added in the shopping cart in an online store) or to record the user's browsing activity (including clicking particular buttons, logging in, or recording which pages were visited in the past).

14.7 BLUETOOTH

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs). Invented by telecom vendor Ericsson in 1994, it was originally conceived as a wireless alternative to RS-232 data cables. It can connect several devices, overcoming problems of synchronization.

Bluetooth is managed by the Bluetooth Special Interest Group (SIG), which has more than 25,000 member companies in the areas of telecommunication, computing, networking, and consumer electronics. The IEEE standardized Bluetooth as IEEE 802.15.1, but no longer maintains the standard.

14.8 WI-FI

Wi-Fi or Wi Fi (Wireless Fidelity) is a technology that allows electronic devices to connect to a wireless LAN (WLAN), mainly using the 2.4 gigahertz (12 cm) UHF and 5 gigahertz (6 cm) SHF ISM radio bands. A WLAN is usually password protected, but may be open, which allows any device within its range to access the resources of the WLAN network. Devices that can use Wi-Fi technology include personal computers, video-game consoles, smartphones, digital cameras, tablet computers, digital audio players and modern printers. Wi-Fi compatible devices can connect to the Internet via a WLAN network and a wireless access point.

14.9 DHCP

The Dynamic Host Configuration Protocol (DHCP) is a standardized network protocol used on Internet Protocol (IP) networks. The DHCP protocol is controlled by a DHCP server that dynamically distributes network configuration parameters, such as IP addresses, for interfaces and services. A router or a residential gateway can be enabled to act as a DHCP server. A DHCP server enables computers to request IP addresses and networking parameters automatically, reducing the need for a network administrator or a user to configure these settings manually. In the absence of a DHCP server, each computer or other device (eg. a printer) on the network needs to be statically (i.e., manually) assigned to an IP address.

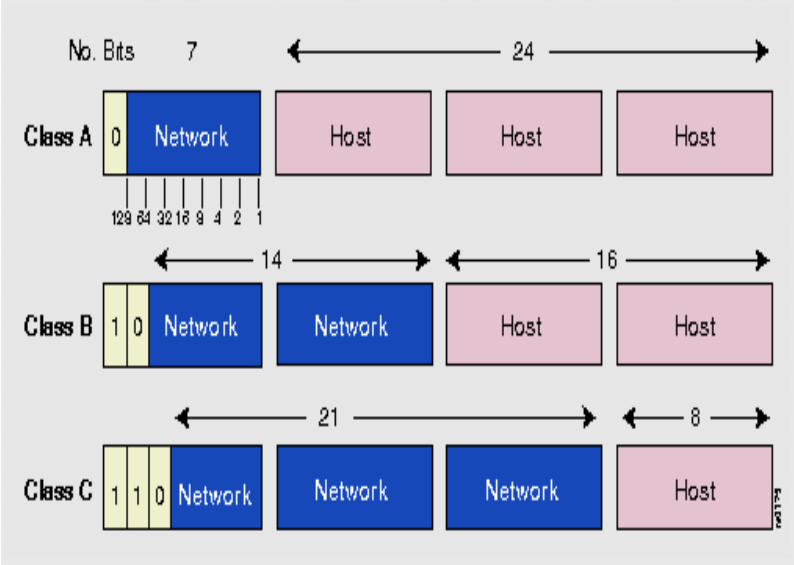
14.10 PROXY SETTING

A Proxy or Proxy server is basically another computer which serves as a hub through which internet requests are processed. By connecting through one of these servers, your computer sends your requests to the proxy server which then processes your request and returns what you were wanting. In this way it serves as an intermediary between your home machine and the rest of the computers on the internet. Proxies are used for a number of reasons such as to filter web content, to go around restrictions such as parental blocks, to screen downloads and uploads and to provide anonymity when surfing the internet.

14.11 IP ADDRESS

An Internet Protocol address (IP address) is unique numerical address assigned to each device (e.g., computer, printer) participating in a computer network that uses the Internet Protocol for communication. Two versions are defined of IP addresses IPv4 and IPv6. IPv4 has size of 32 bit and IPv6 has size 128 bit. IPv4 address space of 32 bit is divided into 4 octet. Each octet has 8 bit. There are five

classes of IPv4 addresses class A, B, C, D and class E. Classes A, B and C use frequently. Octet are divided into host portion and network portion as shown.



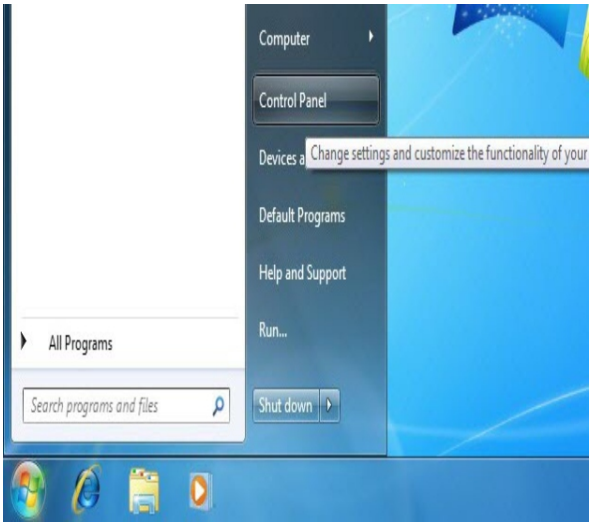
Address range in IPv4

Following figure shows the addresses range in each class.

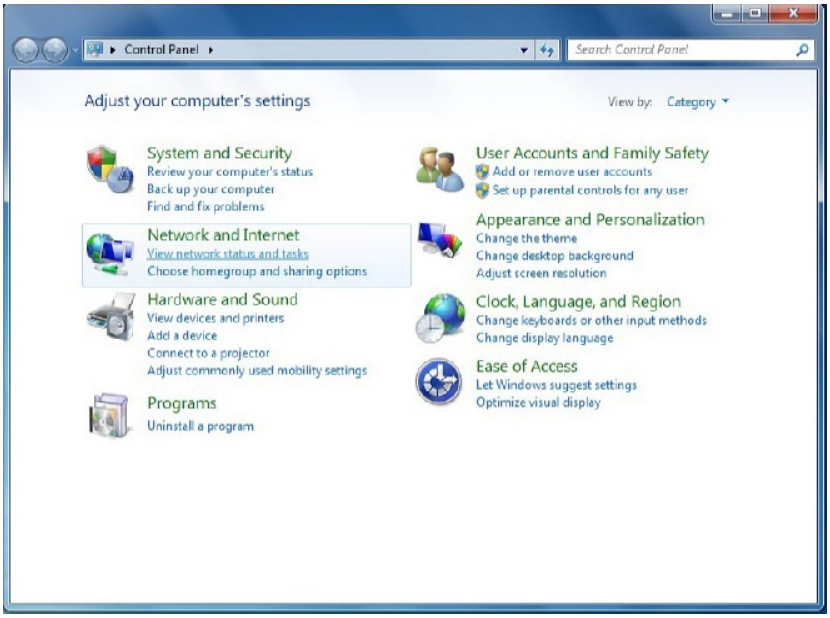
Class	Address Range	Supports
Class A	1.0.0.1 to 126.255.255.254	Supports 16 million hosts on each of 127 networks.
Class B	128.1.0.1 to 191.255.255.254	Supports 65,000 hosts on each of 16,000 networks.
Class C	192.0.1.1 to 223.255.254.254	Supports 254 hosts on each of 2 million networks.
Class D	224.0.0.0 to 239.255.255.255	Reserved for multicast groups.
Class E	240.0.0.0 to 254.255.255.254	Reserved for future use, or Research and Development Purposes.

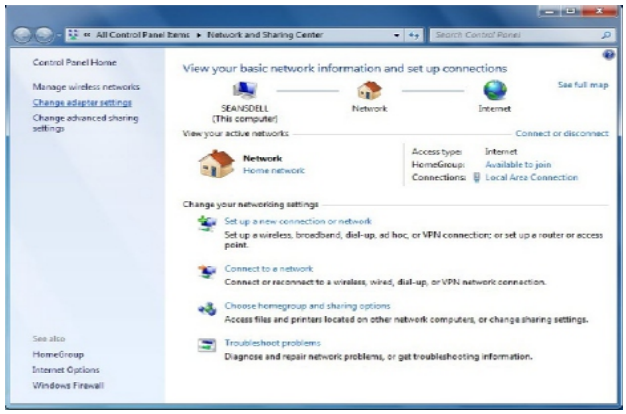
Configuring IPv4 address in windows PC

1. Go to Control Panel.



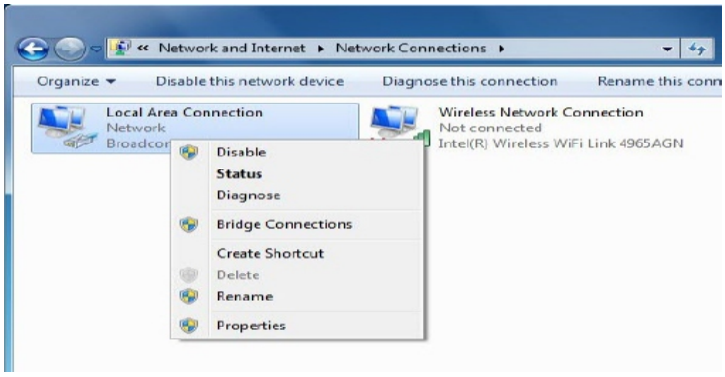
2. Select the Network and Internet tab.

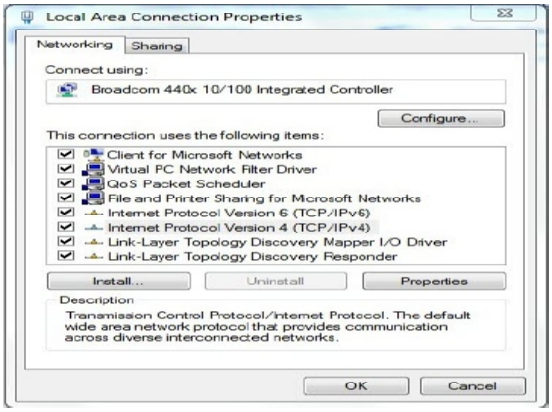


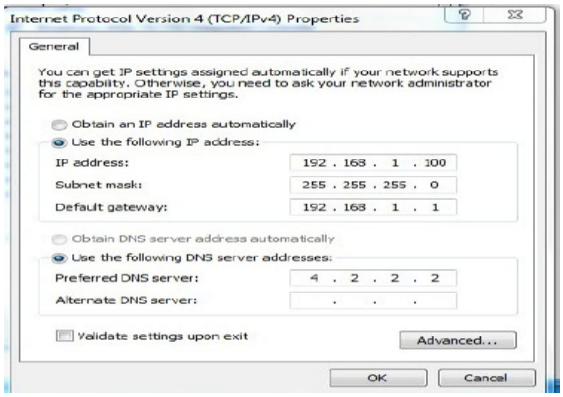


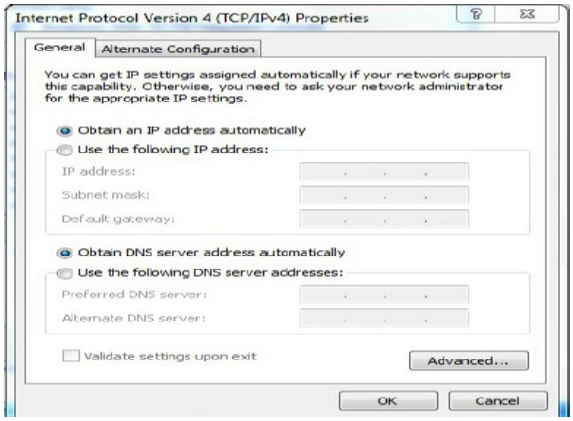
3. There are various networks on Network and Internet window.

4. Right click on any network for which you want to change IP address.




Local Area Connection Properties
Networking
Sharing
Connect using:
Broadcom 440x 10/100 Integrated Controller
Configure...
This connection uses the following items:
Client for Microsoft Networks
Virtual PC Network Filter Driver
QoS Packet Scheduler
File and Printer Sharing for Microsoft Networks
Internet Protocol Version 6 (TCP/IPv6)
Internet Protocol Version 4 (TCP/IPv4)
Link-Layer Topology Discovery Mapper I/O Driver
Link-Layer Topology Discovery Responder
Install...
Uninstall
Properties
Description
Tranamission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
OK
Cancel


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 1 . 100
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 1 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 4 . 2 . 2 . 2
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

14.12 SUBNET MASK

Subnet mask is used to find out the network address from given IP address. By default every class has its Subnet mask given in figure.

IP Class	Network & Host	Default Subnet Mask
A	N H H H	255.0.0.0
B	N N H H	255.255.0.0
C	N N N H	255.255.255.0

IP address in decimal notation

IP address 192.168.1.10
Subnet mask 255.255.255.0

We can find out network address by logical ANDing of given IP address and subnet mask

IP address in Binary notation

IP address 11000000.10101000.00000001.00001010
Subnet mask 11111111.11111111.11111111.00000000
Network Address 11000000.10101000.00000001.00000000

14.13 GATEWAYS

In telecommunications, the term gateway refers to a piece of networking hardware that has the following meaning: In a communications network, a network node equipped for interfacing with another network that uses different protocols.

- A gateway may contain devices such as protocol translators, impedance matching devices, rate converters, fault isolators, or signal translators as necessary to provide system interoperability. It also requires the establishment of mutually acceptable administrative procedures between both networks.

- A protocol translation/mapping gateway interconnects networks with different network protocol technologies by performing the required protocol conversions.

Loosely, a computer or computer program configured to perform the tasks of a gateway. For a specific case, see default gateway. Gateways, also called protocol

converters, can operate at any network layer. The activities of a gateway are more complex than that of the router or switch as it communicates using more than one protocol.

14.14 DNS

The Domain Name System (DNS) is a hierarchical decentralized naming system for computers, services, or any resource connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities. Most prominently, it translates more readily memorized domain names to the numerical IP addresses needed for the purpose of locating and identifying computer services and devices with the underlying network protocols. By providing a worldwide, distributed directory service, the Domain Name System is an essential component of the functionality of the Internet, and has been in use since the 1980s.

IMPORTANT POINTS

- ISPs provide Internet access, employing a range of technologies to connect users to their network.
- Internet service provider (ISP) is a company or organization that provides services for accessing and using the Internet.
- Hyperlinks and Hypertexts are used in order to send your reader to a site that might help them better understand the topic you are talking about.
- Bluetooth is a wireless technology standard for exchanging data over short distances.
- Wi-Fi or Wi Fi (Wireless Fidelity) is a technology that allows electronic devices to connect to a wireless LAN (WLAN).
- Subnet mask is used to find out the network address from given IP address.
- The Domain Name System (DNS) is a hierarchical decentralized naming system for computers, services, or any resource connected to the Internet or a private network.

Practice Questions

Objective type questions:

Q.1 Which one of the following service is provided by Google?

A. Gmail B. Yahoo mail
C. Outlook D. Hotmail

Q.2 Where is the first ISP ‘The World’ formed?

A. Brooklyn B. Austria

C. Mumbai D. Moscow

Q.3 What is the size of IPv6 header?
A. 24 Bit B. 64 Bit
C. 32 Bit D. 128 Bit

Q.4 How many classes are there in IPv4?
A. 2 B. 5
C. 3 D. 4

Q.5 Which medium is used to access the internet?
A. Wi-Fi B. Cookies
C. Proxy D. Internet Protocol

Very short answer type questions:

Q.1. How Internet is accessible? Write down names of medium for accessing Internet?
Q.2. What is ISP? Give the names of ISP's (any four)?
Q.3. Write any two differences between hypertext and hyperlink?
Q.4. What is HTTP cookie?
Q.5. What is Bluetooth? What are the frequency band on which Bluetooth operates?
Q.6. Why DHCP is used?
Q.7. What are default subnet mask for different classes?
Q.8.How to obtain network address by using subnet mask?
Q.9. What is meaning of gateways in communication networks?

Short answer type questions:

Q.1. Discuss different type of internet access and also online services?
Q.2. What is an Internet Service Provider (ISP)? Explain with help of suitable diagram?
Q.3. What are Hypertext and Hyperlinks?
Q.4.Define following terms in context of web browser?
i. Favorites or Bookmarks
ii. Cookies
Q.5. Explain in brief? (i) Bluetooth (ii) Wi-Fi
Q.6. What is DHCP? How is it used?
Q.7. What is IP address? Define range for each class in IPv4?
Q.8.How to configure IP address in widows PC?
Q.9. Define subnet mask? How to write IP address in decimal notation. Give an example?

Q.10. What are gateways? Explain DNS in brief?

Essay type questions:

Q.1. Explain the following internet services in detail?\

- Wi-Fi
- Bluetooth
- DHCP
- Proxy or Proxy server

Q.2.Explain various classes of IP address and subnet mask in detail?

Answer key for objective type questions:

1. A
2. A
3. D
4. B
5. A