

Pragya College of Education

VPO Dulhera, Tehsil Bahadurgarh
Distt. - Jhajjar (Haryana)

Session



Critical Understanding of ICT (1st Year)

Name

College Roll No.

University Roll No.

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Critical Understanding of ICT

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1. Introduction

Information technology is a collection of technique methodology which helps in the collection, storage, processing and transmission of information accurately and effectively for the purpose of enriching the knowledge and developing decision making as well as problem solving ability of the user.

Information technology is any combination of equipment that facilitates the certain modification transmission of information using electronic media.

Aspects of Information Technology

- a) Hardware,
- b) Software,
- c) Connectivity,
- d) Telecommunication.

Example :

- Digital Video Camera,
- Multimedia (PC), Laptop and Notebook,
- E-mail, internet, world-wide-website,
- Video-text, total text.

Information is the data that has been processed into a meaningful form by the receiver and is valuable in current or further

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actions and making decisions. The summarized form of data is known as information.

Factors Affecting Information

* Availability:

Sometimes information processed by a person is new and not available previously, in such cases information availability will help the user in decision making.

* Accuracy:

Those informations which are in process must be accurate. Inaccurate information may be harmful to a person or organisation.

* Timeliness:

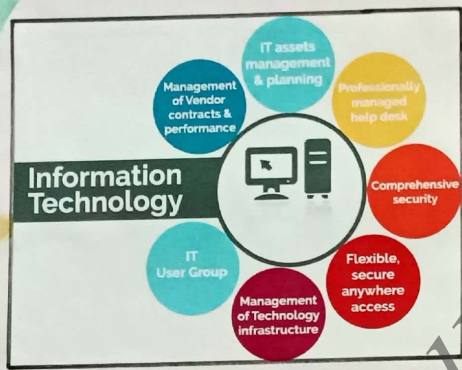
Whenever any information is required, it should be available as early as possible without delay.

* Surprise Elements:

In some occasions, information contains surprise elements. Such demerits can affect decision making.

* Human Competence:

Information technology refers to the creation, gathering, processing, storing and device that enables all to be done. And all these are done by humans. So, human skills competence play a vital role in authenticity of the information.



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Educational Advantages of Information Technology

* For Students:

Information technology may help students to satisfy their urges of curiosity, inventiveness, construction, etc. It helps them to bring necessary changes in their way of decision making.

* For Teachers:

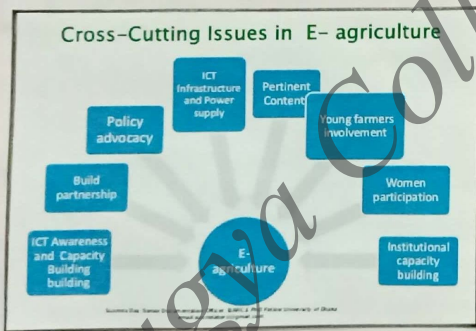
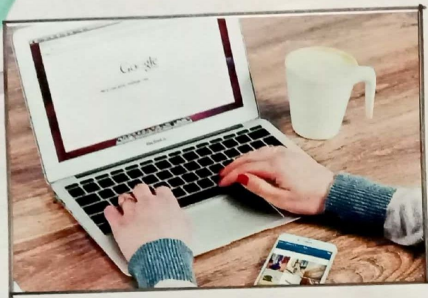
Teachers get sufficient help from IT in their line of teaching. They get lot of information in form of written material, audio-visual media, and other type of aids.

* For Counsellors:

It enables counsellors, working in school and outside in the community, to provide desired educational, vocational guidance as well as counselling to students along with their parents with the help of information gained and gathered from the help of IT.

* For Education Planners:

It helps them by keeping them informed about the development of education and help them to access the proper functioning of the institutions.



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Application of ICT

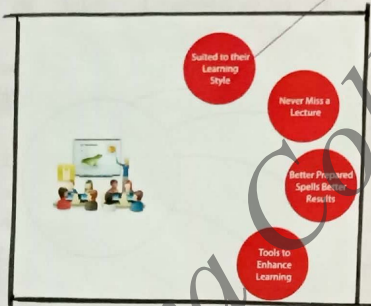
* **e-Business and e-Environment:**
 Governments, international organisations and the private sector are encouraged to promote the benefits of international trade and the use of e-business and promote the use of e-business models and to promote ICT as an instrument for environmental protection and the sustainable use of natural resources.

* **e-Learning:**
 Domestic policies are developed to ensure that ICT are fully integrated in education and training at all levels, including in curriculum development, teacher training, institutional administration and management and in support of the concept of lifelong learning.

Develop and promote programmes to eradicate illiteracy by using ICT at national, regional and international levels.

Reduce global unemployment and to promote teleworking to allow citizens to live in their societies and work anywhere and to increase employment opportunities for women and for those with disabilities.

* **e-Agriculture:**
 Ensure the systematic dissemination of information using ICT in agriculture, animal husbandry, fisheries, forestry and food, in order to provide



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access to comprehensive up-to-date and detailed knowledge and information particularly in rural areas.

* **e-Science:**

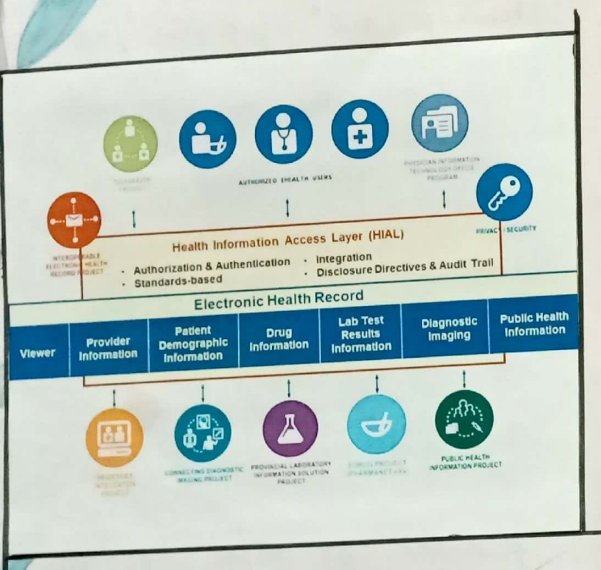
Promote affordable and reliable high-speed internet connections for all universities and research institutions to support their critical role in information and knowledge production, education and training and to support the establishment of partnership, cooperation and networking between these institutions.

* **For Women Empowerment:**

ICT can be a powerful catalyst for political and social empowerment of women and the promotion of gender equity. ICT plays an important role in enhancing safety by provision of or connecting women to services, mapping and monitoring accidents of violence and safety concerns and using social media to change attitudes about harmful practices towards women.

* **e-Governance:**

It focuses on applications aimed at innovating and promoting transparency in public administration and democratic process, improving efficiency and strengthens relations with citizens and business to achieve more efficient allocations of resource.



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and public goods.

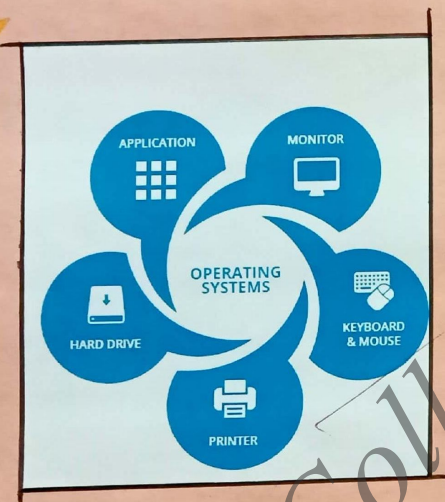
* e-Health:

Promote collaborative efforts of governments, planners, health professionals and other agencies along with the participation of international organizations for creating reliable, timely and high quality health care and health information system. Also, efforts are made in promoting continuous medical training and educating and research through the use of ICT's while respecting and protecting citizens right to privacy.

* For Enterprise Resource Planning (ERP):

It is an integrated computer based applications used to manage internal and external resources including financial resources material, manufacturing and human resources. It's purpose is to facilitate the information between all the function in the boundaries of the organisation and manage the connections to outside holders.

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Operating System

An operating system (OS) is a large and complex set of system programs that control the various operations of a computer system and provide a collection of services to other (user) programs. The purpose of an operating system involves two key goals:

- * Availability of a convenient, easy to use, and powerful set of services that are provided to the user and the application programs in the computer system.
- * Management of the computer resources in the most efficient manner.

Application and system programmers directly or indirectly communicate with the operating system in order to request some of these services.

The services provided by an operating system are implemented as a large set of system functions that include scheduling of the programs, memory management, device management, file management, network management, and other more advanced services related to protection and security. The operating system is also considered a huge resource manager and performs a variety of services.

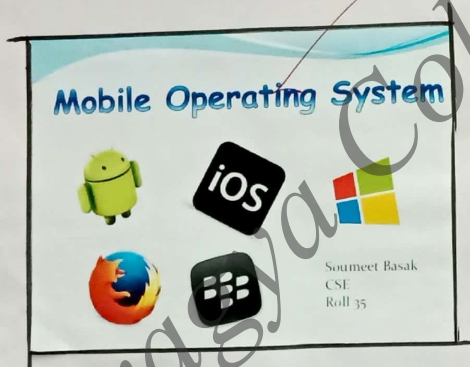
as efficiently as possible to ensure the desired performance of the system.

The most important active resource in the computer system is the CPU. Other important resources are memory and I/O devices. Allocation and deallocation of all resources in the system are handled by various resource management of the operating system.

General-purpose operating system support two general modes of operation :- (A) User mode and (B) Kernel mode, which sometimes called as the supervisor, protected or priviled mode. A user process will normally execute in user mode. Some instructions, such as slow level I/O functions and memory access to special areas where the OS maintains its data structures, can execute only in kernel mode. The OS in kernel mode has direct control of the computer system.

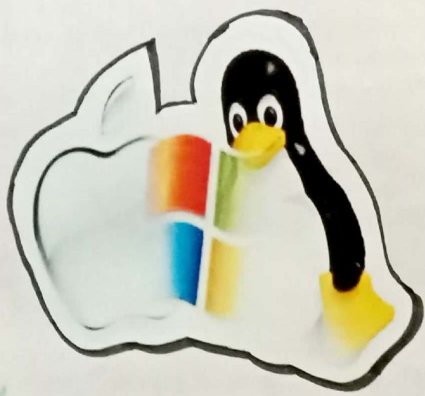
Types of OS:

OS is divided into three categories namely - Desktop, server and mobile. OS of desktop includes: windows, OS X, UNIX, Linux, chrome OS, etc. OS of server includes: windows server, Mac OS X Server, UNIX, Linux, etc. OS of mobile includes: Google android, Apple iOS, windows, phone.



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- * **Desktop OS** - It is a complete operating system that works on desktops, laptops and some tablets. It includes -
- (A) Windows : It is a series of OSs developed by Microsoft. Each version of windows includes a graphical user interface (GUI), with a desktop that allows users to view files and folders in windows.
 - (B) OS X : Mac OS, formerly Mac OS X (2001-12) and OS X (until 2016) is name of an OS for computers made by Apple Inc. These are called Macintosh computers or Macs. It includes the GUI based OS.
 - (C) UNIX : It is a popular multiuser, multitasking, portable, flexible and powerful OS, used in workstations mainly.
 - (D) Linux : It is an OS, a series of programs that let you interact with your computer and run other program, and is modelled on UNIX OS.
 - (E) Chrome OS : It is a Linux-based OS designed to work with web apps.
- * **Mobile OS** - The OS on mobile devices and many consumer electronics is called mobile OS. It includes -
- (A) Android : It is an open source, Linux-based mobile OS, designed by Google for smartphones and tablets.
 - (B) iOS : Developed by Apple, it is a proprietary mobile OS, specifically made for Apple's mobile and tablet devices.
 - (C) Windows phone : Developed by Microsoft, it is an proprietary mobile OS that runs on some mobile



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* **Server OS:** It is specifically designed to run on servers which are specialized computers that operate within a client/server architecture to serve the requests of client computers on the network. It includes:

(A) **Windows server:** This server OS is written by Microsoft and it is used to run apps in which many users can log on at the same time.

(B) **Mac OS X server:** Designed for OS X and iOS, it makes it easy to collaborate, develop software, host websites and wikis, configure Mac and iOS devices, and remotely access a network. It is an separately sold OS add-on.

(C) **Linux:** used in software packages and licensing/support models.

Functions of OS:

At the simplest level, an OS does two things-

- * It manages the hardware and software resources of the system. In desktop computer, resources include things as processor, memory, disk space, etc; and on a cell phone resources include the keypad, screen, address book, phone dialer, battery and network connection.
- * It provides a stable, consistent way for applications to deal with the hardware without having to know all the details of the hardware.



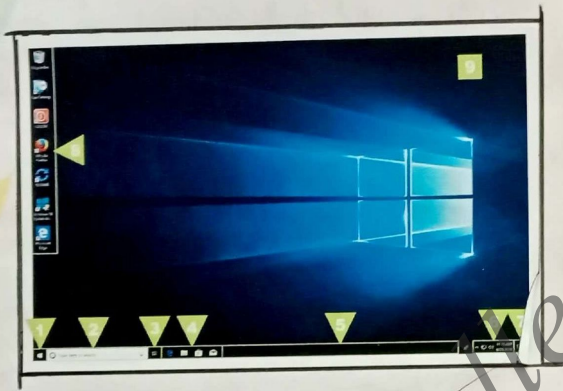
Microsoft Windows

Windows is a computer operating system (OS), developed by Microsoft Corporation to run personal computers (PCs), featuring the first graphical user interface (GUI) for IBM International Business Machines Corporation (compatible) PCs. The Windows OS soon dominated the PC market. Approximately 90% of PCs run some version of Windows.

The first version of Windows, released in 1985, was simply a GUI, offered as an extension of Microsoft's existing disk operating system (MS-DOS). Based in part on licensed concepts that Apple Inc. had used for its Macintosh System Software, Windows for the first time allowed DOS users to visually navigate a virtual desktop. Opening graphical "windows" displaying the contents of electronic folders and files with the click of a mouse button, rather than typing commands and directory paths at a text prompt.

Advantages:

- ▶ Familiar to most people. They know how to operate it.
- ▶ It supports most of the hardware without need



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- of external devices.
- ▶ More software is compatible with windows OS.
- ▶ Won't have any problem finding support.
- ▶ Won't have any trouble finding hardware and drivers.
- ▶ It's availability is very high.
- ▶ It offers good GUI.

Basic Components of Windows.

Following are the main components of MS-Windows Operating System:-

1. Desktop:

The desktop is the user's work area for their programs. It is the on-screen work area provided by Microsoft windows, similar to a physical desktop. It consists of a work-area and taskbar.

1.1 Taskbar :-

A taskbar is an element of a GUI, which has various purposes. The specific design and layout of the taskbar varies between individual operating systems, but generally assumes the form of a strip located along one edge of the screen, which can be moved to any of the four sides of the desktop and can be resized to display more buttons. It generally consists of (in windows 10) :-

1-1.1 Start Menu :-

The start menu is a GUI element used in Microsoft Windows since Windows 95. It provides access to all programs and special windows places (Documents, pictures, music, games, computer, control panel), with "most recently used" list for quick access to recently used programs and documents.

1-1.2 Search Box :-

The search box allows users to quickly search their computer and internet, right from the taskbar.

1-1.3 Task-view / Timeline :-

Taskview button allows users to manage virtual desktops and move application windows between them.

The timeline button allows users to manage virtual desktop, with viewing websites and files that have been used for the last 30 days, if users choose to activate it.

1-1.4 Pinned Apps :-

Applications that users use commonly can be pinned to taskbar. By default, Windows has a couple that it pins for the user.

1-1.5 Task-tray :-

If an application is open, and is not pinned to the taskbar, shows in the task-tray.

1.1.6 Notification-tray and clock :-

The notification tray shows icons of applications that are running in the background and provides access to internet, battery and sound settings. The clock displays the current time and date.

1.1.7 Action Center :-

It is windows main notification center. Any slide-out notification that user receive will be stored in this panel until user clear them. It also provides quick access to system features such as wifi, bluetooth, location, mobile hotspot, brightness, battery saver, project, etc.

1.2 Work-area :-

The on-screen area where user can perform their work, as well as store programs, documents and their shortcuts. It generally consist of :-

1.2.1 Icons :-

An icon is a pictogram, displayed on desktop in order to help the user navigate a computer system. It is a quickly comprehensible symbol of a software tool, function or data file accessible on the system.

1.2.2 Windows :-

A rectangular shaped area on a computer screen in which programs and content appear. A win-

Window can be moved, resized, minimized or closed; it can overlap other windows. Parts of windows are -

(A) Title Bar:

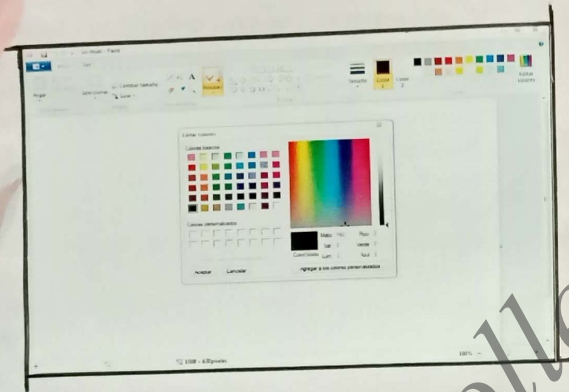
At the top of every window is the title bar. The centre of the title bar displays either the name of the program or relevant information about the activity happening in the program at any given moment. This is one that can be clicked and dragged to move the window to a new location in the screen.

(B) Minimize, Maximize & Close Buttons:

In the upper right-hand corner of the window are the three buttons used to minimize, maximize and close the window. Minimizing the window shrinks it to nothing and places it out of sight. Maximizing the window makes it fill the screen and locks it into position so that it can not be moved by dragging the title bar. Closing the window shuts down the program.

(C) Scroll Bar:

At the right side of the window is the scroll bar, which appears only if there is information to be displayed beyond the bottom range of the current window size. Clicking and dragging on the sliders in the scroll bar moves the contents of the window up or down so user can view



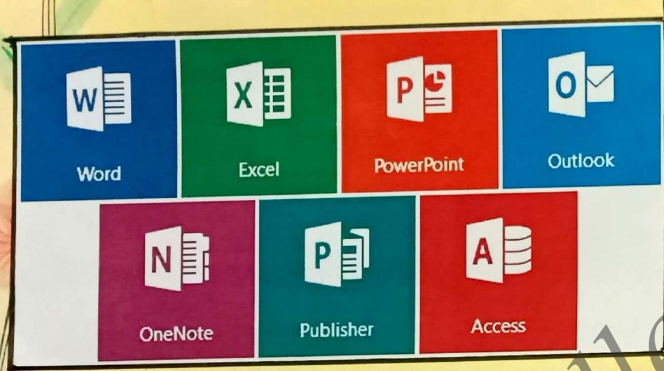
all the data available.

(D) Menu Bar:

Most programs will have a menu bar visible in the upper left-hand corner of the window. It appears as text for most programs, and usually starts with "File" at the far left. Accessing the menu allows user to view various commands available to that program, including closing the program or window.

(E) The Workspace:

The workspace is all of the area inside the window where data for the current program is displayed. Usually it has white background, but it can be customized in all versions of windows, and it may vary by program.



17. MS Office

Microsoft Office is a suite of desktop productivity applications that is designed specifically to be used for office or business use. It is a proprietary product of Microsoft Corporation and was first released in 1990. Microsoft Office is available in 35 different languages and is supported by Windows, Mac and most Linux variants. It mainly consists of Word, Excel, PowerPoint, Access, OneNote, Outlook and Publisher application.

Each of the applications in Microsoft Office serves as specific knowledge or office domain such as:

- * **Microsoft Word**: Helps users in creating text documents.
- * **Microsoft Excel**: Creates simple to complex data/numerical spreadsheets.
- * **Microsoft PowerPoint**: Stand-alone application for creating professional multimedia presentations.
- * **Microsoft Access**: Database management application.
- * **Microsoft Publisher**: Introductory application for creating and publishing marketing materials.
- * **Microsoft OneNote**: Alternate to a paper notebook, it enables an user to neatly organize their notes.

Besides desktop apps, MS-Office is available to use online or from cloud under a lighter and full version.

MS-Word Word Processor :

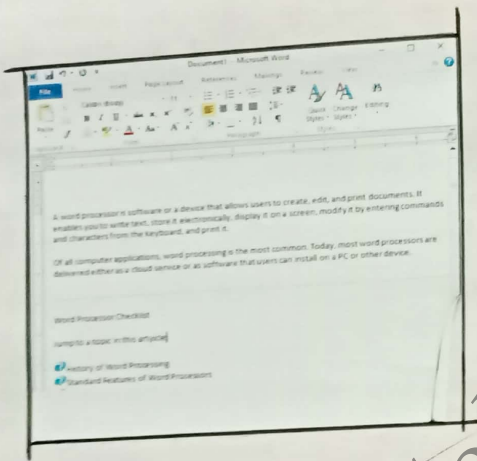
Sometimes abbreviated as a WP, a word processor is a software program capable of creating, storing and printing typed documents. Today the word processor is one of the most frequently used software program on a computer. WP can be used to create multiple types of files including:

- text files (.txt)
- rich text files (.rtf)
- HTML files (.htm and .html)
- Word files (.doc and .docx)
- XML files (.xml)

A WP should not be confused with a text editor, such as Notepad, that only allows editing and creating plain text documents.

The top uses of WP includes -

- * writing a book,
- * writing a document that requires formatting,
- * support documentation for a product or service,
- * keep a digital version of one's daily, weekly or monthly journal,
- * creating a memo, report, resume,
- * writing a letter,
- * overview of a market plan.



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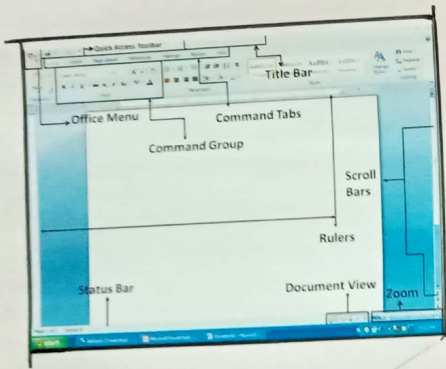
Although MS-Word is the most popular word processor available, but there are others too -

- Abiword
- Apple iWork
- Apple TextEdit
- Corel WordPerfect
- Google Docs
- LibreOffice
- MS-Office
- OpenOffice
- SunStar Office and MS-works (discontinued)

MS Word:

Sometimes called Winword, MS Word or Word, Microsoft Word is a word processor published by Microsoft. It is one of the office productivity applications included in Microsoft Office. Originally developed by Charles Simonyi and Richard Brodie, released in 1983. Microsoft Word is available for the Microsoft Windows, Apple Mac OS, Android and Apple iOS. It could also be run on the Linux operating system using WINE.

Microsoft Word allows users to create professional documents, reports, letters and resumes. It has features including spell check, grammar check, text and font formatting, HTML support, image support, advanced page layout, inserting table, mail-merge, find and replace, inserting watermark, and more.



Components:

Title Bar: It shows the name of the document and is situated in the top of the window application.

Menu Bar: It contains menus of commands. It is located under the title bar. Different menu groups are: File, Edit, View, Insert, Format, Tools, Table, Window, Help.

Tool Bar: It's a group of buttons (icons) for executing menu options/commands in easier and faster way. They generally appear below the menu bar but can be placed anywhere.

Rulers: The window has a horizontal and a vertical ruler displayed along the left and top of the document. They can be used to set margins and for formatting the page also provide measurement.

Cursor: It is I-beam pointer, which tells where on the document the character typed by user will appear. It moves to next position as one goes on typing. It can be moved and placed anywhere using mouse or arrow keys.

Status Bar: This bar displays the positions of the cursor, page no. and other relevant info.


information. It's located at the bottom of the window.

Scroll Bar : They are sliders that can be moved using Mouse. As it moves, the window pans through the document exposing different regions of document. There are two types of scroll bar :-
(i) Horizontal Scrollbar (placed at bottom).
(ii) Vertical Scrollbar (appears at the right of document).

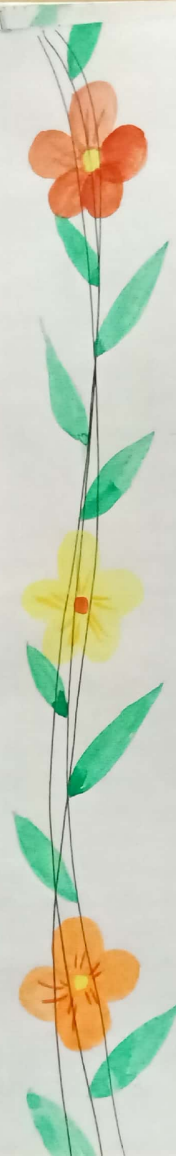
Document Navigator : It allows moving around the document, and is activated when clicked on the ball type button on the vertical scrollbar.

Window Control Bar : It's located at the top right corner of the window. It's available in almost every window based application. It contains maximize, minimize, restore and close buttons.

Operations

MS-Word can be started as follows:-
Click the **Start Button** on the taskbar. Then click the **Program** option in this menu. Click the Microsoft Word option identified by  icon.


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Or, locate the MS-Word icon on the desktop (or anywhere) and double click it. Microsoft window of word opens up.

Basic:

Creating a new file :->

- To create a new word document:
- Click on File menu.
- Click on New or press **Ctrl+N** through the keyboard or click at the  icon at toolbar.
- Select Blank Document under Available Templates.
- Click Create. A new blank document appears in window.

Saving an document :->

For OLD Document { Click on File menu than Save option, or, Press **Ctrl+S**, or, Press the save tool  icon from standard toolbar.

For NEW Document { Click the File tab and select the Save As option. Select a folder where user will like to save document, enter file name that user want to give to his document and select Save option. [.docx format].

Opening an existing document :->

Click the File tab.
Select Open. The open dialog box appears.

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Select the document, then click open. OR

If user have opened file recently, that can be accessed from Recent Documents. Just click on File tab and select Recent.

Closing a document :->

- Click the File tab and select the Close option.
- Then user select the Close option and if the document is not saved before closing, it will display Warning box asking whether the document should be saved or not.
To save, click Save, otherwise click Don't Save. To go back to the document click Cancel.

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MS-PowerPoint

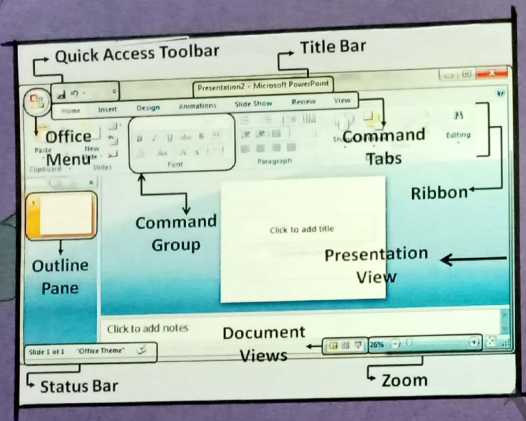
Presentation Graphics:

Presentation graphics also called Presentation Management programs are used to create highly professional or normal slides and edit them. These slides may be displayed under the control of the computer (using a variety of hardware and display devices configurations available), printed as handouts or overhead transparencies or processed into 35 mm slides. Most often, these electronic slides are used as a visual aid for some type of presentation to the audience.

Slides in a presentation (slide-show) may contain text, graphics, sound clips, video-clips and special effects. When a slide-show is displayed under control of computer, the presenter can determine when each slide is displayed. Timings may be applied to slides (all of them or just some of them) resulting in a self-running presentation.

Application of Presentation Graphics:

- Sales presentation
- Advertisements
- Reports



Lectures
Demonstrations, etc.

There are many Presentation Graphics programs available like Microsoft Powerpoint, Lotus's Freelance Graphics, Adobe Persuasion, Astound, Asymetrix compel, Corel Presentation, Harvard Graphics.

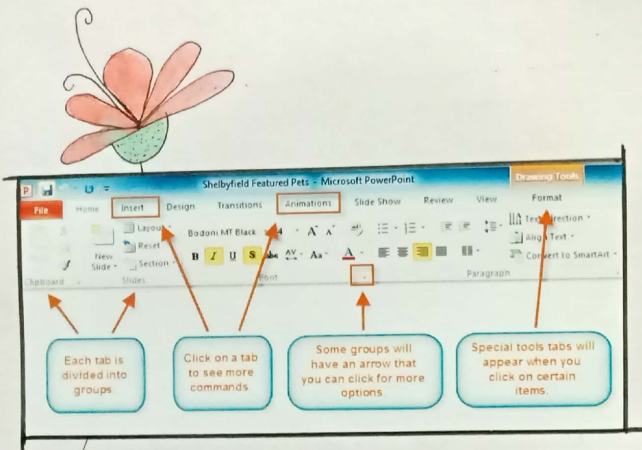
Components :

Backstage view :

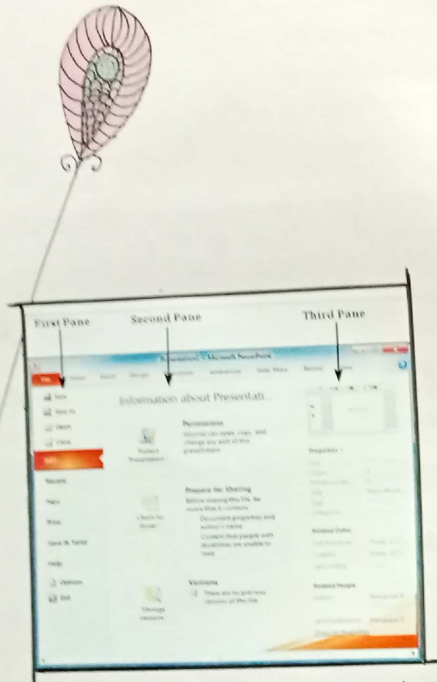
It gives user various options for saving, opening, printing and sharing presentations. For accessing click File tab on the Ribbon. Backstage view will appear.

It contains :-

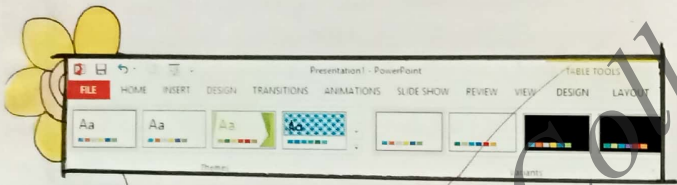
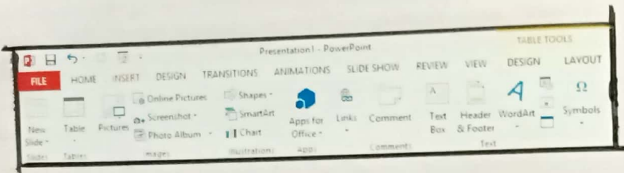
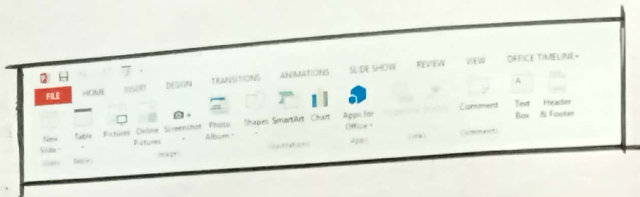
- ⊖ (Back to Powerpoint) : used to close Backstage view and return to Powerpoint.
- Info : It contains information about the current presentation. It contains options:
 - Protect Presentation
 - Inspect Presentation
 - Versions



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- Properties
- New**: From here, user can create a new presentation or choose from a large selection of templates. (Ctrl+N)
 - Open**: From here, user can open recent presentation, as well as presentations saved to user's OneDrive or on user's Computer. (Ctrl+O)
 - Save and Save As**: From here, user can save and save as his/her presentation to computer or OneDrive. (Ctrl+S)
 - Print**: From here, user can change print settings and print their presentation. They can see a preview of their presentation. (Ctrl+P)
 - Share**: From here, one can invite people to view and collaborate on their presentation. One can share his presentation by emailing it as an attachment.
 - Export**: From here, one can choose to export his presentation in other format, such as PDF/XPS, video or PowerPoint 97-2003 presentation.
 - Close**: Click it to close the current presentation.
 - Account**: From here, one can access his/her Microsoft account information, modify theme and background, and sign out too.
 - Options**: From here one can change various PowerPoint Options like:-
 - General Options,
 - Proofing options (how PP corrects & formats text),
 - Save options,



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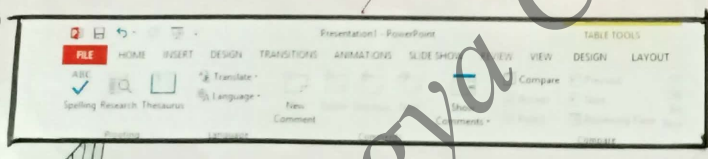
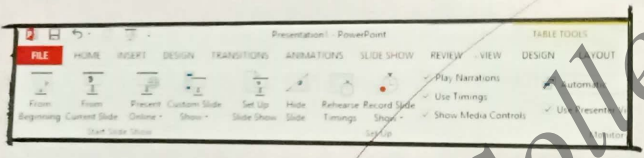
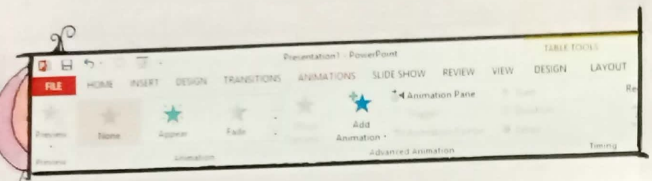
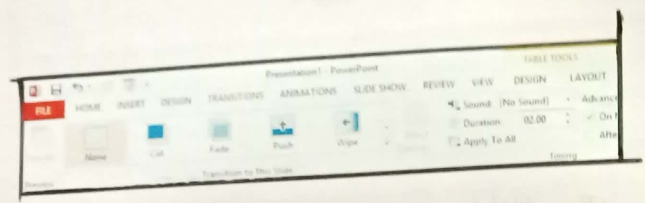
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Language (language preferences),
Advanced Options,
Customize Ribbon,
Quick Access Toolbar, etc.

The Ribbon

The new version of PP contains/uses a **tabbed Ribbon System** instead of traditional menus. The Ribbon contains **multiple tabs**, each with **several groups of commands**. Used to perform the most basic tasks in PP. Tabs it contains are :-

- Home Tab :** It gives the access to the most commonly used commands, including Copy (Ctrl+C), Cut (Ctrl+X), Paste (Ctrl+V), New Slide (Ctrl+M), font setting including Font, Font Size, Bold (Ctrl+B), Italic (Ctrl+I), Underline (Ctrl+U), Clear all formatting, Change case (upper or lower), paragraph settings, drawing and editing settings.
- Insert Tab :** It allows one to insert **Table** **Images** (pictures, online pics, screenshot, photo album), **Illustrations** (shapes, smart graphics, charts), **links**, **comments**, **Text** (headers and footer, Word Art, date and time, slide no, etc), **Symbols** (equations, other symbols) & **media** (video, audio, screen recording).
- Design Tab :** User can apply themes from

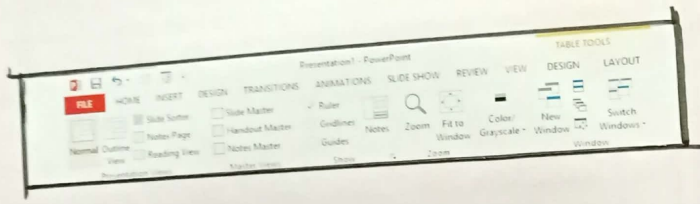


this tab. A **theme** is a predefined combination of colors, fonts, and effects that can quickly change the look and feel of the entire slide show.

- **Transitions Tab:** User can apply slide transitions from this tab. Transitions are the movement we see between slides while the presentation of slide shows. **Timing** and **Preview** can also be changed and seen respectively too.
- **Animations Tab:** This tab allows users to animate text and objects such as clip art, shapes, and pictures.
- **Slide Show Tab:** When one is ready to present slide show, this tab gives tools like (Start slide show - from Beginning / from current slide or Present online / custom slide show), (Set up - setup slide show, hide slide, rehearse timings, record slide show), etc) to make the presentation smooth and professional.
- **Review Tab:** This tab can be accessed to use PP's powerful editing features, including proofing language settings, comments, compare, etc. These features makes it easy to review and collaborate on presentations.
- **View Tab:** It allows to switch between several

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different views for the presentation including presentation view - normal, outline, slide sorter, notes page, reading view, master views, shows, zoom, color, opening or arranging opened windows, etc to help one prepare and organise slide show.

The quick access toolbar:

It is located just above the ribbon; it lets user access common commands, no matter which tab is selected. By default, it includes the Save, Undo, Repeat and Start Presentation commands. One can add other commands depending on their preference.

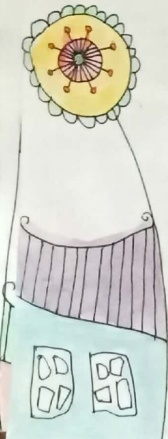
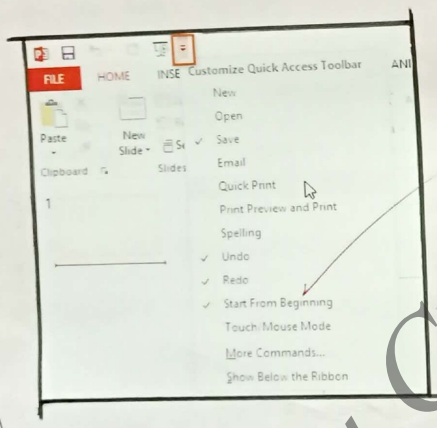
Operations:

Choose a theme:

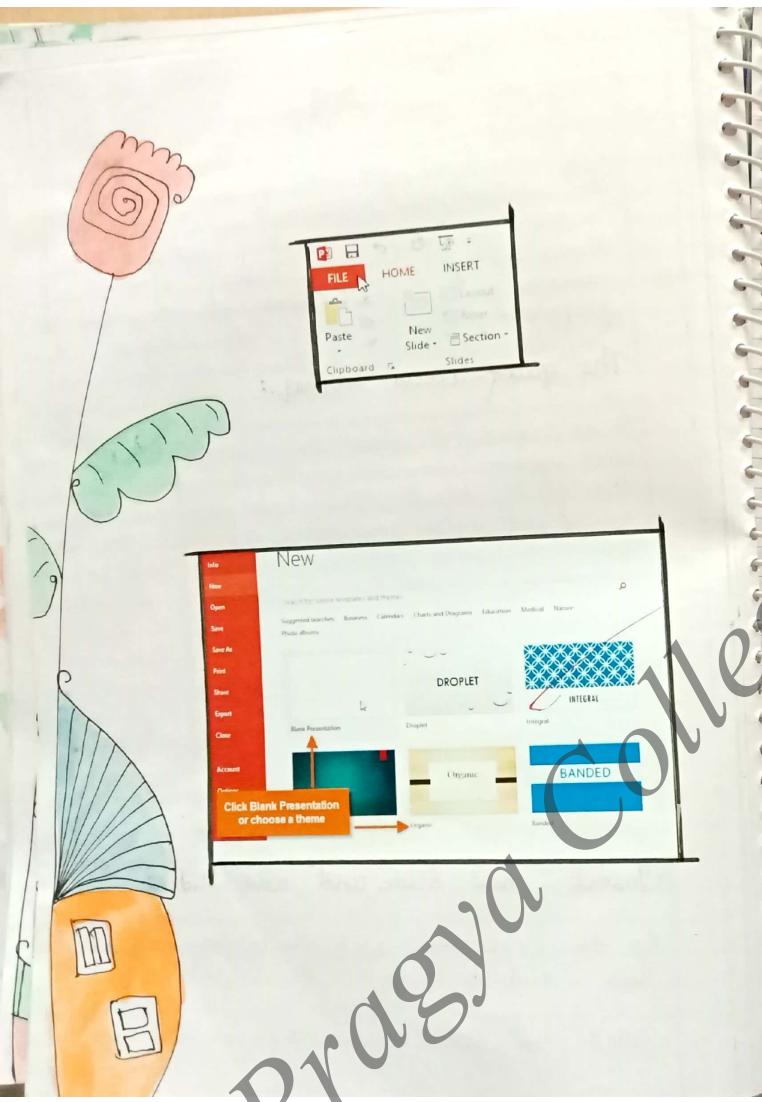
On the File tab of the Ribbon, select New, and then choose a theme. Click Create, or pick a color variation and then click Create.

Insert a new Slide and add Slides:

On the Home tab, click the bottom half of New Slide, and pick-up a slide layout. Select the slide you want your new slide to



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follow.
 1. Select Home > New Slide
 Select a layout
 Select the text box and type.

Rearrange the order of slides:

In the pane on the left, click the thumbnail of the slide (or for multiple slides - Press and hold **Ctrl**, and in the pane, click each slide you want to move, release the **Ctrl** key) and drag it to new location.

Delete Slides :

- For a single slide : Right click the slide on the left and select **Delete slide**
- For multiple slides : Press and hold **Ctrl** and select slides. Release the **Ctrl** key. Then right-click the selection and choose **Delete slide**
- For a sequence of slides : Press and hold **Shift**, select the first and last slides in the sequence. Release the **Shift** key. Then right click the selection and choose **Delete slide**.

Add text, pictures, speaker notes :

- select a text placeholder, and begin typing.
- For format the text, under the **Drawing Tools** choose **Format**.

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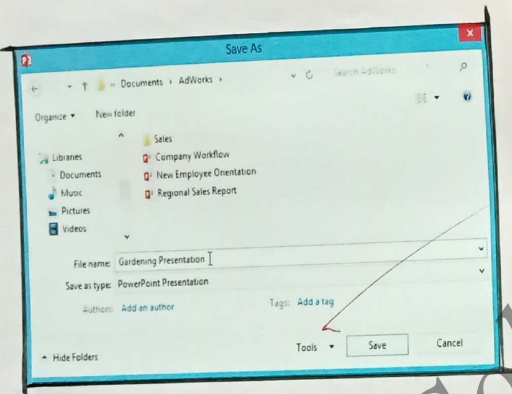
- To change the color of text, choose **Text Fill**, and then choose a color.
- To change outline color of text, choose **Text Outline**.
- To apply a shadow, reflection, glow, bevel, 3D rotation, or transform, choose **Text Effect**.

On the **Insert** tab, choose **Pictures** (to insert a pic saved in local drive or internet server) or choose **Online Pictures** (to insert a pic from web) and choose **Insert**.

To open the notes pane, at the bottom of the window click **Notes**. Click inside the notes pane and write/type notes below the slide.

Save the presentation:

On the **File** tab, choose **Save**. Pick or browse to a folder. In the **File name** box, type a name for presentation, and then choose **Save**.



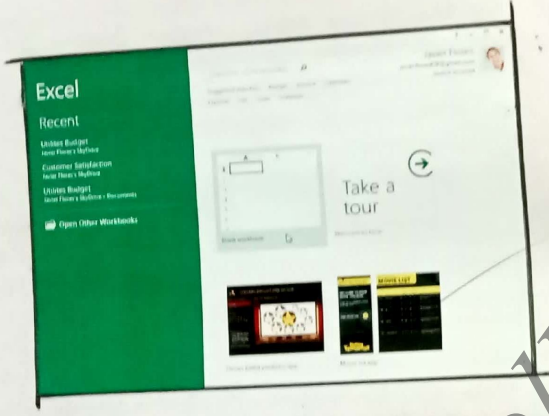
MS-Excel Spreadsheet

A spreadsheet is a large sheet having data and information arranged in rows and columns. It is quite useful in entering, storing, editing, analysing data. Arithmetic operations with numerical data such as addition, subtraction, multiplication and division could be done using Excel, which is one of the most widely used spreadsheet applications. We can also sort numbers / characters according to some given criteria (like ascending, descending, etc), and use simple financial, mathematical and statistical formulas.

► Features of Spreadsheets :

There are a number of features that are available in Excel, some main are -

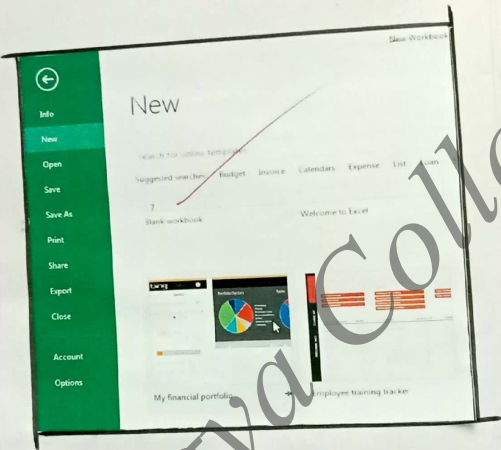
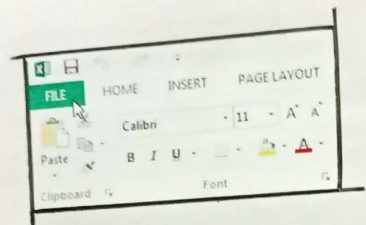
- **AutoSum:** helps to add the contents of a cluster of adjacent cells.
- **List Autofill:** automatically extends cell formatting when a new item is added to the end of a list.
- **Autofill:** allows us to quickly fill cells with



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repetitive or sequential data such as chronological dates or numbers, and repeated text. It's also used to copy functions and alter text and numbers.

- **AutoShapes**: allow us to draw a number of geometrical shapes, arrows, flowchart elements, stars and more.
- **Wizard**: guides to work effectively while we work, by displaying various helpful tips and techniques based on work that we are doing.
- **Drag and Drop**: it help to reposition the data and text by simply dragging the data with the help of mouse.
- **Charts**: help in presenting a graphical representation of our data in the form of Pie, Bar, line charts and more.
- **PivotTable**: it flips and sums data in seconds and allows us to perform data analysis and generating reports like periodic financial statements, statistical reports, etc. We can also analyse complex data relationships graphically.
- **Shortcut Menus**: the commands that are appropriate to the task that we perform will appear by clicking the right mouse button.



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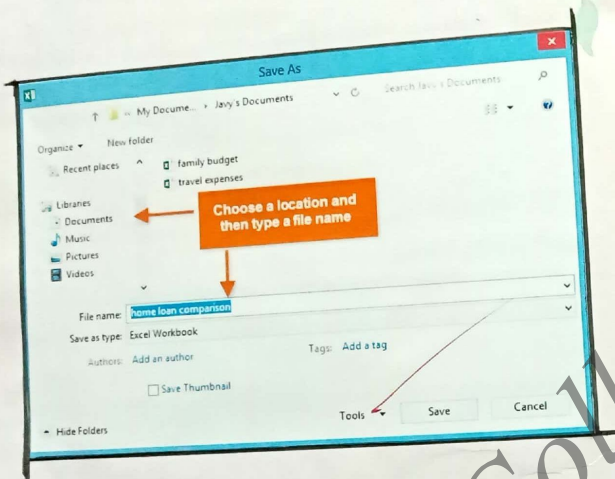
34. Workbook (in Excel):

A workbook is just a fancy name for a MS-Excel file. These two terms - "workbook" and "file" - can be used interchangeably.

Excel allows to open and close workbooks, as well as save them to computer. All of these functions are accomplished using the 'File' menu.

Operations :

- **Start a new Workbook -**
click **File > New**.
Select the type of file (usually **Blank Workbook**) and press the **Create** button. or
Ctrl + N (in windows) or **⌘ + N** (on Mac).
- **Open a workbook -**
click **File > Open**.
Navigate through computer's folders to the file that user want to open, then click **Open**. or
Ctrl + O.
- **Save a workbook -**
click **File > Save / Save As**.
Choose a folder to save it, write name for your file, then click **Save**. or
Ctrl + S.



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Close a workbook -
Click **File > Close**

Bear in mind that Excel can have multiple workbooks (files) open at once, pressing the close icon will only close the current workbook, and will keep all other workbooks open. Or

Ctrl + W

Worksheets

Each workbook contains a number of different worksheets, which are tabs into which we input data. Worksheet tabs appear at the bottom of each workbook. Each worksheet has its own name; by default, a workbook will appear with three worksheets called **Sheet 1**, **Sheet 2** and **Sheet 3**, respectively. But we can add, delete and rename these worksheets.

We can navigate between worksheets by clicking **Ctrl + PgUp** or **Ctrl + PgDn**

Right-click a worksheet tab to bring up the **Worksheet Options Menu**, which allows us to manipulate the worksheet in the workbook. Here we can **Insert**, **Delete**, **Rename**, **Move or Copy**, **Hide**, change tab color, etc; a worksheet.



36.

Internet

The internet is a world wide network of computers that are connected (networked) and are using the communication method called TCP/IP.

The internet was named ARPANET in 1969 by the Advanced Research Projects Agency of the U.S. Department of Defense with just four computers connected together.

The internet contains billions of web pages created by people and companies from around the world, making it a limitless place to locate information and entertainment. The internet also has thousands of services that help make life more convenient.

The internet is the world's largest network because it is a collection of computers and servers that are connected to each other using routers and switches around the world.

Internet is a global wide area network that connects computer system across the world. It includes several high-bandwidth data lines that comprise the internet backbone. These

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lines are connected to major internet hubs that distribute data to major internet nodes locations, such as web-servers and ISPs.

In order to connect to the internet, one must have access to go internet service providers (ISP) which act as the middleman between us and the internet. Most ISPs offer broadband internet access via a cable, DSL or fiber connections. When we connect to the internet using a public wifi signal, the wifi router is still connected to an ISP that provides internet access. Even cellular data towers must connect to an internet service provider to provide connected devices with access to the internet.

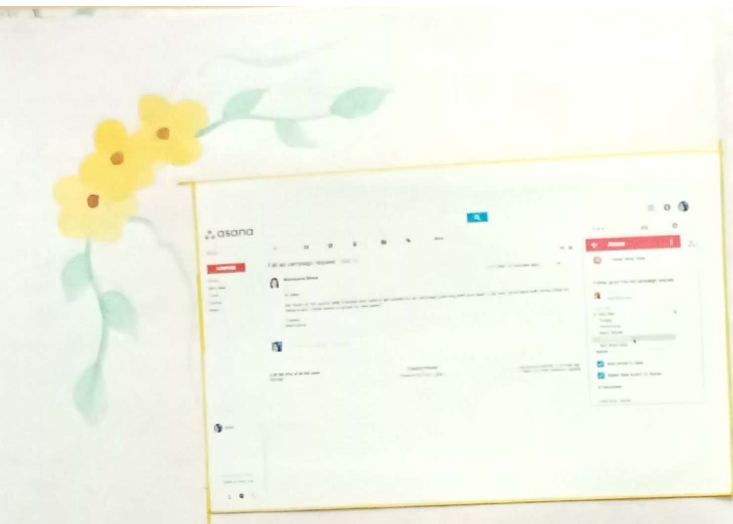
Uses of Internet:

e-mail:

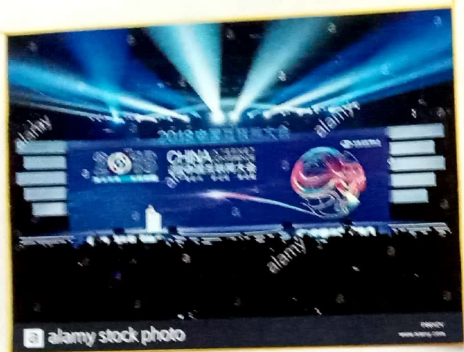
Electronic mail is a method of exchanging messages (mail) between people using electronic devices. Invented by Ray Tomlinson, email first entered limited use in the 1960s and by the mid-1970s has taken the form now recognized as email.

File exchange:

Also known as File exchange Protocol (FXP) and FXSP is a method of data transfer which uses FTP (file transfer protocol) to



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transfer data from one remote server to another (inter server) without routing this data through the third's connection.

Easy research and information:

Anything that you would ever want to know about can be found on the Internet. Search engines such as Google and Yahoo have given people the keys to all of the information in the world. Internet is a total storehouse of information. It's so vast that, even in academics, the use of the Internet has now become inevitable.

Live conferencing:

It refers to the live streaming of interactive audio and video presentations, lectures, meetings and seminars to the global audience with the help of a camera and conferencing equipment. Such equipments lets businesses connect and coordinate with remote workforces located in different region, engage them in productive real-time discussions and record individual or group responses.

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39.

Smart Education Smart Classroom.

Quality education is an essential requirement in today's competitive environment. Technology has affected us in every aspect. The smart classes is a modernized method of education which provides quality education to students by helping them in better concept formation, concept elaboration, improvement in reading skills and academic achievement.

A smartclassroom is generally equipped with a number of multimedia components with an aim of enhancing teaching and learning. A smartclass can be defined as an advanced implementation of technology for schools by providing tools and content for learning. Also known as New media classrooms or Digital classrooms.

Concept:

There are seven basic concepts of a smart classroom—



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➤ Adaptability / Flexibility:

- Smart classroom arrangement and all the elements must be in a way that it permits quickness and variations in setting according to different student's different learning ways or different teaching strategies.
- S/cr must be updated with evolving technology with ever changing environment.

➤ Comfort:

- An increasing no. of houses today have computers connected to internet. Students also have access to smartphones, the use of social media platforms has also increased than never before. The incorporation of such digital elements in the class makes students feel more comfortable.
- S/cr should include comfortable couches, chairs, carpets and pillows.
- S/cr should not only encompass learning, but provide room for maximum comfort (reading, writing, debating, watching videos and playing music) to make learning experience enjoyable.

➤ Connectivity:

An internet connection to devices and informational and social connectivity where students connected to friends, teachers, professionals and informational sources. Mobile devices have become the heart of the modern generation's interaction and mobile innovation is enabling enhanced learning. Today there are intelligent spaces. IoT

Internet of Things) devices, AR and VR devices for teaching all connected to improve learning experience.

→ Multiplicity :

While learning for teaching is going on having capacities enabling the utilization of a no. of stimuli and resources allows for creativity to be exercised along with critical thinking and reasoning and can be customized with respect to various learning styles and needs of learners.

→ Openness :

In SCs, learning occurs beyond limited class room space (traditional formal sitting), both virtually and physically. Therefore, such extended virtual spaces and things should be kept in mind before setting-up SCs.

→ Personalization :

In SCs teachers and students can personalize (setting) and customize (learning and teaching environments by introducing activities that reinforce learning and teaching experience).

→ Safety and security :

SCs have capabilities that prevent users from physical accidents and serve as a safe haven to information access, while connected to the internet. Therefore, it is important to



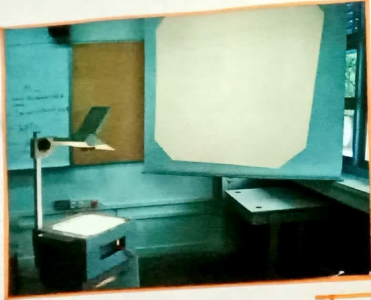
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take into account security systems while designing and conceptualizing smart classroom.

Equipments :

The equipments installed in most of the SCs are -

- **Computer/Laptop** : Instead of writing on board with a chalk or marker, teaching process is done by presentation or images or multimedia in SCs.
- **Projector** : It projects stationary or moving objects onto a screen. It creates an image by shining light through transparent lens or by laser.
- **Screen** : It's a surface (rigid wall-mounted screen / pull-down / fixed-frame / electrical / mobile / switchable projection screens.) used to display the images projected by projector.
- **Microphone** : Generally called as mic or mike. It converts audio signals into electronic ones and are then transmitted, amplified or recorded.
- **Amplifier and Speaker** : These are electronic devices used to increase the volume of a sound.



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- **Podiums**: It's a platform usually made of wood which raises the person standing on it so that he becomes visible to all audience.
- **Document Camera**: Also known as visual presenter/visualizer/digital overheads. The object is simply placed under it. It magnifies and projects the images of a 2-D and 3-D object.
- **Smart Podiums**: Also known as smart boards/LCDs. It's an interactive per display which can be connected to the computer or laptop externally via USB port or RGB ports. It can be called as an external monitor with the facility of digital inking. With this we can open documents, presentations, multimedia files and can write on them, and save our work too.
- **DVD/VCD Player**: There are some videos which have copyright and have to be purchased, which often are in form of DVDs or CDs.
- **Overhead projector**: It's a device which is used to display enlarged images of a transparent acetate sheet placed on its base on a screen.

Organisation:

According to **Kohn (1996)**,



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"Classroom organization is obvious in a room even if no one is present. Furniture arrangements, location of materials, displays, and fixed elements all are part of organization. Effective teachers decorate the room with student work. They arrange the furniture to promote interactions as appropriate, and they have comfortable areas for working."

According to McLeod (2003), adding in previous they also consider student needs in arranging the room by leaving space for wheelchairs to move properly; having walkways so students can access materials, pencil sharpeners, and the trashcan with minimal disturbance to others; and organizing in such a way as to allow the teacher to freely move around the room to monitor students' progress."

Importance in teaching:

- Flexibility in learning: A lot can happen over the smart board - different minds have different preferences so they learn according to it.
- Advance teaching and learning experiences. Advance tech not only enhances the learning experience but also gives an idea



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resting platform to teachers.

- **Easy maintenance:**
As all the tools of smart class are electronic, they are easy and neat to use. They just need good surveillance and have very low maintenance.
- **Access to online resources:**
At every step, availability of solution is high with the help of web.
- **Environment friendly:**
Here, everybody is compatible with notebooks and tablets. Hence the use of paper is almost negligible.
- **Pace of growth:**
E-learning gives separate profile to all the students so they can maintain their own speed of growth.
- **Repetition:**
Everyone has different grasping power. So encrypted data is made available as it can be repeated till it gets into the mind.