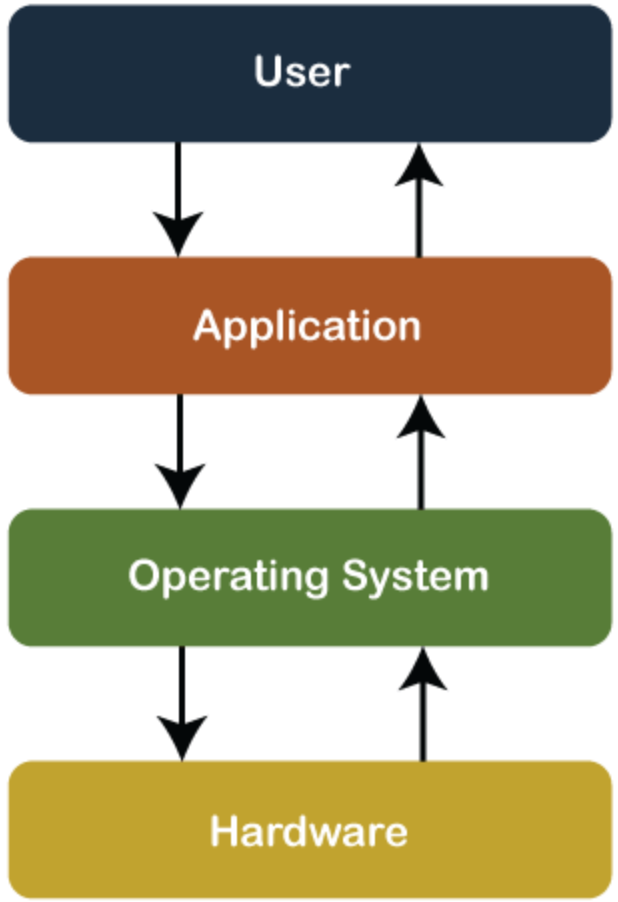
INTRODUCTION TO GUI BASED OPERATING SYSTEM



Infomax
Computer Academy

Introduction to Operating System

- An operating system is a program that **controls the execution of application programs** and acts as an **interface between the user of a computer and the computer hardware**.
- An operating system is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
- Operating System is **System Software**.



Major Functionalities of Operating System:

- Memory Management
- Processor Management
- Device Management
- File Management
- Security

Memory Management

- Memory management refers to management of Primary Memory or Main Memory.
- Main memory is a large array of words or bytes where each word or byte has its own address.
- Main memory provides a fast storage that can be accessed directly by the CPU. For a program to be executed, it must in the main memory.
- An Operating System does the following activities for memory management:
  - Keeps tracks of primary memory, i.e., what part of it are in use by whom, what part are not in use.
  - In multiprogramming, the OS decides which process will get memory when and how much.
  - Allocates the memory when a process requests it to do so.
  - De-allocates the memory when a process no longer needs it or has been terminated.

Processor Management

- In multiprogramming environment, the OS decides which process gets the processor when and for how much time. This function is called **process scheduling**.
- An Operating System does the following activities for processor management −
  - Keeps tracks of processor and status of process. The program responsible for this task is known as **traffic controller**.
  - Allocates the processor (CPU) to a process.
  - De-allocates processor when a process is no longer required.

Device Management

- An Operating System manages device communication via their respective drivers.
- OS perform the following activities for device management −
  - Keeps tracks of all devices. Program responsible for this task is known as the **I/O controller**.
  - Decides which process gets the device when and for how much time.
  - Allocates the device in the efficient way.
  - De-allocates devices.

File Management

- A file system is normally organized into directories for easy navigation and usage. These directories may contain files and other directions.
- An Operating System does the following activities for file management −
  - Keeps track of information, location, uses, status etc. The collective facilities are often known as file system.
  - Decides who gets the resources.
  - Allocates the resources.
  - De-allocates the resources.

Security

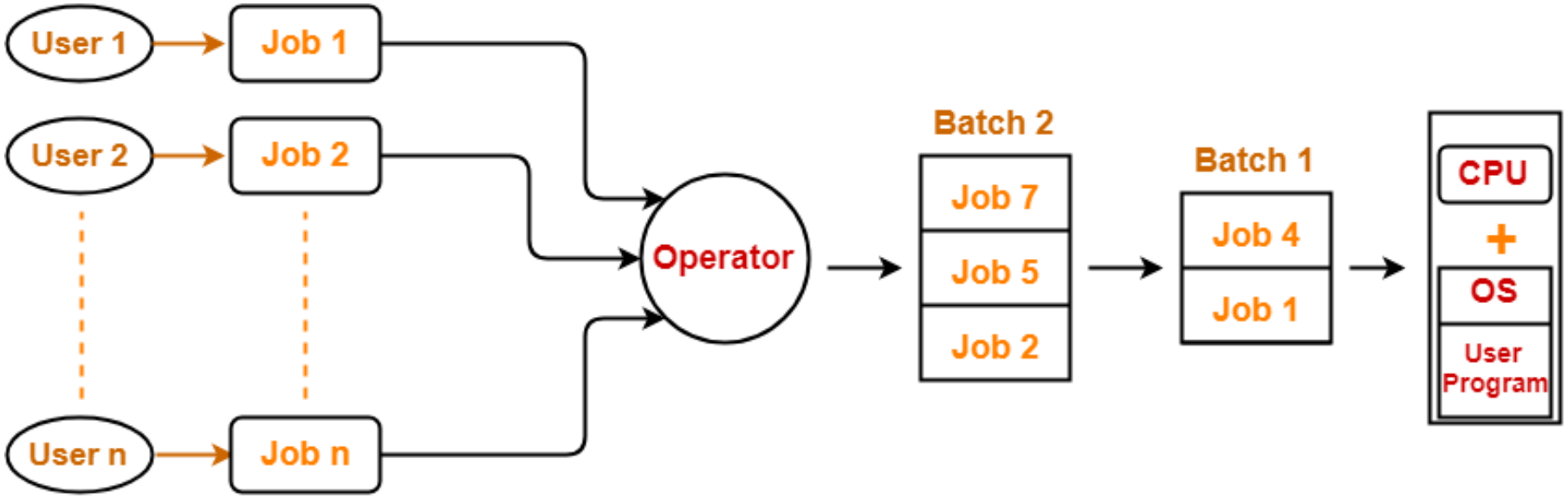
- By means of password and similar other techniques, it prevents unauthorized access to programs and data.
- Encryption and decryption of plain text data into non-readable format.

Types of Operating Systems

- Batch Operating System
- Multiprogramming Operating System
- Time Sharing Operating System
- Distributed Operating Systems
- Network Operating System
- Real-Time Operating Systems

Batch Operating System

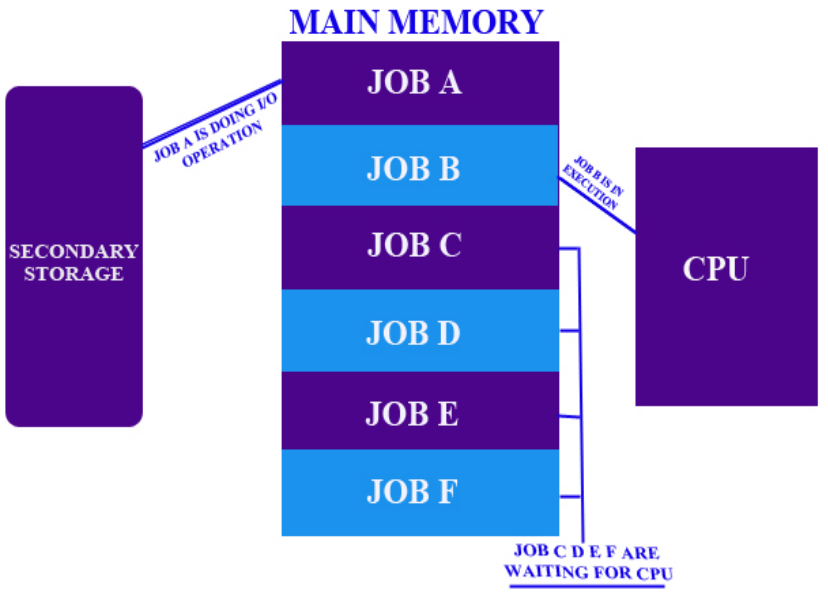
- A batch operating system is a type of operating system that allows multiple users to use it at the same time, without direct communication between them.
- This is done by having the users submit their jobs to the operating system, which then processes them one at a time.



Batch Operating System

Multiprogramming Operating System

- Like the name suggests, a multiprogramming operating system is an operating system that is capable of running multiple programs at the same time.
- The main aim in multiprogramming operating systems is to improve resource utilization and system throughput.
- This is achieved by organizing the computing jobs in a manner that ensures that the CPU always has a job to execute at any one time.
- These operating systems are sometimes referred to as ***multitasking operating systems*** because they allow two or more processes to run simultaneously. This is to mean that data from two or more processes can be held in the primary memory at a given time.



Time Sharing Operating System

- This is a unique type of multiprogramming operating system. Like the typical multiprogramming operating system, it allows multiple tasks to run concurrently.
- However, this is unique in that it has been designed to accommodate multiple users. This means that multiple users can use the same computer resources. The best part about this operating system is that these users will not need to queue to access these resources.

Introduction to Microsoft Windows

- Windows is developed by Microsoft Corporation.
- Microsoft Windows is a series of graphical interface Operating Systems.
- Microsoft Windows provides the environment necessary to start up and to operate a personal computer.
- It controls the overall activity of the computer.
- Windows also provides virtual memory management, supports multitasking platform and support many peripheral devices.
- More than 90 % of all the personal computers were dominated by Windows Operating System.

Different versions of Windows

Versions of Microsoft Windows:-

- Windows 1.0 - 2.0
- Windows 3.0 - 3.1
- Windows 95
- Windows 98
- Windows-2000
- Windows –XP
- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

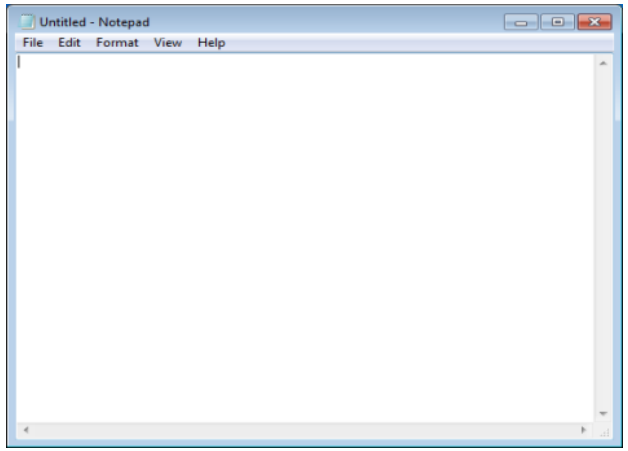
Basic Windows elements

Window

- A window is simply a rectangular unit that acts independently from other windows.
- In a graphical user interface (GUI), the boundaries of the window can be easily expanded or contracted.
- Windows come in two basic types: the application window, and the dialog box.

Application window

- Application windows are the main part of almost all programs.
- Common elements of application windows include the control menu, menu bar, and border.



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Dialog box

- Dialogs perform a specific task or give details for the application.
- Most dialog boxes lack several of the control buttons and a border, and will have other buttons inside the window to complete a request such as “OK” and “Cancel”.

Taskbar

- In GUI interfaces, the taskbar is a desktop toolbar application that lets the user to locate and perform tasks such as switching between open Windows and starting new applications.
- A bar at the bottom of the desktop is the Taskbar and it was first introduced with Microsoft Windows 95 and found in all versions of Windows after that.
- The notification area, at the far right of the taskbar, includes a clock and a group of icons.
- When clicked on a window title in the taskbar, that window will become active and show up in front of other Windows which are opened already.

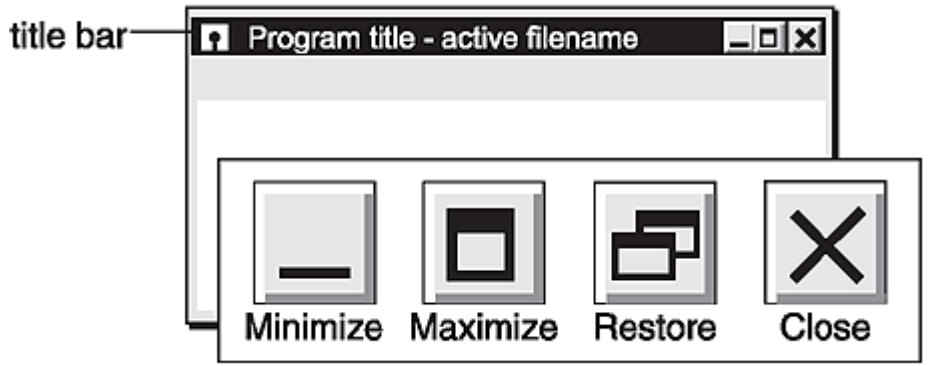
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- **Icons**
- An icon is a small graphic representation of a program.
- Icons allow the user to access the program with ease.
- Icons are used with Graphical User Interface (GUI).
- Operating Systems such as Microsoft Windows and the Apple Mac OS to help quickly identify a type of file or program associated with the icon.
- **Start menu**
- The Start menu is a feature of the Windows Operating System that provides quick access to programs, folders and system settings.
- By default, the Start menu is located in the lower-left corner of the Windows desktop.

Conti..

Title Bar

- The title bar is located along the top of a window or a dialog box that displays the name of the window or software program being used.
- In many graphical user interfaces, including the Macintosh and Microsoft Windows interfaces, user move (drag) a window by grabbing the title bar.
- Control buttons are the little buttons which are on the right side of title bar
- These commands can be done with the mouse using other window elements; their primary usefulness is in when user have to do any of these functions with the keyboard.

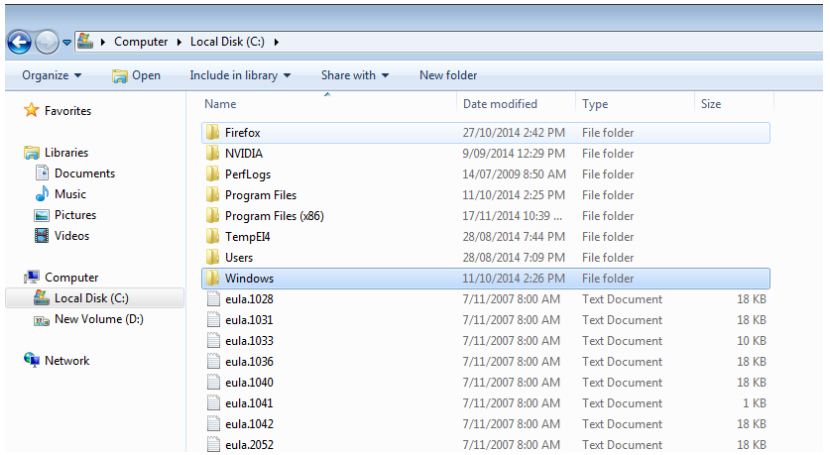


File management through Windows

- File management in windows can be done through Windows explorer or My Computer.
- **Using Windows Explorer**
  - To open Windows Explorer,
  - Click on Start
  - Point to All Programs
  - Point to Accessories, and then click on Windows Explorer (Animation: Recording)
  - The left pane of the Explorer window shows a hierarchical list of files, folders, and storage drives (both fixed and removable) on computer. It also lists any network drives that have been mapped to as a drive letters on computer. (Animation: Recording)
- A drive or folder that contains other folders has an arrow to the left of the icon. Click the arrow to expand it and see the folders inside.
- Windows Explorer can be used to copy, move, rename, and search for files and folders.

Opening drives and folders

- There are two basic formats for the interface used to open drives and folders in the computer.(text animation)
- The single-pane view used for most folders and in My Computer.
- Two drives nearly all computers have a hard drive (drive C:). If user have more than one drive, then they are named E:, F: and so on. If user have a CD drive or a DVD drive, it also is named with a letter.
- Opening a drive or folder is easy. Just double click the icon representing the drive user want to open. Files and folders contained in the drive are now shown in the opened window. Now for opening a folder, double click its icon.



Copying or Moving a file or folder using My Document

- Click on Start, and then click on My Documents.
- Click the file or folder to be copied. More than one file or folder can be copied at a time.
- To select more than one consecutive files or folders, click the first file or folder, press and hold down SHIFT key, and then click the last files or folders.
- Right click on the selected files or folders, then click Copy to copy the selected files and folders.
- Choose the desired location to paste the files of folders, then clicking the right mouse button, select Paste to paste the files or folders to the target drive.

View file details

- Click on Start, and then click on My Documents.
- Double-click the folder that contains the files to be viewed.
- On the View menu, click Details.

Copying and moving files using Explorer

- It will display all the details about the files such as Name, Type, size etc.
- Click Start, point to All Programs then Accessories, and then click Windows Explorer.
- Make sure the destination for the file or folder user want to move is visible.
- Drag the file or folder from the right pane and drop it on to the destination folder in the left pane to move the file or folder there.
- If user drag an item while pressing the right mouse button, they can move, copy, or create a shortcut to the file in its new location.
- To copy the item instead of moving it, press and hold CTRL while dragging.
- If user drag an item to another disk, it is copied, but not moved then press and hold down SHIFT while dragging.
- Dragging a program to a new location creates a shortcut to that program. To move a program, right-click and then drag the program to the new location.

Create a new folder

- Folders help the user to organize their files.
- User can create a folder either by using My Computer window or through Windows Explorer. User can create a Folder in any existing disk drive or folder or on the windows desktop.
- The steps for creating a folder are
- Click on Start, and then click on My Documents.
- Under File menu click New and select Folder.
- A new folder is displayed with the default name, New Folder.
- Type a name for the new folder, and then press ENTER.
- A new folder can also be created directly on the desktop by right-clicking a blank area on the desktop, pointing to New, and then clicking Folder.

Rename a file or folder

- The steps for renaming a folder are
- Click on Start, and then click on My Documents.
- Click on the file or folder user want to rename.
- Under File menu click on Rename.
- Type the new name, and then press ENTER key.
- Alternately file or folder can also be renamed by right-clicking it and then clicking on Rename.

Delete a file or folder

- Steps for delete a folder
- Click on Start, and then click on My Documents.
- Click on the file or folder user want to delete.
- Under File menu click on Delete.
- Files or folders can also be deleted by right-clicking the file or folder and then clicking Delete.
- Deleted files or folders are stored in the Recycle Bin, till they are permanently removed from the Recycle Bin.
- To retrieve a deleted file, double-click the Recycle Bin icon on the desktop. Right-click on the file to be retrieved, and then click Restore.
- To permanently delete a file, press and hold down SHIFT key and drag it to the Recycle Bin.
- Files or folders deleted from a removable storage media such as network drive are permanently deleted and are not sent to the Recycle Bin.

System Tools

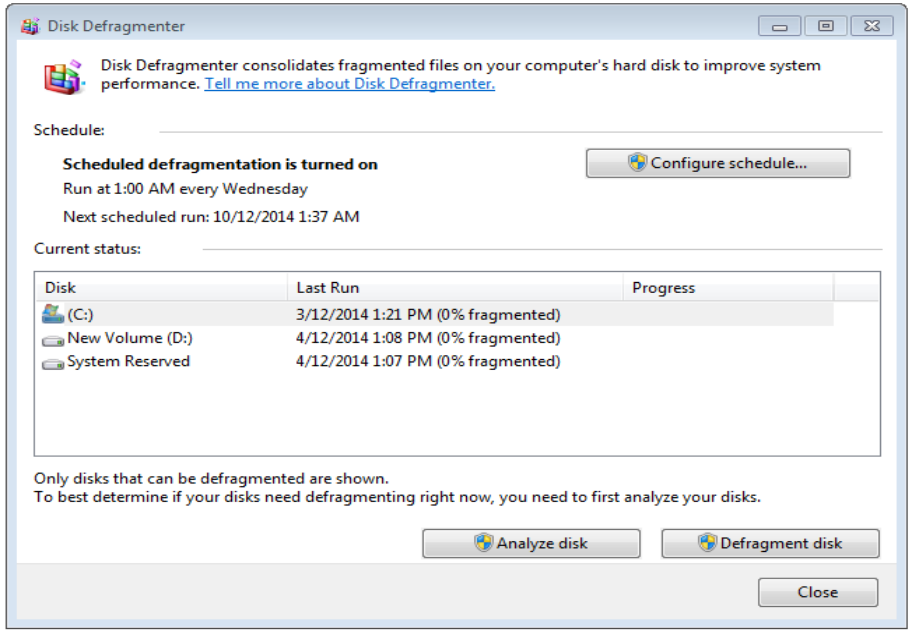
- System Tools allows user to perform some basic maintenance from time to time to keep Operating System run smoothly.
- But, it is impossible to expect the users run these tools on an periodic basis or make the administrators run it for user on all the computers.
- Some of the System tools are as follows
  - Disk cleanup
  - Disk defragmenter

Disk Cleanup

- The Disk Cleanup tool helps user to free up space on the hard disk by searching the disk for files that user can safely delete.
- User can choose to delete some or all of the files.
- Use Disk Cleanup to perform any of the following tasks to free up space on the hard disk.
  - Remove temporary Internet files.
  - Remove downloaded program files. For example, ActiveX controls and Java applets that are downloaded from the Internet.
  - Empty the Recycle Bin.
  - Remove Windows temporary files.
  - Remove optional Windows components that user are not using.
  - Remove installed programs that user no longer use.
- User can start Disk Cleanup, by doing one of the following
  - Click Start, and then click Run. In the Open box, type cleanmgr, and then click OK.

Disk Defragmenter

- Disk defragmentation is the process of consolidating fragmented data on a volume (such as a hard disk or a storage device) so it will work more efficiently.
- It is a tool that rearranges the data on the volume and reunites fragmented data so that computer can run more efficiently.
- To start Disk Defragmenter, use one of the methods.
- Click Start, click All Programs, point to Accessories, select System Tools, and then click Disk Defragmenter.



Entertainment

- Entertainment program is an add-on peripheral, where user can install entertainment software such as Windows Media Player, Volume Control.
- **Windows Media Player**
- To open Media Player, click on the Start button -> All Programs -> Accessories -> Entertainment -> Windows Media Player.
- User can play audio and video files by using Windows Media Player.
- User can choose different skins for the player from the available list or download more skins from Microsoft Windows site.



Notepad

- Notepad creates and edits text and performs basic functions of a text editor without much formatting options.
- The Notepad editor is about as old as Windows itself, yet it still has its uses even today.
- Here are some ideas on how to use this venerable old program.
- To open a notepad, on the Start button, click All Programs, point to Accessories and then choose Notepad.
- Once Notepad is running, user will see its simplistic menu appear at the top of the Notepad program window.
- One interesting feature about Notepad is its ability to word wrap to the width of the window.
- User can indicate whether they want word wrapping turned on or off from the Format menu.

Conti...

- Notepad offers only the most basic text manipulation functions, such as finding text.
- Only newer versions of Windows include an updated version of Notepad with a search and replace function. However it has much less functionality in comparison to full-scale editors.
- **How to create a text file using notepad**
- Once Notepad has been open, type the text file, and then save the file with any name making sure that the file name ends with .txt.
- Notepad will not allow user to add pictures, since it is a plaintext editor and does not support pictures.

Paint

- A paint program is a software graphics program that allows the user to draw or paint bitmapped images on a computer.
- User can use paint to create drawings on a blank drawing area or in existing pictures.
- Many of the tools used in Paint are found in the ribbon, which is near the top of the Paint window.
- Open Paint by clicking the **Start button -> All Programs -> Accessories -> Paint.**
- In paint user can do the following.
  - Drawing lines
  - Drawing different shapes
  - Adding Text
  - Selecting and editing objects
  - Working with color
  - Viewing the picture
  - Saving and using the picture

WordPad

- User can create a formatted document without having to use a full-blown word processor like Word.
- Although WordPad is not as robust as some mainstream word processors, it is a great choice for creating simple documents with a few formatting bells and whistles.
- To open the WordPad window, click on the Start button →All Programs → Accessories → WordPad.
- WordPad allows simple formatting such as
  - Change fonts.
  - Character level formatting.
  - Margins can be changed / created.
  - Insert bulleted charts/graphic and sound files.
- Rich text format (RTF) allows the exchange of text files between different word processors in different OS.

Command prompt

- Command Prompt is a command line interpreter application available in most Windows operating systems.
- The Command Prompt program allows the user to work in an environment that looks more like a traditional operating system as opposed to the icon based Windows environment.
- Command Prompt is officially called Windows Command Processor but is also sometimes called the command shell or by its file name cmd.exe.
- In Command Prompt, only keyboard can be used and mouse cannot be used.
- Command Prompt works at a lower level than Windows. This means that user will have more control over the machine.
- The disadvantage of command prompt is that it is not user-friendly.
- The GUI based operating system made command prompt boring.

Opening a command prompt:

- There are two conventional ways to start a Command prompt.
  - Start->Programs-> Accessories->Command prompt
  - Start->Run and type "cmd" and press enter.
- The Command Prompt shows up as a black terminal window. The command prompt should look something like: C:\>



Directory Navigation

- Navigating the command prompt, as well as changing drives and directories is important skill to have. To do this, you must learn a few commands that you must enter into the command prompt.
- Changing directories (or changing your path) in the command prompt makes use of the CD command. The CD command has a small amount of possible arguments. CD accepts a drive and a path.
- Some of the key commands are:
  - **CD (Change Directory) :** The CD command is very simple to use. All commands are relative to the directory that you are in. Therefore, using the example output of a "dir" that is shown above, if you want to change to the "Windows" directory, you would type
  - **CD Windows :** If you want to change to the "system" directory (which is a sub directory of "windows"), you would enter

- **CD Windows\System :** However if you were already deep in another directory (for example c:\ documents and settings \username\ local settings) and then wanted to move directly to windows\system then you can do that by putting in an initial backwards slash.
- **CD \Windows\System :** This tells the command to go to the root of the drive, then to the directory Windows and system.
- **Moving Back Up** : You can also move back up the tree, instead of down.
- **cd \ or cd\ :** to just return to the root of the drive (C:\)
- **cd.. :** to just go back one level (to use the earlier example, you were in c:\windows\system and you wanted to be in c:\windows).
- **dir -** This command will list all of the folders and files in the directory you are currently at.

- **driveletter: -** This command will take you to the drive letter that you specify. The drive you specify will need to be active, or have a disc in it if it a CD\DVD drive. For example, if you want to switch to your D drive, you would enter the command D:
- **exit -** This command will exit the Command Prompt, no matter your current location.

Creating And Using Batch File

- A script or text file which contains a series of commands to be executed by the command interpreter is called as batch files.
- Batch files are created to automate frequently performed tasks.
- A batch file may have any constructs that enables conditional branching and looping within the batch files.
- Batch files are simply text files, which is created using Windows notepad application. It should be created only using notepad, Other word processing applications should not be used as they stores the files by adding their own formats.
- Batch file is created by typing the command to run, in a text file and saving with the .BAT extension.

Files

- Files are logical containers of data that are always present at the leaf level of a directory tree, i.e., they are the last element of any tree.
- A file cannot be a collection of other files or directories and can only contain data or instructions.
- Each file has a set of properties associated with it, such as
  - Size
  - Date created
  - Date accessed
  - Date modified
  - Path
  - File name

Conti..

File name

- Each file is recognized by its filename. Filename has two parts; name and extension. File naming conventions must be followed while naming a file. A filename can have a maximum of 8 characters.
- Extension identifies the type of the file or the application to which a particular file belongs. It can be 3 characters long.

Size

- Size determines how much space the file is occupying on the disk.

Date created

- Data created corresponds to the date when file was created.

Date accessed

- Data accessed corresponds to the date when file was last accessed.

Date modified

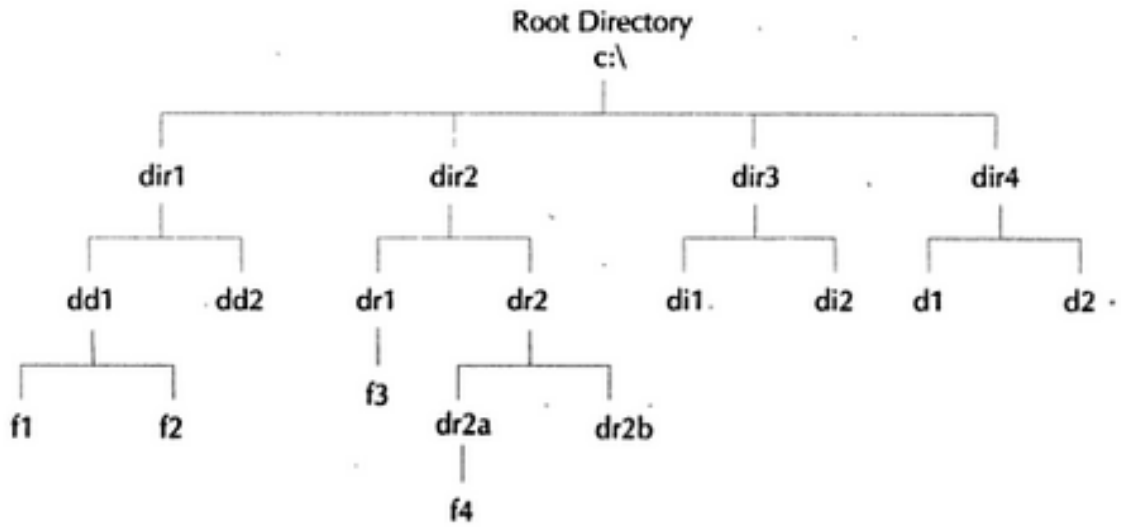
- Data modified corresponds to the date when file was last modified.

Path

- Path specifies the location of file on the disk. It comprises of a series of predecessor (parent) directories and moves up to the root.

Directories and its Structure

- Directories are a collection of files or other directories.
- Directory at the highest level is called the root directory.
- There can be only one root in a directory structure.
- Directories at lower levels are called child and those who share the same parents are called siblings.
- A directory structure can be viewed as a way to organize files on the hard disk.



Operations on a directory

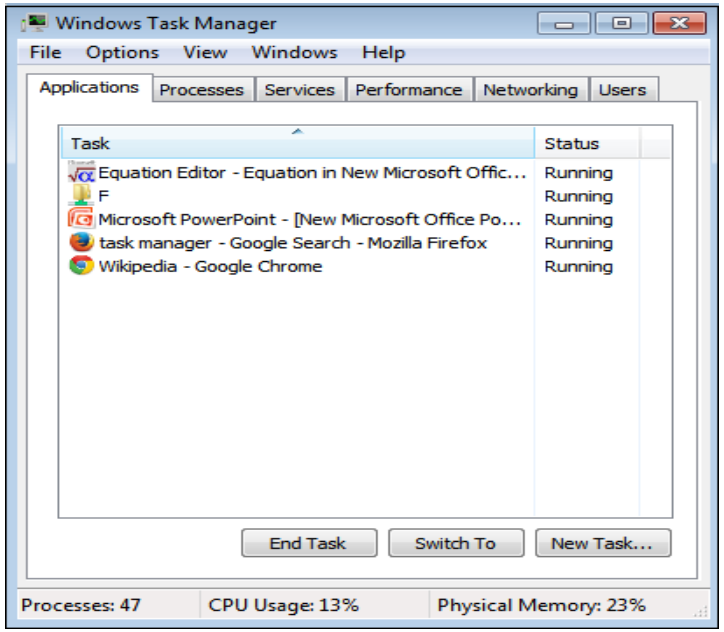
- The directory can be viewed as a symbol table that translates file names into their directory entries.
- The operations that can be performed on the directory are:
  - Search for a file
  - Create a file
  - Delete a file
  - List a directory
  - Rename a file
  - Traverse the file system

Path name

- A path name is the path from the root, through all the subdirectories, to a specified file.
- Example
- In the figure root/spell/mail/prog/obj is a path.
- Types of path names can be of two types.
  - Absolute path name.
  - Relative path name.
- **Absolute path name**
- An absolute path name begins at the root and follows a path down to the specified file giving the directory names on the path.
- **Relative path name**
- A relative path name defines a path from the current directory.
- With reference to figure, if the current directory is root/spell/mail, to reference the file list.
- Relative path name: prog/list.
- Absolute path name: root/spell/mail/prog/list.

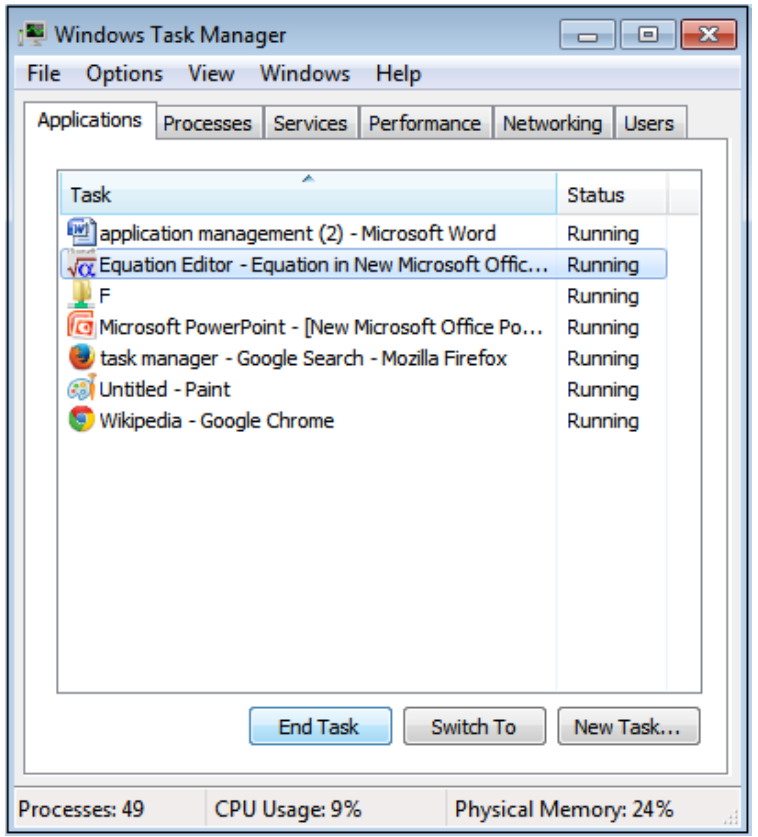
Running Applications

- The running applications can be managed using the task manager.
- Using task bar the following process can be done on the running applications.
- The task manager can be opened in following two ways;
  - Press Ctrl+Alt+Del -> Click start task manager.
  - Right click on the tack bar -> Click start task manager



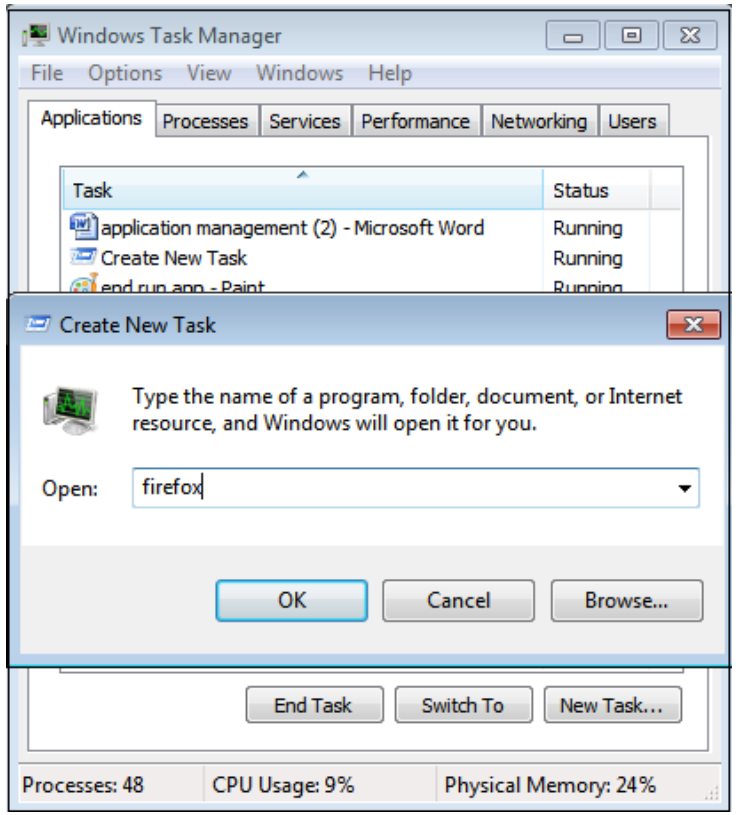
Ending a running application

- The running application can be closed using the task manager.
- It is done when the application hangs too long, The status column shows not responding, when the application is crashed or hanged.
- By that time the user can use task manager to close the application by doing the following steps;
- Open the task manager.
- Click the Applications tab.
- In the Task area, locate an application that is needed to be closed and click on it.
- Finally, Click the End Task button.



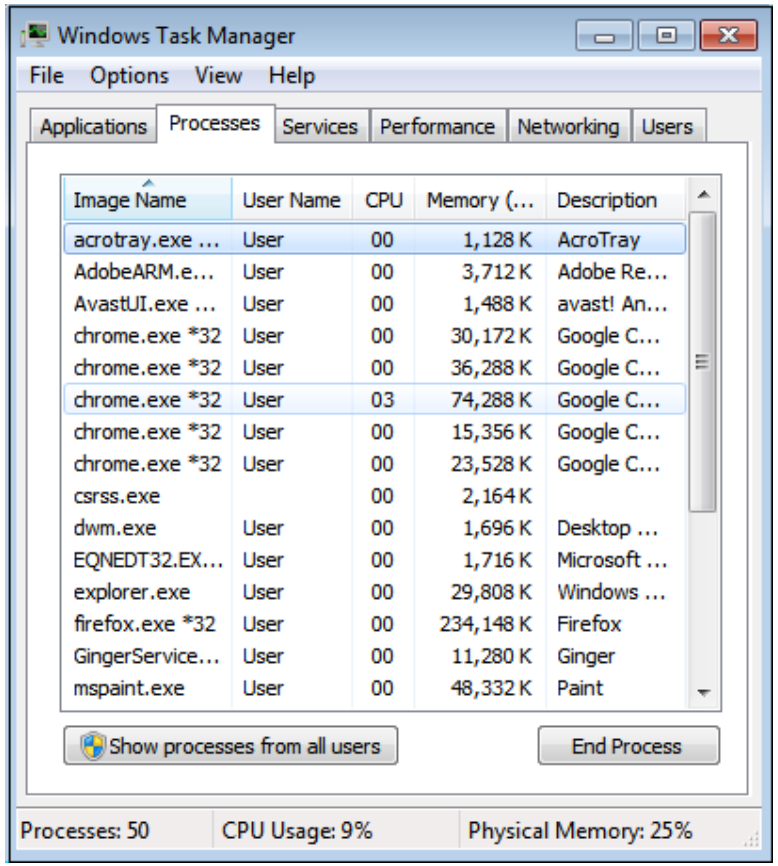
Starting an application

- The Create New Task button comes in handy in situations which helps the user to reopen an application.
- If the user know the path to the application, he can enter it.
- otherwise, the user can click the Browse button to navigate to the application name.
- To open an application follow the steps given below;
  - Open the task manager.
  - Click the Applications tab.
  - Click the New task button.
  - Create new task dialog box opens, in that enter the application name to be opened, or else use browse option to select an application to open.
  - Finally, Click the ok button.



Monitor an Application's CPU and Memory Usage

- The task manager can be user to know about the CPU and Memory usage of an running application.
- It is done as follows;
- Open the task manager.
- Click the Processes tab.
- Now it displays the list of running applications along with their CPU and Memory usage details.



Linux Overview

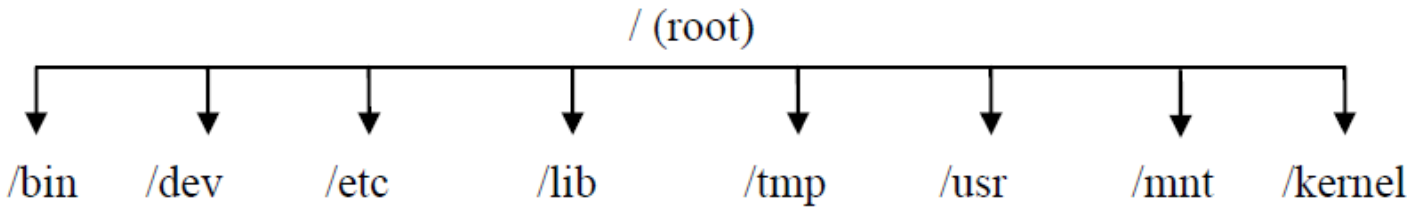
- it is a multi-user multitasking operating system first developed by Linus Benedict Torvalds in the year 1991.
- Linux is a 32 Bit operating system.
- It runs on a wide variety of platforms such as Intel, Alpha etc. It can be considered in every since as full blown implementations of UNIX, but it can’t be called as UNIX because UNIX is a registered trade mark product on own by AT & T Bells Laboratory.
- Linux is distributed as free software under a free software license called the GNU GPL (General Public License).

Basic Elements of Linux

- **Kernel: -** It is the heart of the Linux system as is loaded into the memory as run as the system starts up. It manages main memory, files and peripherals devices all the input output devices and scheduling operations.
- **Shell (Command Interpreter): -** It is a program which interprets commands given by the user. It task is to communicate user request (command) to kernel so that kernel communicate with hardware and gets it executed. The command line or contained in a file called “Shell script”. Command in “Shell script” files are interpreted by the shell.
- **File system: -** Linux treats every thing as files, even a directory treated as a file that content entries for other file. All hardware devices such as input output devices etc. are or treated or all file.

File Structure (Linux)

- The Linux file system is origination in a hierarchy which starts with the root directory. The root is a represented by a forward slash (/) under the root directory is server system directory at the home directory.



- /bin: - This directory contains executable program files (binary files).
- /dev: - This directory contains the special device files. E.g. the printer may be a file known as prn in this directory. The hard disk may be had file and its first partitions would he hda0.
- /etc: - This directory contains all the system wide configuration information as text files.
- /lib: - This directory contains the library files.

Conti..

- /tmp: -This directory contains all the temporary files, which will eventually be deleted from the system.
- /usr: - This directory contains the homes directories of the users source text for the online manual (man) pages, game and other directories.
- /kernel: -This directory contains all the kernel specific code.
- /mnt: -This is the directory where the storage devices other than hard disk (floppy disk and cd disks) are mounted.

Basic Linux Command

- **pwd:** - The command prints the absolute pathname of your current working directory.
- **mkdir sales:** - The sub-directory “sales” is created under the current directory (i.e. /usr/mini).
- **cd sales**: - note that in the above command, we have made use of the relative pathname.
- **rmdir (removing a directory):** - the command rmdir is used for deleting a directory.
- **ls (listing the contents of directories):** - to list the files and sub-directory of the current directory ls command is used.
- **cat (listing the contents of files):** - to list the contents of a file, use the command cat followed by the filename.
- **cp (copying files):** - to command cp is used to copy a file into another.
- **rm (deleting files):** - to delete or remove a file, the rm command is used.
- **mv (moving files):** - a file can be moved, using the mv command.

Thank You

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