SIT100: INTRODUCTION TO COMPUTER APPLICATIONS

Topic 4:

Operating Systems

and

Windows Basics

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Objective of this chapter

- At the end of the chapter the learner shall be able to;
  - Define an operating system.
  - Explain the process of booting a computer
  - Start a computer system and log on to windows operating system
  - Start a program using the all programs menu
  - Turn off and restart a computer
  - Retrieve files, create a folder and a shortcut to a program

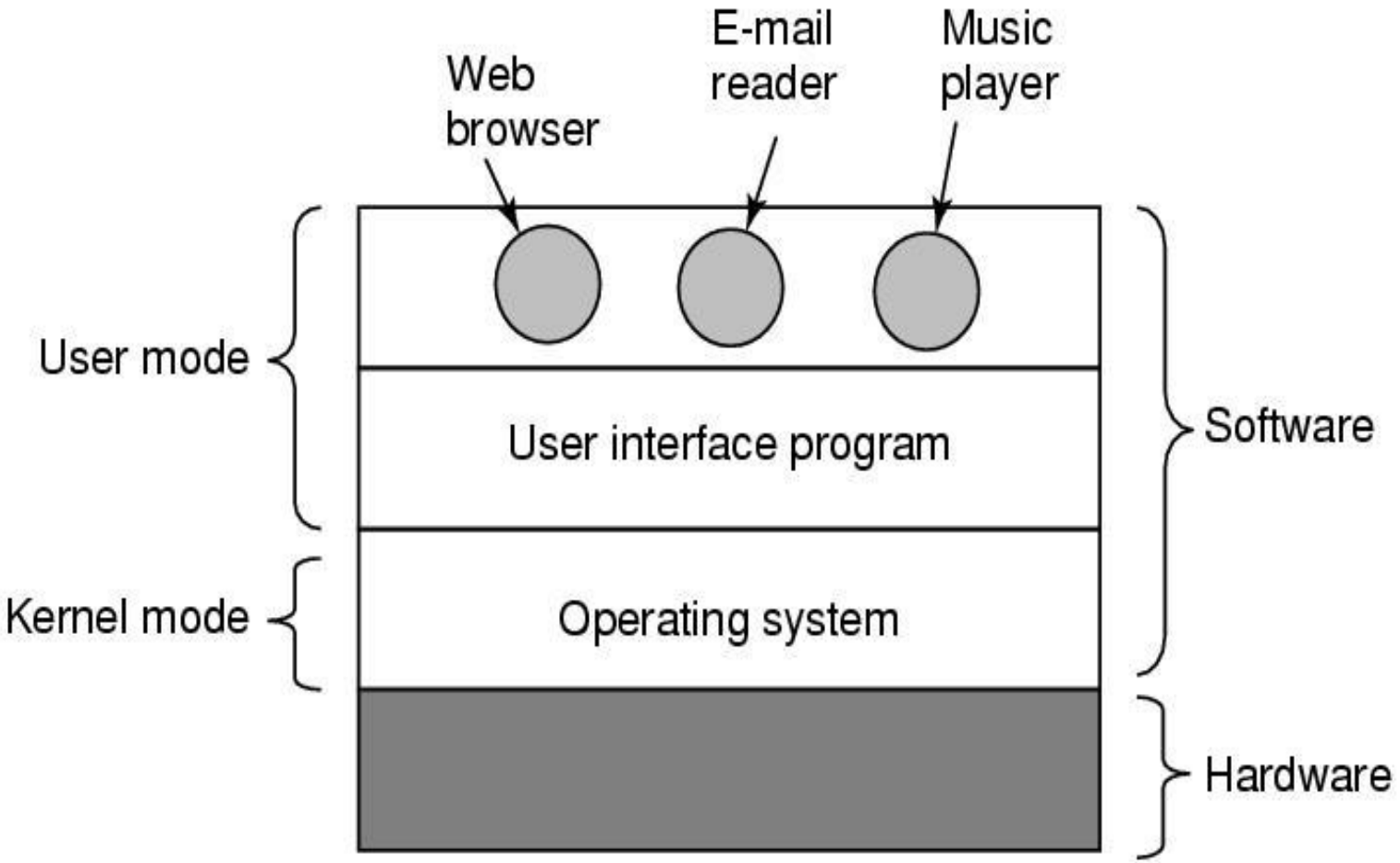
What is an Operating System

- Windows is an example of an OS and therefore we start by defining what an OS is.
- A modern computer consists of:
  - One or more processors
  - Main memory
  - Disks
  - Printers
  - Various input/output devices.
- Managing all these varied components requires a layer of software – the **Operating System (OS).**

What is an Operating System

- An Operating System is a program that acts as an intermediary/interface between a user of a computer and the computer hardware.
- It provides a user-friendly environment in which a user may easily develop and execute programs.
- So, it can be said that an OS hides the complexity of hardware from uninterested users.
- OS goals:
  - Control/execute user/application programs.
  - Make the computer system convenient to use.
  - Ease the solving of user problems.
  - Use the computer hardware in an efficient manner.

Where does the OS fit in?



Services provided by an OS

- Facilities for program creation
  - editors, compilers, linkers, debuggers, etc.
- Program execution
  - loading in memory, I/O and file initialization.
- Access to I/O and files
  - deals with the specifics of I/O and file formats.
- System access
  - resolves conflicts for resource contention.
  - protection in access to resources and data.

- The OS manages these resources and allocates them to specific programs and users.
- With the management of the OS, a programmer is rid of difficult hardware considerations.
- Functions of an OS can be summarized as:
  - Processor Management
  - Memory Management
  - File Management
  - Device Management
  - Concurrency Control

Examples of Operating Systems

- The five of the most common operating systems are **Microsoft Windows** (like Windows 10, Windows 8, Windows 7, Windows Vista, and Windows XP), **Apple macOS** (formerly OS X), Linux (and its flavors like Ubuntu), Android and Apple's iOS.
- Other **examples** include: Chrome OS and BlackBerry Tablet OS.

The Three Elements of an OS

- User Interface – The part of the OS that you interface with.
- Kernel – The core of the OS. Interacts with the BIOS (at one end), and the UI (at the other end).
- File Management System – Organizes and manages files.

Operating System Types

- Multiuser – Two or more users work with the computer at the same time
- Multitasking – Two or more processes running at the same time.
- Multithreading – Two or more parts of the same process running at the same time.

Disk Operating System (DOS)

- The first PC Operating System (1981)
- Not a Multitasking OS, only one program could run at a time
- A command-line interface, no GUI.
- Early versions of Windows sat on top of DOS and used it to communicate with the BIOS.
- Windows XP communicates directly with the BIOS, but allows commands to be entered via a command prompt.

File System

- A *file* is a collection of bytes of information treated as a single unit.
- It is given a *name* to make it easy to find and use later.
- The *file system* keeps track of where a file is actually resident on a disk.
- A disk (hard disk, floppy, optical disk) is subdivided into *directories* or *folders*.

File System (continued)

- The top level folder on a disk is known as the *root*.
- The root is generally subdivided into *subfolders*.
- Any folder or subfolder can contain files and other folders.
- The *fully-qualified filename* includes the name of the file and the *path* to the folder in which it resides:

c:\courses\061\cit141\chapter4.ppt

Windows Registered File Types

- A particular file extension can be registered and associated with a particular program.
  - .docx files are associated with MS Word
  - .xlsx files are associated with MS Excel
  - .txt files are associated with Notepad
  - .html files are associated with IE
- This is how Windows knows what to do when you double-click a file in My Computer.

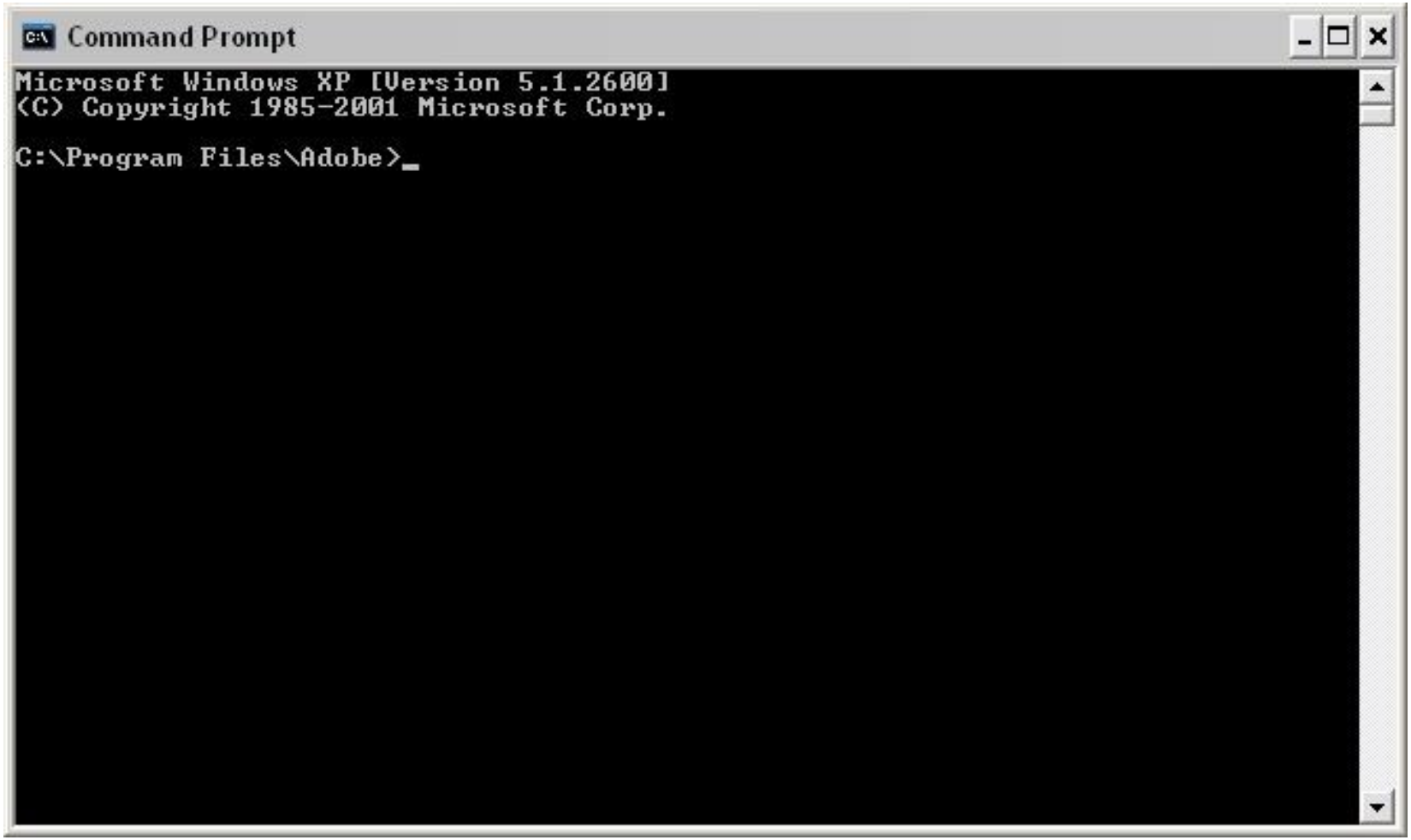
File Attributes

- Each file has four attributes which can be viewed or set.
  - Read Only – File may be viewed, copied, executed (if appropriate), but not changed. It can be deleted.
  - Hidden – File will not be displayed in normal list of files.
  - System – File is identified to belong to system, should not be messed with.
  - Archive – File is (or is not) a candidate for backup.

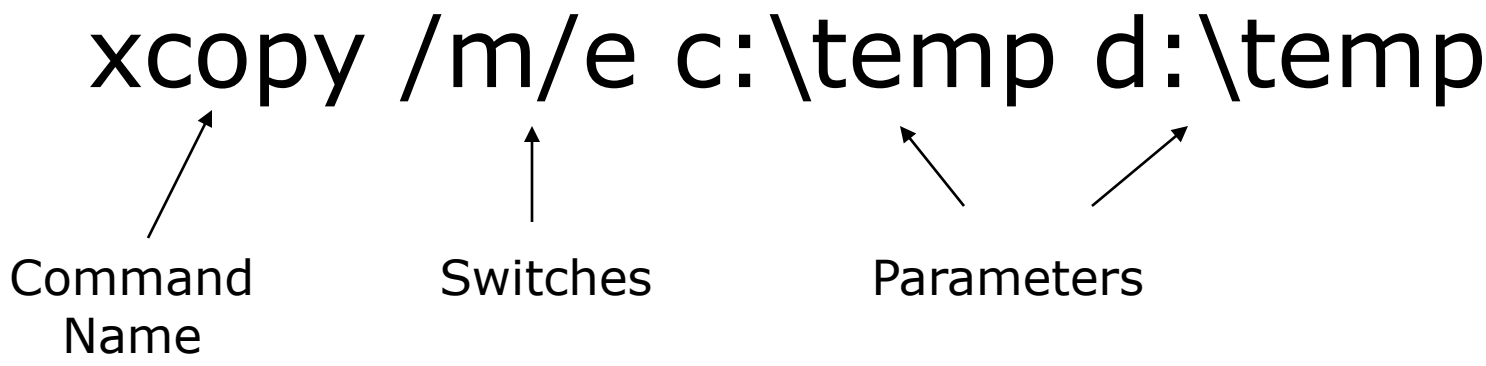
DOS Commands

- Two types – Internal and External
  - Internal commands are resident in the main kernel file: command.com (or cmd.exe)
  - External commands are separate little programs.
- It's important to learn DOS commands because you can write scripts to execute a set of commands automatically.

The Command Prompt



Three Parts of a DOS Command



DOS Wildcard Characters

- The characters ? and * can be used to affect multiple files with a single command.
  - The ? means any single character.

    copy c:\temp\notes??.doc d:\temp

    means copy any Word file that begins with the word "notes" with exactly two other characters, like "notes01.doc", "notesAB.doc", etc.

DOS Wildcard Characters

- The "*" wildcard replaces any number of characters.

  copy c:\temp\notes.* d:\temp
  (copy all files with the name "notes" and any extension.)

  copy *.doc c:\temp
  (copy all files with a "doc" extension in the current directory.)

At the Command Prompt

- A drive letter and a ":" (e.g. "f:") makes that your current drive.
- CD (Change Directory)
  - cd (with no parameters) reminds you what the current directory is.
  - cd .. moves you to the parent of the current directory (up one level).
  - cd \ moves you to the root of the current drive.
  - cd <some directory> makes that your current directory.

DOS Commands

- MD – Make directory.
- RD – Remove a directory or an entire directory tree.
- DIR – Display the contents of a directory.
- DEL (or ERASE) – Deletes one or more files.
- COPY – Places a copy of file(s) in a different folder.
- XCOPY – Flexible copy command used for copying large groups of files, commonly used for file backup.

More DOS Commands

- MOVE – Moves file(s) from one folder to another.
- REN(AME) – Renames file(s).
- ATTRIB – Displays or sets file attributes.
- FORMAT – Formats a disk.
- CHKDSK – Tests the file system on a disk, and reports status.

Even More

- DATE and TIME – Display & set the current date & time in the PC.
- TYPE – Displays the contents of a text file.

Windows operating system Boot up Process

Booting Up

In **computing**, **booting** is the process of starting a **computer**. It can be initiated by hardware such as a button press, or by a software command. After it is switched on, a **computer's** central processing unit (CPU) has no software in its main memory, so some process must load software into memory before it can be executed.

Windows operating system Boot up Process

There are essentially two forms of booting –

The warm boot and

The (cold) boot.

To perform a **cold boot** (also called a "hard **boot**") means to start up a **computer** that is turned off. It is often used in contrast to a **warm boot**, which refers to restarting a **computer** once it has been turned on. A **cold boot** is typically performed by pressing the power button on the **computer**.- re-start or reboot or reset

Boot-up Process

The Windows boot-up process comprises of the following procedures:

a. The Power-On Self Test Phase (POST)

b. BIOS ROM Phase

c. Boot Loader Phase

d. Operating System Configuration Phase

e. Security & Logon Phase

Logging On to Windows

When someone logs in or logs on, or logs into a computer system, they start using the system, usually by typing their logginig credentials name(user name) or identity code and a password.

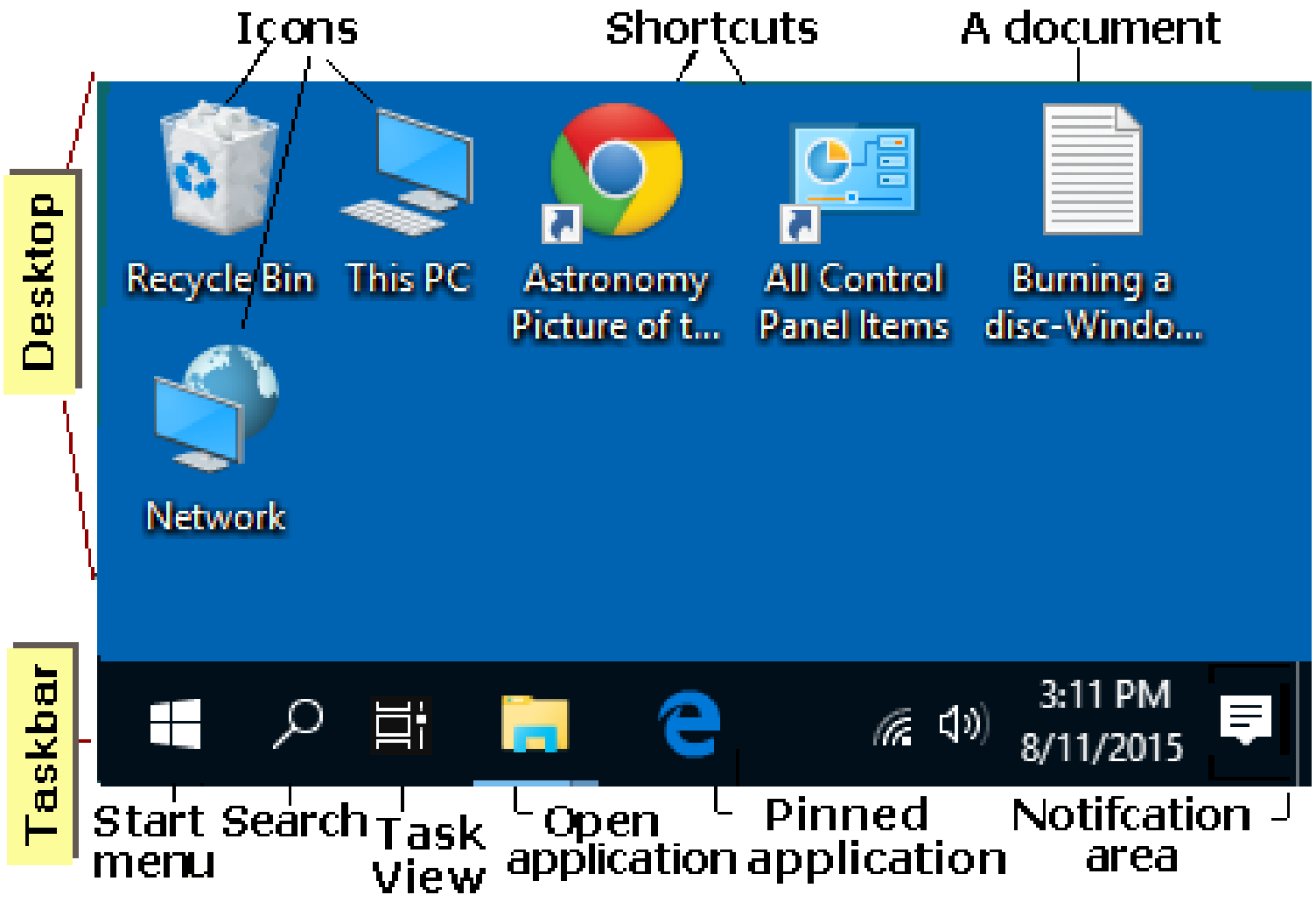
When you enter your password, Windows will display a series of dots (●●●●●●●●●●●) to protect your password from wandering eyes.

Press ENTER on the keyboard or click OK

Windows Desktop

- Desktop is your work area on which program and files icons are located.
- It’s basically a workspace where users can access all things needed to operate your computer, such as system components, applications, the Internet, etc.
- All current versions of Windows are very similar in the way the Desktop behaves but they look different. Windows can be personalized in so many ways that your own desktop probably looks quite different from the simplified Windows desktop illustration on Figure1.

Fig.1: Illustration of Windows Desktop



Windows Desktop

Features of the desktop:

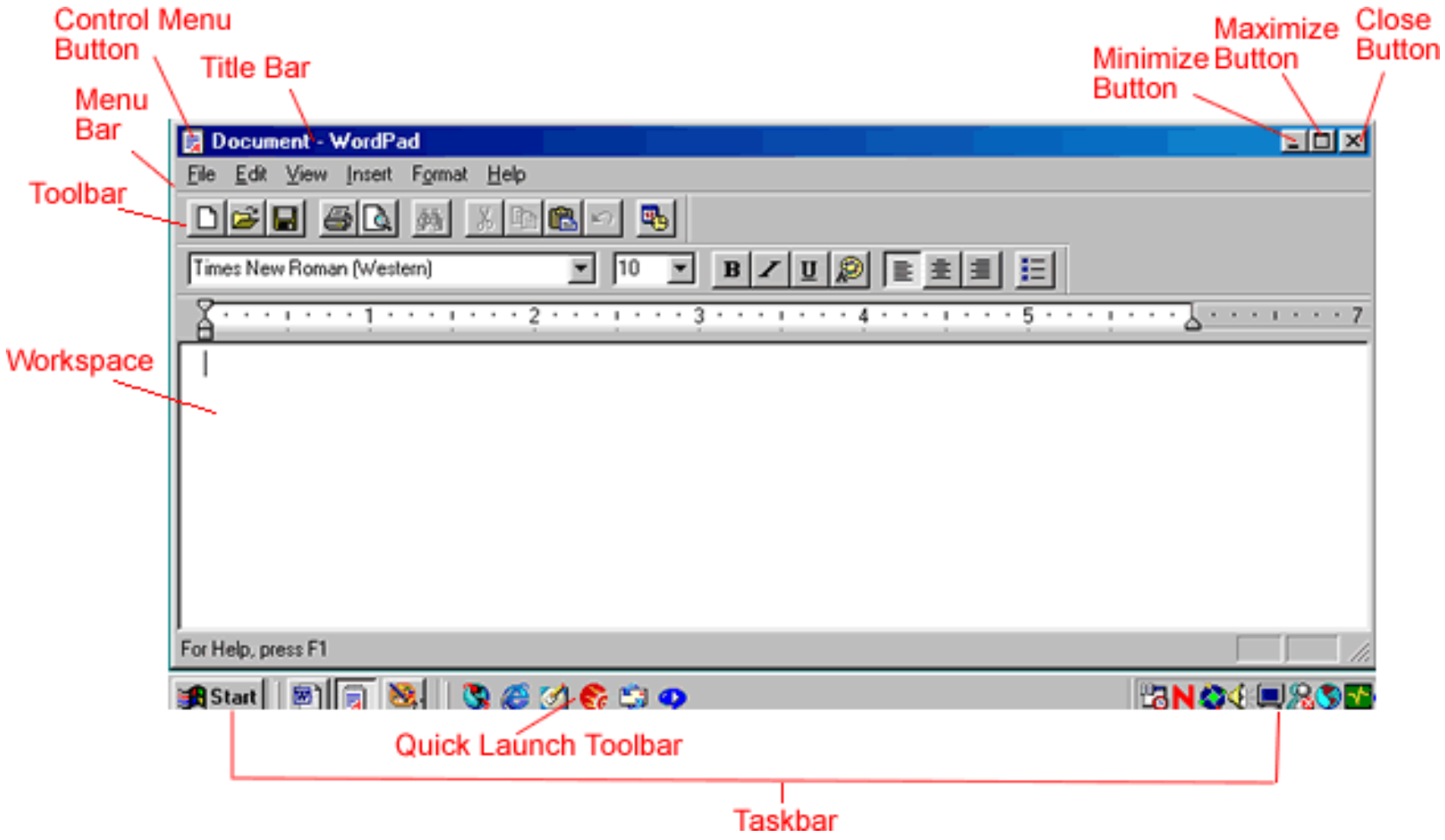
- **Start button:.** The Start button allows you to open menus and start applications.
- **Taskbar:** primarily used to switch between open windows and applications
- **Icons** (or graphical pictures): represent applications, files, folders and other parts of the operating system.
- **My Computer.** The My Computer icon provides access to the resources on your computer. You can access your drives and other peripherals by clicking on the My Computer icon. You can also access the Control Panel through My Computer.
- **Internet Explorer.** The Internet Explorer icon launches the Internet Explorer browser.
- **My network places.** If you are working on a network, this displays all of the computers on the network
- **System Tray.** The part of the taskbar that holds the clock, volume control, and icons for other utilities that runs in the background of your system.
- **Recycle Bin.** This is where you dump any files you want to delete.

Starting a Program

There are three ways to start a program:

1. Click on start then the application
2. Double click on an application icon
3. Start by double click on a document created by a particular application

Parts of a Window



Parts of a Window

1) **Close Button** Closes the window or program, removing it from the screen and the computer's memory.
2) **Minimize Button** Minimizes a program from view. The program is still ready for use and can be found in the task bar.
3) **Maximize Button** Enlarges the window so that it fills the entire screen, allowing you to see your entire workspace. Notice, when a window is maximized, this button is not shown.
4) **Restore Button** When a window is maximized, this button is shown. Clicking it will make the window smaller.
5) **Menu Bar** Controls what a program does. The menu functions listed will change from program to program, but the bar is always located at the top.
6) **Status Bar** Displays information about the program, such as instructions or special information.
7) **Title Bar** Displays the name of the program and name of the file in use.
8) **Main Window** .This is where you work within a program. If it is Microsoft Word, this is where you would type, if it is a web browser this is where the web page would be displayed.
9) **Toolbar.** Have shortcuts to the menu items

System Management: Log off, Switch Users, Restart, Lock System (win xp)

Windows enables you to log off the computer so someone else can log on without having to restart the computer

Command

- Click the Start menu
- Click the Arrow to the right of Shut Down
- Select and Click the appropriate option

a) **Switch User** allows someone else to log on to the computer. If you choose to Switch User, your applications will continue to run in the background while the new user logs on.

b**) Log Off:** If you choose Log Off, your applications will close and the systems takes you to the login window where you will be required to type in your username and password.

c) **Lock;** the system will be locked and cannot be access by anyone until you unlock it by entering your password.

d) **Restart:** the system shuts down and restarts again (re-boots)

e) **Sleep:-** System is put to sleep where it slows down its activities, power usage etc. sometimes a user password may be required to “wake” it up

f) **Hibernate:** Puts the system to an inactive state.

Windows 7 and Above

Windows 7 and Above

4.7 Working With Files and Folders

Computer folders are named memory spaces that can be used to store files.

Creating a Folder

Creating a Folder

- Go to the location you need to create a folder
- Right click there and chose new folder
- New folder appears
- Change name/ enter folder name
- Press return key

To Create a folder in side another folder

- **– Sub-folders**.

- Double Click the proposed parent folder and open it
- Select and click New folder option on the Menu Bar. The folder will appear at the bottom of your list. When it displays as a black rectangle with the words New Folder highlighted in blue, it is prompting you to give it a name.
- Type in the name of the folder created and press Enter Key

Open your Folders

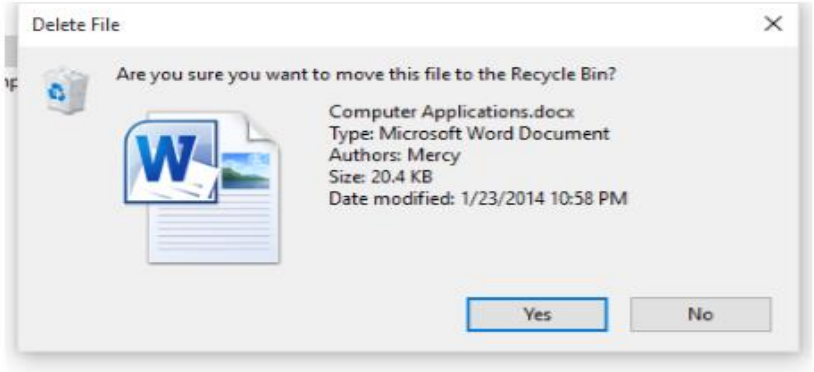
- Double click my computer and locate your file.
- Double click on the folder.
- The contents of the folder will be displayed in the open window. To get back to the previous folder, click the Back Button.

Renaming a Folder To rename an existing folder

- Renaming a Folder To rename an existing folder, move your mouse over the name and right click. A menu will appear. Close to the bottom you will see the word Rename. Click it, and the black rectangle with the word highlighted in blue will appear. Rename your folder and hit Enter

Deleting a folder

- Deleting a folder
- Right click on the folder and select delete or.
- Select the file, go to file menu and select



Once files are deleted they go to the recycle bin which is a holding or storage location for files not required. Such files are still in the hard disk. These files can be retrieved from recycle bin as long as recycle bin have not been emptied.

Copying and moving files in folders

Copying file between folders allows you to have two duplicate copies of the file in different folders.

A copy of the file is left in the Source folder while a duplicate copy is maintained in any subsequent folder it is copied to.

Source Folder

- Select the file from the Source folder
- Select and Click Organize menu
- Select and click copy

Destination folder

- Select and double click the Destination folder
- Select and click Organize menu
- Select and Click Paste

Copying and moving files in folders

By dragging Open the source and destination folders and place them next to each other

- Click on the file on source folder and hold the mouse left button down
- Drag it to the destination folder and release the button

Copying and moving files in folders

Short cuts

Short cuts are icons placed on the Desktop that allows you to quickly open a program or file

Procedure of creating shortcuts

Locate the item and right click

Select Send to menu

Select Desktop (create shortcut)

Copying and moving files in folders

Recycle Bin

- Windows provides us with a folder called recycle bin where all deleted files are stored. If you accidently delete a file you can be able to retrieve it from the recycle bin and restore it to the folder it originally was stored in. The Recycle bin icon is always place on the desktop.

Retrieving files

- Select and double click the recycle bin Icon on the Desktop to open it
- Locate the file and right click on it and select restore.