**COMPUTER MANAGEMENT**

TERMS TO NOTE

**Computer maintenance** is the practice of keeping computers in a good state of repair.

**Computer repair** is the process of identifying, troubleshooting and resolving problems and issues in a faulty computer

**Computer servicing** is the periodic routine inspection and maintenance of a computer to prevent its breakdown. It includes; updating and upgrading of software and hardware, defragmenting disks, cleaning the computer, cleaning the registry, among others

**Software upgrading** is the replacement of software with a newer and better version in order to bring the system up to date and improve its functionality

**Software updating** is the process of installing the latest up-to-date codes and fixes of software to correct software bugs and to address security weaknesses

**System fine-tuning** refers to making adjustments to the computer system in order to obtain optimum performance. It includes; adjusting BIOS settings to improve CPU speed, increasing operating system performance, defragmenting disks and closing all idle background applications

**Computer Booting**

For the computer to run it needs an OS, because the OS is the software that manages all the activities and devices attached to the computer.

However, when the computer is off, the OS is not running, and is simply stored on the hard disk inside the computer.

Therefore when a user presses the power button when the computer is off, the OS cannot get itself out of the hard drive since is it off. So how does the computer start up without the OS?

**Definition of Booting**

**Booting** is the process of loading the operating system (OS) from disk into working memory(RAM)

Booting (also known as booting up) is the initial set of operations that a computer system performs when electrical power is switched on.

The process begins when a computer that has been turned off is re-energized, and ends when the computer is ready to perform its normal operations.

**BOOT SEQUENCE**

Is the set of actions as well as the sequence of the actions that take place when the computer is started from a power off status or restarted with the power still on. The boot sequence is as described below.

When a computer is turned on, the cooler fan starts running and lines of text start scrolling on the screen. This process is called **POST** (Power on Self Test) performed by BIOS (Basic Input Output System). It checks for existence and functionality of the drives, basic input and output devices such as the keyboard, monitor & mouse

If a problem is encountered, the process is halted and an error message is displayed on the screen, otherwise, the operating system is loaded into RAM which provides a desktop for the user to interact with their computer.

**TYPES OF BOOTING**

There are basically two types of booting:

1. **Cold booting.**

This is the process of turning on a computer after it had been powered off completely.

**Steps for Cold Booting a Computer**

1. First check to ensure that all the computer parts are well connected and check whether power is on
2. Turn on the wall switch
3. Turn on the UPS/power regulator and extension cable
4. Turn on the system unit and the monitor
5. Turn on the secondary devices such as printer, speakers, etc

**2. Warm booting.**

This is the process of restarting a computer that already is powered on.

**Steps for Warm Booting a Computer**

1. Press **RESET** button on the system unit.
2. Press **CTRL+ALT+DELETE** at once but twice.
3. Click **START** button, click **SHUTDOWN**, select **RESTART** and click **OK.**

**Reasons for warm booting (Conditions under Which a Warm-Boot is Performed)**

1. When the computer freezes, i.e, stuck by refusing to respond to any command. This may be due to hardware or software failure, when RAM is over strained.
2. When new settings have been added to the computer, e.g. network settings
3. When installing a new software.
4. When installing new hardware
5. When there is need to scan the boot sector for viruses.

**SHUTTING DOWN A COMPUTER**

**Procedure for Shutting Down a Computer**

1. Ensure that all the work is properly saved
2. Close all currently running programs
3. Click on the **start** button
4. On the start **menu**, click **Turn off computer**
5. From the message box that appears, click **Turn off**. The computer now starts the shutting down process.
6. Switch off the monitor and other peripheral devices like printers, scanners if any.
7. Switch off the UPS and the wall sockets if any

**Log off:** This refers to switching to a new user, i.e. switches off the current user completely

**STEPS INVOLVED IN THE BOOT PROCESS**

1. The power supply sends a signal to the components in the system unit.
2. The processor finds the ROM chip(s) that contain the   
   BIOS (Basic input/output system).
3. The BIOS performs the POST (Power-On Self Test) which checks components such as the mouse, keyboard and adapter cards. A series of messages may display.
4. The results of the POST are compared with data in a CMOS chip
5. The BIOS looks for system files on the Hard disk (C:)
6. The system files and the kernel of the Operating System load into RAM from the Hard Disk.
7. The OS loads configuration information and displays the welcome screen.
8. On start up, the OS may verify that the person attempting to use the computer is a legitimate user through use of a password.
9. After the user logs on, the desktop and icons are displayed on the screen.
10. Finally, the operating system also executes programs in the Startup folder, which contains a list of programs that open automatically when you boot the computer.

**Further Definitions.**

**A boot loader** is a computer program that loads the main operating system or runtime environment for the computer after completion of self-tests. Examples of boot loaders include NTLDR, BOOTMGR, GNU GRUB, Syslinux, e.t.c.

A boot drive is the drive from which your personal computer boots (starts).

NB : In most cases, drive C (the hard disk) is the boot drive.

**THE DESKTOP**

**A desktop** is the large coloured area you see in the screen background, which shows the icons of the programs, folders and files that can be used, windows, and the taskbar.

You can customize the desktop by adding shortcuts to your favourite programs, documents, printers and by changing its appearance to fit your mood and personality. The desktop can contain windows, icons, and taskbar.

**AN ICON**

This is a graphical representation of an item like a: command, file, folder or program.

**Typical Icons on The Desktop**

**My Computer**:This gives access to, and information about, the disk drives, cameras, scanners and other hardware connected to your computer. It also provides access to the control panel.

**Recycle Bin**:This contains files and folders that have been deleted. You can dump unwanted documents and programs in here either by dragging and dropping them with the mouse or by selecting them and pressing the ***Delete* (*or DEL*)** key on the keyboard. You can also retrieve the contents of the recycle bin by clicking ***restore***.

**My Network Places:** This provides access to the computers and other devices connected to the network.

**Taskbar:** This is the long blue or grey strip at the bottom of the screen which contains the **start** button, quick launch bar and notification area. The taskbar lets you to quickly switch between open programs.

**CONTENTS OF THE TASKBAR**

1. **The start button**. This is where everything springs from. Click this button to display the start menu.
2. **Start menu**. It provides access to all programs and windows settings, a help and support guide, etc.
3. **Notification Area**.This section of the taskbar not only houses the time; it also contains icons for handy little programs, which run all the time your computer is on. It is also known as system tray or systray.
4. **The quick launch bar**. This provides a quick and easy way to start programs you use frequently, such as your web browser and email program. You can drag shortcuts to other programs into the quick launch bar.
5. **The task manager**. This is the part of the taskbar that shows all the programs and processes currently running, the users currently logged on, networking, and the general performance of the computer system.

**CONTENTS OF THE START MENU**

1. **Control panel**: This provides options for the user to customise the appearance and functionality of their computer, add or remove programs and set-up network connections and user accounts
2. **Search facility**: For locating documents and other items on your computer or on the internet.
3. **All programs**: Displays all the programs installed on your computer
4. **Printers and faxes**: This shows installed printers and faxes and helps you to add new ones
5. **Set program access and defaults**: Chooses default programs for certain activities, such as web browsing, or sending e-mail and specifies which programs are accessible from the start menu, desktop and other locations
6. **Others** are: my computer, my network places, my music, my pictures, my recent documents, my documents

**THE WINDOW**

**A window** is a framed work area on the screen in which the user interacts with their computer. There are two types of windows, namely:

1. **Application window**.This is a window in which an application program like MS Word opens and runs. This window is also known as a program window
2. **Document window**.This is a window found within an application window. They contain the application’s workspace. They are also known as group windows.

**PARTS OF A WINDOW**

1. **Title bar**. Displays the name of the window or program running, e.g. my computer, MS word, control panel
2. **Control menu box**. This is located in the top left corner of the window. it contains the control menu, which is activated by clicking on this box
3. **System buttons**. These are three buttons in the upper right corner of the window and they include:

* *Minimize*. Reduces the window to an icon on the taskbar. The window is hidden but not closed
* *Maximise & Restore*. The maximise option expands the window’s workspace to fill the entire desktop. The restore option restores the maximised window to its previous size and location.
* *Close*. This button terminates the entire window.

1. **Menu-bar**. This stretches across the window, just below the title bar. It contains the available menus which one can work with in that particular application.
2. **Toolbar**. A set of icons below the menu-bar, used to provide shortcuts to commands on the menu-bar.
3. **Window borders**. This is the perimeter, which defines the window’s work area.
4. **Work space**. The inside part of the window where you can type, edit, view and store the data
5. **Scroll bars**. Appear on the right and bottom borders of the window if the window contains more items than can fit in the visible work area. Scrolling the window using scroll bars brings the hidden items into view.

**DIALOG BOX CONTROLS**

This is a framed region in which the user specifies to the computer how a command should be executed. Examples of dialog boxes include the following;

* **Command buttons**. These initiate an action in progress such as cancelling or confirming a command.
* **Text boxes**. These offer a rectangular space for typing in additional information.
* **List boxes**. These offer a list of choices that can be selected from.
* **Drop down list boxes**. These offer options like the list boxes except that initially, they look like text boxes with an arrow pointing down on the right of the box. Clicking on this button opens the box to display a list of available options
* **Spin box**. This has the up and down incrementing buttons to a control.
* **Check boxes**. These offer non-exclusive options in a group of options. All check boxes can be selected or un-selected depending on what is desired.
* **Options buttons**. These offer a group of mutually exclusive options of which only one can be selected.

**SYSTEM CONFIGURATION**

PARTS OF A COMPUTER

These are the components that make-up a complete functioning computer.

**System configuration** refers to the connection and setup of hardware and software components to form a complete functioning computer.

NB The basic parts that make up a functioning personal computer are: the system unit, monitor, keyboard and mouse.

**PERIPHERAL DEVICE INTERFACES**

**A** ***peripheral device*** is any device that is connected to the computer system unit externally such as: mouse, keyboard, projector, printer, scanner, digital camera, monitor, graphics tablet, trackball, joystick, speakers. These devices are connected to the system unit using the ports.

A ***port*** is an external socket on the motherboard designed for attaching peripherals onto the system unit. Ports are described as *female* or *male* ports. The ***male ports*** consist of a pattern of pins that plug into the respective ***female ports*** with the corresponding pattern of holes. Therefore, if a port is male then the corresponding connector has to be a female. ***The types of ports are:***

1. **Serial ports**. These are serial communication physical interface through which information transfers in or out one bit at a time. They connect low transmission speed devices, e.g. mouse and keyboard.
2. **Parallel ports**. These are parallel communication physical interfaces through which information transfers in or out several bits at a time. Most printers connect to the system unit using a parallel port.
3. **Universal serial bus** (USB). A USB is an external data pathway. A USB port transmits data through a USB cable to a USB device. USB ports support ***port plugging*** and ***plug and play***. **Plug and play** is the ability to add a new hardware component to a computer & have it work automatically without physical configuration
4. **VGA (Video Graphics Array) port**. This is a female external port that allows a user to connect the system unit to the display unit, like the monitor.
5. **Audio ports**. These transfer audio data to and from the computer. They are female plug-in jacks usually two in number. These include one for audio input, e.g. microphone connection, and the other for audio output, e.g. to a speaker
6. **Personal system (PS/2) ports**. These are small circular female ports for connecting the keyboard and mouse to PCs. Communication is serial, synchronous and bi-directional.
7. **Power port**. Connects the power cable to the power supply to tap power from the source to the system unit
8. **Network port**. It is also called LAN port or Ethernet port. This is a port that facilitates network cables to connect to a computer system.

**SYSTEM SPECIFICATIONS**

This is a detailed description of the hardware and software components of a complete functioning computer. i.e. their: model name, manufacturer, appearance, performance. When determining system specifications, the important information to record include;

1. Operating system (e.g. Windows XP, Windows 7, Windows 8)
2. Processor and its speed (e.g. Pentium 4, 3.4 GHz)
3. RAM size (e.g. 512 MB), Hard disk space (e.g. 80 GB)
4. I/O ports (i.e USB, parallel, serial, SCSI, VGA and Network ports)
5. Mouse and Keyboard type, Monitor type (14”, 17”)
6. Application software

***Assignment****: Determine and interpret the specifications of a computer; assemble and disassemble a computer.*

**FILE MANAGEMENT**

**A computer file**, (or a file), is a named collection of logically related information or data stored on storage media like a disk.

**DEFINITION OF TERMINOLOGIES**

* **File name**; is an identifying name given to a computer file by the user. It should conform to limitations imposed by the operating system, as in length or restricted choice of characters.
* **File extension**; is a group of characters after a period in a file specification, indicating the type of the file.
* **A folder**; is a named storage area in a windows operating system for storing files and sub-folders
* **A sub-folder;** is a folder located inside another folder
* **A directory**; is named storage area having files & sub-directories in a non-windows operating system like MS DOS, LINUX, UNIX
* **File attributes**: this refers to the characteristics of a given file, e.g. file name, file type, file location, file size, owner, time and date created/modified, file protection (who can read, write, archive, etc)
* **A File Path**;is the route taken to a particular location on a storage device where a given file is stored. A path statement may include a drive letter, a folder and any sub-folders and finally the file name.

**e.g.** C:\Class work \ ICT \ marks.doc. This path statement means that: a file named **marks.doc** is in a sub-folder named **ICT** and in a folder named **Class work** on drive **C:\**

* **Path Delimiter**;is a symbol (/ or \) that separates one directory from another in a file path

**RULES TO CONSIDER WHEN NAMING FILES**

1. A file specification consists of two parts, that is, file name and file extension
2. A file name can have 1 to 255 characters (in windows operating system) or 1 to 8 characters (in DOS)
3. The file extension may have 1 to 4 characters
4. In a file specification, a file name is separated from the file extension by a period (.) or a full stop
5. Some special characters like; +, =, additional period, space, [, ], may not be accepted in a file specification
6. Files under the same directory/folder cannot have the same file specification

**OPERATIONS THAT CAN BE PERFORMED ON A FILE**

1. Creating a file, opening a file, closing a file, and renaming a file
2. Copying a file. To duplicate or replicate a file or folder to get as many similar copies as possible
3. Cutting (moving) file. Transferring a file from one location to another without leaving another copy behind
4. Pasting. Is the process of inserting clipboard contents in the required place
5. Deleting a file. Is the erasing of a file from the computer storage
6. Printing a file. Is the process of generating a hardcopy of a file using a printer connected to the computer
7. Editing a file. Correcting errors or adding more information to your file
8. Saving a file. The storing of a file on a storage media for future use or reference

**FILE TYPES**

A file type refers to the kind of data stored in a computer file. Most modern operating systems use the file extension to determine the file type. Below are some file extensions with their associated programs.

1. Note pad file .txt
2. Microsoft PowerPoint Presentation .ppt
3. Microsoft Word document .doc
4. Microsoft Excel work book .xls
5. Microsoft Publisher file .pub
6. Microsoft Access Database file .mdb
7. Batch file having DOS commands .BAT
8. Adobe illustrator file .ai
9. Video file .AVI/.mp4/.DAT
10. Compressed audio file .mp3/.wav/.amr
11. Portable document format file .pdf
12. Image file .gif/.jpg/.jpeg/.tif/.png/.bmp
13. System file .sys
14. Web page/document .html/.ht