**Computer software**

Software is a set of program that instructs the computer about tasks to be performed and how the task should be performed

Computer hardware requires software in order to be useful.

Computer software are broadly classified into two categories which are system software and application software.

Different sets of software can be loaded on the same hardware to perform different kind of tasks.

System software provide the basic function that are performed by the computer while application software is used by users to perform specific tasks.

**1.System Software**

Has the following purpose.

* Provide basic functionality to the computer.
* Control computer hardware.
* Acts as an interface between user, application software and computer hardware.

Without system software the computer cannot work.

Use of computer doesn’t need to be aware about functioning of the system software while using the computer. When you buy a computer, the system software would also include different devices drives, when you request to use any of this devices the corresponding device drive software interacts with that hardware devices to perform the specific request, if the appropriate device driver for any devices particular model of plotter is installed in a computer it means a computer can work.

On basis of functionality, system software may be broadly divided into two categories;

1. System software for the management of the functionality of computer.
2. System software for the development of application and other software
3. **System software for the management and functionality of computer**

* It relates t the functioning of different components of computer like processor, input devices and output devices.
* It is required for managing the operations performed by the components of the computer and the devices attached to the computer.
* It provides support for various services as requested by the application software an example, the operating system, the driver, system utility software that constitute the system software for management of computer and its resources.

1. **System software for development of application and other software**

* It provides services required for the development and execution of application and other software. We have the programming languages software e.g. Java also categorized by the system software that are required for application software development.
* We have the element of the application software development using this type of the system software.
* It provides the software tools required for the development of application software.

**System software for the management and functionality of computer**

**Operating system (OS)**

It is an intermediary between the user of the computer and the computer hardware. Links between the live ware and hardware.

It controls and coordinate the use of hardware among different application software and users. Provides an interface that is convenient for users to use and facilitate efficient operation of the computer system resources.

NB: OS runs all the time while the computer is in use.

Function of the OS

It is a large and complex software consisting of several components, each component of an OS has its own set of defined input and output.

The functions are;

1. Process management – involve controlled access to shared resources like memory, control execution of application
2. Memory management – to allocate the memory, free memory, reallocate memory to a program keep track of memory usage.
3. File management – creation and deletion of files, provide access to files, allocate space for files, keep backup for the files and secure files.
4. Device management – open close right devices drivers, communicate and control, monitor each device driver.

Other functions;

1. Protection and security – OS protects the resources of the system.
2. User interface /command prompt – provides an interface between the computer user and computer hardware, user interface is a set of command or a graphical user interface via which the user interacts with the application and the hardware.

**Types of OS**

It is divided depending on the capability of processing

1. **Single user and Single task OS**

Used by a single user for a standalone single computer for performing a single task e.g. OS for personal computers

For example, if the user is editing a document then a document can be printed in the printer simultaneously.

Single user OS are simple operating system designed to manage one task at a time. E.g. MS 005

1. **Single user and multitasking OS**

It allows execution of more than one task concurrently.

Processor time is divided among different tasks.

This OS type are also called time sharing OS

Processor switches rapidly between processes i.e. user can listen to music writing using word processor.

1. **Multiuser OS**

It is used in computer networks that allows same data and application, to be accessed by multiple user at the same time. The user can also communicate with each other E.g. windows server, windows family operating system.

1. **Real time OS**

They are designed to respond to an event within a predetermined time.

They are used to control processes

Processing is within a time constraint

OS monitors the event that affects execution of process and respond accordingly. Used to respond to queries like in medical imaging system, industrial control system, nynx operating system.

1. **Embedded OS**

Embedded in a device in the ROM.

Are specific to a device and are less resource intensive.

Used in devise like microwave, breathe control system.

**Device driver**

Device driver intermediates between the device and the software in order to use the device.

**System Utilities**

System utilities soft wares are required for maintenance of computer.

System utilities are used for supporting and enhancing programs and data in computer.

Some system utilities software come embedded with OS, others may be added later. Example, antivirus, data compression software, backup programs.

**System software for development of application and other software**

**Programming language**

Programming language consist of a set of vocabulary and grammatical rules to express the computation and tasks that the computer has to perform.

They are used to write a program that controls the behavior of computer, coding the algorithm precisely or enable human computer interface.

Each language has unique keywords and syntax for organizing program instruction

Example, Java, C++, python

They fall under the categories

1. Machine Language – a program written in machine language is a collection of binary digits or bits that the computer reads and interprets.
2. Assembly language – Allow programmer to substitute names for numbers. A program written in assembly language uses symbolic representation of machine codes needed to program a particular processor or processor family.
3. High level language – programs written in high level language is written in English like language. such language hides detail of CPU operation and are easily portable across computer.

**2.Application software**

It is a software a user uses for accomplishing specific tasks

It may be single program or a set of programs

Example of application software

1. Word processing software – for writing letters, reports etc. e.g. MS word
2. Image processing software – assist in drawing and manipulating graphics e.g. adobe Photoshop
3. Accounting software – Assists in accounting information, salary (tally software)
4. Spreadsheet software – used for creating budget tables e.g MS Excel
5. Presentation software – make presentation, slide shows e.g. MS PowerPoint