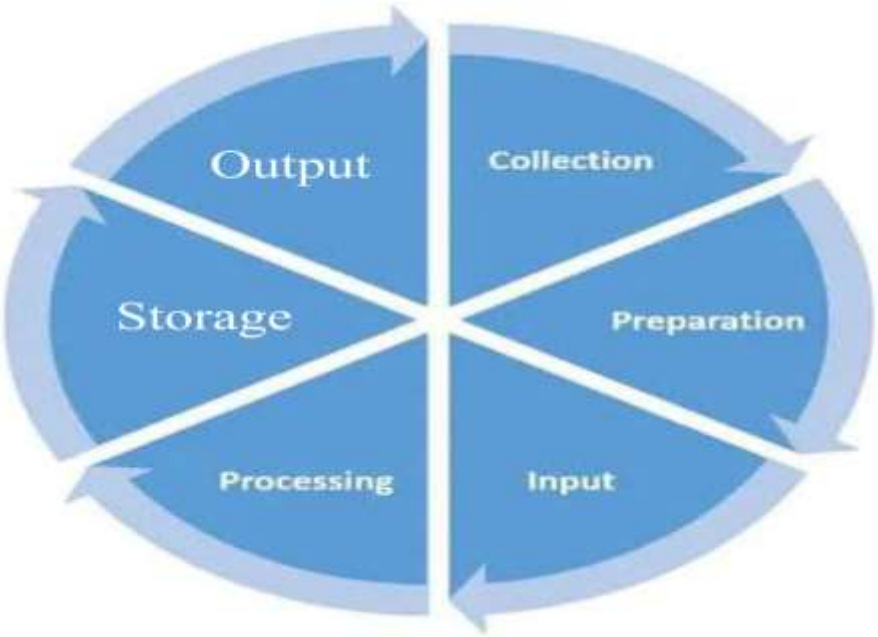
DATA AND INFORMATION

- **DATA**: Data refers to any sequence of one or more symbols.
- Data requires interpretation to become meaningful information.
- **INFORMATION**: Information refers to processed data

DATA PROCESSING CYCLE

- Data processing cycle refers to a set of operations used to transform data into useful information
- The intent of this processing is to create actionable information that can be used to enhance a business.



STAGES OF DATA PROCESSING

- There are six (6) stages of data processing;
- **Data collection**
- **Data preparation**
- **Data input**
- **Data processing**
- **Data storage**
- **Out put**

DATA COLLECTION AND PREPARATION

- **Data collection**: Data is pulled from available sources like data lakes, fields, research stations, historical sites, data warehouses and others.

- **Data preparation**: This often referred to as "pre-processing", this is where raw data is cleaned up and organized in order to eliminate redundant, incomplete and incorrect data.

3. DATA INPUT

- This refers to the entering of data into the computer. Data can be text typed in a word processing document, keywords entered in a search engine's search and others.
- Data entry into the computer is done with the help of **INPUT DEVICES.**
- These include;
- Mouse
- Keyboards
- Scanners
- Light pens
- Digital cameras and others

4.DATA PROCESSING

- This refers to the manipulation of data by the computer into standard organized information.
- It includes conversion of raw data into machine readable languages, flow of data through the Central processing unit, memory and output devices.
- The main processing device is know as the **Central Processing Unit** (CPU) known as the "computer".

5. DATA STORAGE

- This refers to the storing of processed data onto storage devices. These are classified into two (2) categories;

- **(a) Primary storage devices.** These are volatile storage devices that holds data temporarily when a computer is running.
- These include;

(1) **Random Access Memory (RAM)**

(2) **Read Only Memory (ROM**

- **(b) Secondary storage devices;** These are non volatile storage devices that stores data permanently and they operate alongside the computer's primary memory.
- They store any amount of data from megabytes, gigabytes, terabytes to petabytes. These are classified as follows;
- **Solid state storage devices** such as USB flash disks and memory cards.
- **Optical storage devices** such CDs, DVDs, Floppy disks and Blue ray discs.
- **Magnetic storage devices** such as hard disk drives.

6.DATA OUTPUT

- In this stage processed data can be produced in form of a soft copy or a hard copy.
- **Soft copy** refers to the electronic intangible output of a computer. This main output devices of softcopies are; Monitors and Projectors.
- **Hard copy** refers to the tangible output of a computer.
- Hard copies are normally "touchable printouts of printers, plotters and microfiche.

- These hardcopies can be papers, invitation cards, newspapers, banners and others.

Information systems

An information system is the integration information and communication technology (ICT) tools that an organization uses to support business processes. It can also refer to the way in which people interact with this technology to move business activities.

- **There are five components of an information system;**

- **Computer hardware**; These are referred to as the electronic tangible components of a computer, in simple terms know as "physical technology". Hardware can be as small as a smart phone that fits in a pocket or as large as a supercomputer that fills a building.

- **Computer software**; The hardware needs to know what to do, and that is the role of software. Software can be divided into two types: system software and application software.

- System software are a set of instructions that controls the way the computer operates. This can be a windows operating system for a computer or can be as small as an Android operating system of a smart phone.

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- Application software are programs designed to solve users problems for example; applications used for creating a document, or designing a web page.

- **Telecommunications**
- This component connects the hardware together to form a network. Connections can be through wires, such as Ethernet cables or fibre optics, or wireless, such as through WI-FI. A network can be designed to tie together computers in a specific area, such as an office or a school, through a local area network (LAN). If computers are more dispersed, the network is called a wide area network (WAN). The internet itself can be considered a network of networks.

- **Database systems**

- A database is an organized collection of data, generally stored and accessed electronically from a computer system. Where databases are more complex they are often developed using formal design and modeling techniques.

- **Human resources and procedures**

- These are the instructions fed into the computer by users, this interaction between humans and computers is assisted by machine code languages where instructions are executed into codes that can be understood by the computer.

GIS AND REMOTE SENSING

- A geographic information system (*GIS*) is a framework for gathering, managing, and analyzing data. Rooted in the science of geography, *GIS* integrates many types of data. It analyzes spatial location and organizes layers of information into visualizations using maps and 3D scenes.

- **Remote sensing** is the acquisition of information about an object or phenomenon without making physical contact with the object and thus in contrast to on-site observation, especially the Earth.