Information Technology for CSEC
Chapter 1
CHAPTER 1
INTRODUCTION TO COMPUTER SYSTEMS

OBJECTIVES
1. Describe the basic computer system
2. Identify and explain the hardware components of a computer system
3. Identify different types of computers
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INTRODUCTION

COMPUTER: A computer is a device that accepts information (input in the form of digitalized data) and manipulates it for some result based on a program or sequence of instructions on how the data is to be processed. This information can then be displayed or stored for future use.

Data: This collection of raw unprocessed facts, figures and symbols. Computer processes data to create Information hence Information is data that is organized, meaningful and useful.

Hardware: this is the physical components contained in a computer system. For example; printers, monitor and speaker.

Peripheral Device: any hardware device connected to and controlled by the central processing unit. Examples of peripherals are modems, disk drives, printers, scanners and keyboard.

Software: also called a program is a series of instructions that tells the hardware how to perform tasks. Without software most hardware are useless.

Backing Store: Storage external to the computer used for large quantities of data or large programs. Backing store is also known as secondary store, auxiliary store or external store.

User: a user is someone who communicates with the computer or uses information it generates.
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- Computer: is an electronic device that automatically accepts data or input, processes the data to produce information (using stored programs) and creates output for users or stores the information for future use.
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- **Data** is raw facts that may not make much sense to you. After data has been processed, sorted or organized, it becomes usable **information**.

- 4 Functions of PC:
  1. Input
  2. Processing
  3. Storage
  4. Output
How a computer operates
AKA (Data Flow Cycle of a PC)
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- Computer 4 major functions:
  - **Input**: this is where data is entered into a PC through a input device. (keyboard)
  - **Processing**: data is processed into information using the processing unit, which is made up of the Central Processing Unit (CPU) and main memory.
  - **Storage**: Information can be kept for an indefinite period of time using a storage device. (hard drive)
  - **Output**: Information is given to the user through an output device. (monitor)
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- COMMON EXAMPLE
- MAESTRO SMS

1. The teacher takes register to see who is not in today and entered into the school database by the registrar (INPUT).
2. The data is PROCESSED by the school database to create an attendance record of each pupil and STORED on the hard drive of the school server computer.
3. An OUTPUT is printed or can be viewed on his monitor by the Principal for any student who has been absent.
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- Hardware and Software

**Hardware**: The physical parts that make up a computer are called hardware. (mouse, keyboard, system unit, monitor)

**Software**: Refers to the programs that make the computer function and able to carry out the different tasks (MS-Word, Excel, Internet Explorer)
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- **Computer Hardware**
- 4 types of components of hardware
  1. **CPU**: Arithmetic Logic Unit (ALU) + Control Unit (CU)
  2. **Main Memory**: immediate access storage or primary storage
  3. **Secondary Storage**: backup storage or auxiliary storage.
  4. **Input/Output (I/O) devices**
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1. CPU (CU + ALU)
   - The CPU (processor) processes all the data entered into the computer. It ensures that the components of the computer communicate with each other.
   - Control Unit described as the boss of the computer
     I. It directs operations in the processor
     II. It controls communication and coordination between I/O devices
     III. It reads and interprets instructions
     IV. It determines the sequence for processing the data.
To perform the functions, the CU needs location for temporary storage of instructions and data called register.

**Arithmetic Logic Unit (ALU)** performs data manipulation, including mathematical and logical operations.

**CU vs. ALU**

CU does not perform any data manipulation; it sends data to be manipulated in the ALU.

**CPU** processes data at high frequency. The frequency/speed is measured in hertz (Hz)
Figure 7: The flow of signals and data between the CPU, main memory and other devices.

Relationships between CU and ALU, and other devices.
- Control signals and program instructions
- Data flows

At start of a program, instructions are also read into memory from secondary storage devices.
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2. Main Memory
   - Main memory is used to store data that will be processed by the CPU.
   - 2 types of main memory
     i. RAM (Random Access Memory) stores data temporarily while the computer is being used.
     ii. ROM (Read Only Memory) stores data permanently such as BIOS data to start up a PC.
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3. Secondary Storage
   Secondary storage is long term storage that allows information to be saved even when the PC has been shutdown.

4. Input/Output (I/O) devices
   Input device is any device that takes data into the computer. Output device is any device that displays/audio or prints out data.
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- 4 types of computer
  1. Supercomputer
  2. Mainframe
  3. Microcomputer
  4. Microprocessor

Supercomputer: are the most powerful, expensive computers on the planet because they carry out very complex calculations at extremely high speed. (US Department of Defense, N.A.S.A., National Hurricane Center)
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2. **Mainframe**: They are often called servers. They are faster than home computers and can do complex calculations that can host hundreds of users at a time. (SPHS Matrix Server, Facebook Server)
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3. **Microcomputer**: They are often called PC, or home computer is most common computers used at work or at school. They also include desktops, laptops, IPad
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4. **Microprocessor**: They are the smallest kind of computer. A small chip performs all the functions of a CPU. They are not very powerful or fast, but are useful for small devices that perform simple functions.
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ASSIGNMENT 1

1. What is the difference between input devices and output devices?
2. Draw a diagram that shows the basic function of a computer.
3. What is the basic difference between main memory and secondary storage?
4. What are two parts that make up a CPU?
5. List the functions of the CU.
6. What is the difference between data and information?
7. What is the difference between the CU and the ALU?