Fundamental of Computer Hardware

BBA 510113: Computer and Information Technology

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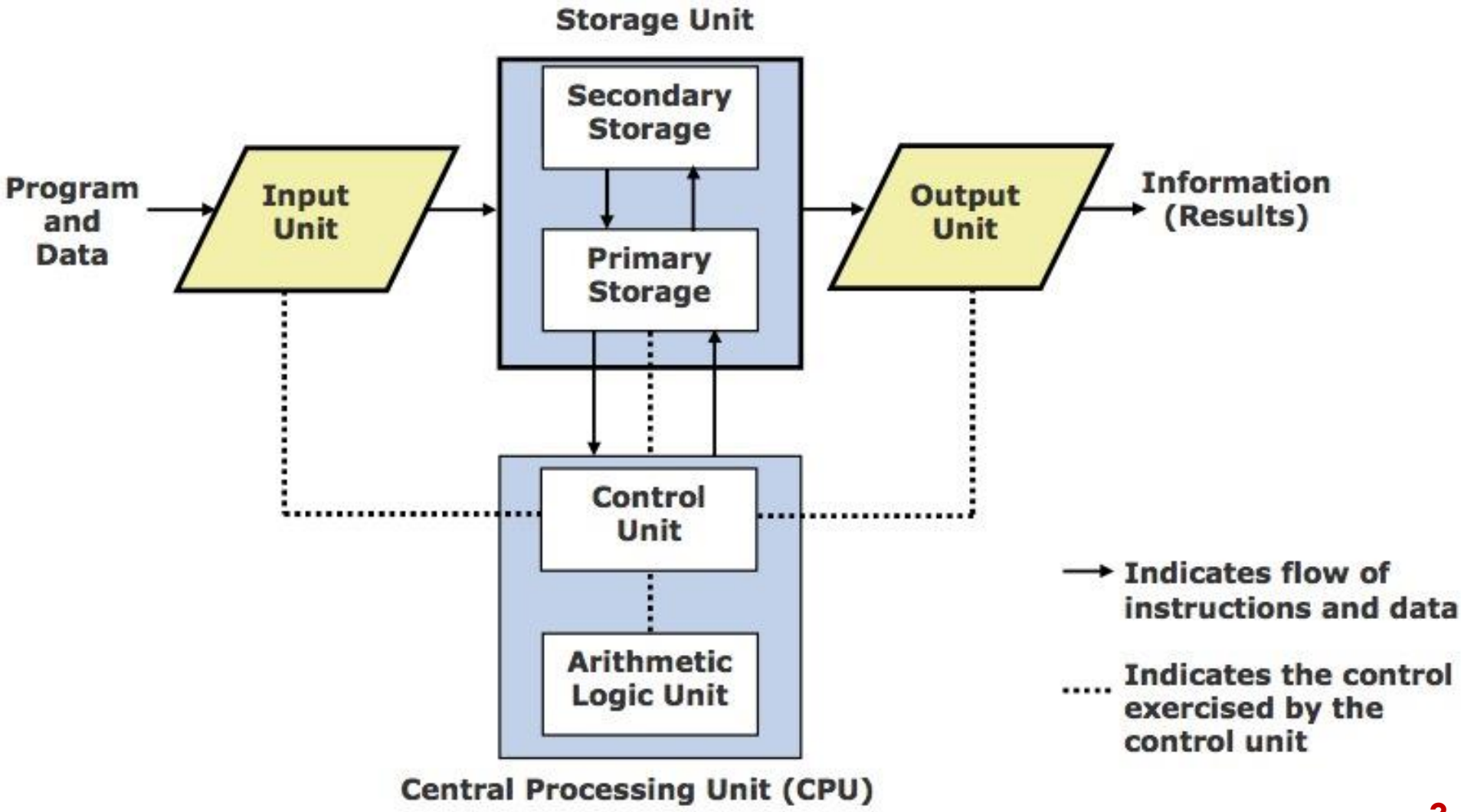
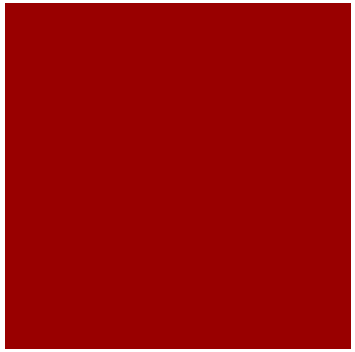
The Five Basic Operations of a Computer System

- **Inputting**. The process of entering data and instructions into the computer system
- **Storing**. Saving data and instructions to make them readily available for initial or additional processing whenever required
- **Processing**. Performing arithmetic operations (add, subtract, multiply, divide, etc.) or logical operations (comparisons like equal to, less than, greater than, etc.) on data to convert them into useful information
- **Outputting**. The process of producing useful information or results for the user such as a printed report or visual display
- **Controlling**. Directing the manner and sequence in which all of the above operations are performed

Basic Organization of a Computer System



Input Unit



An input unit of a computer system performs the following functions:

① It accepts (or reads) instructions and data from outside world

② It converts these instructions and data in computer acceptable form

③ It supplies the converted instructions and data to the computer system for further processing

Output Unit

An output unit of a computer system performs the following functions:

① It accepts the results produced by the computer, which are in coded form and hence, cannot be easily understood by us

② It converts these coded results to human acceptable (readable) form

③ It supplies the converted results to outside world

Storage Unit

- **The storage unit of a computer system holds (or stores) the following :**
  - ① Data and instructions required for processing (received from input devices)
  - ② Intermediate results of processing
  - ③ Final results of processing, before they are released to an output device

Two Types of Storage

① Primary storage

- Used to hold running program instructions
- Used to hold data, intermediate results, and results of ongoing processing of job(s)
- Fast in operation
- Small Capacity
- Expensive
- Volatile (looses data on power dissipation)

Two Types of Storage

②Secondary storage

- Used to hold stored program instructions
- Used to hold data and information of stored jobs
- Slower than primary storage
- Large Capacity
- Lot cheaper than primary storage
- Retains data even without power

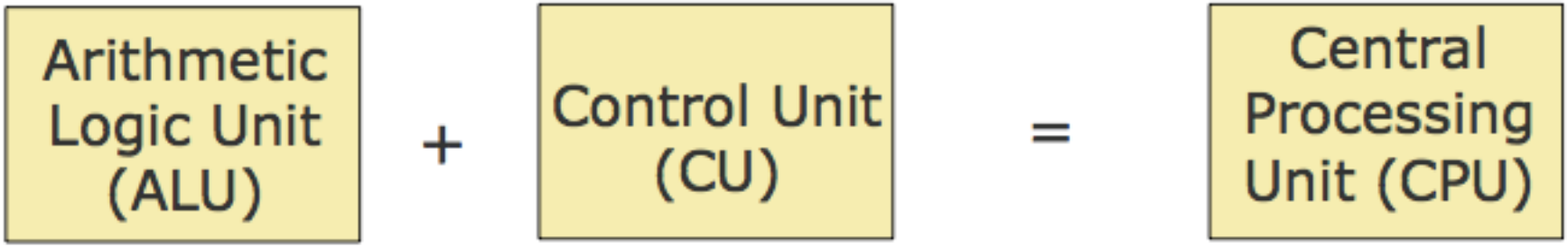
Arithmetic Logic Unit (ALU)

- Arithmetic Logic Unit of a computer system is the place where the actual executions of instructions takes place during processing operation

Control Unit (CU)

- Control Unit of a computer system manages and coordinates the operations of all other components of the computer system
- The control unit is a component of a computer's central processing unit (CPU) that directs operation of the processor. It controls communication and co-ordination between input/output devices. It reads and interprets instructions and determines the sequence for processing the data.
- It directs the operation of the other units by providing timing and control signals.
- All computer resources are managed by the CU (Control Unit).
- It directs the flow of data between the Central Processing Unit (CPU) and the other devices.

Central Processing Unit (CPU)



- It is the brain of a computer system
- It is responsible for controlling the operations of all other units of a computer system

The System Concept

- **A system has following three characteristics:**
  ① A system has more than one element
  ② All elements of a system are logically related
  ③ All elements of a system are controlled in a manner to achieve the system goal

- A computer is a system as it comprises of integrated components (input unit, output unit, storage unit, and CPU) that work together to perform the steps called for in the executing program

Key Words/Phrases

- Arithmetic Logic Unit (ALU)
- Output interface
- Auxiliary storage
- Output unit
- Central Processing Unit (CPU)
- Outputting
- Computer system
- Primate storage
- Control Unit (CU)
- Processing
- Controlling
- Secondary storage
- Input interface
- Storage unit
- Input unit
- Storing
- Inputting
- System
- Main memory