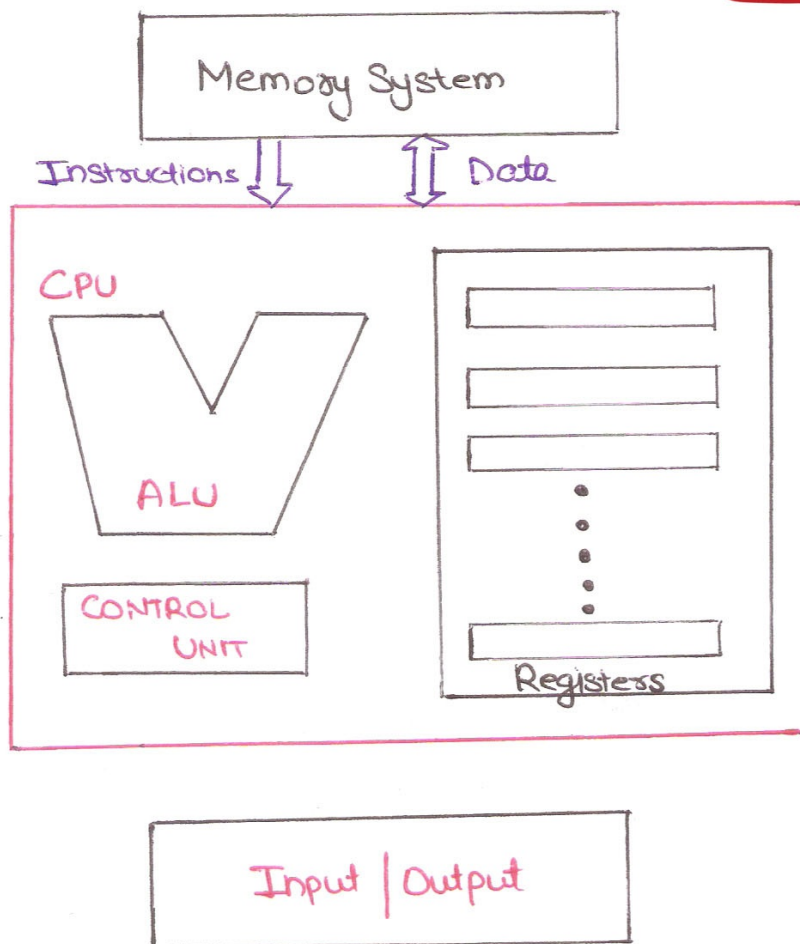# Structured Organization — CPU

## Role of CPU in Structured Organization

→ A typical CPU has three major Components

a.) Register set,    b.) Arithmetic Logic unit (ALU)

and (3) Control unit (CU)

Central processing unit main Components and interactions with memory and I/o.

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\* Register set differ from one Computer Architecture to another

Registers are mainly Combination of <u>General-Purpose-Register</u> and <u>Special-Purpose Registers</u>.

General purpose Register :- Used for any purpose

Special purpose Registers :- for special purpose in Cpu. like

<u>PC- program Counter</u> is used to hold the address of the instruction to be executed next.

<u>IR- Instruction Register</u> :- hold the instruction that is Currently executed.

<u>ALU</u> :- The ALU provides the Circuitry needed to perform the arithematic, logical and shift operations demanded of instruction set.

<u>CU</u> : Control unit is responsible for fetching the instruction to be executed from the main memory and decoding and then executing it.

<u>Instruction Execution Cycle :-</u>

→ The next instruction to be executed, whose address is obtained from the PC, is fetched from the memory and stored in the IR.

→ The instruction is decoded.

→ Operands are fetched from the memory and stored in CPU registers, if needed.

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→ The instruction is executed.

→ Results are transferred from <u>CPU registers</u> to the <u>memory</u>, if needed.

The actions of the CPU during an execution cycle are defined by <u>micro-orders</u> issued by the control unit.

Micro-orders are individual control signals sent over dedicated control lines.

→ <u>Let us Assume</u>:- We want to execute an instruction that moves the contents of <u>Register X</u> to <u>Register Y</u>; and both these are connected to Data bus D.

→ Then the control unit will issue a control signal to tell Register X to place its contents on the Data Bus D.

→ Hardwired or micro programming control is used to determine the activation of control signals.

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