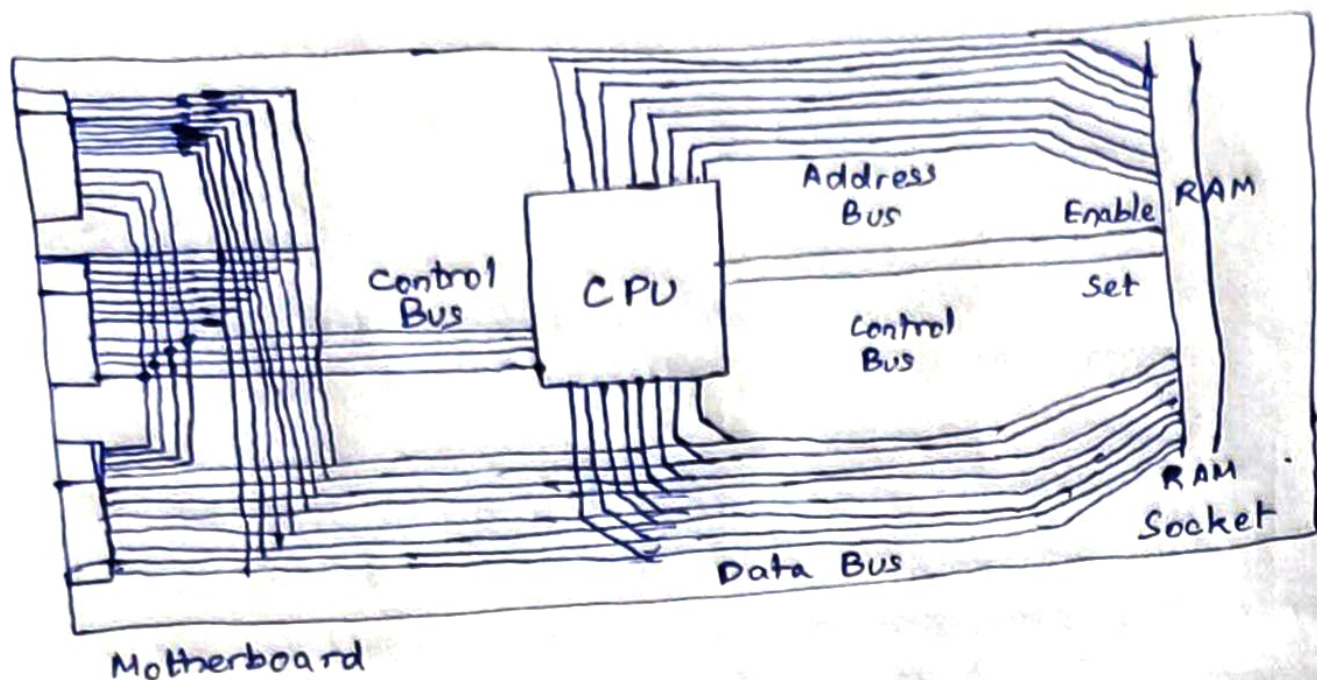# C O A

NOTES

Owner : Annamalai. A.

Start : 25 Sep 2025

End : 25 Sep 2025

Scott C.P.U.

Motherboard

→ The motherboard allows the components of a computer to interact with each other, much like our nervous system, which transfers messages from and to the spinal cord and brain.

→ RAM : Random Access Memory
Contains all the data that is being processed by the CPU. The CPU can read or write data here.

→ CPU : Central Processing Unit
Responsible for processing data by decoding instructions. It is also the center of the motherboard, where every other components are connected.

Q. How CPU connects with RAM?

→ The RAM consists of a list of addresses, and each address is a piece of data.

→ The CPU usually requests and accesses the data in order, However, it can also access it randomly if insisted.

→ Read : The CPU sends an address using the address bus, turns on the enable wire in the control bus and the data is retrieved by the data bus.

CPU → RAM	CPU → RAM	RAM → CPU
Address	Enable	Data
A.B.	C.B.	D.B

→ write : The CPU sends the address via the address bus,
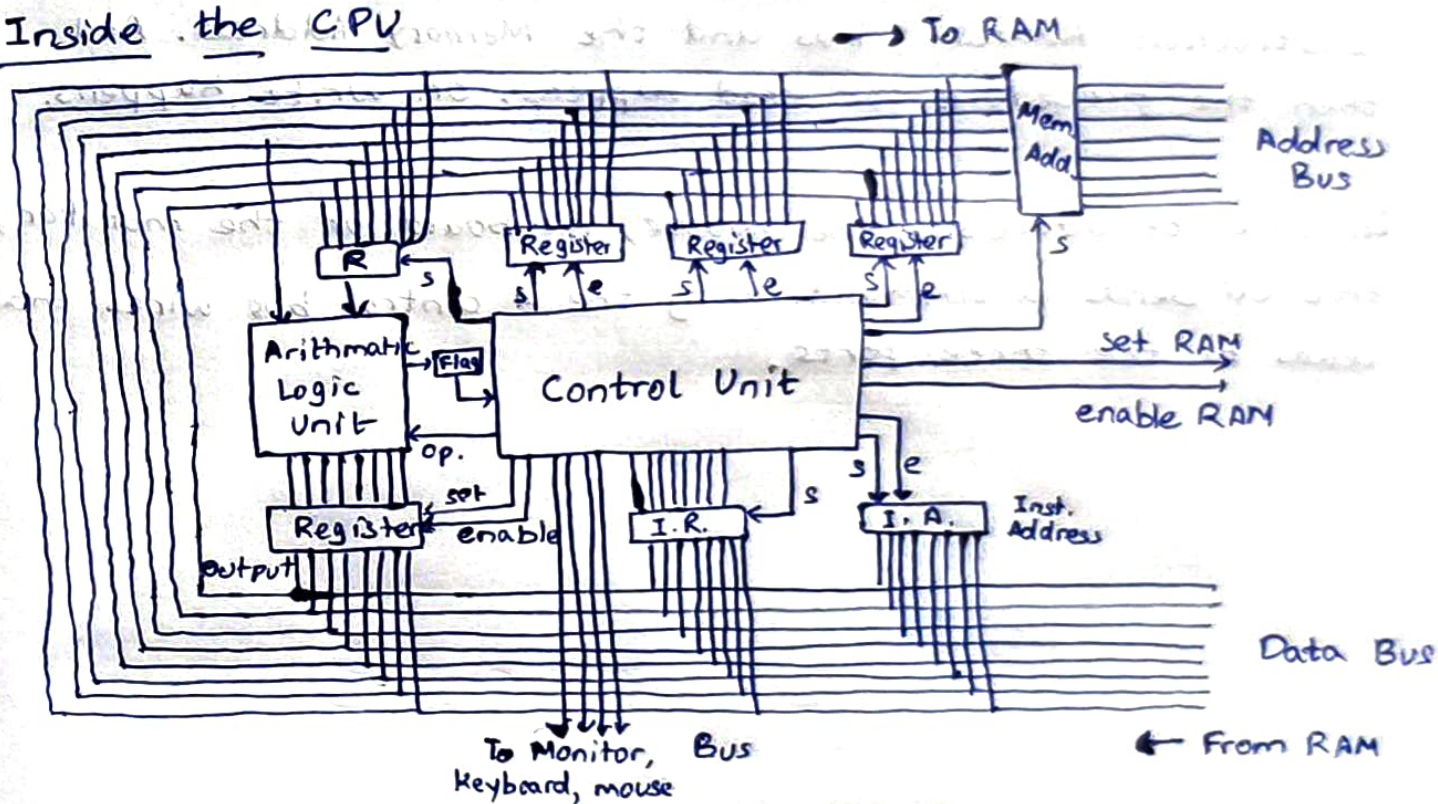   it then sends data via the data bus and turns
   on the enable wire.

CPU → RAM	CPU → RAM	CPU → RAM
Address	→ Data	→ Set
A.B.	D.B.	C.B.

→ Data can be in the form of instructions, numbers, letters,
   and even addresses.

Instruction Set

→ LOAD   → COMPARE   → OUT put

→ ADD   → JUMP IF condition   → IN put

→ STORE   → JUMP

Inside the CPU   → To RAM

Q. How does the CPU process an instruction?

1. The Instruction Register stores the instruction from RAM, as
   the CU turns on the set wire.

2. If the instruction is an operation, it sends it to the ALU and
   and an output is expected. If it is compare, the ALU is
   expected to tell the CU how to operands are compared.

3. In case of an operation, the CU tells the ALU which operation
   to do using the wires for passing operations. The ALU then
   stores a result on the register, as the CU turns on the.
   set wire.
   The data is stored in the registers via the bus.

Note : Registers are temparory storage pieces that stores
data while the CPU is processing an instruction.
These components are present in the CPU itself.

4. For the ALU to perform an operation or compare, it needs
operands, which are directly passed to the ALU via the bus.

5. If the result generated by ALU is required for the next
instruction, the temparory register above the ALU stores it
as the CU turns on the ~~enat~~ set wire. This is because the bus
can carry only one number at a time.

6. In case of compare, the ALU returns the type of comparison
to the CU using the flag register, which stores the compare
status.

7. Once the CU finishes an instruction, it requests the next
instruction using the ~~Information Register~~
Instruction Address & bus and the Memory Address. And
then the procedure for read ~~happens~~. or write happens.

8. In case of addressing the mouse, keyboard or the monitor,
the CU sends a command using the 4 control bus wires that
leads to the three ports.