# 1. Computer Architecture & Organization

What to do →

Computer Architecture & Organisation.

Computer Architecture describes what the computer does and it deals with high level design issues (that are system or computer issues)

- This computer Architecture is functional behaviour. this ~~Compt~~ for desigining of computer we will go through first architecture this computer architecture involves with different insturction sets, addressing modes and data types

How to do? - Computer organisation -

In computer organization discribes How the computer do it.

- Computer organisation deals with the low level design issues (i.e logic circuits).
- Organisation is structural relationship (The computer having different components)
- For designing of computer organization will be second part.
- Computer organization involves different circuit design signals, A.L.U, C.P.U;.
- Architecture is those Attributes which is visible to the programmer i.e. Insturction sets, No. of bits, No. of Data types, Addressing techinques,
- Organization is how the features are implimente
- for the architecture we consider what to do & for the organization how to do.

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# Unit I - Introduction

- Computer Architecture.
- Computer Organization.
- Structure and Function.
- Computer functions.
- Functional view.

mpq Difference between computer Architecture and Organization.

→

| Computer Architecture | Computer Organization. |
|---|---|
| 1) Computer Architecture is a Functional behaviour of computer system. | 1) Computer Organization deals with structural relationship. |
| 2) Architecture describes what the computer does. | 2) Organization describes how it does. |
| 3) For designing a computer its architecture is fixed first. | 3) For designing a Computer organization decided after its architecture. |
| 4) Computer architecture involves instruction sets, registers, data types and addressing modes | 4) Computer organization consists of physical units like circuit designs parepharals and addresses |
| 5) It deals with high level design issues. | 5) It deals with low level design issues. |
| 6) e.g. Is there a multiply instruction. | 6) e.g. Is there a hard-ware multiply unit or it is done by repeated addition. |

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- Structure and Function.

## Structure :-

Structure is the way in which the components relate to each other

## Function :-

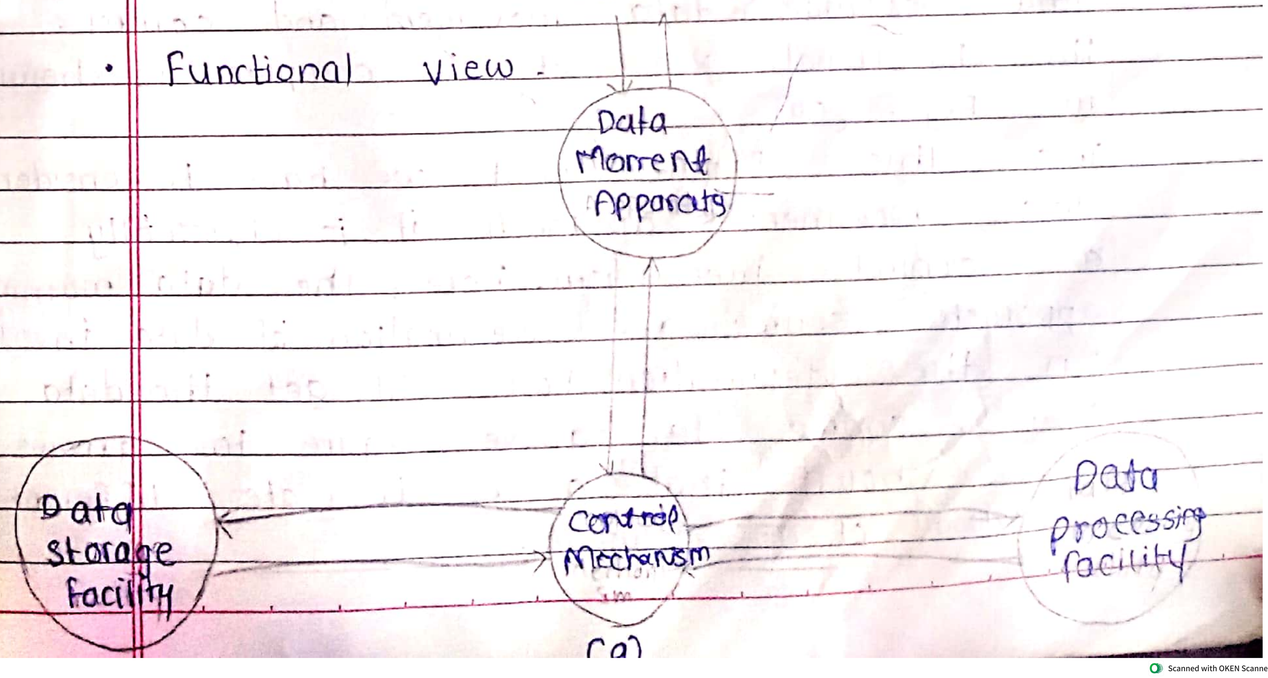
Function is the operation of individual components as a part of structure.

- Computer functions.

1) Data Processing.
2) Data Storage.
3) Data Movement.
4) Control.

1] Data Processing. (Source & destination of data)

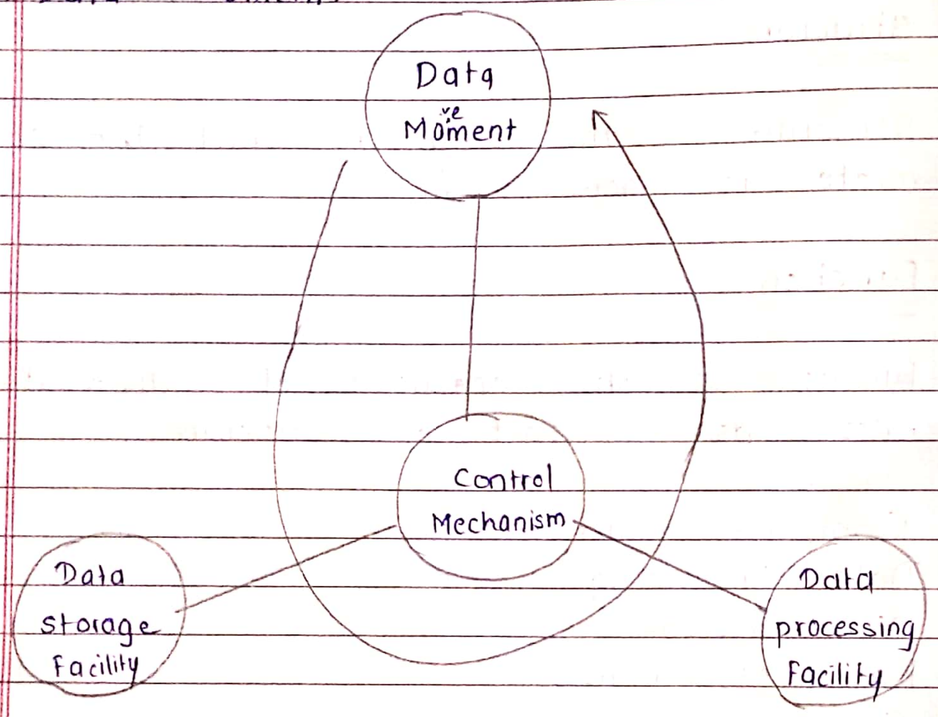
- Functional view.




(a)

- Operations.

a) Data moment.




The computer functions are data processing data storage, data movement and control. the Functional view of a computer is shown in Figure (a).

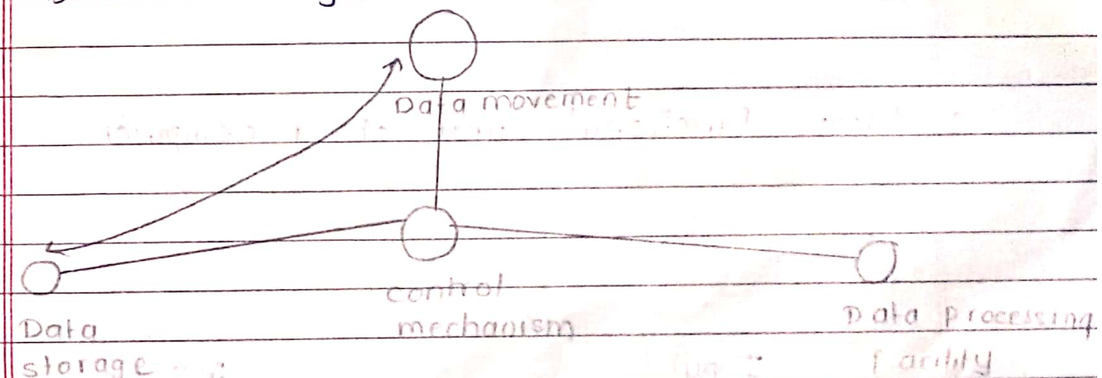
This this Figure First we have to consider data movement approach it is basically a control mechanism. here, the data moment apporach source and destination of data involved In the destination we will get the data from source. In above figure two arrows are shown that arrows indicates different operation of a computer.

For the data processing computer must be able to process the data which may take a wide varity of forms and the range of processing.

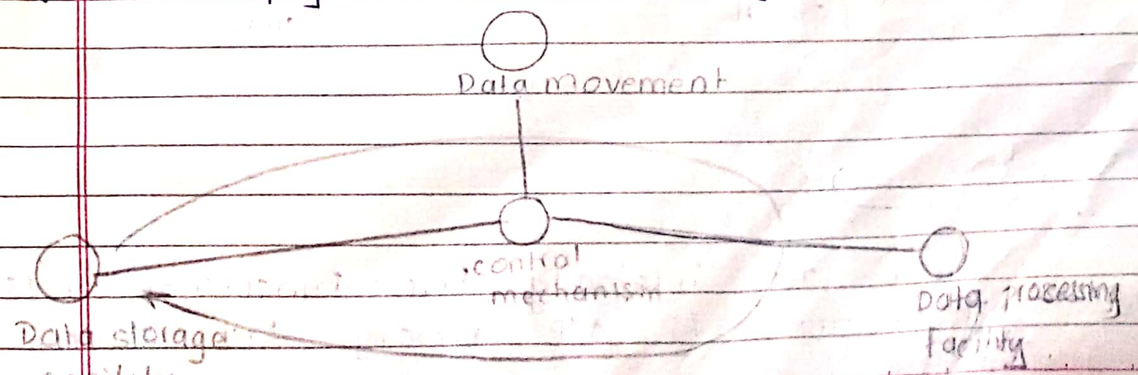
For the data storage computer can store data temporary or permanantly.

For the data movement computer must be able to move the data between itself and outside the world. to control the different functions of a computer the control mechanism is provided.

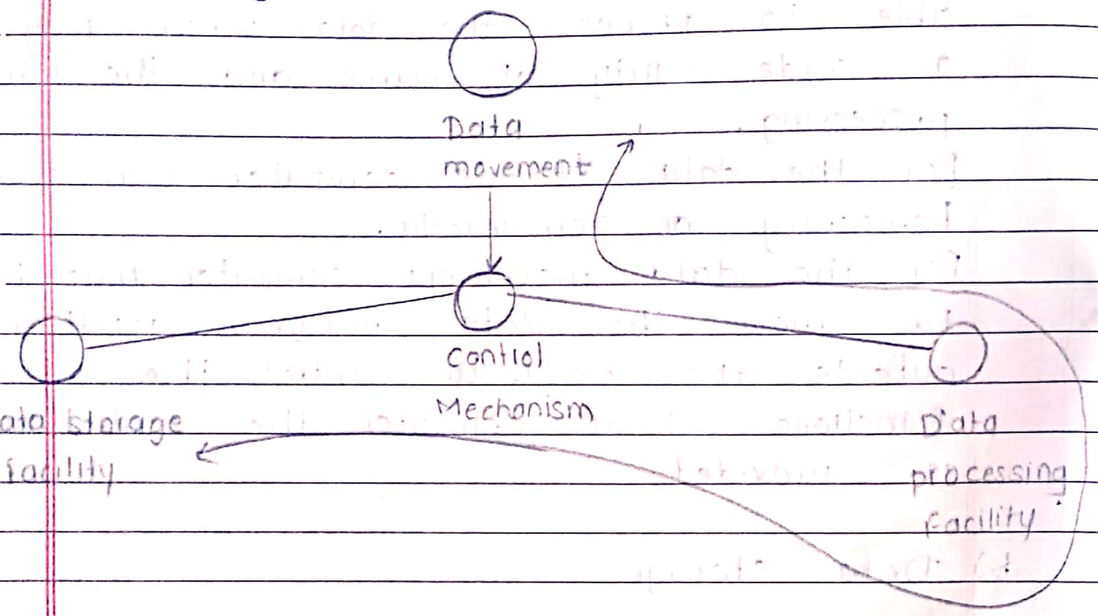
b) Data storage.



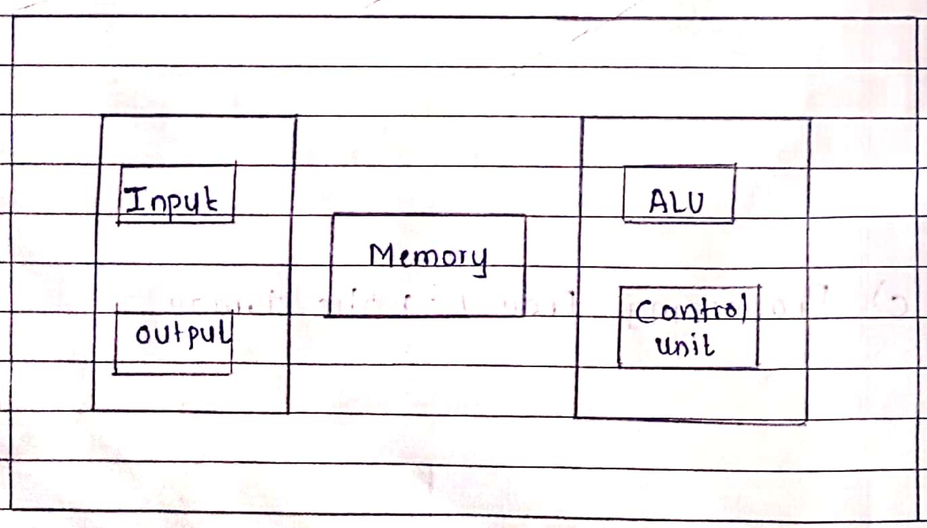

c) Processing From I to the storage.



D) Processing From / to Input ~~output~~.




- Basic functional unit of a computer-




- There are basically Five Functional units that are I/P, O/P, memory, ALU, control unit.

1) Input unit - Computer accepts encoded information through the input unit. The standard input device is keyboard, mouse. whenever, a key is pressed a keyboard controlled sends a code to the CPU or memory.

2) Output - After computations the computer returns computed results, errors messages, via the output devices.

3) Memory - Memory stores instructions, data & the result of computations.

4) ALU (Arithmatic logic unit): ALU consists of necessary logic circuits like adder, substracter comparator to perform operations like addition, substraction. comparasion

5) Control unit - Control unit co-ordinates all the activities of all units by issuring the control signals.
Control unit interpretes or decide the operation or action to be performed.

- Computer top level structure.
- Control unit having its major structural components i.e sequencing logic ckts; control unit registors & decoders & the control memorey.
- The sequencing logic ckts gets signal from control unit & perform different logical operations. In controlunit registors store in different

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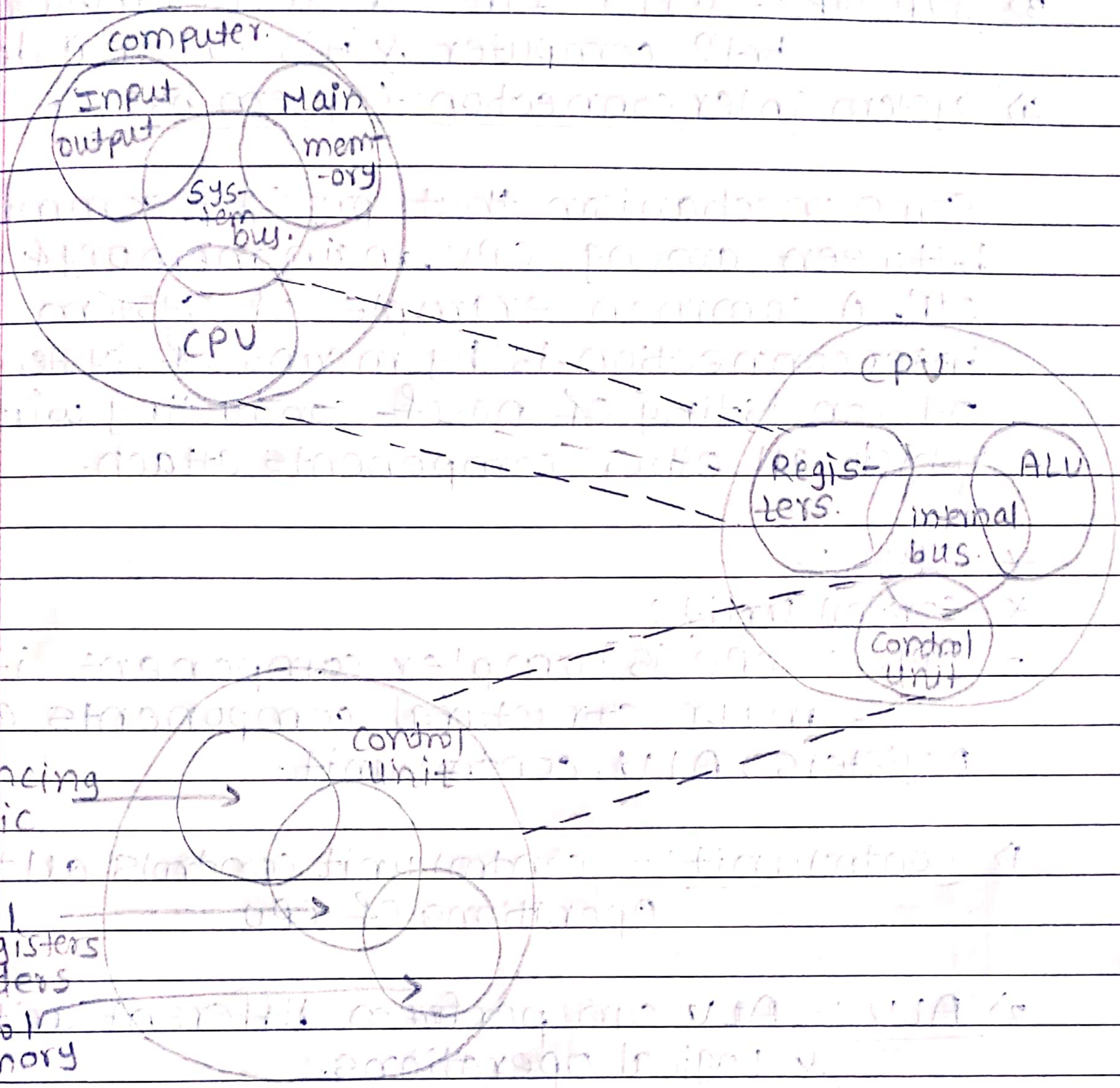
data which is required for the program. The operations of control unit performed by getting the different signals & result is stored in the memory.

Q. Explain the computer Lop level structure with structural components with neat sketch diagram

# * computer Top level structure :-




The fig. shows computer top level structure.
Here, there are four structural components

1) CPU :- CPU can performs different functions & simply it is referred as processor.
2) Main memory :- Memory can stores data whenever there is necessary it provides that data to CPU.

3) I/P O/P :- with I/P O/P devices move data bet? computer & it's external device

4) System interconnection (system bus) :-

Some mechanism that provides communica~~between~~ among CPU, main memory & I/P O/P. A common example of system interconnection is by means of system bus. It consisting of no. of conducting wires to which all other components attach.

* CPU :-
* control unit :-

- CPU :- CPU is complex component. its major structural components are Registers, ALU, control unit.

1) control unit :- control unit controls all the operations of CPU.

2) ALU :- ALU can perform different arithem & logical operations.

3) Registers :- It provides storage internal to the CPU.