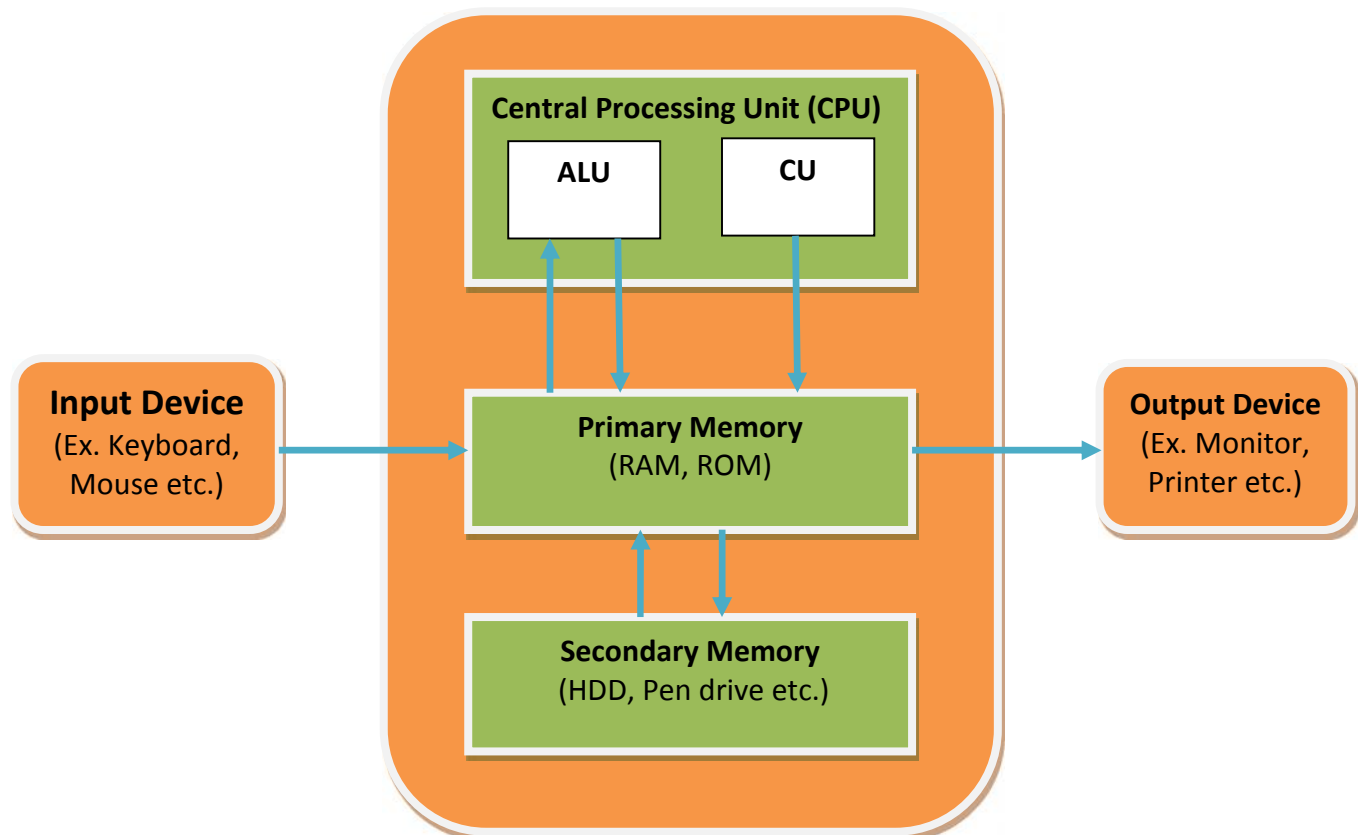| CHAPTER NO: 1	INTRODUCTION TO COMPUTER AND PROGRAMMING
1	Explain block diagram of computer with all its components.
2	What is software? Explain Types of software.
3	What is hardware?
4	Explain types of languages in detail.
5	What is flow chart? Explain different symbols of flowchart.
6	Explain flowchart with suitable example.
7	Explain algorithm with example.

Q-1 Explain block diagram of computer with all its components.

Answer:

There are five main component of computer.

1) Input Device
2) CPU
3) Primary Memory
4) Secondary Memory
5) Output Device

Block diagram of computer is shown below.

1) **Input Device:**
   - Input device is used to get the data from user.
   - All the data from input devices must be entered into Primary Memory.
   - When user enters data through keyboard, which are into user language must be converted into binary language.
   - So, Input device is bridge between user and computer.
   - Example: keyboard, mouse, scanner, joy stick, light pen etc.

2) **CPU:**
   - CPU – Central Processing Unit
   - It is the brain of computer.
   - CPU is divided into two main parts.
     - I) ALU
     - II) CU
          CPU = ALU + CU

     - I)   ALU – Arithmetic & Logical Unit

       - As the name suggest it is used to perform arithmetic and logical operation on data which is come from primary memory (RAM).
       - Data is processed on ALU and generate the result which is again transfer from ALU to RAM.

     - II)   CU – Control Unit
       - This unit does not take part into any calculation or operation.
       - As the name, it is used to control the devices like input device, output device and primary memory.

3) **Primary Memory:**
   All the data, whether it will from input device or from secondary memory must come into primary memory.
   There are two types of primary memory:
   - I)   RAM
   - II)   ROM

   - I) RAM:
     - RAM – Random Access Memory

- It is volatile memory.
- We can say that RAM is temporary storage unit and can't store data permanent.
- All the data from input device or from secondary memory must come into RAM.
- When we turn off the system all the data are erased from RAM.

II) ROM:
- ROM – Read Only Memory
- As name we can't write any data into ROM, we can just read the data from ROM.
- It is non-volatile memory.
- ROM can store data permanently.
- It contains the different details of manufactures, version etc.

4) **Secondary Memory:**
- It is non volatile memory, so can store data permanently.
- When result is generated by ALU and if want to store result permanently, then we can store such data into secondary memory.
- Ex. HDD – Hard Disk Drive, Flash Drive, CD, DVD etc.
- Operating System is also store into secondary memory.

5) **Output Device:**
- It is used to display the result generated by CPU.
- Again result generated by computer is in binary form, so need to convert this data into user language.
- Ex. Monitor, Printer, Plotter etc.

Q-2 what is software? Explain different types of software.
Answer:

Software is collection of programs and program is collection of instruction.

It is logical component of computer, which cannot touch.

It is used to handle the hardware of computer.

Mainly two type of software are available.

I)   System Software
II)   Application Software

1) System Software:

- System software is designed to operate the computer hardware.
- It is also provide platform for running application software.
- Types of system software:
    - Operating system
    - System support software
    - System development software

Operating system:

- It is the interaction between hardware and software.
- Ex: DOS, Windows-XP, VISTA, LINUX, UNIX…

System Support Software:

- It mange the hardware more efficiently.
- Ex: Drivers of the I/O devices, Antivirus software's.
- Driver is a one type of interfacing program which can interacts between I/O devices and O.S.

System Development Software:

- It provides the environment to user to develop application software's.
- Ex: Editor: It is used to create the programs and modify the programs.
- Pre-processor: It is used before translators (compilers, editors), which is used to replace some segments of the code with some another segment.
- Compilers: It is the software which translates high level programs into low level programs.
- Interpreters: It is the software which translates line high level programs into low level programs.
- Loaders: It is the software which can load object codes into main memory and execute it.

2) Application Software:

Application software is designed to perform specific user applications.

There are two categories of application software.

I) General-purpose software
II) Specific-purpose software

General-purpose software:

Microsoft office, Oracle

Specific-purpose software:

Tax calculation software, Pay-roll system, banking software's etc.

Q-3 what is hardware?

Answer:

Hardware is the physical component which can be seen and touched.

Hardware is divided into three parts:

- Microprocessor
- Motherboard
- Other peripherals

Example: Monitor Mouse, CPU, and Printer.

Q-4 Explain types of language.

Answer:

There are two types of language.

1. Low level language
2. High level language

1. Low level language:

Low level language is divided into two types:

- Machine level language
- Assembly level language

Machine level language:

o The Machine language is written using binary language (0's and 1's).

o Computer can understand only low level language. So there is no need to convert this language.

o Low level languages are faster.

o Machine Level language is also known as Binary Language and Low Level language.

Advantages:

Binary language is faster as compared to any other language.

There is no need of translator.

Disadvantages:

As all the instruction and data are in 0's and 1's form, so it is very difficult to remember as compared to all other language.

Assembly level language:

As binary language is difficult to remember, assembly language is introduced.

In this language all the instruction of 1's and 0's form are converted into symbols, this symbols are known as mnemonics.

But computer cannot understand assembly language, so we need to convert this language into binary language.

The translator which is used to convert assembly language into binary language is known as **assembler**.

```
┌──────────────────┐      ┌──────────────┐      ┌──────────────────┐
│  ASSEMBLY LEVEL  │ ───▶ │   ASSEMBLER  │ ───▶ │  BINARY LANGUAGE │
│     LANGUAGE     │      │              │      │                  │
└──────────────────┘      └──────────────┘      └──────────────────┘
```

Advantages:

It is easy to remember as compared to binary language.

Disadvantages:

We need to convert this language into binary, so speed is slow as compared to binary language.

It is platform dependent.

2. **High Level Language:**

As assembly language is platform independent, to overcome this problem high level language is introduce.

High level language is made up with A-Z, a-z, 0-9 and mathematical symbols.

But computer can't understand high level language; need to convert this language into binary language.

To convert high level language into binary language two types of translator are used.

           a. Compiler
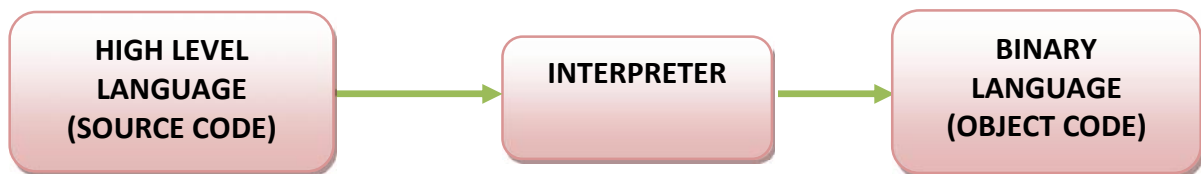   b. Interpreter

Compiler:

- It is used to convert high level language into binary language.

- It converts whole source code into binary language at a time.
- It is faster than interpreter.
- Error detection is difficult to identify as compared to interpreter.

HIGH LEVEL LANGUAGE (SOURCE CODE)	→	COMPILER	→	BINARY LANGUAGE (OBJECT CODE)

Interpreter:
- It is also used to convert high level language into binary language.
- It converts source code into object code (binary language) as line by line.
- It is slower as compared to compiler.
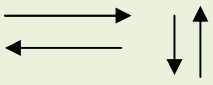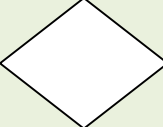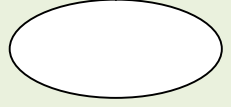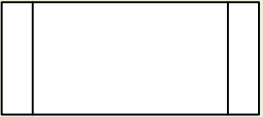- Error detection is easy as compared to compiler.

HIGH LEVEL LANGUAGE (SOURCE CODE)	→	INTERPRETER	→	BINARY LANGUAGE (OBJECT CODE)

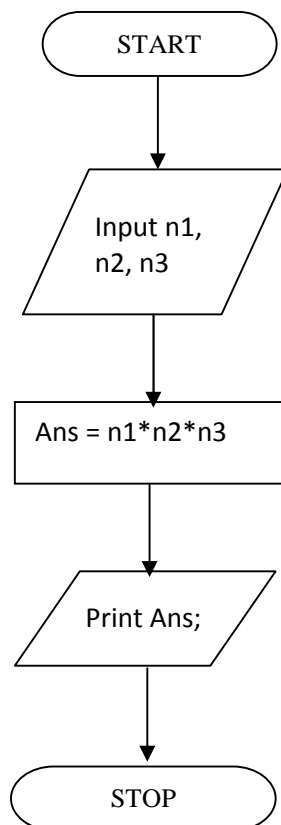**Q-5 what is flow chart? Explain different symbol of flow chart.**
Answer:

- A flowchart is a graphical representation of sequence of operations to be performed to get the solution of the problem.
- Once the flowchart is drawn, it becomes easy to write the computer program using any high level language like C.

Symbol	Meaning
(oval/stadium shape)	Used to represent Start or Stop process.
(rectangle)	Used to represent operations during process.
(parallelogram)	Used to represent input and output process.

→ ← ↓↑	Used to represent data flow of process.
◇	Used to represent Decision making statement.
⬭	Used to represent connector between two pages.
▯	Used to represent predefined process.

Q-6 Draw a flow chart to find multiplication of three numbers.
Answer:

```
        ( START )
            │
            ▼
      / Input n1,  /
      / n2, n3    /
            │
            ▼
    [ Ans = n1*n2*n3 ]
            │
            ▼
      / Print Ans; /
            │
            ▼
        ( STOP )
```

Q-8 what is algorithm? Explain with example.
Answer:

An algorithm is just a detailed sequence of simple steps that are needed to solve a problem. An algorithm consists of a set of explicit and finite steps which when carried out for a given set of initial conditions, produced the corresponding output and terminate in a fixed amount of time.

Features of Algorithm:

Finiteness: Algorithm must have finite steps.
Definiteness: Each step must be clear.
Effectiveness: Each step must be effective.
Input: Algorithm can have multiple inputs.
Output: Output of algorithm must be one.

Ex: **Write an algorithm to find multiplication of three numbers**.

Step 1: Read the value of no1
Step 2: Read the value of no2
Step 3: Read the value of no3
Step 4: Calculate multiplication of three numbers
            by answer = no1 * no2 * no3
Step 5: Print the answer
Step 6: Stop