

## Lecture – 1

**Definition of Programming:** Programming is writing instruction for a machine specially a computer. The machine which works differently according to the instructions given to it is called a programmable machine. The job of this machine is not fixed. We can change the working plan of the machine by changing the instructions or programs according to our requirements.

**Language:** Instructions given to computer have a particular format. Computers are unable to understand human language. There are several levels of format or language which a computer can understand.

**Low Level Language:** Machine language, Assembly language.

**Mid Level Language:** C.

**High Level Language:** Pascal, Basic, COBOL.

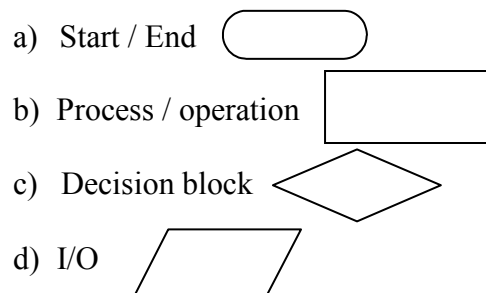
**Algorithm:** Algorithm is defined as any special method of solving a certain problem. But in computer it has a special meaning. It means step by step procedure to solve a problem by a computer. An algorithm has following properties:

- i) An algorithm must be composed of finite number of steps. Each step may be another algorithm composed of several steps.
- ii) Each step of algorithm must be definite. You cannot say add 2/3 to x.
- iii) The steps must be effective.
- iv) The algorithm may have one or more inputs but it must have at least one output.
- v) An algorithm must terminate after a finite number of operations. Without termination it can be a computational procedure. An operating system of digital computer is an example of a computational procedure since it does not terminate, but contains in a waiting state until a new job is entered.

**Use of algorithm in programming:** Whenever a problem is found the method of solving it should be written in an easier way. This is called an algorithm. The steps of algorithm can be converted to any programming language. Programming means translation of an algorithm into a programming language.

### Programming tools for expressing algorithm:

#### i) Flow Chart:



#### ii) Pseudo codes: Sometimes called structured English, is a method of expressing program logic using plain English statements rather than a programming language.

Say, we want to find median of 3 numbers (a, b, c).

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if  $b \leq a \leq c$  then
    median = a
else if  $a \leq b \leq c$  then
    median = b
else
    median = c
  
```

History of C language: C was invented and first implemented by Dennis Ritchie on a Dec PDP11 using the UNIX operating system. C is the result of a development process that started with an older language called BCPL developed by Martin Richards. BCPL influenced a language called B which was invented by Ken Thompson and which led to the development of C in the 1970s.

ANSI (American National Standard Institute) C is formed in 1980.

Features of C: C is considered as a middle level language. Because it is successfully combines structured high level language and powered and efficient assembly language.

C is a middle level language because it allows manipulation of bit, byte and address. C is portable means the code written for one machine (Apple II+) can easily be converted as the code for on IBM-PC. C is case sensitive.