



Week 03

Algorithm

Algorithm is a detailed step-by-step solution to a problem.

An algorithm must have some characteristics:

- must be precise (unambiguous);
- must be effective;
- must have a finite number of instructions;
- execution must always terminate.

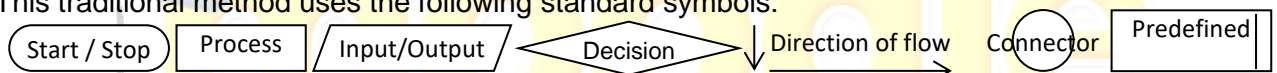
There are number of design tools that a programmer can use to develop the algorithm:

- flowchart,
- pseudo code,
- decision trees,
- decision tables,
- structure diagrams etc.

Flowcharts:

Program flowcharts can be described as a pictorial or graphical method to represent an algorithm or processing logic.

This traditional method uses the following standard symbols:

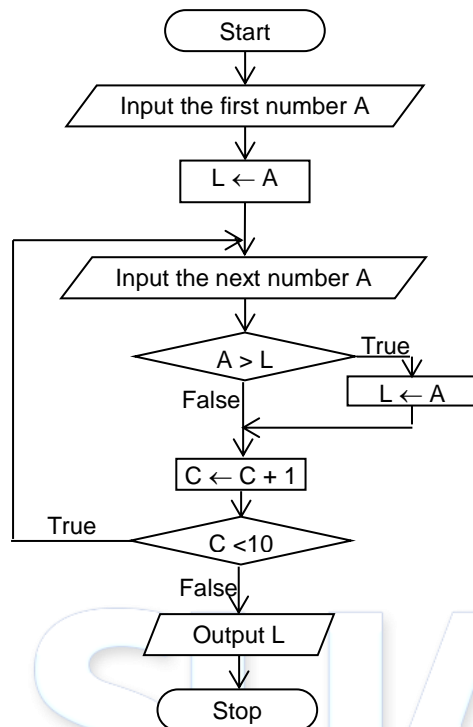


This traditional flow chart may lead to very unstructured program code.

Structured flow charts are a development of the original flow chart idea, but recognizing the three constructs of sequence, selection and iteration.



Example: A flow chart for finding the largest number of ten given numbers.



Pseudo Code:

Pseudo code, sometimes called *structured English*, is a nonstandard English-like language that lets you specify your algorithm with more precision than you can in plain English but with less precision than is required with a formal programming language.

In this method standard words of the natural language English with mathematical notations are used to illustrate an algorithm.

Example: A pseudo code for finding the largest number of ten given numbers.

Start

Accept the first number A

$L \leftarrow A$

$C \leftarrow 1$

Repeat

Accept the next number A

If $A > L$ then $L \leftarrow A$

$C \leftarrow C + 1$

Until $C \geq 10$

Display L

Stop