

Week 3

Algorithm

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

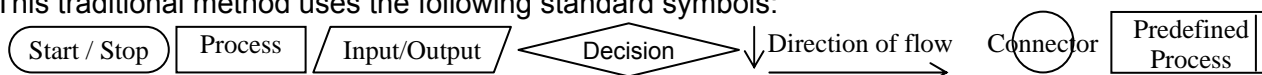
An algorithm must have some characteristics: must be precise (unambiguous); must be effective; must have a finite number of instructions; execution must always terminate.

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:

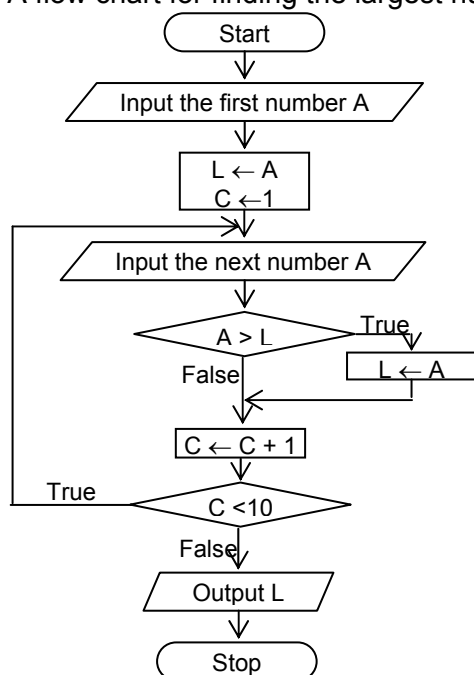
Program flowcharts can be described as a pictorial or graphical method to represent an algorithm or processing logic.

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 ← A
  C ← 1
  Repeat
    Accept the next number A
    If A > L then L ← A
    C ← C + 1
  Until C >= 10
  Display L
Stop
  
```