

ALGORITHMS

Introduction

In computer science, an **algorithm** is a finite sequence of well-defined, computer-implementable instructions, typically to solve a class of problems or to perform a computation, calculations, data processing, automated reasoning, and other tasks. Or a set of rules that precisely defines a sequence of operations.

As an effective method, an algorithm can be expressed within a finite amount of space and time, and in a well-defined formal language for calculating a function. Starting from an initial state and initial input, the instructions describe a computation, proceeds through a finite number of well-defined successive states, eventually producing "output" and terminating at a final ending state. The transition from one state to the next is not necessarily deterministic; some algorithms, known as randomized algorithms, incorporate random input.

Algorithm design refers to a method or a mathematical process for problem-solving and engineering algorithms.

Typical steps in the development of algorithms:

1. Problem definition
2. Development of a model
3. Specification of the algorithm
4. Designing an algorithm
5. Checking the correctness of the algorithm
6. Analysis of algorithm

7. Implementation of algorithm

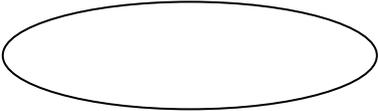
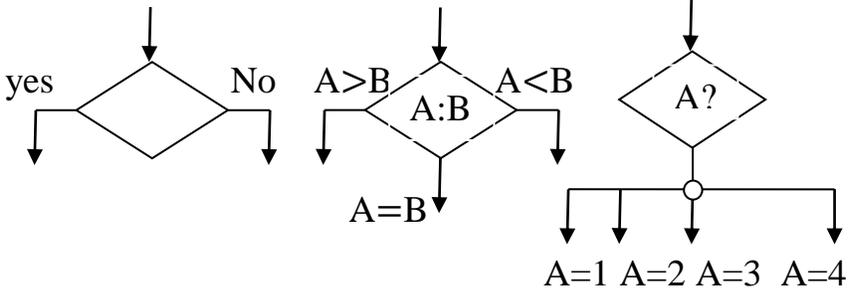
8. Program testing

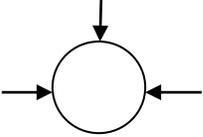
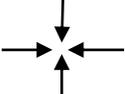
Flowcharts

The flowchart is a group of symbolic shapes connected together with arrows in order to indicate the main steps in the computer program.

The flowchart can be considered as a helpful tool for the programmer to understand the given program or problem from start to end.

The symbolic shapes are:

	Start or End
	Output or Input Statements (Print, Write, Input, Read)
	Equations
	Test

	Transfer or Continuation Point
	Repeating
	Direction

Example1:

Find the mean value for the following five degrees, D1, D2, D3, D4 and D5.

Solution:

1-Start

2-Read the five degrees

3-Find the mean value by the equation:

$$Mean = \frac{D1 + D2 + D3 + D4 + D5}{5}$$

4-Print the mean value

5-End

The flowchart for example 1 is :

