

Algorithm and Flowchart

Definition Algorithm

Algorithm can be defined as the set of rules and sequential steps that define how a particular problem can be solved in finite and ordered sequence.

Function of Algorithms

An algorithm generally takes some input, carries out a number of effective steps in a finite amount of time, and produces some output.

Characteristics of Algorithms

Every algorithm should have the following five characteristic features

1. Input
2. Output
3. Definiteness
4. Effectiveness
5. Termination

Example 1: Write an algorithm to compute the area and circumference of a circle given the diameter d . Use the formulas and

Solution

Step 1: Start

Step 2: Get the diameter d

Step 3: Compute

Step 4: Compute

Step 5: Compute

Step 6: Display the results

Step 7: Stop

Example 2: Write an algorithm that tells you how to wash dishes

Solution

Step 1: start

Step 2: scrape food off dishes

Step 3: wash the dishes with soap and water

Step 4: Rinse the dishes

Step 5: Dry them

Step 6: Stop

Example 3: Write an algorithm to evaluate the equation $y = a(b-c)^2/d+2$

Solution

Step 1: start

Step 2: input the value of a , b , c , d

Step 3: Value of y is to be calculated

Step 4: Calculate the value of $b-c$ and denote f

Step 5: Calculate the square of f

Step 6: Multiply f by a and denote g

Step 7: Calculate the value of $d+2$ and denote h

Step 8: divide h by g

Step 9: We get the value of y

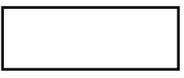
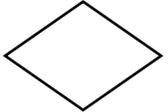
Step 10: Print y

Step 11: Stop

Definition of Flowchart

This is the graphical representation of steps involved in solving a given problem. More formally, flowchart is a pictorial representation in which symbols are used to show the various operation and decision to be followed in solving a problem.

Some standard symbols used in drawing a program flow chart are:

Symbol	Description
	<u>Terminal symbol</u> : It is used represent start and end
	<u>Input/output symbol</u> : It is used to represent any input or output
	<u>The processing symbol</u> : It is used to represent some type of data manipulation or arithmetic operation.
	<u>The decision symbol</u> : it is used to represent a logical comparison operation.
	<u>The direction of flow symbol</u> : It indicate the next step in the program
	<u>The connector symbol</u> : it is used when several symbols displayed at one point might cause confusion and reduce understanding.

Example 1: Draw a flow chart to print the area of a 10cm square

Solution