Chapter -1 : Introduction to Programming

Basic Model of Computation

Problem definition:

A problem definition involves the clear identification of the problem in terms of available input parameters and desired solution.

Approach towards solving the problem:

After a problem is identified, the user needs to implement a step-by-step solution in terms of algorithms.

Graphical representation of problem solving sequence:

This step involves representing the steps of algorithm pictorially by using a flowchart.

Each component of the flowchart presents a definite process to solve the problem.

Converting the sequence in a programming language:

Converting the graphical sequence of processes into a language that the user and the computer can understand and use for problem solving is called programming.

After the program is compiled the user can obtain the desired solution for the problem by executing the machine language version of the program.

Algorithm

A sequential solution of any program that written in human language, called algorithm.

Algorithm is first step of the solution process, after the analysis of problem, programmer writes the algorithm of that problem.

Example of Algorithm :

1. Write an algorithm to add two numbers entered by the user.

Step 1: Start

Step 2: Declare variables num1, num2 and sum.

Step 3: Read values num1 and num2.

Step 4: Add num1 and num2 and assign the result to sum.

   $sum \leftarrow num1 + num2$

Step 5: Display sum

Step 6: Stop

2. Write an algorithm to find the largest among three different numbers entered by the user.

Step 1: Start

Step 2: Declare variables a,b and c.

Step 3: Read variables a,b and c.

Step 4: If a > b

   If a > c

      Display a is the largest number.

   Else

      Display c is the largest number.

   Else

If b > c

    Display b is the largest number.

Else

    Display c is the greatest number.

Step 5: Stop

Assignment

Q. 1. Write an algorithm to find the area of a rectangle.

    Area = Length X Width

Q.2 Write an algorithm to find the area of Circle.

    Area = 22/7 *radius * radius

Q.3 Write an algorithm to calculate the Simple Interest , after reading the Principal Amount , Rate of Interest and Time .