

LESSON 2

1. Algorithm:

To write a logical step-by-step method to solve the problem is called algorithm, in other words, an algorithm is a procedure for solving problems. In order to solve a mathematical or computer problem, this is the first step of the procedure. An algorithm includes calculations, reasoning and data processing. Algorithms can be presented by natural languages, pseudo code, etc.

In programming, algorithm are the set of well-defined instruction in sequence to solve a program. An algorithm should always have a clear stopping point.

Algorithm properties:

1. Inputs and outputs should be defined precisely.
2. Each steps in algorithm should be clear and unambiguous.
3. Algorithm should be most effective among many different ways to solve a problem.
4. An algorithm shouldn't have computer code. Instead, the algorithm should be written in such a way that, it can be used in similar programming languages.

Examples of Algorithms in Programming

Example 1:

Write an algorithm to add two numbers entered by 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←num1+num2

Step 5: Display sum

Step 6: Stop

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Example 2:

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

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2. Flowcharts

A flowchart is a graphical representation of an algorithm or of a portion of an algorithm. Flowcharts are drawn using symbols. The main purpose of a flowchart is to analyze different processes. The main symbols used to draw a flowchart are shown in following figures.

□ Terminal Box - Start / End



□ Input / Output



□ Process / Instruction



□ Decision



□ Connector / Arrow



Example 1:

Algorithm: Print numbers from 1 to 20:

Step 1: Start

Step 2: Initialize X as 0

Step 3: Increment X by 1

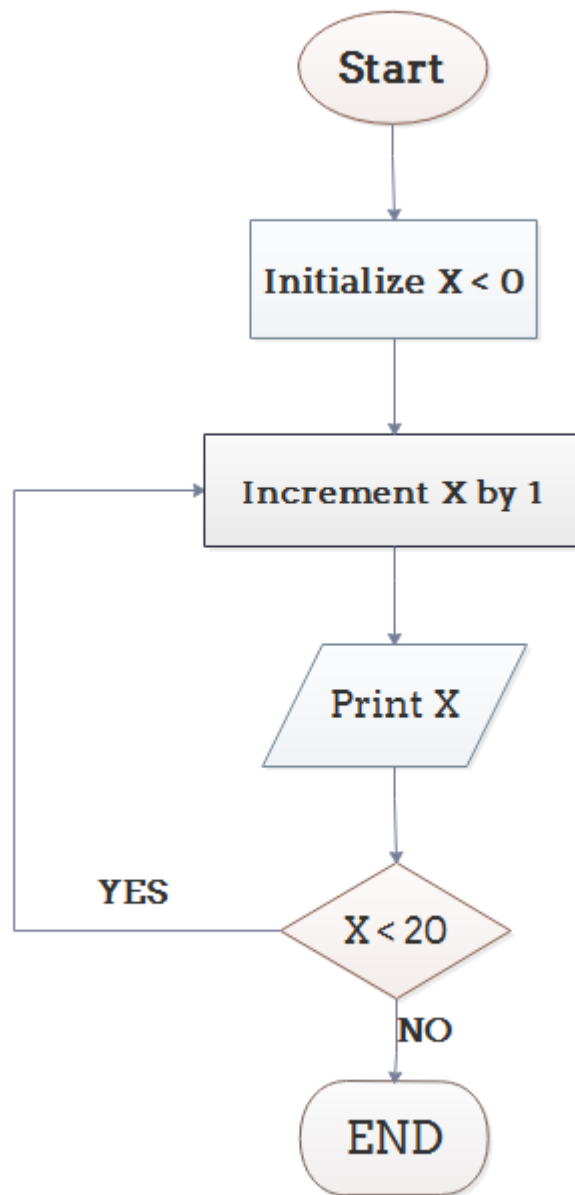
Step 4: Print X

Step 5: If X is less than 20 then go back to step 3

Step 6: Stop

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Flowchart :



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Example 2:

Algorithm: Convert Temperature from Fahrenheit (°F) to Celsius (°C)

Step 1: Start

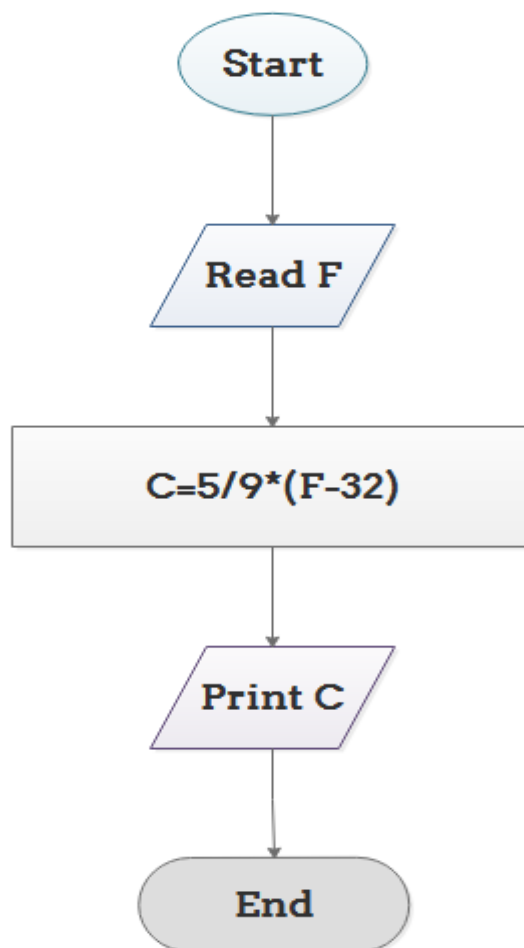
Step 2: Read temperature in Fahrenheit

Step 2: Calculate temperature with formula $C = 5/9 * (F - 32)$

Step 3: Print C

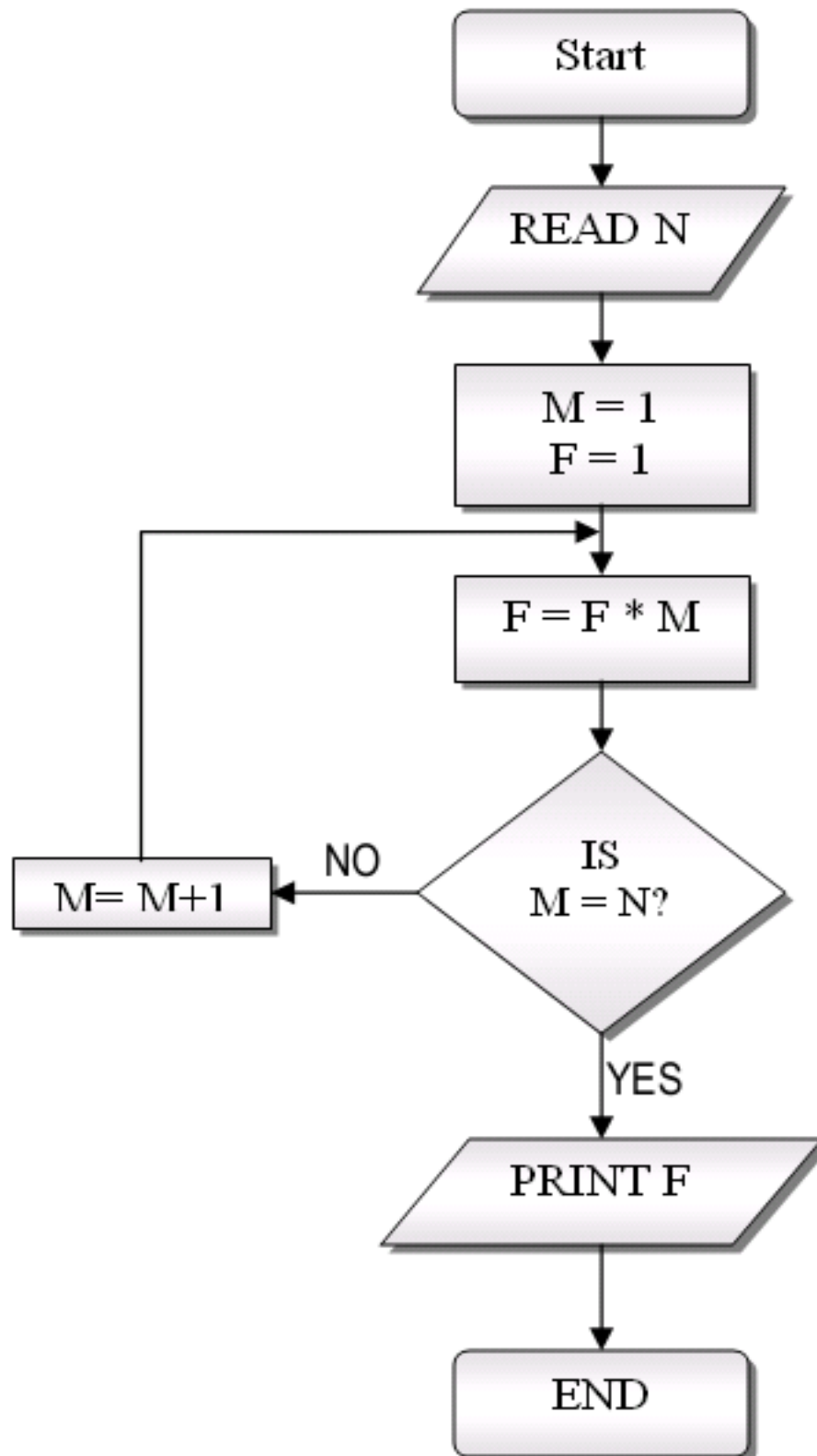
Step 4: Stop

Flowchart:



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Example 3:



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Example 4:

