

Grade 8

Pseudocode and Flowcharts

Q1. Explain algorithm, pseudocode and flowchart

Algorithm

An algorithm is step by step method of solving a problem. This is usually shown as a flowchart or pseudocode.

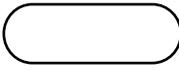
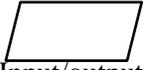
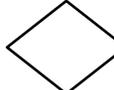
Pseudocode

This is a simple way of describing an algorithm (or program) using English-like words and mathematical operators .It is often easier to write, and more understandable, since it is close to English.

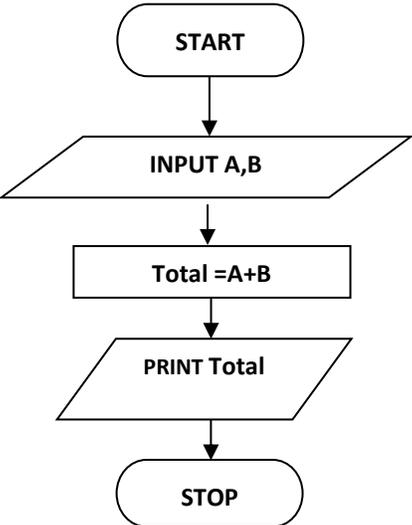
Flowcharts

A graphical (picture) representation of the sequence of operations in a program is called flowchart. Flowcharts are an effective way to communicate the algorithm that shows how a system or sub-system works. In this technique, operations are represented by drawing the appropriate geometrical shapes.

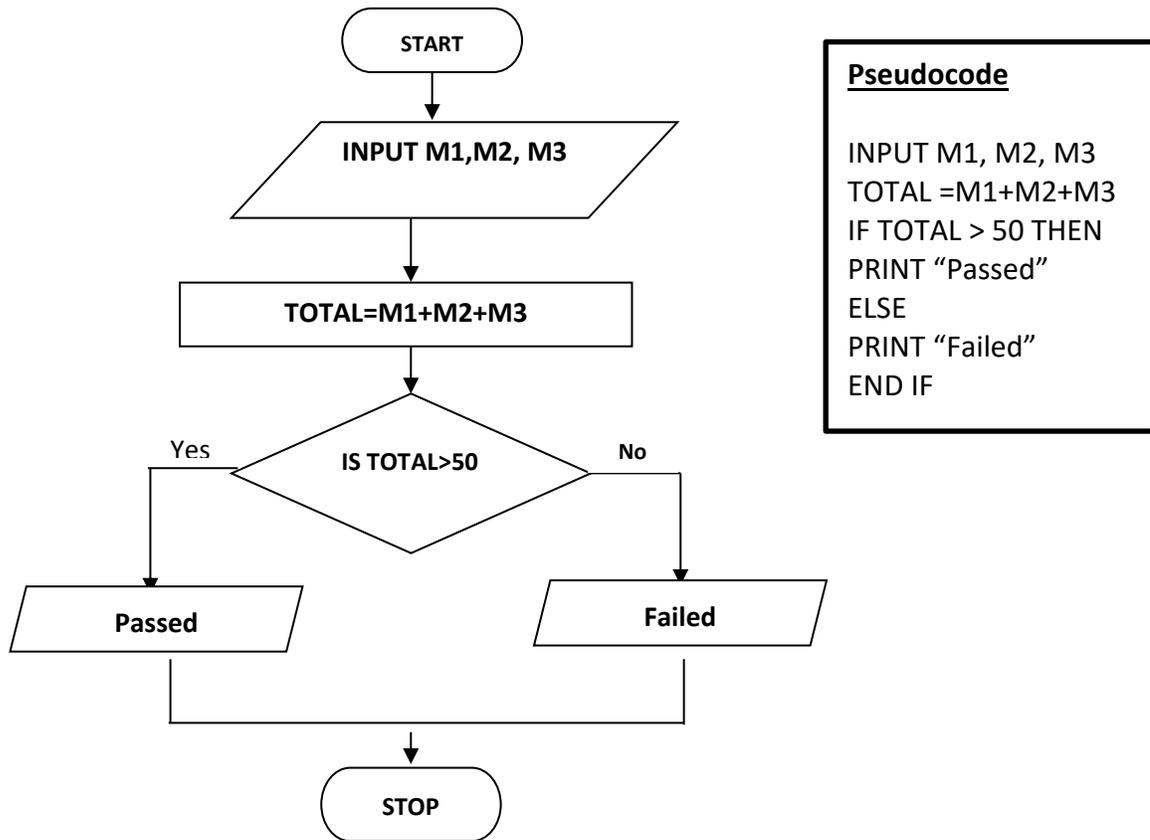
Basic Flowchart Symbols and Meaning

Symbol	Meaning
 Start/End	Rounded rectangle or oval shape denotes the beginning or end of the program.
 Input/output	Parallelogram denotes either an input operation (eg. Input name or read number) or output operation (eg. Print name).
 Process	Rectangle shape denotes process to be carried out. Eg: addition, subtraction, division etc
 Flow line	Arrow denotes direction of logic flow in a program.
 Decision	Diamond shape denotes the decision to be made(eg.If...then...else)
 Connector	Circle denotes continuity of flowchart in another place or page.

1. Write an algorithm, using pseudocode and a flowchart to inputs two numbers and find sum of these numbers.

Flowchart	Pseudocode
 <pre> graph TD Start([START]) --> Input[/INPUT A,B/] Input --> Process[Total =A+B] Process --> Output[/PRINT Total/] Output --> Stop([STOP]) </pre>	<p>INPUT A,B Total=A+B PRINT Total</p>

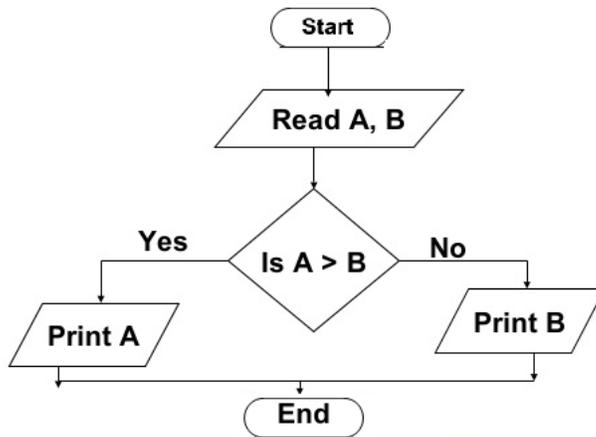
2. Write an algorithm, using pseudocode and a flowchart to determine a student’s final marks and indicate whether it is passing or failing. The final mark is calculated as the sum of three marks.



Pseudocode

INPUT M1, M2, M3
 TOTAL =M1+M2+M3
 IF TOTAL > 50 THEN
 PRINT "Passed"
 ELSE
 PRINT "Failed"
 END IF

3. Flow Chart to find largest of two numbers:



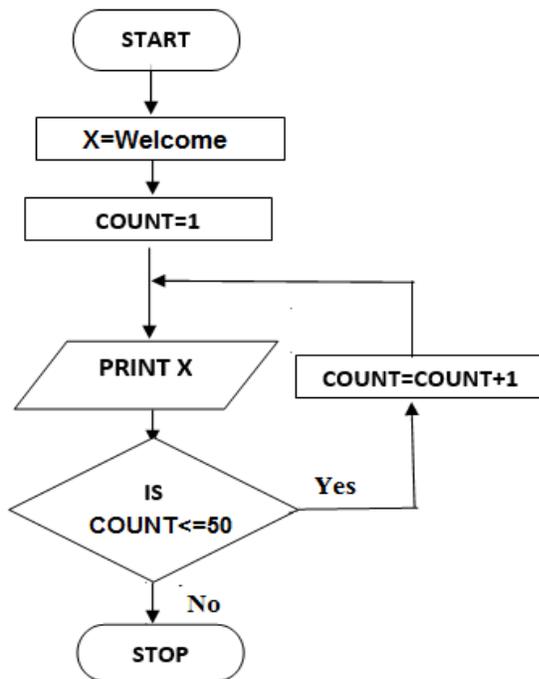
Pseudocode

```
READ A,B  
IF (A > B ) THEN  
PRINT A  
ELSE  
PRINT B  
END IF
```

LOOP STRUCTURE OR ITERATION

Loop is an action which is repeated again and again depending upon a condition test.

1. Flowchart to print the word “WELCOME” in 10 times

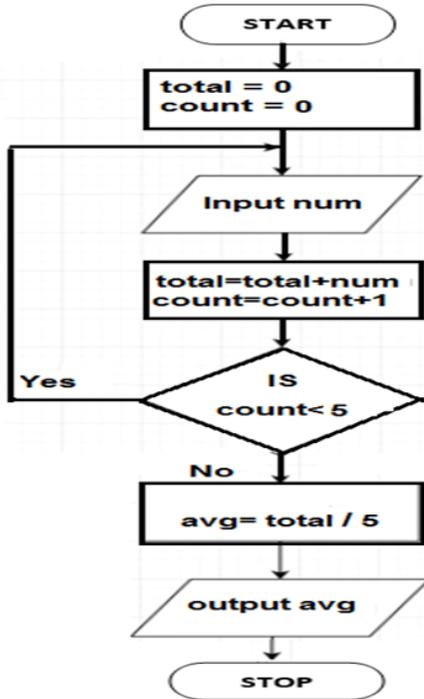


Algorithm:

1. Enter X= Welcome (Process)
2. Initialise count=1
3. Print Welcome
4. Is count is less than or equal to 10 then increment count by 1 and go to step 3 else stop.

2. Flowchart to find average of 5 numbers. Complete the trace table for this flowchart using the following input numbers.

7, 10, 5, 1, 2

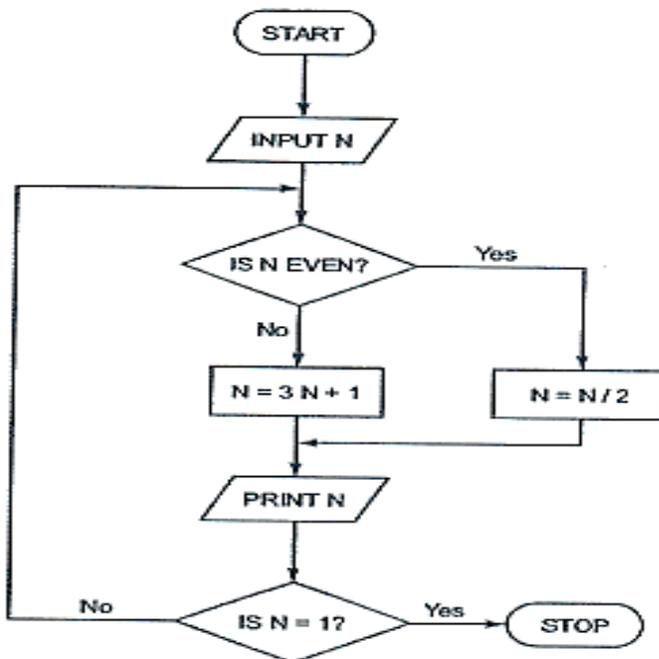


total	count	num	Avg

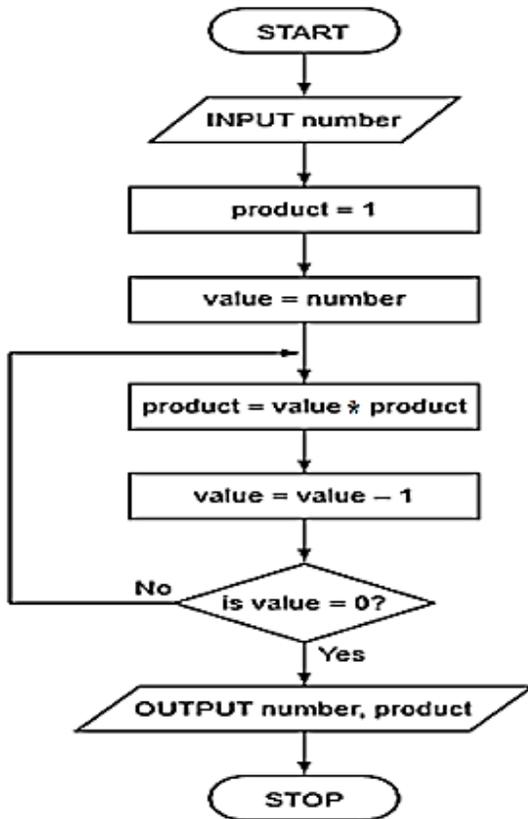
3. Trace the flow chart using the numbers 2 and 3. Write down the each of the values of N in the order they are printed out.

a)2.....

b)3.....



4. Study the following flowchart very carefully



Complete the trace table for the input value of 5

number	product	value	OUTPUT