

Algorithms and Flowcharts

1. Algorithm & Flowchart to find the sum of two numbers

Algorithm

Step-1 Start

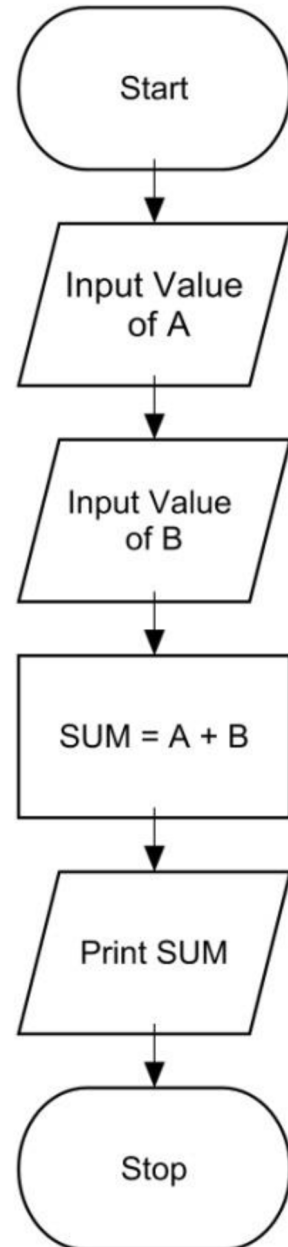
Step-2 Input first numbers say A

Step-3 Input second number say B

Step-4 $SUM = A + B$

Step-5 Display SUM

Step-6 Stop



2. Algorithm & Flowchart to find Area and Perimeter of Square

Algorithm

Step-1 Start

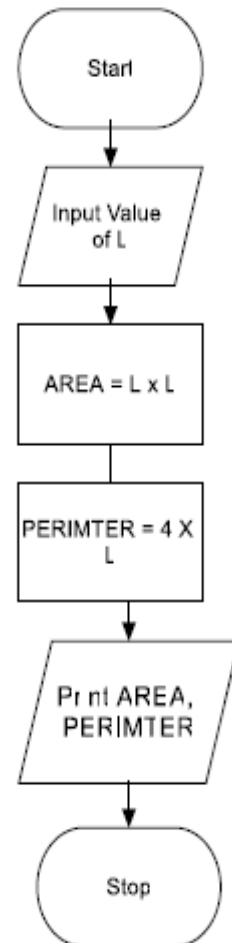
Step-2 Input Side Length of Square say L

Step-3 $\text{Area} = L \times L$

Step-4 $\text{PERIMETER} = 4 \times L$

Step-5 Display AREA, PERIMETER

Step-6 Stop



3. Algorithm & Flowchart to find Area and Perimeter of Rectangle

Algorithm

Step-1 Start

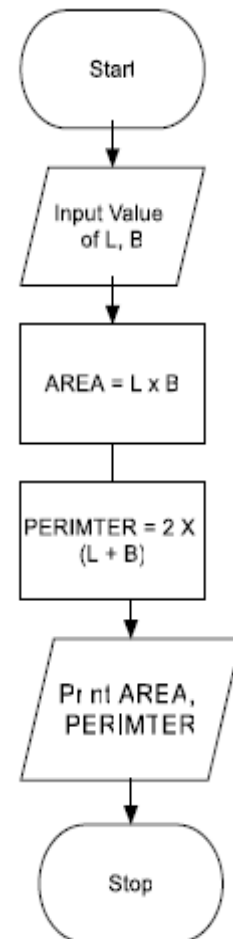
Step-2 Input Side Length & Breadth say L, B

Step-3 $\text{Area} = L \times B$

Step-4 $\text{PERIMETER} = 2 \times (L + B)$

Step-5 Display AREA, PERIMETER

Step-6 Stop



4. Algorithm & Flowchart to find Area and Perimeter of Circle

Algorithm

Step-1 Start

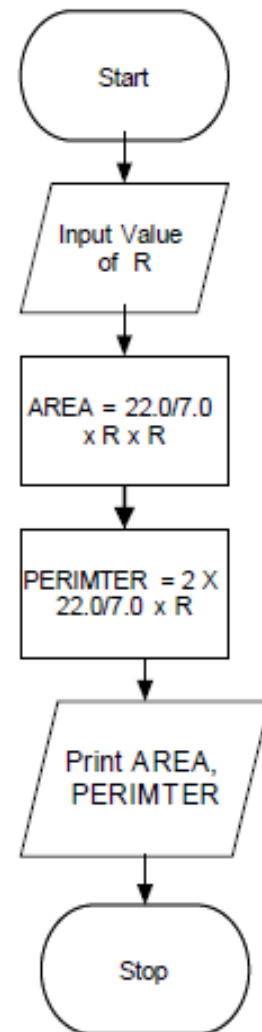
Step-2 Input Radius of Circle say R

Step-3 $\text{Area} = 22.0/7.0 \times R \times R$

Step-4 $\text{PERIMETER} = 2 \times 22.0/7.0 \times R$

Step-5 Display AREA, PERIMETER

Step-6 Stop



5. Algorithm & Flowchart to find Simple Interest

P : Principle Amount

N : Time in Years

R : % Annual Rate of Interest

SI : Simple Interest

Algorithm

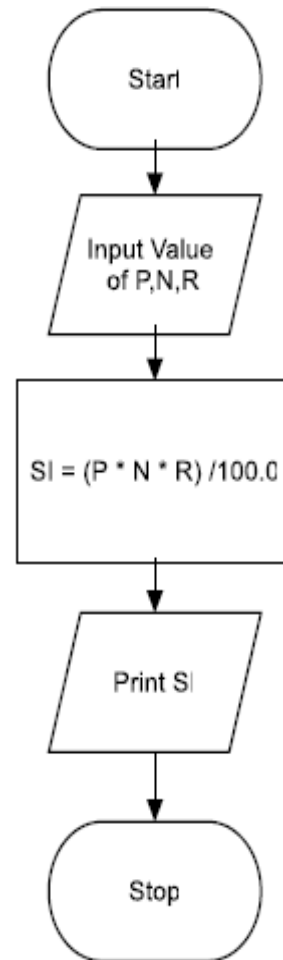
Step-1 Start

Step-2 Input value of P, N, R

Step-3 $SI = (P \times N \times R) / 100.0$

Step-4 Display SI F

Step-6 Stop



6.

Algorithm & Flowchart to find the smallest of two numbers

Algorithm

Step-1 Start

Step-2 Input two numbers say NUM1, NUM2

Step-3 IF NUM1 < NUM2 THEN

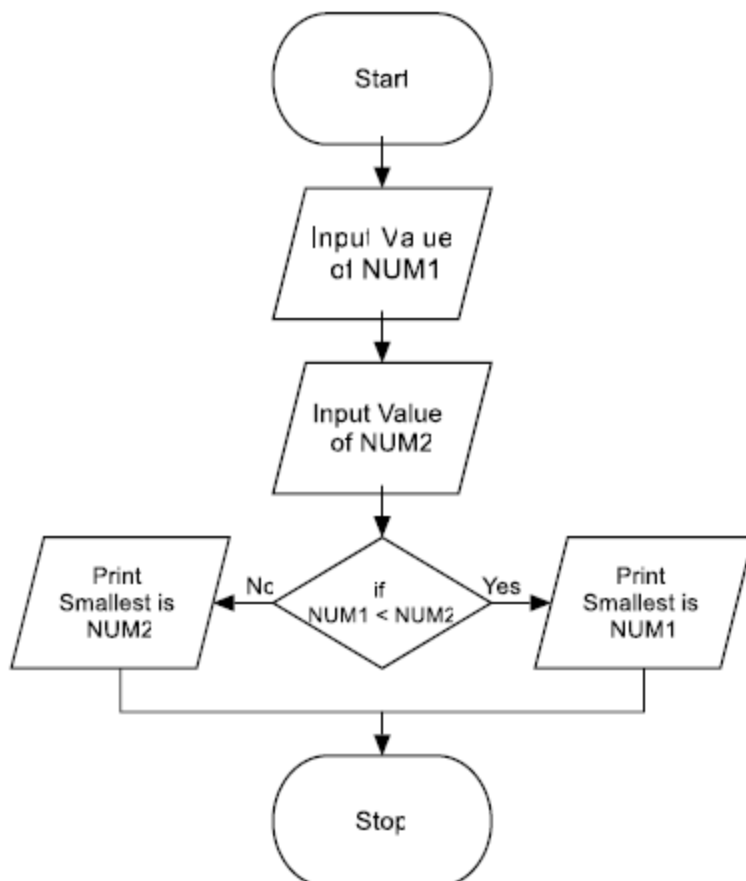
print smallest is NUM1

ELSE

print smallest is NUM2

ENDIF

Step-4 Stop



7

Algorithm & Flowchart to Swap Two Numbers using Temporary Variable

Algorithm

Step-1 Start

Step-2 Input Two Numbers Say NUM1, NUM2

Step-3 Display Before Swap Values NUM1, NUM2

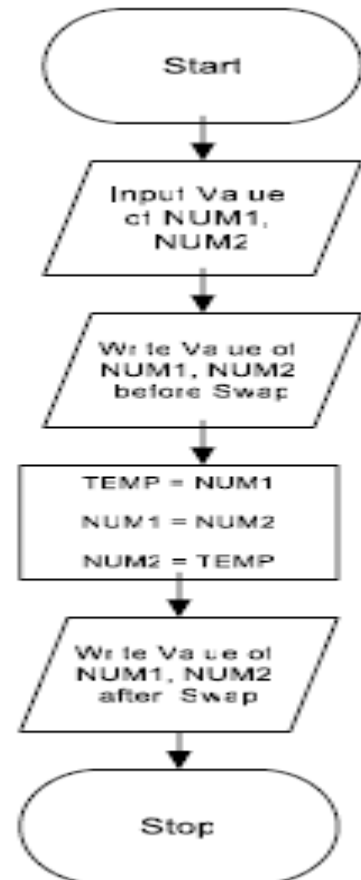
Step-4 TEMP = NUM1

Step-5 NUM1 = NUM2

Step-6 NUM2 = TEMP

Step-7 Display After Swap Values NUM1, NUM2

Step-8 Stop



8.

Algorithm & Flowchart to Swap Two Numbers without using temporary variable

Algorithm

Step-1 Start

Step-2 Input Two Numbers Say A,B

Step-3 Display Before Swap Values A, B

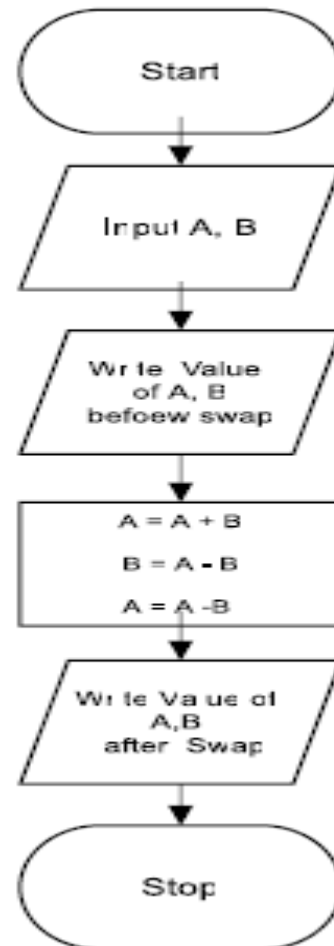
Step-4 $A = A + B$

Step-5 $B = A - B$

Step-6 $A = A - B$

Step-7 Display After Swap Values A, B

Step-8 Stop



\Objective Type Questions

FILL IN THE BLANKS WITH THE CORRECT WORDS:

1. A is a diagrammatic representation of a program.
2. The..... box is rectangular in shape.
3. The box has two output lines; one for True and other for False.
4. A represents input/output in a flowchart.
5. The flowchart symbols are connected by lines.

Flowchart

flow chart

decision

parallelogram

parallelogram

STATE WHETHER TRUE OR FALSE AND ALSO CORRECT THE FALSE STATEMENT.

1. The decision box is circular in shape
Diamond in shape.
2. There should be only one start box in a flowchart.
3. A flowchart must be drawn on a single page. Can be drawn on multiple pages.
4. You can use connectors in a flowchart.
5. An algorithm is a pictorial form of a flowchart.
6. Flowchart is a pictorial form of a flowchart.

ANSWER THE FOLLOWING:

1. What is the difference between an Algorithm and a Flowchart?

An algorithm is a finite set of step-wise instructions that should be followed to perform a specific task like solving a logical or a mathematical problem.

A flowchart is a diagrammatic representation of a problem-solving process in which steps are laid out in logical order.

2. What are the rules for flowcharting?

Following are the rules for flowcharting:

- a. A flowchart should have only one Start and one Stop symbol.
- b. The general direction of flow in a flowchart is from top to bottom or from left to right.
- c. Arrowheads are used to indicate the flow of information or sequence of steps.
- d. The arrow lines should not cross each other.
- e. Off-page and on-page connectors should be used when joining parts of a flowchart spanning multiple pages/same page.

3. Explain the different symbols used in a flowchart.

Following are the different symbols used in a flowchart:

- a. **Oval (Start/Stop box):** Used to indicate the start and end of the program.
- b. **Rectangle (Process box):** Indicates processes or actions.
- c. **Parallelogram (Input/Output box):** Indicates input and output of a program.
- d. **Diamond (Decision box):** Used in situation which demands one to choose either 'Yes' or 'No'.
- e. **Arrow line (Flow lines):** Shows the flow of logic in a flowchart.

4. What are the two types of connectors in a flowchart? Explain their uses.

Following are the two types of connectors in a flowchart:

- a. **Off-page connectors:** Used for joining the parts of a flowchart that occupies more than one page.
- b. **On-page connectors:** To join the parts of a flowchart contained within one page.

5. What are the characteristics of a good algorithm?

Following are the characteristics of a good algorithm:

- a. It receives an input.
- b. It works on a set of inputs.
- c. The steps must be precisely defined.
- d. The result of each step should depend on the results of previous steps.
- e. It stops after a finite number of instructions.
- f. It produces the desired output.

6. What are the advantages of Algorithm?

- It is a step-wise representation of a solution to a given problem, which makes it easy to understand.
- An algorithm uses a definite procedure.
- It is not dependent on any programming language, so it is easy to understand for anyone even without programming knowledge.
- Every step in an algorithm has its own logical sequence so it is easy to debug.

7. What are the advantages of Flowchart?

- Flowchart is an excellent way of communicating the logic of a program.
- Easy and efficient to analyze problem using flowchart.
- During program development cycle, the flowchart plays the role of a blueprint, which makes program development process easier.

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- After successful development of a program, it needs continuous timely maintenance during the course of its operation. The flowchart makes program or system maintenance easier.
- It is easy to convert the flowchart into any programming language code