Department of

Computer Science and Engineering

Title: Problem Solving and Flowchart Design

Computational Thinking and Problem Solving

CSE 100

Green University of Bangladesh

Objectives:

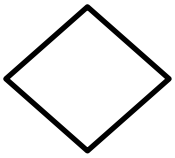
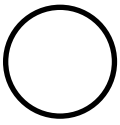
1. Familiarization with flowchart
2. Understand the basics of problem solving in programmatic context
3. To design the flowchart of different problems

Problem Analysis:

Flowchart:

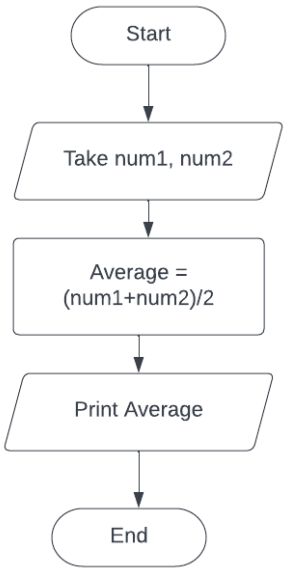
A flowchart is a detailed picture of the algorithm using some special symbols to represent various statement. It will be drawn from top to bottom showing the exact order of the algorithm

Basic flowchart symbol:

Rounded rectangles It represents the terminals of a program (e.g., Start, End)	
Parallelograms It represents the Input and output operation. (e.g., Display a Message, Read Hours)	
Rectangle It represents process. (e.g., A mathematical calculation)	
Diamond It represents decision making process (e.g., A condition Is analyzed, where answer is usually either True or False).	
Flow Lines Arrow shows the direction of flow of Instructions.	
Connectors They are used to join one part of the flowchart with another part of the flowchart.	

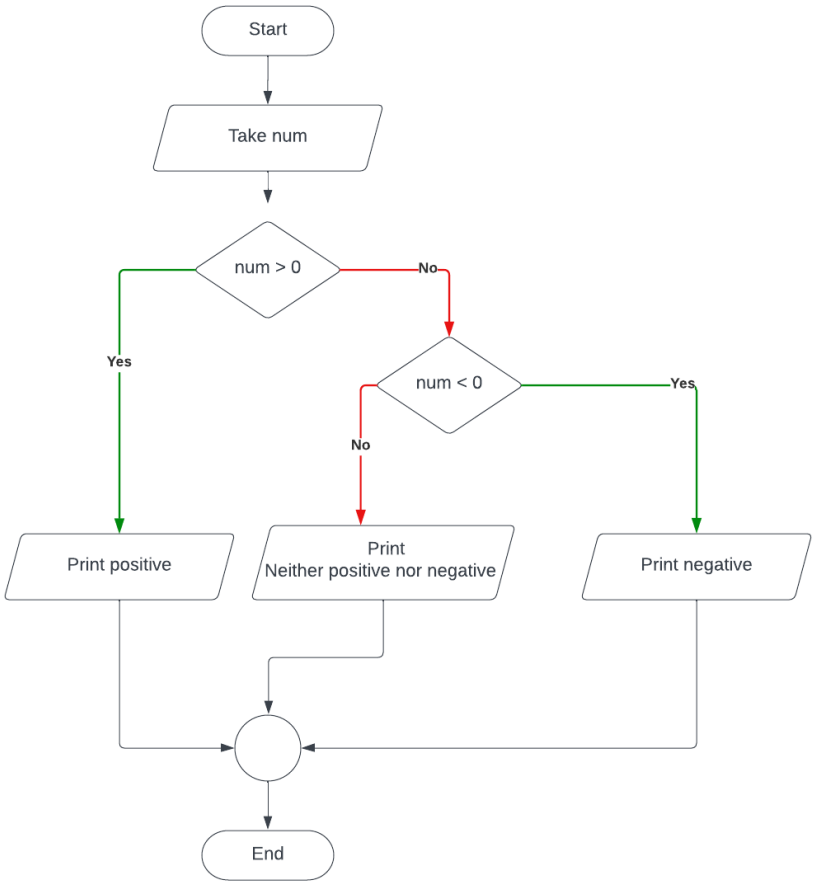
1. **Problem Description:** Draw a flowchart for calculating average of two numbers.

   Flowchart:



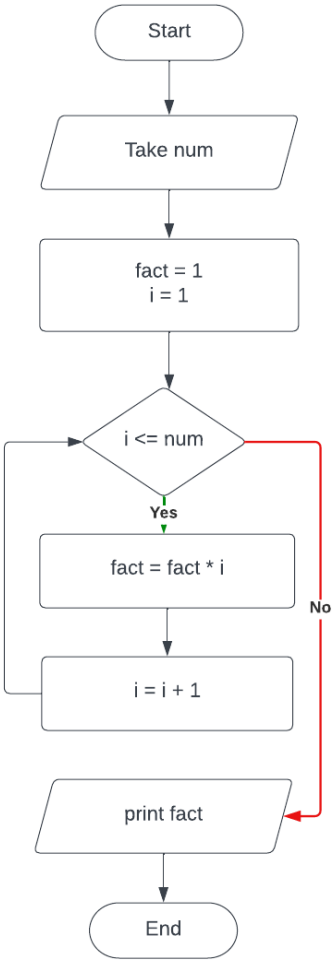
2. **Problem Description:** Check whether a given number is positive or negative

   Flowchart:



3. **Problem Description:** Find the factorial of a given number

   Flowchart:



Discussion and Conclusion

Based on the focused objectives, be familiar with flowchart and able to design flowchart of a given problem. The additional lab exercise made me more confident in the fulfillment of the objectives.

Lab Task (Please implement yourself and show the output to the instructor)

1. Check whether a year is leap year or not
2. Convert temperature from Fahrenheit to Celsius
3. Find the largest among three numbers

4. Find the Fibonacci series of first n terms.
5. Print numbers from 1 to n.

Lab exercise (submit as a report)

1. Swap two numbers using a third variable
2. Calculate the summation of even numbers from 1 to n
3. Check whether a number is prime or not
4. Check whether a triangle is equilateral, isosceles, or scalene.
5. Print multiplication table of a given number n

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