Abdelhafid Boussouf University of Mila

Science and Technology Faculty

Department of Process Engineering

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# Practical Work 04

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**Course title: Structure of Computers and Applications**

**Level: 1st year ST - ENG & LMD**

**By:**

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## Objective

This practical work aims to develop students' skills in:

1. Understanding and designing algorithms for mathematical operations
2. Creating flowcharts to visualize program logic
3. Working with loops, conditional statements, and iterative processes
4. Analyzing algorithms using trace tables
5. Understanding the logic behind digital systems
6. Apply systematic problem-solving methodologies

## Exercise 01: Factorial Calculation

1. Write an algorithm and draw a flowchart to obtain the factorial of 4.
2. Write an algorithm and draw a flowchart to obtain the factorial of N.

## Exercise 02: Area of Circles

1. Write an algorithm and draw a flowchart to find the area of (N) circles. Input the circles (N, R) and print the result. Use the general form.
2. Create a trace table using the following inputs: (Assume N to be 5 and the set of R values to be the numbers {1 2 3 6 8}).

## Exercise 03: Digital Clock

- Write an algorithm and draw a flowchart that shows how the digital clock works.

## Exercise 04: Even Numbers

1. Write an algorithm and draw a flowchart to find even numbers from 0 to 10.
2. Verify your result by a trace table.

## Exercise 05: Even and Odd Counter

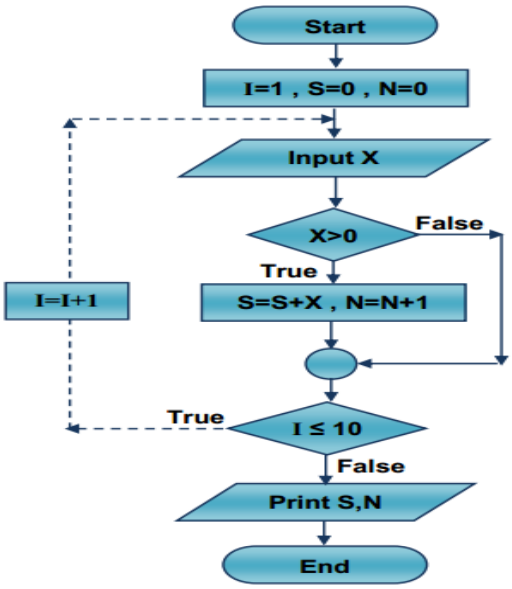
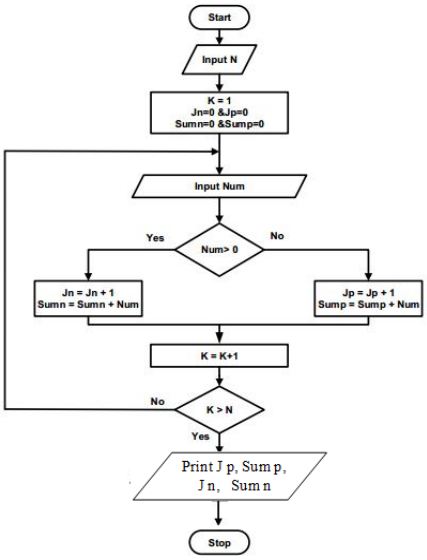
1. Write an algorithm and draw a flowchart to print number of even and odd numbers for N entered numbers. Read numbers one by one.

2. Verify your result by a trace table. (Assume N to be 5 and the following set to be the numbers {1 6 2 3 8})

## Exercise 06: Sum of Even Numbers

1. Draw a flowchart to add even numbers from 0 to 7.
2. Verify your result by a trace table.

## Exercises 07 & 08: Flowchart Analysis

| **Exercise 07** | **Exercise 08** |
|---|---|
| 1. Discuss the following flowchart and show their purposes and final results.<br>2. Verify your result by a trace table. | 1. Discuss the following flowchart and show their purposes and final results.<br>2. Verify your result by a trace table. |
|  |  |