Data Structure and Algorithm

Laboratory Activity No. 2

Algorithm Analysis and Flowchart

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I. Objectives

Introduction

Data structure is a systematic way of organizing and accessing data, and an algorithm is a step-by-step procedure for performing some task in a finite amount of time. These concepts are central to computing, but to be able to classify some data structures and algorithms as "good," we must have precise ways of analyzing them.

This laboratory activity aims to implement the principles and techniques in:

- Writing a well-structured procedure in programming
- Writing algorithm that best suits to solve computing problems to improve the efficiency of computers
- Convert algorithms into flowcharting symbols

II. Methods

A. Explain algorithm and flowchart

B. Write algorithm to find the result of equation: $f(x) = \begin{cases} -x, & x<0 \\ x, & x \geq 0 \end{cases}$ and draw its flowchart

C. Write a short recursive Python function that finds the minimum and maximum values in a sequence without using any loops

III. Results

A.

The flowchart and algorithm describe the process of calculating the absolute value of a number. The process starts by taking a number, x, as input. A decision is then made based on a condition: if x is a negative number (x<0), the function's result is set to −x, which makes the number positive. If x is not negative (x≥0), the function's result is simply the number itself, x. Finally, the resulting non-negative value is output. This entire process, whether shown as a step-by-step list or a visual flowchart, systematically converts any input number into its positive equivalent.

B.

1. Start
2. Input a number, let's call it x.
3. Check if x is less than 0.
4. If it is, then f(x) is -x.
5. Otherwise (if x is greater than or equal to 0), f(x) is x.

6. Output the result, f(x).

7. End

Conditional Function Flowchart

C.
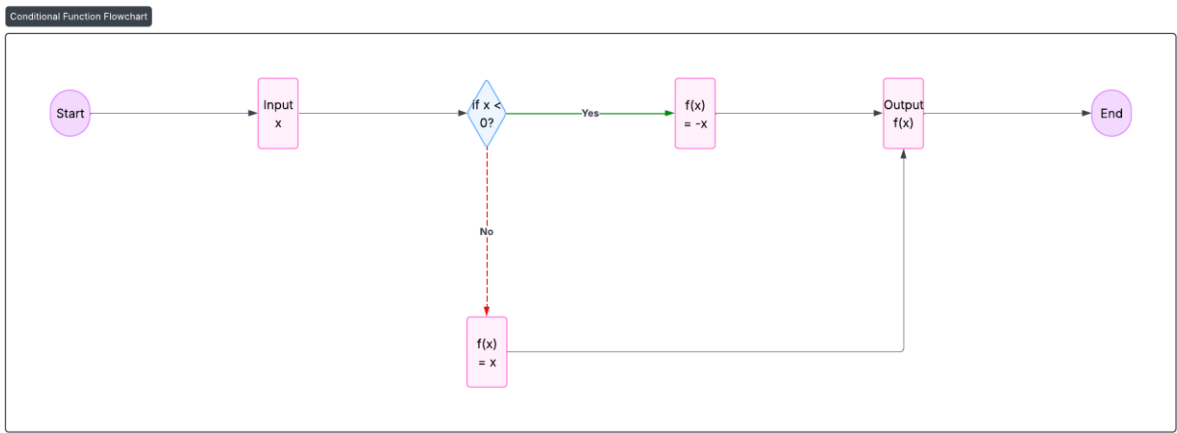
IV. Conclusion

I relearn how to solution for the problem by following planning stages like by having an initial setup, like creating an algorithm, and then after it, creating a flowchart to have Visualization of how the solution will be executed will help you plan. each stage of yours and catch any mistake that can disrupt the system

References

[1] Co Arthur O.. "University of Caloocan City Computer Engineering Department Honor Code," UCC-CpE Departmental Policies, 2020.