Data Structure and Algorithm

Laboratory Activity No. 2

Algorithm Analysis and Flowchart

|  |  |
| --- | --- |
| *Submitted by:* | *Instructor:* |
| Caasi,Karl Benedict D. | Engr. Maria Rizette H. Sayo |

August, 2,2025

# 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

# Methods

* 1. Explain algorithm and flowchart

-x, x<0

x, x ≥ 0

* 1. Write algorithm to find the result of equation: f (x) = and draw its flowchart
  2. Write a short recursive Python function that finds the minimum and maximum values in a sequence without using any loops

# Results

Present the visualized procedures done. Also present the results with corresponding data visualizations such as graphs, charts, tables, or image . Please provide insights, commentaries, or explanations regarding the data. If an explanation requires the support of literature such as academic journals, books, magazines, reports, or web articles please cite and reference them using the IEEE format.

Please take note of the styles on the style ribbon as these would serve as the style format of this laboratory report. The body style is Times New Roman size 12, line spacing: 1.5. Body text should be in Justified alignment, while captions should be center-aligned. Images should be readable and include captions. Please refer to the sample below:

A diagram of a flowchart

AI-generated content may be incorrect.Figure 1

This flowchart shows how a program calculates the **sum** and **average** of a list of numbers. It's a visual representation of the logic used in the Python code we discussed earlier.  
  
  
  
  
A computer screen shot of a program code

AI-generated content may be incorrect.

Figure 2

This code shows how to write a function in Python that calculates the total sum and average of a list of numbers. It is a helpful way to quickly get these two important values without doing the math by hand.  
In summary, this code is a simple and useful example of how programming can help us quickly calculate totals and averages from any group of numbers.

Conclusion

In this project, we used a flowchart and a Python program to find the sum and average of a list of numbers. The flowchart helped us plan the steps clearly, and the Python code showed how easily we can do the calculation using functions.

This example shows how flowcharts and code work together to solve problems in a simple and understandable way. It also helps beginners learn how to break down a problem into steps and write clean code to get the correct result.

**References**

https://docs.python.org/3/library/functions.html#sum  
https://docs.python.org/3/library/functions.html#len