Data Structure and Algorithm

Laboratory Activity No. 3

Translating Algorithm to Program

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# 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 tasks 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
* Writing an efficient Python program from translated algorithms

# Methods

• Design an algorithm and the corresponding flowchart (Note: You may use LucidChart or any application) for adding the test scores as given below if the number is even: 26,49,98,87,62,75

• Translate the algorithm to a Python program (using Google Colab)

• Save your source codes to GitHub

# Results

**ALGORITHM:**

1. **Start** the process.
2. **Initialize** a variable sum to 0 to store the sum of even numbers.
3. **Define** the list of test scores: [26, 49, 98, 87, 62, 75].
4. **Loop** through each number in the list:
   * **Check** if the current number is even (using number % 2 == 0).
   * If **even**, add it to sum.
   * If **odd**, skip it.
5. **After the loop ends**, display the sum of even numbers.
6. **End** the process.

**FLOWCHART**

A diagram of a flowchart

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*Figure 1: Screenshot of the flowchart of the program*

This flowchart shows what are the process to sum of all the even numbers in the list. As you can see if the number is not an even number it goes in a loop, if it is even it will be added to get the sum of all even numbers. Then the sum of all even numbers get print.

**Python program done in Google Colab**

A screenshot of a computer

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*Figure 2: Source code and Output*

This program totals all of the even numbers list and print them if it is odd number it will not be in the sum.

# Conclusion

This flowchart and Python program show how to sum even numbers from a list. It initializes a total, checks each number, adds evens to the total, and prints the result (186). The process efficiently filters and sums only even values.

**References**

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