UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Data Structure and Algorithm

Laboratory Activity No. 3

Translating Algorithm to Program

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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 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

II. 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

III. Results

Algorithm

- Start
- Set sum to 0
- For each number in the list:
    a. If the number is even:
    b. Add it to sum
- Display the value of the sum
- End the process

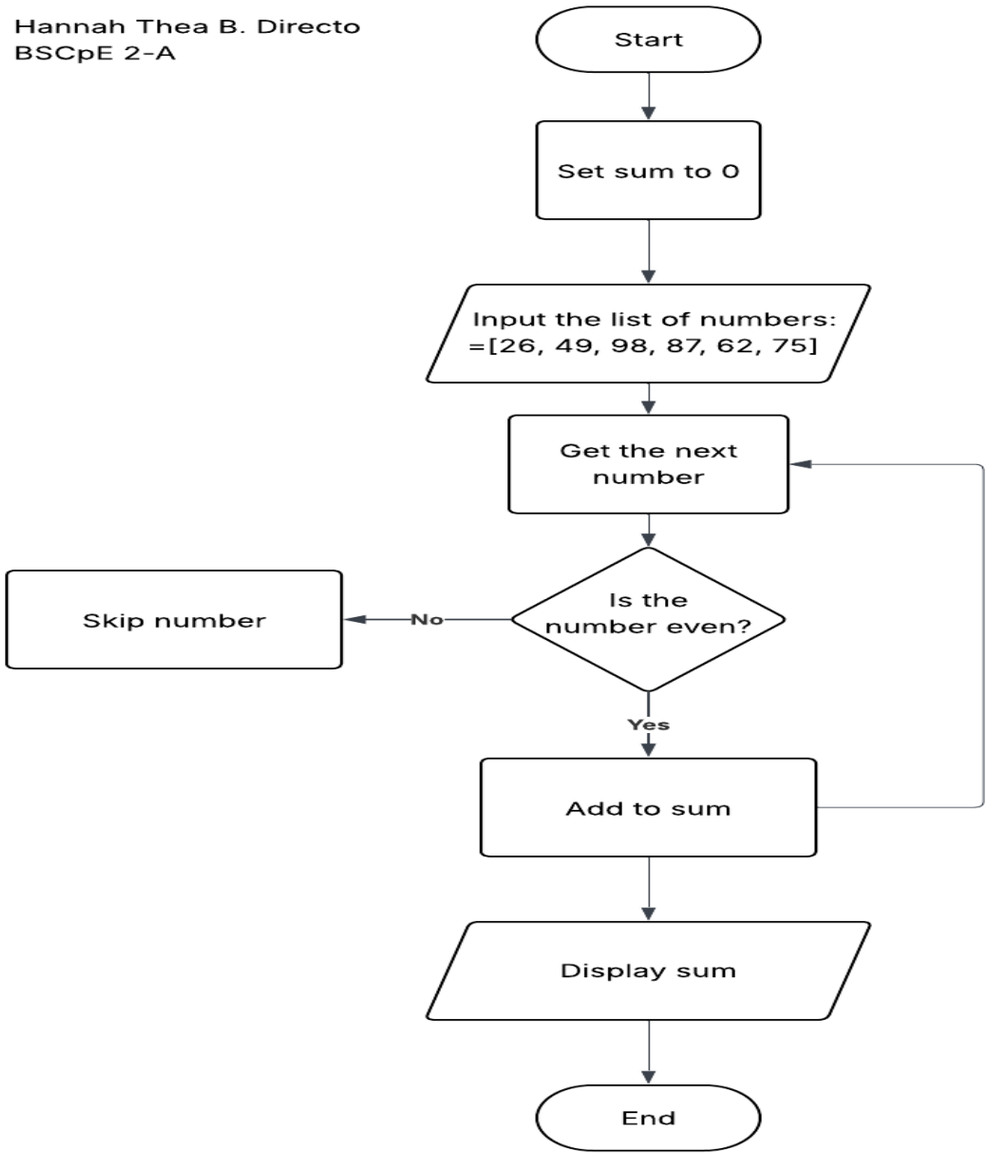
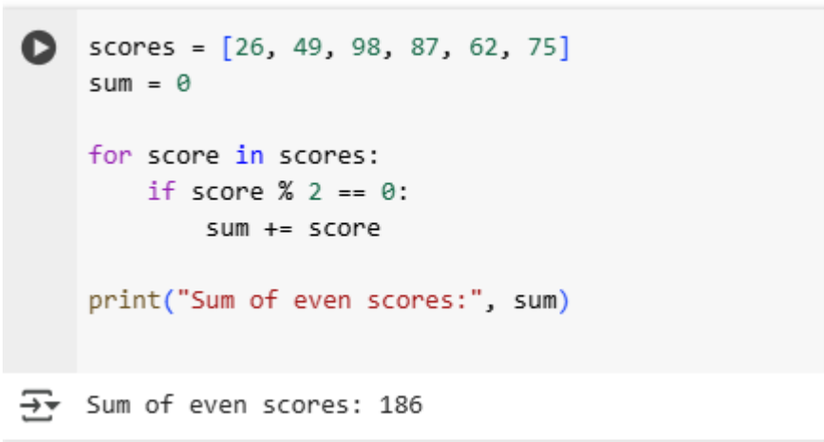


Figure 1 Screenshot of flowchart

The flowchart represents a process that calculates the sum of even numbers from a given list. It starts by setting the total sum to zero, then checks each number in the list [26, 49, 98, 87, 62, 75]. The program checks each number in the list one by one. If a number is even, it is added to the sum and if it is odd, the number will be skipped. After that, the program displays the final sum and ends the process.



```
scores = [26, 49, 98, 87, 62, 75]
sum = 0

for score in scores:
    if score % 2 == 0:
        sum += score

print("Sum of even scores:", sum)
```

```
Sum of even scores: 186
```

Figure 2 Screenshot of program

The program starts by creating a list of numbers: [26, 49, 98, 87, 62, 75,], and it also sets a variable called sum to 0. It then goes through each number in the list one by one using a loop. For every number, it checks if the number is even. Then, If the number is even, it is added to the sum. If it is odd, the program skips it. After all the numbers have been checked, the program prints out the total sum of the even numbers. In this case, the even numbers are 26, 98, and 62, and their sum is 186. So, the final output shows: “The sum of even scores: 186”.

Conclusion

This laboratory activity showed how to turn a step-by-step algorithm into a working Python program. We created a flowchart and wrote a program to calculate the sim of even numbers from a given list. Through this process, we practice using basic programming concepts like loops and conditions. The activity showed how important it is to plan our steps clearly before coding.