Adamson University
College of Engineering
Computer Engineering Department

Data Structure and Algorithm

Laboratory Activity No. 3

Translating Algorithm to Program

Submitted by:
Manigbas, Jeus Miguel T. <Leader>
Barredo, Alwin P.
Bela, Lorenzo Miguel D.
Callorina, Rovic Victor A.
Guzon, Kean Loiz I.

Instructor:
Engr. Maria Rizette H. Sayo

November, 15, 2023

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

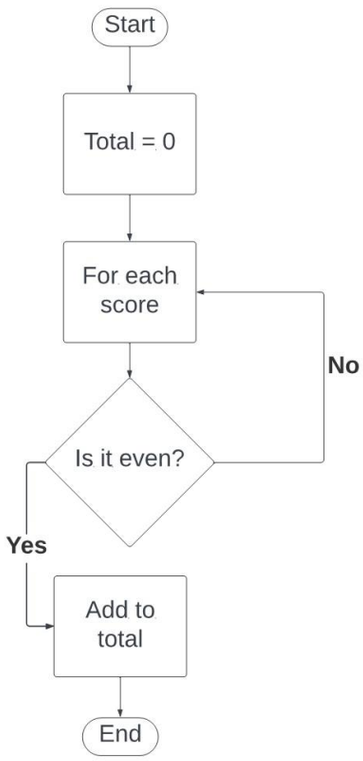

Figure 1: Flowchart of the Algorithm

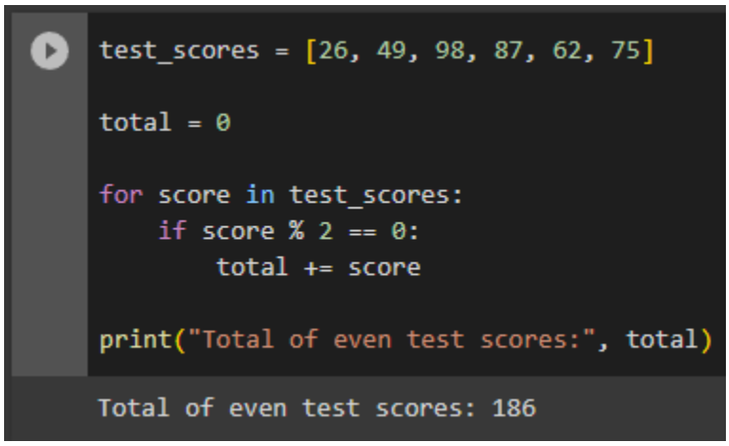

Figure 2: Translation into code from the flowchart

The provided code calculates the total of even test scores from a list of test scores. The list of test scores is defined as `test_scores = `. The code initializes a variable `total` to 0 and then loops through each score in the list. For each score, it checks if the score is even by using the modulo operator `%` to check if the score is divisible by 2. If the score is even, it adds the score to the `total` variable. Finally, it prints the total of even test scores. In this case, the output would be "Total of even test scores: 186" since the even scores are 26, 98, and 62, and their sum is 186. [2][3][4]

IV. Conclusion

Translating an algorithm to a program involves converting a set of step-by-step procedures or rules into a programming language in Python. The code provided in the question is an example of a program that implements an algorithm to calculate the total of even test scores from a list of test scores. Flowcharts and pseudocode are commonly used to design algorithms and communicate technical solutions in a structured and visual way. Once an algorithm is created, it can be translated into a program using a programming language, and the resulting program can be tested and debugged to ensure that it meets the intended requirements and specifications.

References

[1] Co Arthur O.. "Adamson University Computer Engineering Department Honor Code," AdU-CpE Departmental Policies, 2020.

[2] Bunny, “How to count the amount of input of test scores in Python?,” *Stack Overflow*, Jul. 28, 2018. https://stackoverflow.com/questions/51571891/how-to-count-the-amount-of-input-of-test-scores-in-python (accessed Nov. 15, 2023).

[3] Python Software Foundation, “Creating a program that compares test scores to answers,” *Discussions on Python.org*, Mar. 26, 2023. https://discuss.python.org/t/creating-a-program-that-compares-test-scores-to-answers/25176 (accessed Nov. 15, 2023).

[4]“Python program to print even numbers in a list,” *GeeksforGeeks*, Oct. 22, 2018. https://www.geeksforgeeks.org/python-program-to-print-even-numbers-in-a-list/ (accessed Nov. 15, 2023).