



CLASS NUMBER: 31

SECTION: BSTM - 1120 191

NAME: Torres, Isaiah

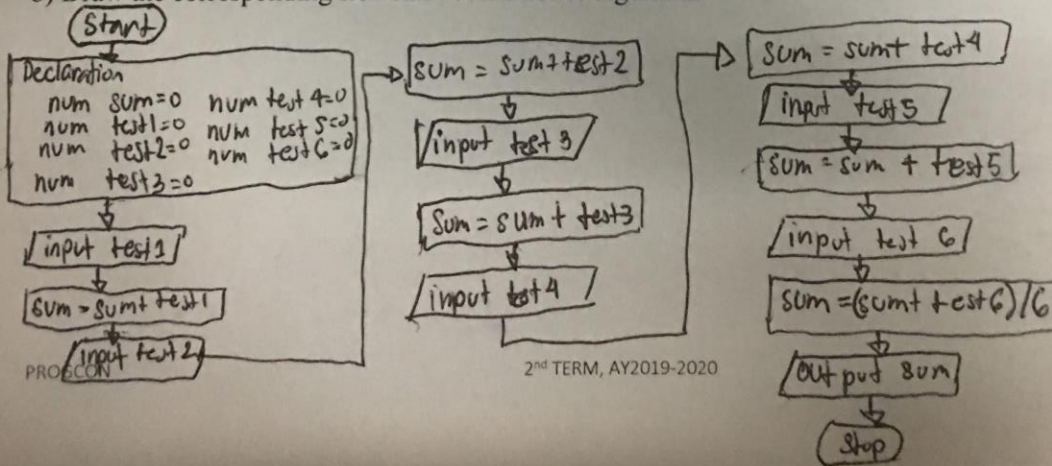
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**Exercise 1.** Design an algorithm and the corresponding flowchart for adding the test scores as given below: 85, 65, 78, 52, 98, 83

a) Algorithm

1. Start
2. Sum = 0
3. Get the first test score
4. Add first test score to sum
5. Get the second test score
6. ~~(Get the)~~ Add the second test score to the value of the sum
7. Get the third test score
8. Add to the value of the sum
9. ~~Get the fourth test score~~
10. Add to the value of the sum
11. Get the fifth test score
12. Add to the value of the sum
13. ~~Get sixth test score~~
14. Add to value of the sum and divide sum by 6
15. Output
16. Stop

b) Draw the corresponding flowchart of the above algorithm





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### Flowcharting Exercises

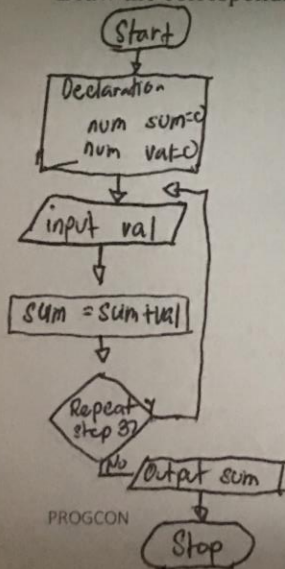
**Exercise 2:** The problem with the algorithm from Exercise 1 is that, some of the steps appear more than once, i.e. step 5 get second number, step 7, get third number, etc.

One could shorten the algorithm as follows:

1. Start
2. Sum = 0
3. Get a value
4.  $\text{sum} = \text{sum} + \text{value}$
5. Go to step 3 to get next Value
6. Output the sum
7. Stop

This algorithm and its corresponding flowchart are a bit shorter than the first one. In this algorithm, step 3 to 5 will be repeated, where a number is obtained and added to sum. Similarly, the flowchart indicates a flow line being drawn back to the previous step indicating that the portion of the flowchart is being repeated.

Draw the corresponding flowchart of the above algorithm.





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### Flowcharting Exercises

**Exercise 3:** From the exercise 2, one problem indicates that these steps will be repeated endlessly, resulting in an **endless** algorithm or flowchart.

The algorithm needs to be improved to eliminate this problem. In order to solve this problem, we need to add a last value to the list of numbers given. This value should be unique so that, each time we get a value, we test the value to see if we have reached the last value.

In this way our algorithm will be a finite algorithm which ends in a finite number of steps as shown below. There are many ways of making the algorithm finite.

The new list of numbers will be 10, 20, 300, 4000, 50000, 1, -1. The value -1 is a unique number since all other numbers are positive.

1. Start
2. Sum = 0
3. Get a value
4. If the value is equal to -1, go to step 7
5. Add to sum (  $\text{sum} = \text{sum} + \text{value}$  )
6. Go to step 3 to get next Value
7. Output the sum
8. Stop

Draw the corresponding flowchart of the above algorithm.

