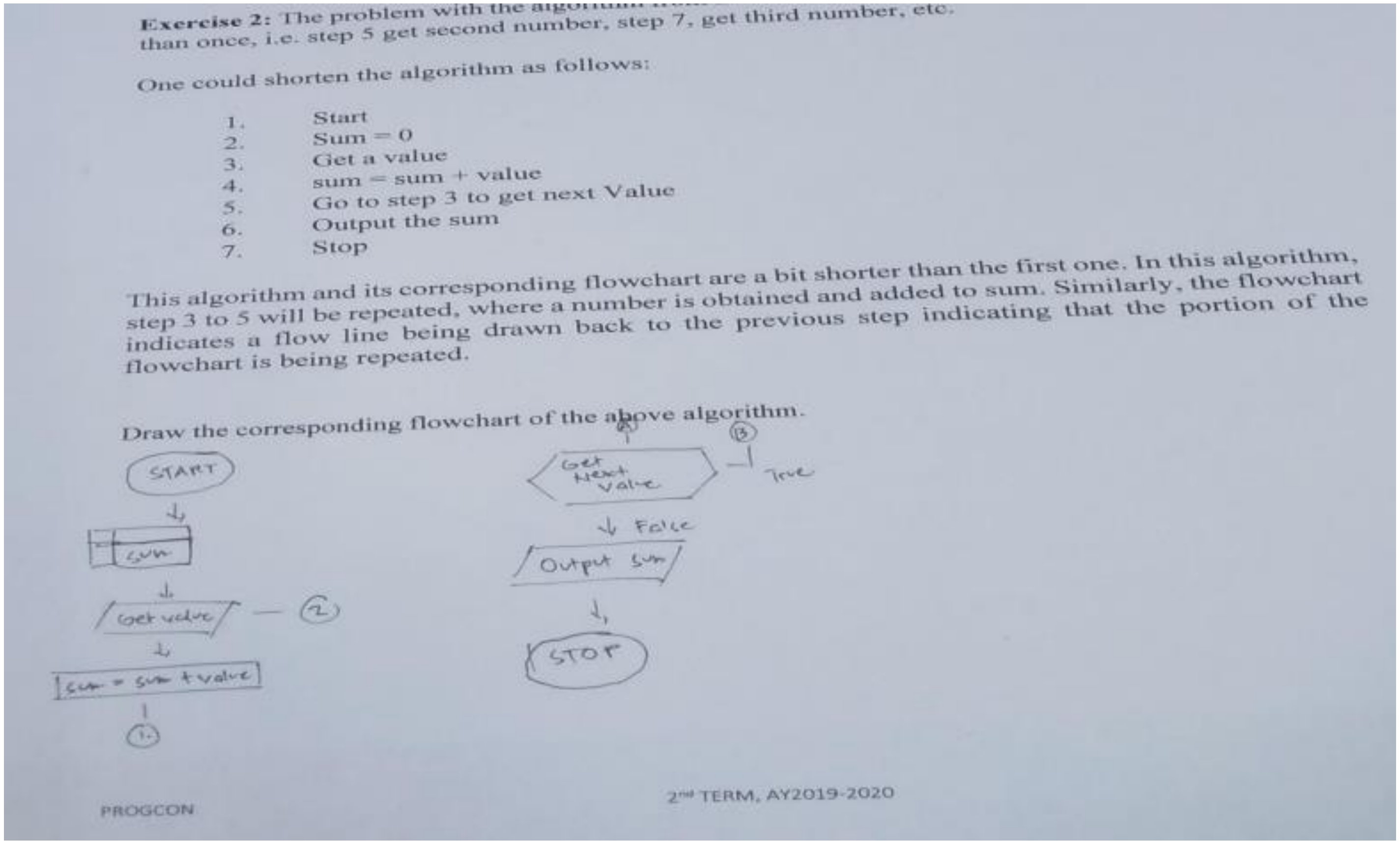
Jot Flora G. Lorenzo

BSBA-FM191

Flowcharting Exercises



Exercise 2: The problem with the algorithm
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.    sum = sum + 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.

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.    sum = sum + value
5.    Go to step 3 to get next Value
6.    Output the sum
7.    Stop
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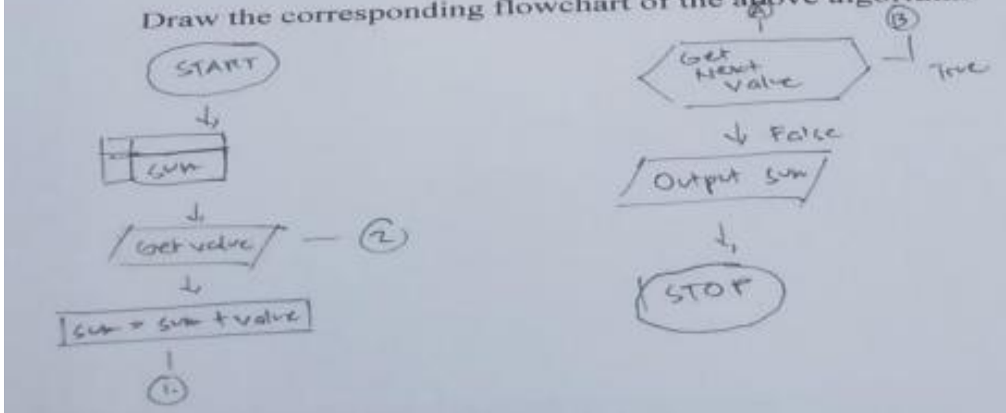


Exercise 3: From the exercise 2, one problem indicates that these steps will be repeated endlessly, resulting in an **endless** algorithm or flowchart.

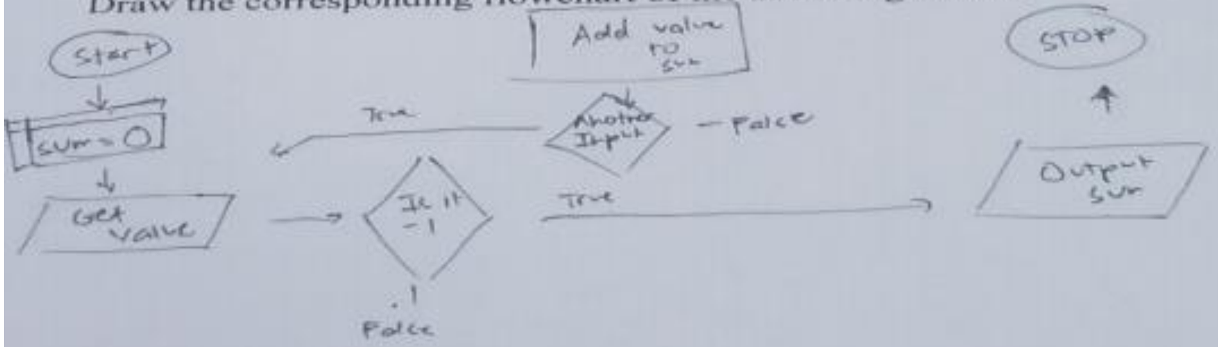
The algorithm needs to be improved to eliminate this problem. In order to solve this problem, we need to add a last value to the list of numbers given. This value should be unique so that, each time we get a value, we test the value to see if we have reached the last value.

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 (sum = sum + value)
6. Go to step 3 to get next Value
7. Output the sum
8. Stop

Draw the corresponding flowchart of the above algorithm.


Start
sum = 0
Get value
Is it -1
True
Falce
Add value to sum
Another Input
True
- Falce
Output sum
STOP