SINDH MADRESSATUL ISLAM UNIVERISTY, KARACHI

DEPARTMENT OF SOFTWARE ENGINEERING

FALL 2022

CSC103 - PROGRAMMING FUNDAMENTALS

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SECTION SE1A/SE1B/SE1C/CS1D[e]

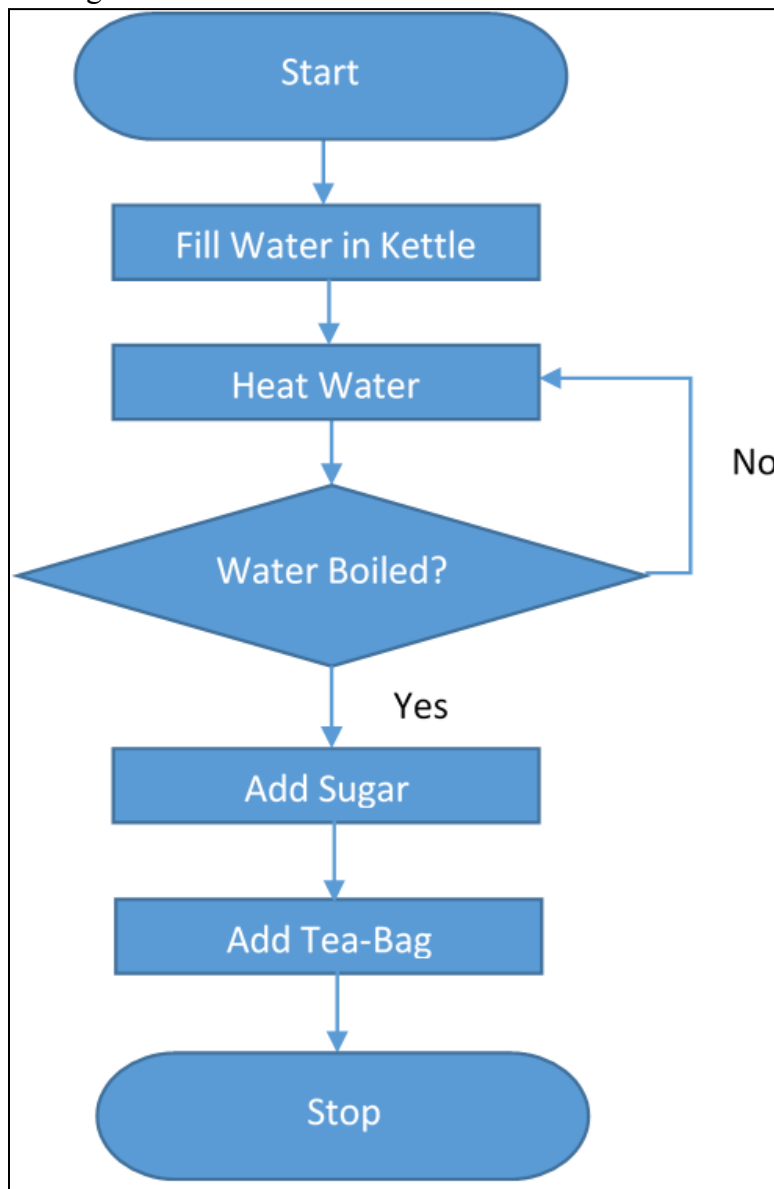# LAB MANUAL 01

FLOWCHARTS IN RAPTOR

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1. Flowchart:

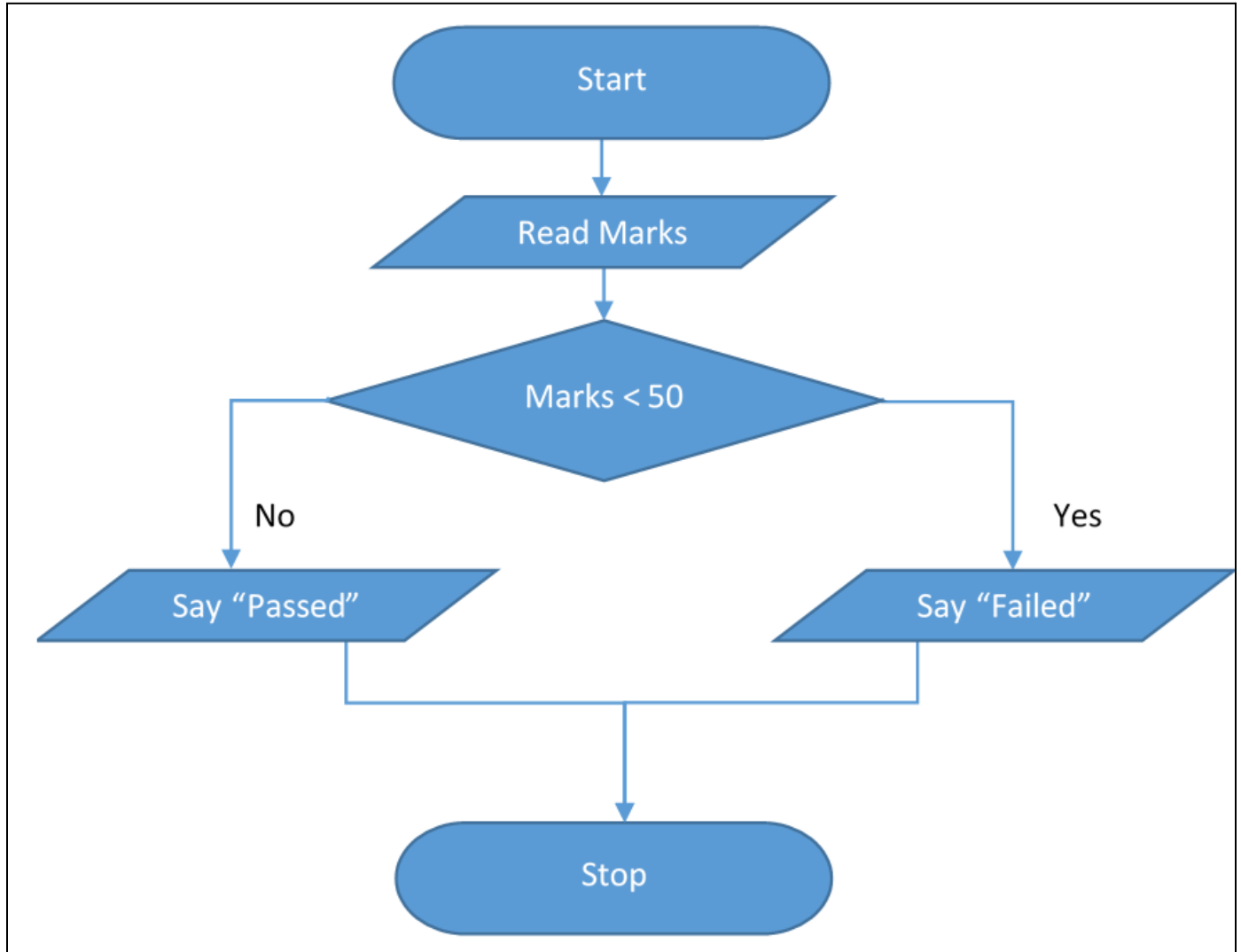- Flowchart is a pictorial representation showing a step-by-step picture of the process.

2. Example 01:

- Making Tea:

3. Example 02:

- Assigning Result:

4. Flowchart Symbols:

Symbols	Name	Function
	Start/Stop	Represents Start or end point
	Arrows	Shows flow/relationship between the shapes
	Input/Output	Represents if an input or output undergoes
	Process	Represents a process or action
	Decision	A diamond indicates when a decision is to be taken

5. Problem:

● Multiply two numbers

Example:

Input: Read two numbers a and b

Output: Product of a and b

Steps:

1. Read a
2. Read b
3. Multiply = a*b
4. Display Multiply

Converting algorithm into flowchart

```
        ┌─────────────────┐
        │      Start       │
        └─────────────────┘
                 │
                 ▼
        ╱─────────────────╱
       ╱     Read a       ╱
      ╱─────────────────╱
                 │
                 ▼
        ╱─────────────────╱
       ╱     Read b       ╱
      ╱─────────────────╱
                 │
                 ▼
        ┌─────────────────┐
        │ Multiply = a * b │
        └─────────────────┘
                 │
                 ▼
        ╱─────────────────────╱
       ╱   Display Multiply   ╱
      ╱─────────────────────╱
                 │
                 ▼
        ┌─────────────────┐
        │      Stop        │
        └─────────────────┘
```
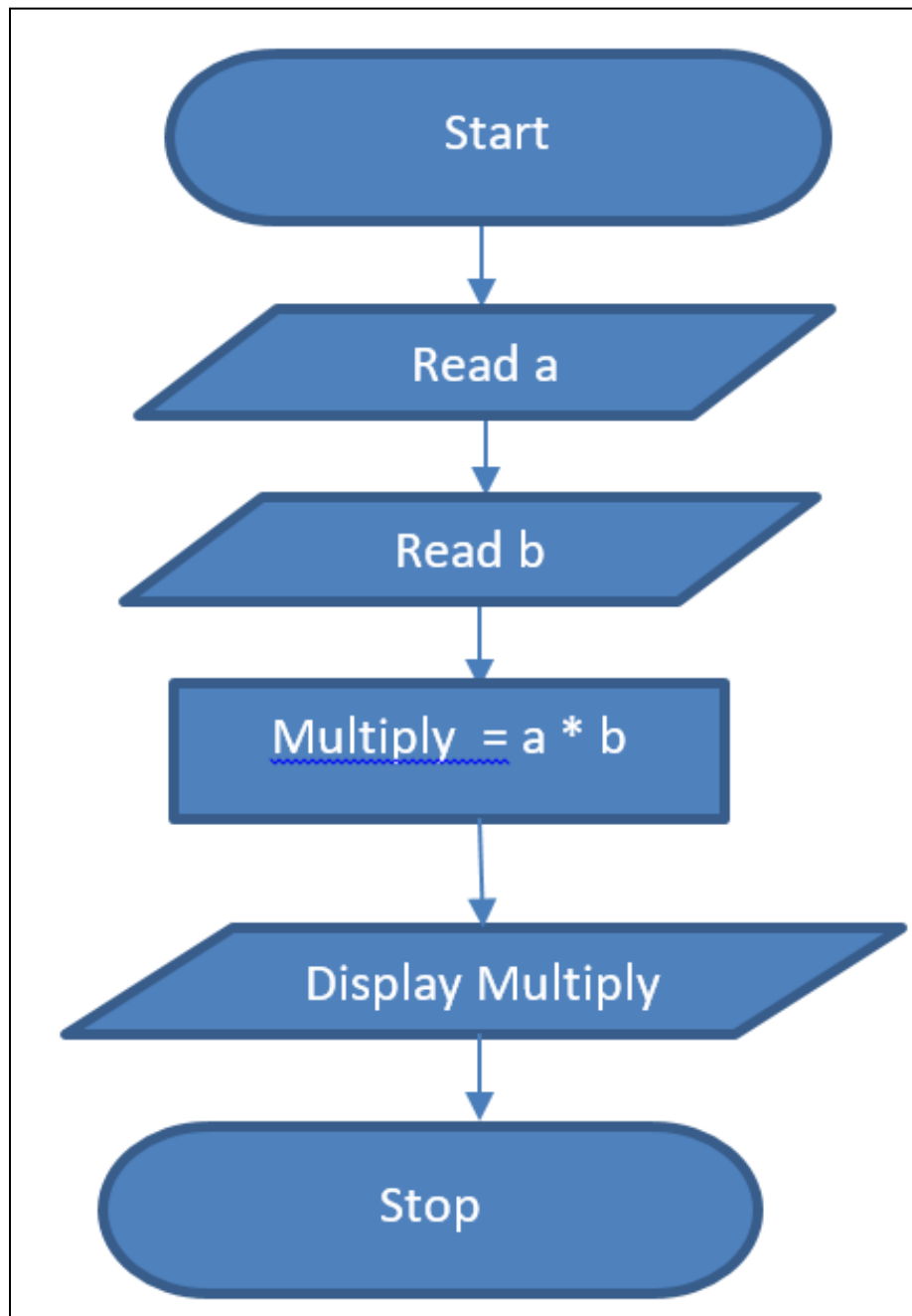
6. A Sample Raptor Flowchart

- A flow chart showing the sum of two numbers

```
                    Start

            "Enter Number1"
               GET a[3]

            "Enter Number2"
               GET b[4]

            sum ← a[3] + b[4]

        PUT "the sum is " + sum¶

                    End
```
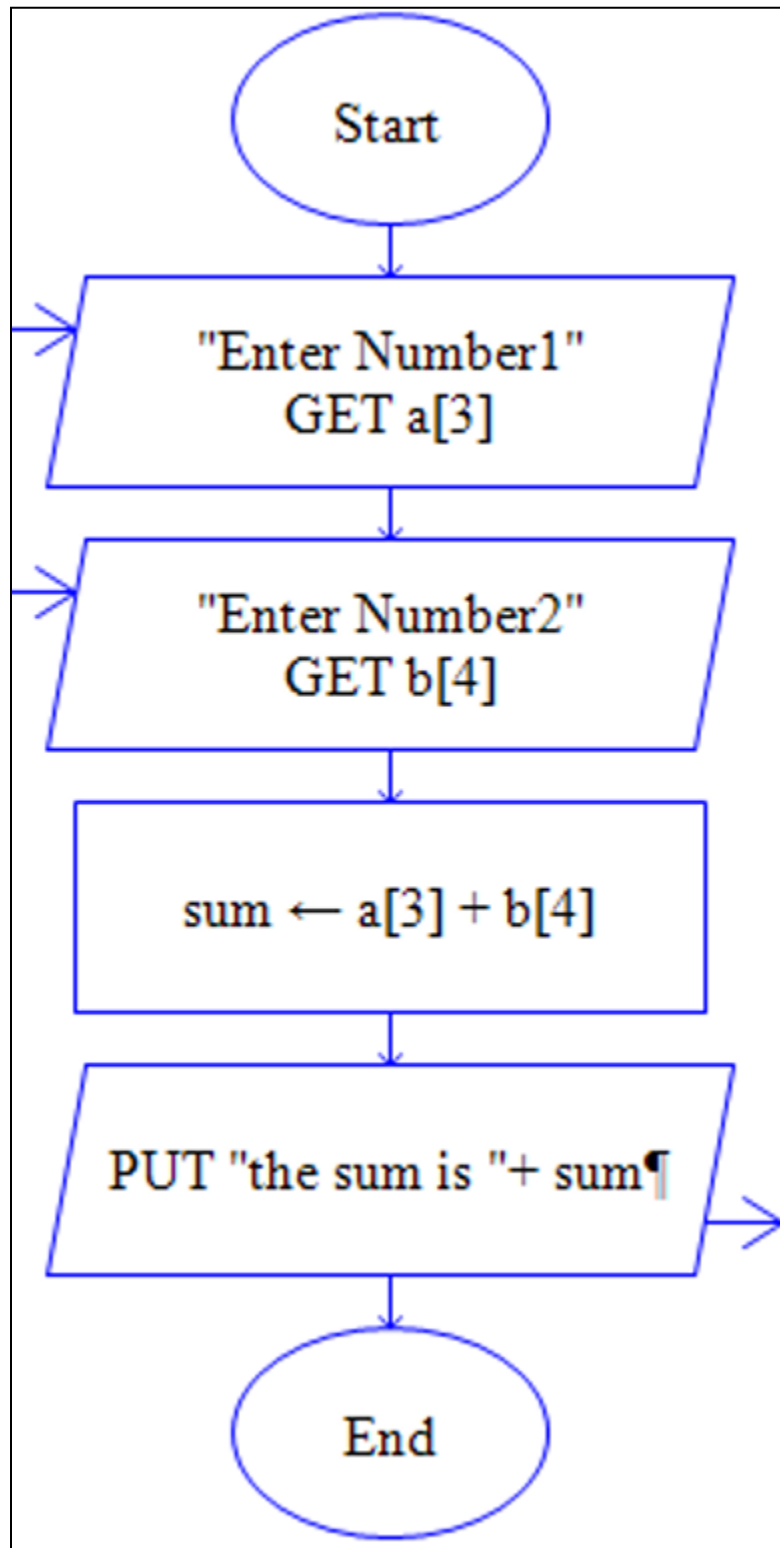
Lab Task 01:

1. **Write step by step instructions and draw the flowchart for finding the average of two numbers.**
2. **Write a solution and draw the flowchart for finding the area of a rectangle.**
3. **Read four lengths a, b, c and d and find out whether they 'can' form a valid square.**
4. **Input an alphabet (e.g. 'a', 'b, 'c', 'x', 'y', 'z') and display whether the input alphabet is a vowel (i.e. a, e, i, o, u) or not.**
5. **Find whether a number is divisible by 9 or not.**

Submission Instructions:

Due Date: Oct 13, 2022

1. **Write a Word document and answer the questions in that.**
2. **Convert the file to PDF and name it yourRollNum_yourSection_LTNumber (e.g. BSE-22F-123_SE1A_LT1.pdf)**
3. **For Raptor files, name your raptor files as questionNumber_yourRollNum_yourSection_LTNumber.rap (e.g. Q1_BSE-22F-123_SE1A_LT1.rap).**
4. **Place all files (both pdf and Raptor files) in a folder and name the folder as yourRollNum_yourSection_LTNumber (e.g. BSE-22F-123_SE1A_LT1).**
5. **Compress the folder by using either Winrar or 7Zip with the same name.**
6. **Go to tiny.cc/pffall2022smiu and in the "Coordination Document Folder" open the "PF-Activity Submission Form".**
7. **Fill out all the details with your correct password and submit the form by the due date.**