FACULTY OF COMPUTING

SEMESTER 1 2023/2024

(SECJ1013) PROGRAMMING TECHNIQUE 1

SECTION 3

ASSIGNMENT 1

LECTURER: DR. NIES HUI WEN

STUDENT NAME	MATRIC NO
LAU YEE WEN	A23CS0099
CHERYL CHEONG KAH VOON	A23CS0060

ASSIGNMENT 1

INSTRUCTIONS TO THE STUDENTS

- This assignment must be done **in a group of two**.
- Any form of plagiarism is **NOT ALLOWED**. Students who copied other's assignments will get **ZERO** marks (both parties, students who copied and students who shared their work).
- Please put your **name and matric number** and your member's **name and matric number** on the front page of the submitted file.

SUBMISSION PROCEDURE

- Please submit this exercise no later than **November 05, 2023, Sunday (00:00 MYT)**.
- Only one file is required for the submission (the file with the extension **.pdf**).
- Only **ONE** submission per pair (group).
- Submit the assignment via the UTM's e-learning system (https://elearning.utm.my/23241/).
- Note: Draw your flowchart using any appropriate drawing tools such as Microsoft Visio, Lucid chart (https://www.lucidchart.com/pages/examples/flowchart-maker), and draw.io (https://app.diagrams.net/).

SET 1

Based on the output below, provide your answers on how you designed the program. Make sure to include either pseudocode or flowchart until you write the codes for the program to generate the output.

Note: The font in **bold** shows input entered by the user.

Output

Enter member 1 name: **your group's first member name**
Enter member 1 matric number: **your group's first member matric number**
Enter member 2 name: **your group's second member name**
Enter member 2 matric number: **your group's second member matric number**

Assignment 1

Course: SECJ 1013 Programming Technique 1
Section: your section number
Program: your program name (e.g., Bachelor of Computer Science (Bioinformatics / Data Engineering / Software Engineering))
Members:
your group's first member name (your group's first member matric number)
your group's second member name (your group's second member matric number)

```cpp
#include <iostream>
#include <string>
using namespace std;

int main()
{
    string name1, name2, num1, num2;

    cout << "Enter member 1 name: ";
    getline(cin, name1);

    cout << "Enter memeber 1 matric number: ";
    cin >> num1;
    cin.ignore();

    cout << "Enter memeber 2 name: ";
    getline(cin,name2);

    cout << "Enter member 2 matric number: ";
    cin >> num2;
    cin.ignore();

    cout << "\nAssignment 1" <<endl;
    cout << "-----------------" << endl;
    cout << "Course: SECJ 1013 Programming Technique 1" <<endl;
    cout << "Section: 03";
    cout << "\nProgram: Bachelor of Computer Science(Data Engineering)"<<endl ;

    cout << "Members: " << endl;
    cout << name1 <<" (" << num1 <<")"<< endl;
    cout << name2 <<" (" << num2 <<")";
    return 0;
}
```

```
C:\Users\Asus_User\OneDrive
Enter member 1 name: LAU YEE WEN
Enter memeber 1 matric number: A23CS0099
Enter memeber 2 name: CHERYL CHEONG KAH VOON
Enter member 2 matric number: A23CS0060

Assignment 1
-----------------
Course: SECJ 1013 Programming Technique 1
Section: 03
Program: Bachelor of Computer Science(Data Engineering)
Members:
LAU YEE WEN (A23CS0099)
CHERYL CHEONG KAH VOON (A23CS0060)
--------------------------------
Process exited after 43.89 seconds with return value 0
Press any key to continue . . .
```

Pseudocode

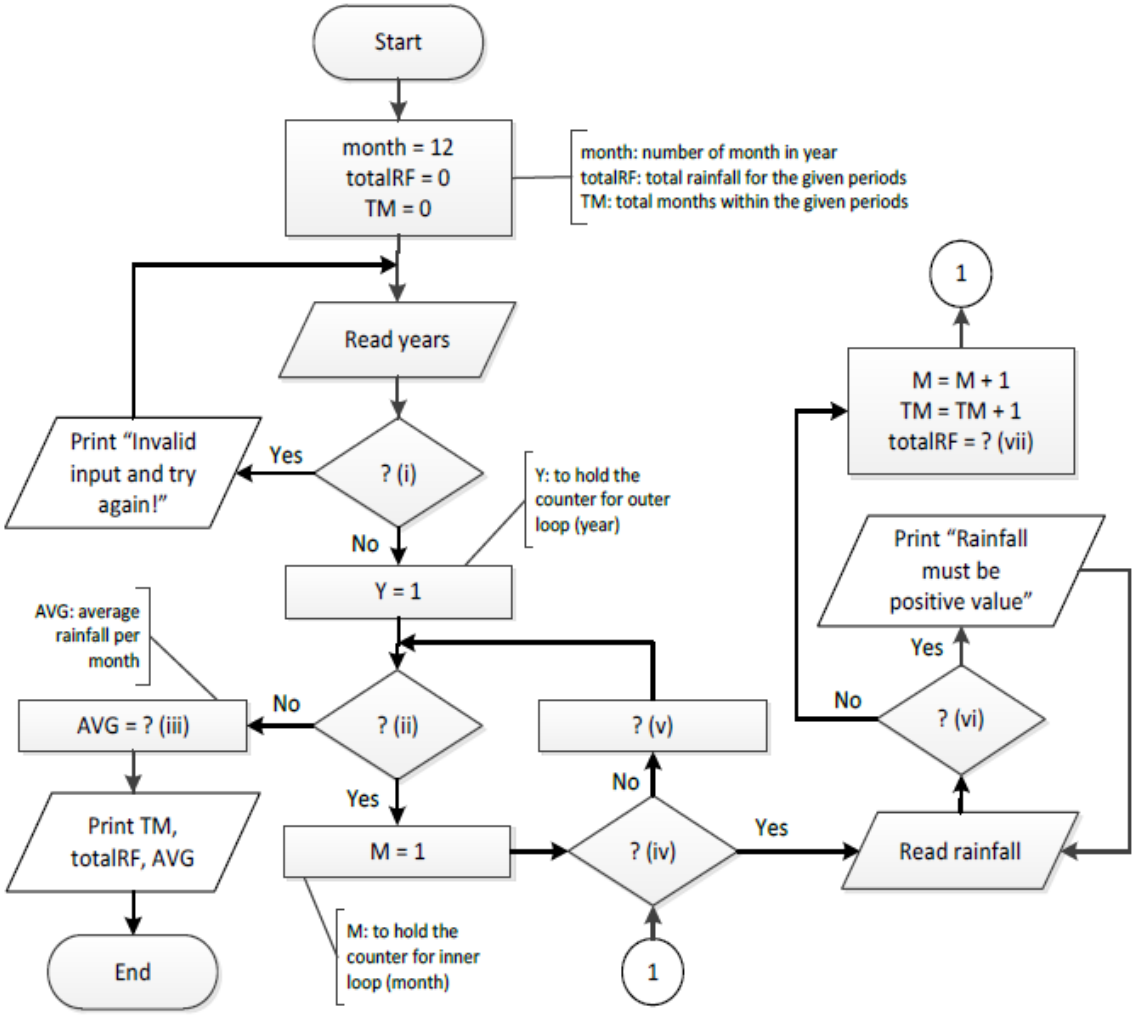
1. Start
2. Print “Enter member 1 name: ”
3. Read name1
4. Print “Enter member 1 matric number: ”
5. Read num1
6. Print “Enter member 2 name: ”
7. Read name2
8. Print “Enter member 2 matric number: ”
9. Read num2
10. Print “\nAsignment 1”
11. Print “----------”
12. Print “Course: SECJ 1013 Programming Technique 1”
13. Print “Section: 03”
14. Print “Program: Bachelor of Computer Science (Data Engineering)”
15. Print “Members: ”
16. Print name1 , “ (” , num1, “)”
17. Print name2 , “ (” , num2 , “)”
18. Stop

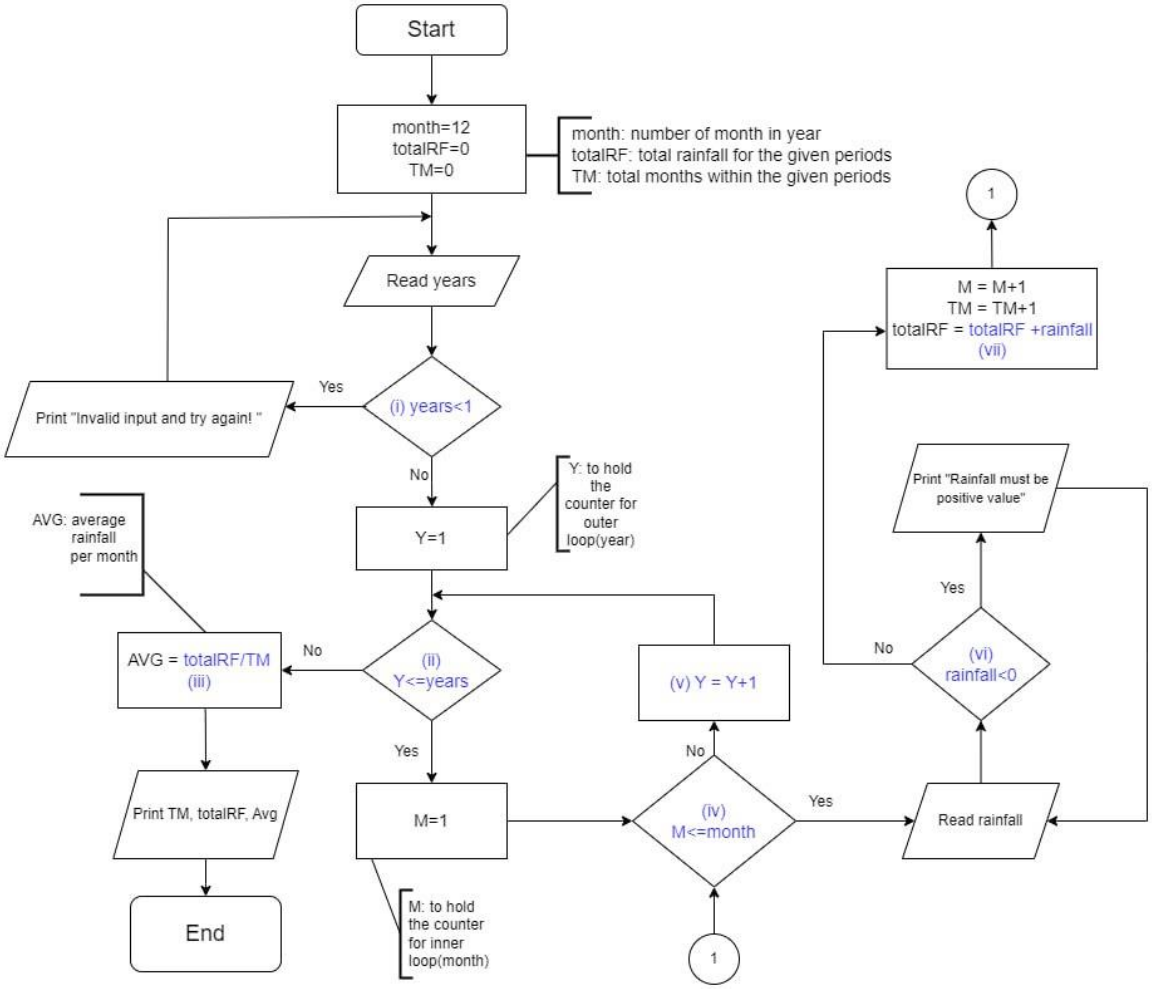
SET 2

The flowchart below represents a nested loop to collect data and calculate the average rainfall over a period of years. First, the program should ask for the number of years. The outer loop will iterate once for each year. The inner loop will iterate 12 times for each year. Each iteration of the inner loop will ask the user for the inches of rainfall for that month. After all iterations, the program should display the number of months, the total inches of rainfall, and the average rainfall per month for the entire period.

Input Validation: Do not accept a number less than 1 for the number of years. Do not accept negative numbers for the monthly rainfall.

Fill in the blank graphical symbols with question mark (?) and Roman numbers in the flowchart below with appropriate instructions. Redraw the flowchart below with your answers.




Start
month=12
totalRF=0
TM=0
month: number of month in year
totalRF: total rainfall for the given periods
TM: total months within the given periods
Read years
(i) years<1
Yes
Print "Invalid input and try again! "
No
Y=1
Y: to hold the counter for outer loop(year)
AVG: average rainfall per month
(ii) Y<=years
No
AVG = totalRF/TM (iii)
Print TM, totalRF, Avg
End
Yes
M=1
M: to hold the counter for inner loop(month)
(iv) M<=month
No
(v) Y = Y+1
1
Yes
Read rainfall
(vi) rainfall<0
No
Yes
Print "Rainfall must be positive value"
M = M+1
TM = TM+1
totalRF = totalRF +rainfall (vii)
1

SET 3

Based on the C++ program below, Identify and correct any syntax and/or logical errors in the program by writing the corrected statements in the table below. Only the corrected statements need to be written in the table.

```
1   #include <iostream>
2   int main() {
3   int i = 25;
4   while (i > 0) {
5   for (j = i; j > 0; j =- 5) {
6   if (i + j) % 4 != 0;
7   continue;
8   else
9   cout << "j = " << --j;
10  << " i = " << i << endl;
11  }
12  i =/ 2;
13  }
14  }
```

Line	Corrected Statements
2	using namespace std;
5	for (int j=i ; j>0; j-=5) {
6	if ((i+j) % 4 !=0)
8	else {
9	cout << "j= " << --j << endl;
10	cout << " i= " << i << endl; }
12	i /= 2 ;
14	return 0 ;

SET 4

Convert the pseudocode below to a simple C++ program and provide the output as shown below.

Note: The font in **bold** shows input entered by the user.

```
1. Start
2. Set price = 0
3. Read quantity, level
4. If (level = "Low")
    4.1 If (quantity >= 0) AND (quantity < 15)
          4.1.1 price = quantity * 0.3
    4.2 Else_If (quantity >= 15) AND (quantity <= 50)
          4.2.1 price = quantity * 0.5
    4.3 Else_If (quantity >= 51)
          4.3.1 price = quantity * 0.7
    4.4 End_If
5. Else
    5.1 If (quantity > 0) AND (quantity <= 10)
          5.1.1 price = quantity * 0.2
    5.2 Else_If (quantity > 10) AND (quantity <= 20)
          5.2.1 price = quantity * 0.3
    5.3 Else_If (quantity > 20)
          5.3.1 price = quantity * 0.6
    5.4 End_If
6. End_If
7. Display price
8. End
```

Note:

"If" using the command "if"

"Else_If" using the command "else if"

Output for Example 1

Enter the quantity and level: **51 Low**

Price: RM 35.7

Output for Example 2

Enter the quantity and level: **0 Medium**

Price: RM 0

Output for Example 3

Enter the quantity and level: **20 High**

Price: RM 6

```cpp
#include <iostream>
using namespace std;

int main()
{
    double price = 0;
    string level;
    int quantity;

    cout << "Enter the quantity and level: ";
    cin>> quantity >> level;

    if(level == "Low")
    {
        if ((quantity >= 0)&& (quantity <15))
            price = quantity* 0.3;
        else if ((quantity >= 15) && (quantity <=50))
            price = quantity* 0.5;
        else if (quantity >= 51)
            price = quantity* 0.7;
    }
    else
    {
        if((quantity>0) && (quantity <=10))
            price = quantity* 0.2;
        else if ((quantity > 10) && (quantity <=20))
            price = quantity* 0.3;
        else if (quantity >20)
            price = quantity* 0.6;
    }
    cout<< "Price: RM " << price;
}
```

```
C:\Users\Asus_User\OneDrive
Enter the quantity and level: 51 Low
Price: RM 35.7
--------------------------------
C:\Users\Asus_User\OneDrive
Enter the quantity and level: 0 Medium
Price: RM 0
C:\Users\Asus_User\OneDrive
Enter the quantity and level: 20 High
Price: RM 6
--------------------------------
Process exited after 2.847 seconds with return value 0
Press any key to continue . . .
```