



## STIA1113 PROGRAMMING 1

FIRST SEMESTER SESSION 2021/2022 (A211)

### ASSIGNMENT 3

**TOPIC:**

**UNIVERSITY**

**PREPARED FOR:**

**PROF. MADYA DR. AZMAN BIN YASIN**

**PREPARED BY:**

**GROUP 4**

NO.	NAME	MATRICS NO.
1.	<b>SITI NUR AISYAH BINTI ABDULLAH</b>	<b>286752</b>
2.	<b>NUR ALYA BINTI MOHD IZAZI</b>	<b>286814</b>
3.	<b>TANG WEI CHIANG</b>	<b>286841</b>
4.	<b>FARA AYEESHA BINTI AHMAD YUSNI</b>	<b>286941</b>
5.	<b>NIK MOHAMAD HANIS BIN NIK YAHYA</b>	<b>286961</b>

## **TOPIC EMPLOYEES - SITI NUR AISYAH BINTI ABDULLAH**

### **1. Identify problem:**

In some institutions hourly-paid teaching staff are paid a comprehensive teaching rate for every hour of teaching that is supposed to cover other duties such as preparation, marking, administration and attending meetings. They face a problem when they have hazy understanding of how the salary have been paid according to their types of lecturers. This makes it difficult to calculate an accurate monthly wage.

However, lecturers generally consist of several types or classes. This depends on the offer made by the university. Over time, when a new campus opens, the number of students recruited increases and indirectly, the teaching staff required also increases. Therefore, new employees were recruited to cover the shortage of lecturers.

They are several types of lecturers in university:

#### i. Permanent Lecturer

Permanent lecturers are lecturers who are confirmed positions in university. The average permanent lecturer has a master's degree. However, there may still be lecturers with a degree who are serving.

#### ii. Contract Lecturer

Contract lecturers may consist of two small groups either from scholarship holder or from lecturers who have served for a long time and were appointed to contract positions. For the scholarship holder lecturer, the contract lecturer referred to here is a probationary period before being confirmed for a permanent position. However, they will be called to teach even they has not yet completed their studies. In fact, there are also many lecturers who have served but have not completed their studies in the master's field.

#### iii. Part Time Full Time Lecturer(PTFT)

In some places, it is also known as a package lecturer. PTFT lecturers only needed while waiting for the return of the contract lecturer according to the semester. Unlike permanent or contract lecturers, their salaries are paid by the Malaysian government. If the government announces a bonus, this bonus is only enjoyed by permanent or contract staff. In fact, PTFT only gets a basic salary.

## **2. Understanding the problem:**

A salary or wages is the payment typically paid on monthly basis. The lecturers who are teaching at Universiti Utara Malaysia (UUM) are paid per hour according to their respective work codes. 10% and 0.5% of the salary will be deducted to the Employees Provident Fund (EPF) and Employee SOCSO, and they will get an allowance for every month. They have to keep the pay slip for future use and the pay slip must have detailed information such as name, identification number, work code, month of payslip, amount of allowance and deduction and the net salary. The table below show the general information for lecturers use to key in their details. They have to key in other information such as name and identification number to confirmed their salary.

Types of lecturer	Permanent Lecturer	Contract Lecturer	PTFT Lecturer
Work code	DPL45	DCL51	DP441
Salary per hour	RM132.00	RM85.00	RM63.00
Allowance	RM900	RM800	RM0

## **3. Alternative ways:**

- i. Lecturers just receive the payment by bank transfer without well documented.
- ii. Lecturers have to check their salary with digital access by using the information that prepared and insert their detailed information as well.
- iii. Lecturers check their salary and print out the pay slip.

## **4. Best way(2):**

The best way to solve this problem is way (ii). This is because, the data input process for the lecturer's payment will easier since the system used has digital access. Compared to way (i) and (iii), way (ii) will minimize the difficulties to use the payslip in future use. Furthermore, the financial data is recorded more clearly and it will prevent from loss and damage.

## **5. Instruction:**

- i. Lecturer have to enter their name, identification card number, work code and month of payslip.

- ii. Lecturer insert an input such as hour of work, salary per hour and allowance for system save and calculate their salary based on details.
- iii. System calculates the basic salary by use the formula:  

$$\text{basic salary} = \text{salary per hour} * \text{hour}$$
- iv. System calculates the amount of deduction by use the formula:  

$$\text{EPF} = 0.1 * \text{basic salary}$$
  

$$\text{SOCSO} = 0.005 * \text{basic salary}$$
  

$$\text{amount of deduction} = \text{EPF} + \text{SOCSO}$$
- v. System calculates the net salary based on basic salary and amount of deduction  

$$\text{net salary} = \text{basic salary} - \text{amount of deduction}$$
- vi. System display the payslip contains their information and net salary.

## 6. Evaluate the solution

The solutions fulfil the requirement to solve the problem that have been stated. Lecturers must insert their information to system for process. First of all, the system will calculate basic salary based on salary per hour and hour of work. Next, system will calculate the amount of deduction by adding the amount of EPF and SOCSO together. Lastly, the system will calculate the net salary by deduct the basic salary with amount of deduction. Later, the system displays the lecturer's info and the wage's info on the payslip.

## 7. Algorithm

$$\text{Basic Salary} = (\text{Salary per hour} \times \text{hour}) + \text{Allowance}$$

$$\text{EPF} = 0.1 \times \text{Basic salary}$$

$$\text{SOCSO} = 0.005 \times \text{Basic salary}$$

$$\text{Amount of deduction} = \text{EPF} + \text{SOCSO}$$

$$\text{Net salary} = \text{Basic salary} - \text{Amount of deduction}$$

## 8. Pseudocode

START

PUBLIC METHOD line()

For (int i=0; i<93; i++)

Output “\_”

PRIVATE String id,name,workCode,monthOfpayment

PRIVATE float basicSalary,epf,socso,allowance,amountOfdeduction,netsalary

PRIVATE long ic

PRIVATE int hour,salaryPerhour

PUBLIC METHOD userinfo()

input name, ic

for (int i=0; i<1; i++)

input monthOfpayslip

input workCode

if (workCode==code1)

Print "DPL45"

else if (workCode==code2)

Print "DCL51"

else if (workCode==code3)

Print "DPP41"

endif

input hour, salaryPerhour, allowance

basicSalary = (salaryPerhour\*hour) + allowance

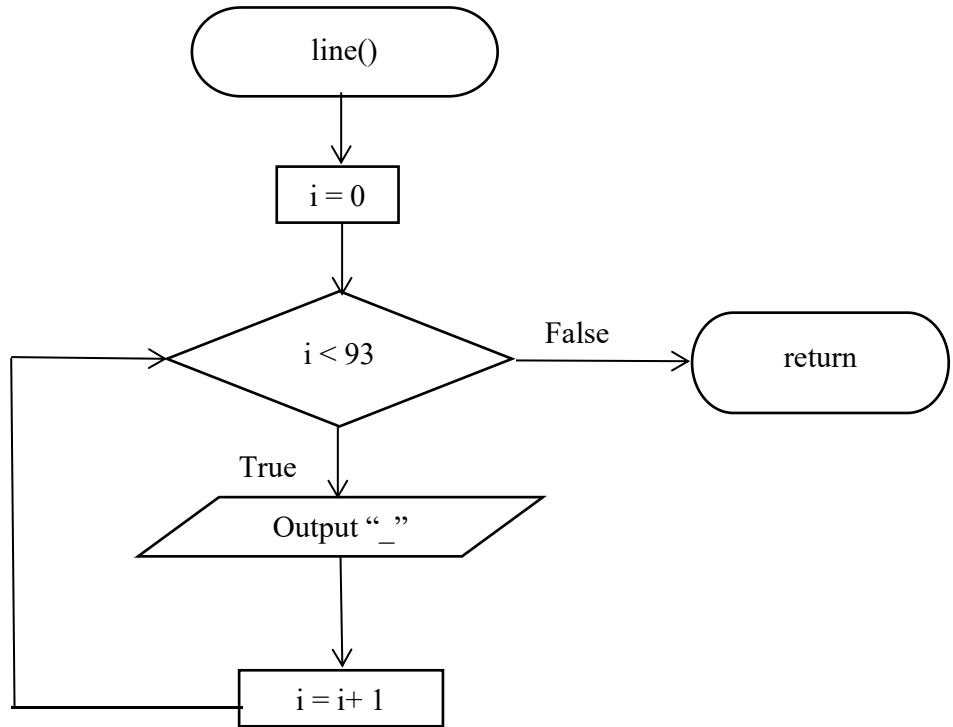
epf = 0.1\*basicSalary

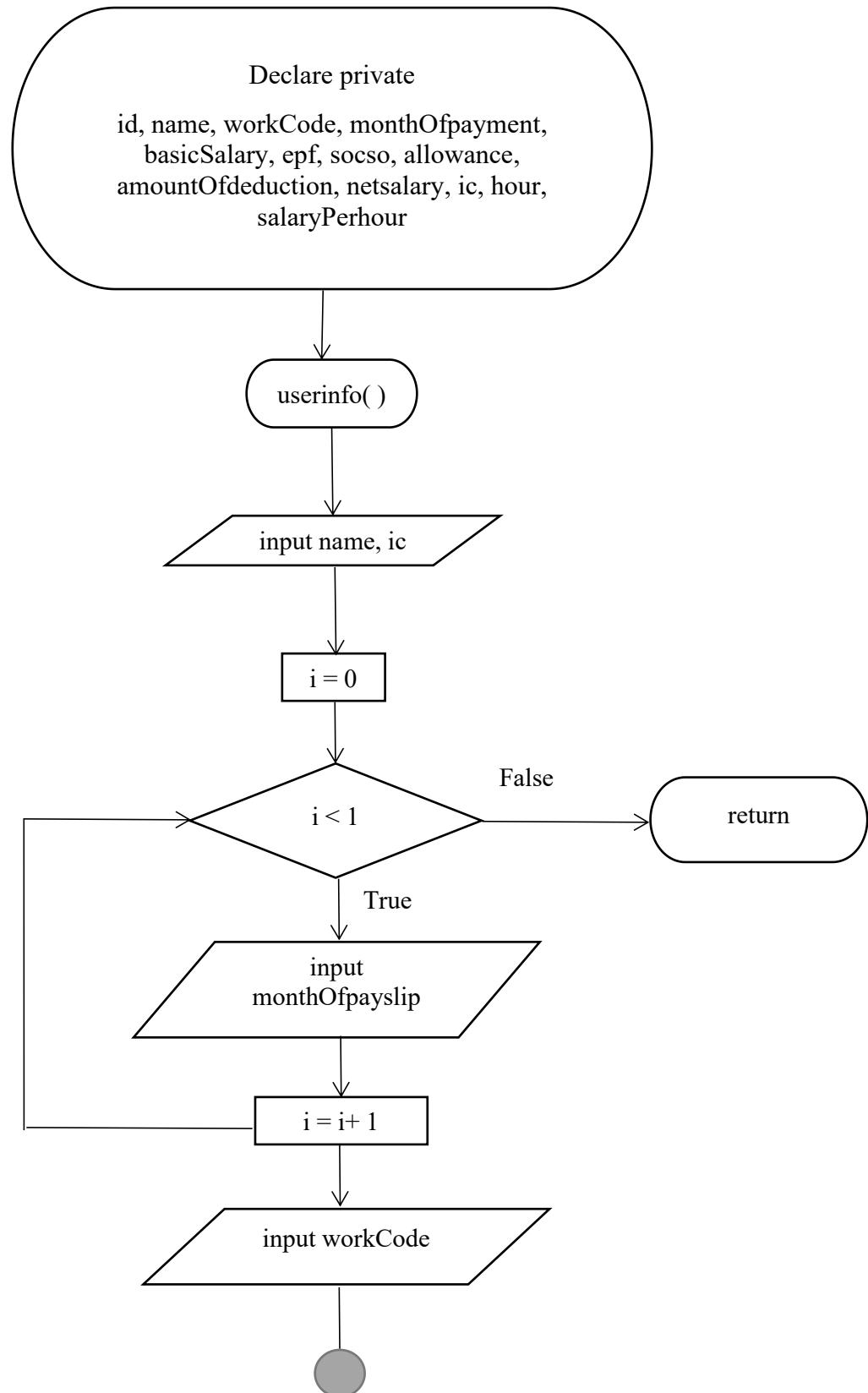
socso = 0.005\*basicSalary

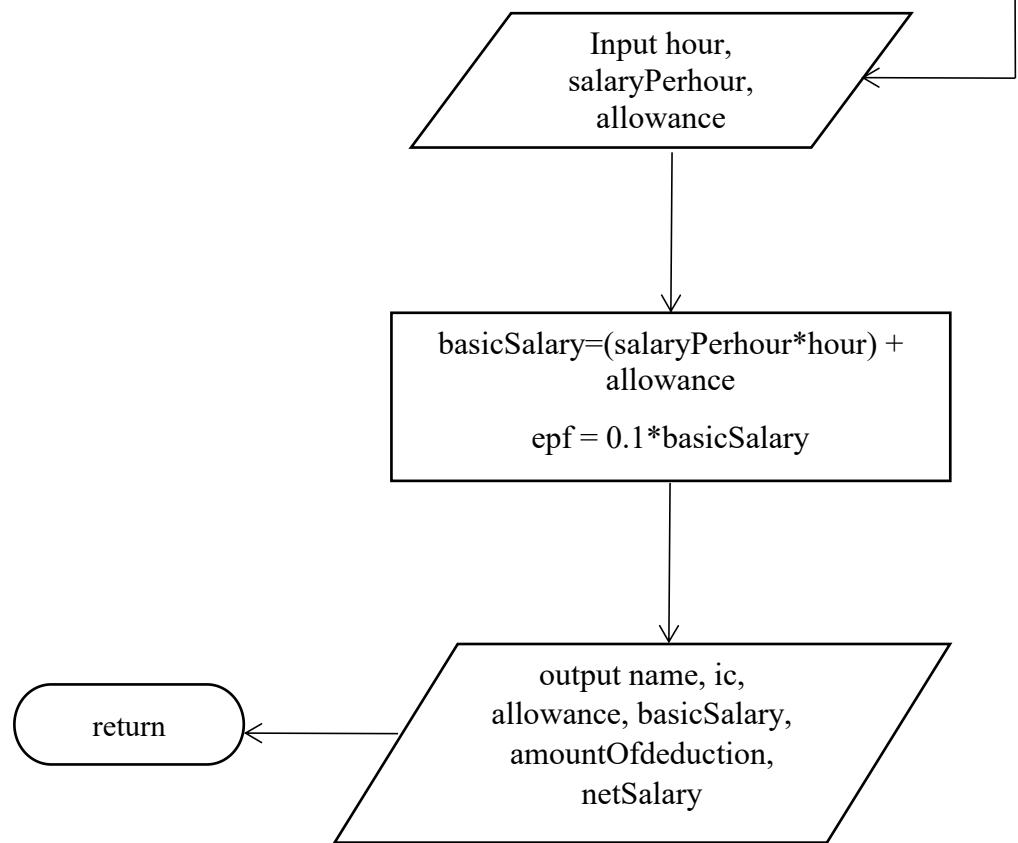
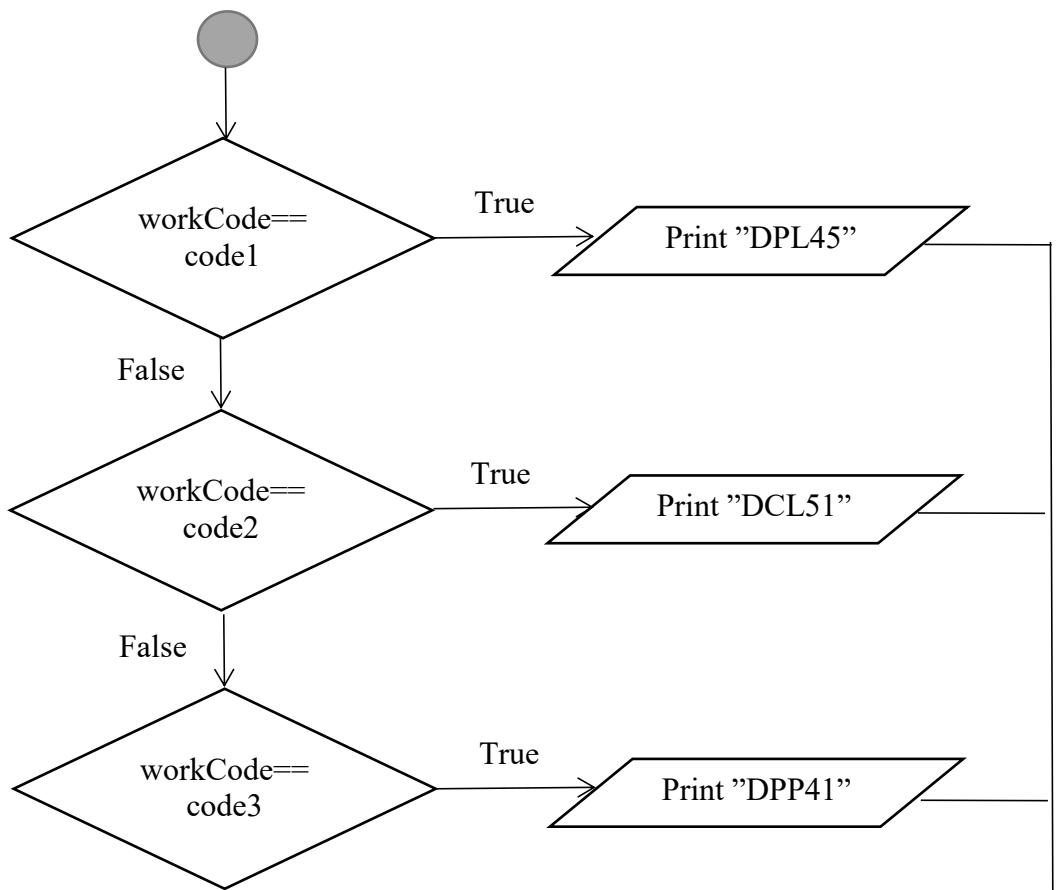
amountOfdeduction = epf+socso

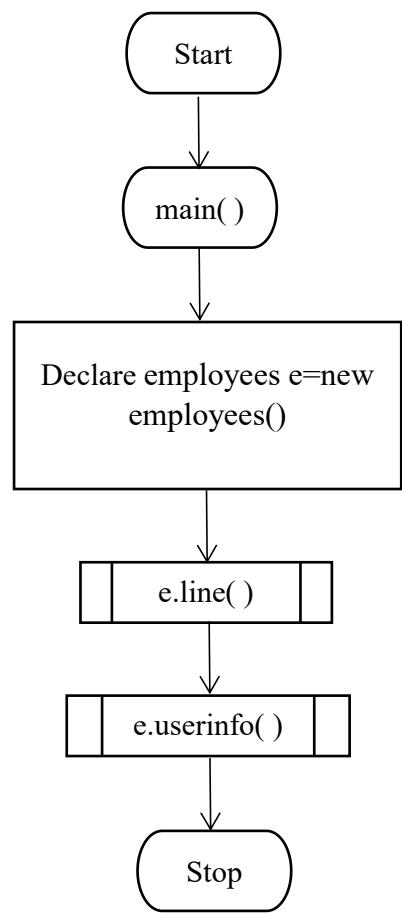
```
netSalary = basicSalary-amountOfdeduction  
output name, ic, allowance, basicSalary, amountOfdeduction,  
netSalary  
PUBLIC METHOD main()  
    Declare  
        employees e=new employees()  
        e.line()  
        e.userinfo()  
STOP
```

## 9. Flowchart









## 10. CODING

```
1 import java.util.ArrayList;
2 import java.util.Scanner;
3 public class employees {
4
5     public static void line() {
6         for (int i=0; i<93; i++) {
7             System.out.print ("_");
8         }
9         System.out.println(" ");
10    }
11
12    private String id,name,workCode,monthOfpayment;
13    private float basicsalary,epf,socso,allowance,amountofdeduction,netsalary;
14    private long ic;
15    private int hour,salaryPerhour;
16
17    public static void userinfo() {
18        Scanner sc=new Scanner(System.in);
19        String code1="DPL45";
20        String code2="DCL51";
21        String code3="DPP441";
22        String code;
23        System.out.println();
24        System.out.print("Enter your name:");
25        String name=sc.nextLine();
26        System.out.print("Enter your identification card number:");
27        long ic=sc.nextInt();
28
29        System.out.print("Enter the month of payslip you want:");
30        ArrayList<String> monthOfpayment = new ArrayList<>();
31        for(int i = 0; i < 1; i++) {
32            monthOfpayment.add(sc.nextInt());
33        }
34
35        System.out.print("Enter your work code:");
36        String workCode=sc.nextInt();
37        if (workCode==code1) {
38            code="DPL45";
39        }
40        else if (workCode==code2) {
41            code="DCL51";
42        }
43        else if (workCode==code3) {
44            code="DPP441";
45        }
46
47        System.out.print("Enter your hour of work for this month:");
48        int hour=sc.nextInt();
49        System.out.print("Enter your salary per hour:");
50        System.out.print("RM");
51        int salaryPerhour=sc.nextInt();
52        System.out.print("Enter your allowance");
53        System.out.print("RM");
54        double allowance=sc.nextDouble();
55
56        double basicsalary=(salaryPerhour*hour)+allowance;
57        double epf=.01*basicSalary;
58        double socso=.005*basicSalary;
59        double amountOfdeduction=epf+socso;
60
61        double netsalary=basicsalary-amountOfdeduction;
62
63
64        System.out.println("*****");
65        System.out.println(" PAYSHEET "+ monthOfpayment + ", 2021");
66        System.out.println("*****");
67        System.out.println(" NAME: " + name + " WORK CODE: " + workCode);
68        System.out.println("NRIC NO: " + ic);
69        System.out.println();
70        System.out.printf ("***EARNINGS***");
71        System.out.println();
72        System.out.printf ("BASIC SALARY: RM%.2f",basicSalary);
73        System.out.println();
74        System.out.printf ("ALLOWANCE: RM%.2f", allowance);
75        System.out.println ("\n");
76        System.out.printf ("***DEDUCTION***");
77        System.out.println();
78        System.out.printf ("EPF: RM%.2f",epf);
79        System.out.println();
80        System.out.printf ("SOCSE: RM%.2f",socso);
81        System.out.println();
82        System.out.printf ("AMOUNT OF DEDUCTION: RM%.2f",amountOfdeduction);
83        System.out.println();
84        System.out.println("*****");
85        System.out.printf ("    NET SALARY: RM%.2f",netsalary);
86        System.out.println();
87        System.out.println("*****");
88    }
89
90    public static void main(String[] args) {
91
92        employees e=new employees();
93
94        e.line();
95        System.out.println(" | TYPES OF LECTURER | PERMANENT LECTURER | CONTRACT LECTURER | PTFT LECTURER |");
96        e.line();
97        System.out.println(" | WORK CODE | DPL45 | DCL51 | DPP441 |");
98        e.line();
99        System.out.println(" | SALARY PER HOUR | RM132.00 | RM85.00 | RM63.00 |");
100       e.line();
101       System.out.println(" | ALLOWANCE | RM900.00 | RM800.00 | RM80.00 |");
102       e.line();
103       e.userinfo();
104    }
105
106 }
107
```

## OUTPUT

TYPES OF LECTURER	PERMANENT LECTURER	CONTRACT LECTURER	PTFT LECTURER
WORK CODE	DPL45	DCL51	DPP441
SALARY PER HOUR	RM132.00	RM85.00	RM63.00
ALLOWANCE	RM900.00	RM800.00	RM0.00

```
Enter your name:  
SYUKRI BIN YUSUF  
Enter your identification card number:  
567891234  
Enter the month of payslip you want:  
JANUARY  
Enter your work code:  
DCL51  
Enter your hour of work for this month:  
34  
Enter your salary per hour:  
RM85  
Enter your allowance  
RM800*****  
*****  
PAYSILIP [JANUARY], 2021  
*****  
NAME: SYUKRI BIN YUSUF WORK CODE: DCL51  
NRIC NO: 567891234  
*****  
==EARNINGS==  
BASIC SALARY: RM3690.00  
ALLOWANCE: RM800.00  
*****  
==DEDUCTION==  
EPF: RM369.00  
SOCSE: RM18.45  
AMOUNT OF DEDUCTION: RM387.45  
*****  
NET SALARY: RM3382.55  
*****
```

## **TOPIC STUDENT- NUR ALYA BINTI MOHD IZAZI**

### **1. Identify the problem**

Universities in Malaysia are often become the choice of students from abroad to pursue their studies because of the quality of teaching provided and also well-experience lecturers who teach at universities. Not only that most international students decided to pursue their studies at university in Malaysia because of the facilities provided starting from transportation facilities that help students to move from one place to another, internet network facilities, library services for students to review lessons, comfortable lecture halls, sophisticated devices and comfortable accommodation for students.

### **2. Understand the problem**

Students who are decided to stay at the residential college in the university are required to pay for the room fee. For the students that are Malaysian, they are allow to choose between two college which is Syed Residential College and Zain Residential College. For the international students they can only choose Syed Residential College. Syed Residential College's room give the student more benefit from the facility that are provided meanwhile Zain Residential College's room provided the students the normal facility. The price for the Syed Residential's room is three time more expensive than Zain Residential College's room Discounts 80% will be given to the students who are active in the university activities by getting mark more than 70. Write a programme that will show the balance fee of Residential College that student need to pay based on the Residential College choice that were chosen and the student's co-curriculum mark range.

Achievement	Category	Mark
Participation on	chairman	12

<b>residential college organization</b>	<b>Deputy chairman</b>	<b>10</b>
	<b>Secretary</b>	<b>8</b>
	<b>Treasurer</b>	<b>8</b>
	<b>Committee member</b>	<b>6</b>
<b>Participation on university organization</b>	<b>Chairman</b>	<b>15</b>
	<b>Deputy chairman</b>	<b>13</b>
	<b>Secretary</b>	<b>10</b>
	<b>Treasurer</b>	<b>10</b>
	<b>Committee member</b>	<b>8</b>
<b>Excelled in academic</b>	<b>CGPA 3.5 – 4.0</b>	<b>10</b>
<b>Involvement in university club organization</b>	<b>Chairman</b>	<b>10</b>
	<b>Deputy chairman</b>	<b>8</b>
	<b>Secretary</b>	<b>7</b>
	<b>Treasurer</b>	<b>7</b>
	<b>Committee member</b>	<b>5</b>
	<b>participants</b>	<b>3</b>
<b>Involvement in university sport day</b>	<b>Chairman</b>	<b>8</b>
	<b>Deputy chairman</b>	<b>7</b>
	<b>Secretary</b>	<b>6</b>
	<b>Treasurer</b>	<b>6</b>
	<b>Committee member</b>	<b>4</b>
	<b>participants</b>	<b>2</b>
<b>Participation in university activity</b>	<b>International level</b>	<b>10</b>
	<b>National level</b>	<b>8</b>
	<b>University level</b>	<b>7</b>

### **3. Alternative Method**

(i) Write a program that can calculate the balance fee based on the total co-curriculum mark and college name.

(ii) Lecturer have to calculate manually balance fee that student need to pay based on the total co-curriculum mark and college name and send the details through email to the students.

### **4. Best Way**

The best way to solve this problem is by using number (i) method. Number (i) method help the lecturer to manage student payment matter easier and can save more time than using number (ii) method.

### **5. Instructions**

1. Key in number 0 or 1 to indicate your nationality. If key in 0, the system will bring you to the next question under nationality Malaysia. If you key in 1, the system will bring you to the next question that are under nationality foreigner.

2. Key in the student information and details.

3. The program will give the option for the students who are from Malaysia to choose between two choices which is choice 1, Zain Residential College or choice 2, Syed Residential College.

4. For the students who key in number 0 which is an international student the program will only give student one option which is choice 1, Syed Residential College and the current balance fee will be calculated.

5. The student have to key in number from 1 to 10 according to their total co-curriculum mark range.

6. The program will calculate the residential college fee after discount for the students who key in number 8, or number 9, or number 10.

#### **ONLY APPLY TO MALAYSIAN STUDENT**

(when key in number 8 or 9 or 10 for students who are key in choice 2 for Zain Residential College)

balanceFee=(collegeFee\*1)

balanceFee=(balanceFee\*0.2)

#### APPLY TO MALAYSIAN STUDENT AND INTERNATIONAL STUDENT/FOREIGNER

(when key in number 8 or 9 or 10 for students who are key in choice 1 for Syed Residential College)

balanceFee=(collegeFee\*3)

balanceFee= (balanceFee \*0.2)

#### APPLY TO MALAYSIAN STUDENT AND INTERNATIONAL STUDENT/FOREIGNER

(When key in number 1/2/3/4/5/6/7)

balanceFee= collegeFee (when key in choice 2, Zain Residential College)

balanceFee= (collegeFee\*3) (when key in choice 1, Syed Residential College)

7. The system will print out the student details, student's choice and balance fee.

### **6.Evaluate the Solution**

The solution meets the requirement to solve the problems stated. The balance fee of Residential College that student need to pay is calculated based on the college choice (choice 1, Syed Residential College and choice 2, Zain Residential College) and the total of co-curriculum mark range. The calculation of the balance Fee will begin when student key in their total cocurriculum mark range from number 1 to number 10. The system will print out the student's detail, the college choice that are chosen, and the balance fee.

## **7.Algorithm**

If choose choice 1 (Syed Residential College) and key in number 8/9/10:

balanceFee = (collegeFee\*3)

balanceFee = (balanceFee \* 0.2)[80% discount were given]

If choose choice 1 (Syed Residential College) and key in number below than 8 which is 1 until 7:

balanceFee = (collegeFee\*3) [no discount given]

If choose choice 2 (Zain Residential College) and key in number 8/9/10:

balanceFee = (collegeFee)

balanceFee = (balanceFee \* 0.2)

If choose choice 2 (Zain Residential College) and key in number below than 8 which is 1 until 7:

balanceFee = (collegeFee)

## **8.Pseudocode**

Start

Declare int choice, double balanceFee,double collegeFee = 160.99, int sem, String nationality.

String[]National = Malaysia, Foreigner

int choice, double balanceFee, double collegeFee = 160.99, int sem, String nationality

Read i

i<number.length

Output “Please key in your nationality”

if(number=o)

Output “Please key in your name”

Input name

Output “Please key in your sem”

Input sem

Declare int choice, double balanceFee, double collegeFee = 160.99, int sem, String nationality.

Output "Please key in your choice"

Input choice

Input (choice==1)

Display balanceFee=(collegeFee\*3)

If(number ==8 || number==9 || number==10||)

Display balanceFee=(collegeFee\*3)

balanceFee=(balanceFee\*0.2)

else

Display balanceFee=(collegeFee\*3)

Else if

if(number=1)

Output "Please key in your name"

Input name

Output "Please key in your sem"

Input sem

Declare int choice, double balanceFee, double collegeFee = 160.99, int sem, String nationality.

Output "Please key in your choice"

Input choice

Input (choice==1)

Display balanceFee=(collegeFee\*3)

If(number ==8 || number==9 || number==10||)

Display balanceFee=(collegeFee\*3)

balanceFee=(balanceFee\*0.2)

else

Display balanceFee=(collegeFee\*3)

Output"Please key in your choice"

Input choice

Input (choice!=1)

Display balanceFee=(collegeFee)

If(number ==8 || number==9 || number==10||)

Display balanceFee=(collegeFee)

balanceFee=(balanceFee\*0.2)

else

Display balanceFee=(collegeFee)

Else if

Else if

Else if

Display name

Display sem

Display Malaysia

Display choice

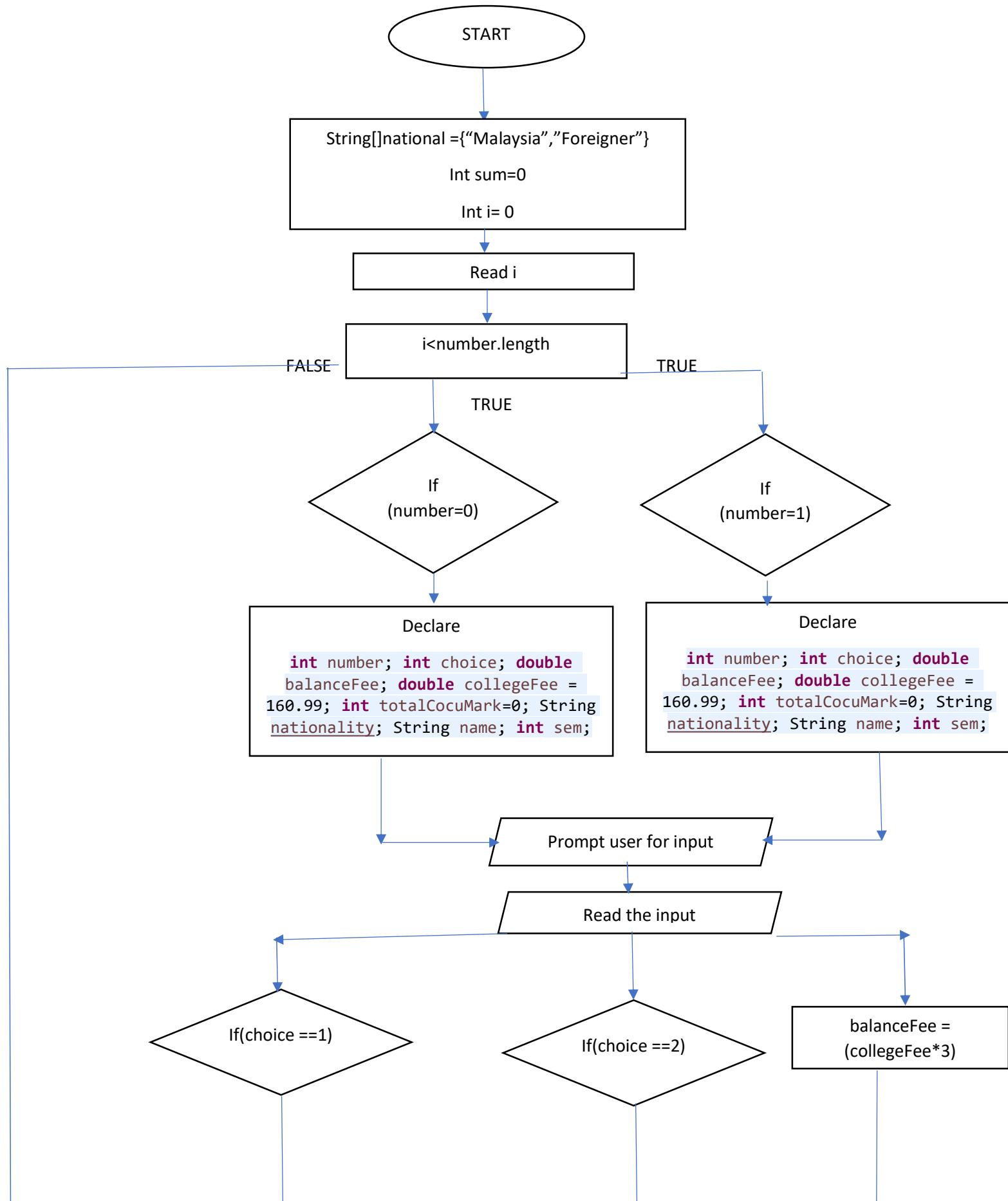
Display choice

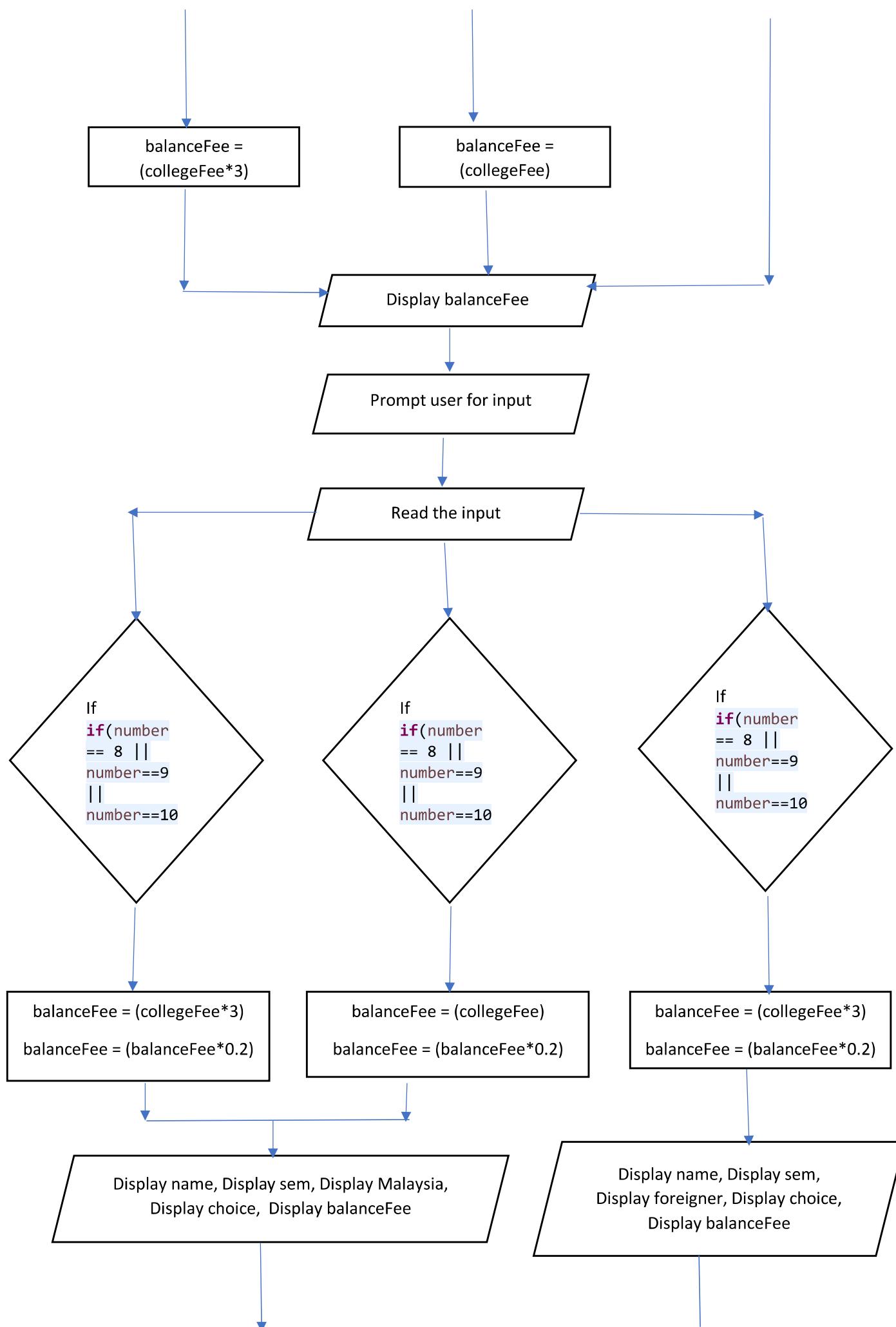
Display balanceFee

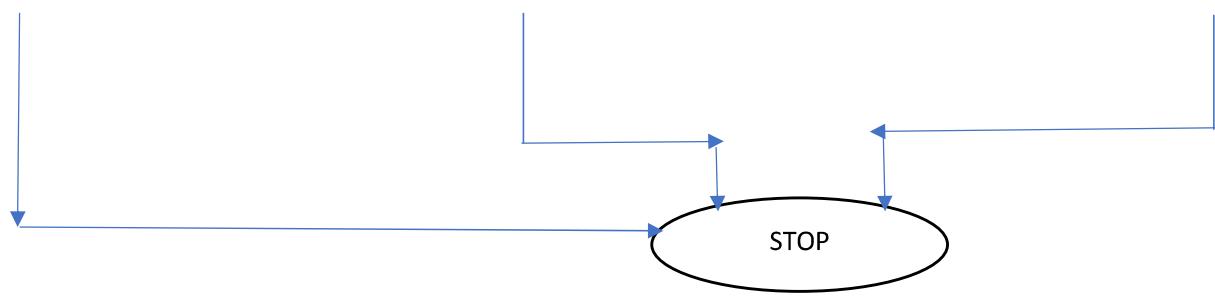
Output "balance fee."

End

## 9.Flowchart







## 10.Coding

```
1 package Topic_University;
2 import java.util.Scanner;
3 public class Student {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         Scanner scan = new Scanner(System.in);
8         int choice; double balanceFee; double collegeFee = 160.99; ; int sem; String nationality;
9
10        String []national = {"Malaysia", "Foreigner"};
11
12
13
14
15        System.out.println("Based on the info please key in your choice in the next question.");
16        System.out.println("-----");
17        System.out.println(" For Malaysian please key in number 0 ");
18        System.out.println(" For foreigner please key in number 1 ");
19        System.out.println("-----");
20        System.out.println("Please key in your nationality : ");
21        int number = scan.nextInt();
22        System.out.println(national [number]);
23
24
25        if (number==0){
26            malaysian();
27        }
28        else if (number==1){
29            foreign();
30        }
31
32
33
34    }
35
36
37
38
39
40    }
41    public static void malaysian() {
42        Scanner scan= new Scanner(System.in);
43
44
45        int number; int choice; double balanceFee; double collegeFee = 160.99; String nationality; String name; int sem;
46
47        System.out.println("Welcome to UUM Portal.");
48        System.out.println("Please make sure you complete all part.");
49        System.out.println("-----PART 1-----");
50        System.out.println("\nPlease key in your detail");
51        System.out.println("Name: ");
52        name = scan.nextLine();
53
54
55        System.out.println("Semester: ");
56        sem = scan.nextInt();
57
58
59        System.out.println("Based on the info below please answer the next question.");
60        System.out.println("-----");
61        System.out.println("For foreigner/International Student you are given only one choice of residential college to choose:");
62        System.out.println(" OPTION 1 - SYED RESIDENTIAL COLLEGE");
63        System.out.println("NOTES: THE SYED RESIDENTIAL COLLEGE WILL CHARGE YOU THREE TIMES MORE THAN ZAIN RESIDENTIAL COLLEGE PRICE");
64        System.out.println("-----");
65        System.out.println("Please key in your choice:");
66        choice = scan.nextInt();
67
68
69
70        balanceFee = (collegeFee*3);
71        balanceFee = balanceFee;
72        System.out.println("Your current balance fee is: " +balanceFee);
73
74        System.out.printf("The balance fee that you need to pay is: %.2f\n" ,balanceFee);
75
76    }
}
```

```
75
76
77     System.out.println("-----PART II-----");
78     System.out.println("Based on the info below please answer the next question.");
79     System.out.println("-----COCURICULUM MARK RANGE-----");
80     System.out.println("Number 1- TOTAL COCURICULUM MARK FROM 0 TO 10");
81     System.out.println("Number 2- TOTAL COCURICULUM MARK FROM 11 TO 20");
82     System.out.println("Number 3- TOTAL COCURICULUM MARK FROM 21 TO 30");
83     System.out.println("Number 4- TOTAL COCURICULUM MARK FROM 31 TO 40");
84     System.out.println("Number 5- TOTAL COCURICULUM MARK FROM 41 TO 50");
85     System.out.println("Number 6- TOTAL COCURICULUM MARK FROM 51 TO 60");
86     System.out.println("Number 7- TOTAL COCURICULUM MARK FROM 61 TO 69");
87     System.out.println("Number 8- TOTAL COCURICULUM MARK FROM 70 TO 80");
88     System.out.println("Number 9- TOTAL COCURICULUM MARK FROM 80 TO 90");
89     System.out.println("Number 10- TOTAL COCURICULUM MARK FROM 90 TO 100");
90     System.out.println("Please key in the number based on the range of your total cocuriculum mark:");
91     number = scan.nextInt();
92
93
94
95     switch (number) {
96         case 1:
97             System.out.println("TOTAL COCURICULUM MARK FROM 0 TO 10");
98             System.out.println("Sorry you failed to get 80% discount.");
99             System.out.println("The system will calculate your balance fee");
100            break;
101        case 2:
102            System.out.println("TOTAL COCURICULUM MARK FROM 11 TO 20");
103            System.out.println("Sorry you failed to get 80% discount.");
104            System.out.println("The system will calculate your balance fee");
105            break;
106        case 3:
107            System.out.println("TOTAL COCURICULUM MARK FROM 21 TO 30");
108            System.out.println("Sorry you failed to get 80% discount.");
109            System.out.println("The system will calculate your balance fee");
110            break;
111        case 4:
112            System.out.println("TOTAL COCURICULUM MARK FROM 31 TO 40");
113            System.out.println("Sorry you failed to get 80% discount.");
114
115
116        case 5:
117            System.out.println("TOTAL COCURICULUM MARK FROM 41 TO 50");
118            System.out.println("Sorry you failed to get 80% discount.");
119            System.out.println("The system will calculate your balance fee");
120            break;
121        case 6:
122            System.out.println("TOTAL COCURICULUM MARK FROM 51 TO 60");
123            System.out.println("Sorry you failed to get 80% discount.");
124            System.out.println("The system will calculate your balance fee");
125            break;
126        case 7:
127            System.out.println("TOTAL COCURICULUM MARK FROM 61 TO 69");
128            System.out.println("Sorry you failed to get 80% discount.");
129            System.out.println("The system will calculate your balance fee");
130            break;
131        case 8:
132            System.out.println("TOTAL COCURICULUM MARK FROM 70 TO 80");
133            System.out.println("Congratulation you have successfully receive 80% discount.");
134            System.out.println("The system will calculate your balance fee");
135            break;
136        case 9:
137            System.out.println("TOTAL COCURICULUM MARK FROM 81 TO 90");
138            System.out.println("Congratulation you have successfully receive 80% discount.");
139            System.out.println("The system will calculate your balance fee");
140            break;
141        case 10:
142            System.out.println("TOTAL COCURICULUM MARK FROM 91 TO 100");
143            System.out.println("Congratulation you have successfully receive 80% discount.");
144            System.out.println("The system will calculate your balance fee");
145            break;
146        default:
147            System.out.println("Please enter valid number");
148            System.out.println("Congratulation you have successfully receive 80% discount.");
149            System.out.println("The system will calculate your balance fee");
```

```

149         System.out.println("The system will calculate your balance fee");
150         break;
151     }
152
153     if(number == 8 || number==9 || number==10){
154         balanceFee = (collegeFee*3);
155         balanceFee = (balanceFee*0.2);
156
157     System.out.printf("The balance fee that you need to pay is: %.2f\n" ,balanceFee);
158
159
160
161
162
163     System.out.println("-----");
164     System.out.println();
165     System.out.println("Student's Details");
166     System.out.println("Name: \t \t \t \t "+name);
167     System.out.println("Semester: \t \t \t "+sem);
168     System.out.println("Nationality: \t \t \t Foreigner ");
169     System.out.println("College Residential choice: \t "+choice);
170     System.out.println("Total Balance Fee: \t \t RM" +balanceFee);
171     System.out.println();
172     System.out.println("-----");
173 }
174
175
176
177     else {
178         balanceFee = (collegeFee*3);
179     System.out.println("The balance fee that you need to pay is: " +balanceFee);
180
181     System.out.println("-----");
182     System.out.println();
183     System.out.println("Student's Details");
184     System.out.println("Name: \t \t \t \t "+name);
185     System.out.println("Semester: \t \t \t "+sem);
186     System.out.println("Nationality: \t \t \t Foreigner ");
187     System.out.println("College Residential choice: \t "+choice);
188     System.out.println("Total Balance Fee: \t \t RM" +balanceFee);
189     System.out.println();
190     System.out.println("-----");
191 }
192 }
193
194
195
196
197
198
199
200
201
202
203
204
205     public static void malaysian(){
206         int number; int choice; double balanceFee = 0; double collegeFee = 160.99; int totalCocuMark = 0; String nationality; String name; int sem;
207         Scanner scan = new Scanner(System.in);
208
209         System.out.println("Welcome to UUM Portal.");
210         System.out.println("Please make sure you complete all part.");
211         System.out.println("-----PART 1-----");
212         System.out.println("\nPlease key in your detail");
213         System.out.print("Name: ");
214         name = scan.nextLine();
215
216         System.out.print("Semester: ");
217         sem = scan.nextInt();
218
219         System.out.println("Based on the info below please answer the next question.");
220         System.out.println("-----");
221         System.out.println("For Malaysian student you are given to choose your college residential based on the option given: ");
222         System.out.println(" OPTION 1 - SYED RESIDENTIAL COLLEGE \nNotes: This option will charge three time more than option 2 ");
223         System.out.println(" OPTION 2 - ZAIN RESIDENTIAL COLLEGE \tRM160.99 ");
224
225         System.out.println("Please key in your choice:");
226         choice = scan.nextInt();

```

Line: 199

```
223
224     System.out.println("-----");
225     System.out.println("Please key in your choice:");
226     choice = scan.nextInt();
227
228     if(choice != '1')
229     {
230         balanceFee = (collegeFee);
231         System.out.println("Your current balance fee is: " +balanceFee);
232     }else if(choice =='1')
233     {
234         balanceFee = (collegeFee*3);
235         System.out.println("Your current balance fee is: " +balanceFee);
236         System.out.printf("The balance fee that you need to pay is: %.2f\n" ,balanceFee);
237     }
238
239     System.out.println("-----PART II-----");
240     System.out.println("Based on the info below please answer the next question.");
241     System.out.println("-----COCURICULUM MARK RANGE-----");
242     System.out.println("Number 1- TOTAL COCURICULUM MARK FROM 0 TO 10");
243     System.out.println("Number 2- TOTAL COCURICULUM MARK FROM 11 TO 20");
244     System.out.println("Number 3- TOTAL COCURICULUM MARK FROM 21 TO 30");
245     System.out.println("Number 4- TOTAL COCURICULUM MARK FROM 31 TO 40");
246     System.out.println("Number 5- TOTAL COCURICULUM MARK FROM 41 TO 50");
247     System.out.println("Number 6- TOTAL COCURICULUM MARK FROM 51 TO 60");
248     System.out.println("Number 7- TOTAL COCURICULUM MARK FROM 61 TO 69");
249     System.out.println("Number 8- TOTAL COCURICULUM MARK FROM 70 TO 80");
250     System.out.println("Number 9- TOTAL COCURICULUM MARK FROM 80 TO 90");
251     System.out.println("Number 10- TOTAL COCURICULUM MARK FROM 90 TO 100");
252     System.out.println("Please key in the number based on the range of your total cocuriculum mark:");
253     number = scan.nextInt();
254
255
256     switch (number) {
257         case 1:
258             System.out.println("TOTAL COCURICULUM MARK FROM 0 TO 10");
259             System.out.println("Sorry you failed to get 80% discount.");
260             System.out.println("The system will calculate your balance fee");
261             break;
262         ...
263         case 2:
264             System.out.println("TOTAL COCURICULUM MARK FROM 11 TO 20");
265             System.out.println("Sorry you failed to get 80% discount.");
266             System.out.println("The system will calculate your balance fee");
267             break;
268         case 3:
269             System.out.println("TOTAL COCURICULUM MARK FROM 21 TO 30");
270             System.out.println("Sorry you failed to get 80% discount.");
271             System.out.println("The system will calculate your balance fee");
272             break;
273         case 4:
274             System.out.println("TOTAL COCURICULUM MARK FROM 31 TO 40");
275             System.out.println("Sorry you failed to get 80% discount.");
276             System.out.println("The system will calculate your balance fee");
277             break;
278         case 5:
279             System.out.println("TOTAL COCURICULUM MARK FROM 41 TO 50");
280             System.out.println("Sorry you failed to get 80% discount.");
281             System.out.println("The system will calculate your balance fee");
282             break;
283         case 6:
284             System.out.println("TOTAL COCURICULUM MARK FROM 51 TO 60");
285             System.out.println("Sorry you failed to get 80% discount.");
286             System.out.println("The system will calculate your balance fee");
287             break;
288         case 7:
289             System.out.println("TOTAL COCURICULUM MARK FROM 61 TO 69");
290             System.out.println("Sorry you failed to get 80% discount.");
291             System.out.println("The system will calculate your balance fee");
292             break;
293         case 8:
294             System.out.println("TOTAL COCURICULUM MARK FROM 70 TO 80");
295             System.out.println("Congratulation you have successfully receive 80% discount.");
296             System.out.println("The system will calculate your balance fee");
297             break;
```

```
296         break;
297
298     case 9:
299         System.out.println("TOTAL COCURICULUM MARK FROM 81 TO 90");
300         System.out.println("Congratulation you have successfully receive 80% discount.");
301         System.out.println("The system will calculate your balance fee");
302         break;
303
304     case 10:
305         System.out.println("TOTAL COCURICULUM MARK FROM 91 TO 100");
306         System.out.println("Congratulation you have successfully receive 80% discount.");
307         System.out.println("The system will calculate your balance fee");
308         break;
309
310     default:
311         System.out.println("Please enter valid number");
312         System.out.println("Congratulation you have successfully receive 80% discount.");
313         System.out.println("The system will calculate your balance fee");
314         break;
315     }
316
317     if(number ==8 || number==9 || number==10) {
318         balanceFee = (balanceFee*0.2);
319     }else {
320         balanceFee = balanceFee;
321
322         System.out.printf("The balance fee that you need to pay is: %.2f\n" ,balanceFee);
323     }
324
325
326
327
328     System.out.println("-----");
329     System.out.println();
330     System.out.println("Student's Details");
331     System.out.println("Name: \t \t \t \t "+name);
332     System.out.println("Semester: \t \t \t \t "+sem);
333     System.out.println("Nationality: \t \t \t \t @Malaysia");
334     System.out.println("College Residential choice: \t \t \t \t "+choice);
335     System.out.println("Total Balance Fee: \t \t \t \t "+balanceFee);
336     System.out.println();
337     System.out.println("-----");
338
339
340
341
342 }
```

## 11.Output

```
@ Javadoc Console X
<terminated> Student [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Jan 28, 2022, 8:59:11 PM - 8:59:43 PM)
Based on the info please key in your choice in the next question.

For Malaysian please key in number 0
For foreigner please key in number 1
-----
Please key in your nationality :
0
Malaysia
Welcome to UUM Portal.
Please make sure you complete all part.
-----PART I-----
Please key in your detail
Name:
alya
Semester:
2
Based on the info below please answer the next question.

For Malaysian student you are given to choose your college residential based on the option given:
OPTION 1 - SYED RESIDENTIAL COLLEGE
Notes: This option will charge three time more than option 2
OPTION 2 - ZAIN RESIDENTIAL COLLEGE RM160.99
-----
Please key in your choice:
1
Your current balance fee is: 160.99
-----PART II-----
Based on the info below please answer the next question.|-----COCURICULUM MARK RANGE-----
Number 1- TOTAL COCURICULUM MARK FROM 0 TO 10
Number 2- TOTAL COCURICULUM MARK FROM 11 TO 20
Number 3- TOTAL COCURICULUM MARK FROM 21 TO 30
Number 4- TOTAL COCURICULUM MARK FROM 31 TO 40
Number 5- TOTAL COCURICULUM MARK FROM 41 TO 50
Number 6- TOTAL COCURICULUM MARK FROM 51 TO 60
Number 7- TOTAL COCURICULUM MARK FROM 61 TO 69
Number 8- TOTAL COCURICULUM MARK FROM 70 TO 80
Number 9- TOTAL COCURICULUM MARK FROM 80 TO 90
Number 10- TOTAL COCURICULUM MARK FROM 90 TO 100
Please key in the number based on the range of your total cocuriculum mark:
9
TOTAL COCURICULUM MARK FROM 81 TO 90
Congratulation you have successfully receive 80% discount.
The system will calculate your balance fee
-----
Student's Details
Name: alya
Semester: 2
Nationality: Malaysia
College Residential choice: 1
Total Balance Fee: 32.198
```

## **TOPIC COURSE – TANG WEI CHIANG**

### **1. Identify the problem**

A course is a syllabus item offered by the University that's similar to a subject that we may have studied at school. We undertake courses to complete our own program requirements. Courses are identified by a subject area and catalogue number, for example CHEM 1101 is a level 1 Chemistry course. Within each course there will be classes that you enrol into, for example lectures, tutorials, seminars or practical.

In higher education in various countries, such as Canada, Nigeria and the United States, a course is a unit of teaching that typically lasts one academic term, is led by one or more instructors (teachers or professors) and has a fixed roster of students. A course usually covers an individual subject. Courses generally have a fixed program of sessions every week during the term, called lessons or classes. Students may receive a grade and academic credit after completion of the course.

In India, the United Kingdom, Australia, and Singapore, as well as parts of Canada, a course is the entire programme of studies required to complete a university degree, and the word "unit" or "module" would be used to refer to an academic course as used in North America and the rest of Europe. This corresponds roughly to an academic major in the United States system.

In South Africa, a course is officially the collection of all courses (in the American sense, these are often called "modules") over a year or semester, though the American usage is common. In the Philippines, a course can be an individual subject (usually referred to by faculty and school officials) or the entire programme (usually referred to by students and outsiders).

Courses are time-limited in most universities worldwide, lasting anywhere between several weeks to several semesters. They can either be compulsory material or "elective". An elective is usually not a required course, but there are a certain number of non-specific electives that are required for certain majors.

## **2. Understand the problem**

Universiti Utara Malaysia (UUM) aka Northern University of Malaysia, which was officially established on 16 February 1984, is the sixth Malaysian public university. UUM consists of two campuses, which is Sintok campus and Kuala Lumpur. UUM divided the college variety into three parts, which is College of Business, College of Arts and Sciences, and College of Law, Government and International Studies. Each college consists of several school. In School of Computing under College of Arts and Sciences, students will undergo course registration in every new semester given a certain period. When students want to register a second-level course, the course requires prerequisite course to register. Means that students want to register course A, they are going to complete course B with requirement, where students need to pass the grade with a minimum of GPA 2.00 and attendance rate of 80% or higher. The GPA will be calculated by using the marks from tests (80%) and coursework (20%). The total attend times for a course is 20. There would be certain course which require more than one prerequisite course, but the passing grade and attendance rate are the same. If student failed to reach the requirements of the secondary-level course they want to register, they are required to retake the prerequisite course until they fulfil the course requirements.

<b>MARKS</b>	<b>GRADE POINT</b>	
90 - 100	4.00	(Excellent)
80 - 89	4.00	(Excellent)
75 - 79	3.67	(Good)
70 - 74	3.33	(Good)
65 - 69	3.00	(Good)
60 - 64	2.67	(Satisfactory)
55 - 59	2.33	(Satisfactory)
50 - 54	2.00	(Pass)
45 - 49	1.67	(Fail)
40 - 44	1.33	(Fail)
35 - 39	1.00	(Fail)
0 - 34	0.00	(Fail)

0	0.00	(Barred)
0	0.00	(Withdraw)

Minimum passing GPA

Attended Times	Total Attend Times	Attendance Rate (%)
20	20	100
19	20	95
18	20	90
17	20	85
16	20	80
15	20	75
14	20	70
13	20	65
12	20	60
11	20	55
10	20	50
9	20	45
8	20	40
7	20	35
6	20	30
5	20	25
4	20	20
3	20	15
2	20	10
1	20	5
0	20	0

Minimum attendance rate

### **3. Alternative method**

- i. A system that can both calculate GPA using test mark and coursework mark, calculate attendance rate using attended time and total attend times.
- ii. Develop an add drop system
- iii. Develop a CGPA calculating system

### **4. Best method**

The (i.) way is the best method as it fulfilled the problem stated where calculation of GPA using tests mark and coursework mark and calculation of attendance rate using attended time and total attended time. The (ii.) way wasn't clear to solve the problem as it only stated to add and drop something. The (iii.) way also didn't solve the problem as it calculate CGPA where only GPA are required in the problem stated.

### **5. Instructions**

- i. Get personal info from user (name, id, sem)
- ii. Get user about course information (registeredCourse, testMark, courseworkMark, attendedTimes)
- iii. Get the scdLvlCourse, display the course requirements (Completed prerequisite course required with minimum GPA 2.00 and attendance rate 80% or higher)
- iv. Calculate test mark (Test 1 + Test 2)
- v. Calculate the total mark of registered course (testMark + courseworkMark)
- vi. Display total mark and GPA
- vii. Calculate the Attendance Rate ( $\text{attendedTimes}/\text{totalAttendTimes} \times 100$ )
- viii. Display attendance rate
- ix. Determine whether the registered course fulfils the requirements of second-level course. If fulfilled, move on to next registration. Else, retake the registered course.

### **6. Evaluate the solution**

The solution meets the requirement to solve the problems stated. Firstly, the registered course tests mark and coursework mark is summed up into total mark. The total mark will be based on the grading table that determines the course GPA. Next, the system will also calculate the attendance rate of the registered course by student. As student

has keyed in the number of attended times of registered course, the system will calculate the attendance rate using the data keyed in with the total attend times. And so, both the GPA and attendance rate of the registered course has been calculated and displayed, it will determined whether student is allowed to register the second-level course.

## 7. Algorithm

Tests Mark = Test 1 Mark + Test 2 Mark

Total Mark = Test Mark + Coursework Mark

$$\text{Attendance rate} = \frac{\text{Attended Times}}{\text{Total Attend Time}} \times 100$$

## 8. Pseudocode

START

method main():

    CALL userinfo  
    CALL registeredcourse  
    CALL secondelevelcourse  
    CALL registrationconfirmation

RETURN

method void userinfo()

    OUTPUT "Welcome!"  
    OUTPUT "We would like to know your information."  
    OUTPUT "Enter your name: "  
    INPUT name  
    OUTPUT "Enter your id: "  
    INPUT id  
    OUTPUT "Enter your semester: "  
    INPUT semester  
    Declare String ui [ ][ ]  
    CALL userinfo(ui)

RETURN

method void userinfo(String [ ][ ] UI)

    OUTPUT "USER INFO:"  
    PRINT Matrix [0][0] + [1][0]  
    PRINT Matrix [0][1] + [1][1]  
    PRINT Matrix [0][2] + [1][2]  
    PRINT Matrix [0][3] + [1][3]

RETURN String [ ][ ] UI

```

method void registeredcourse()
    OUTPUT "REGISTERED COURSE: "
    OUTPUT "You've registered 3 courses in last semester"
    OUTPUT "These are the courses that you've registered."
    FOR (int i = 0; i < 60; i++)
        OUTPUT "_"
ENDFOR
Declare
    int course [ ] = {1,2,3};
    String cName [] = {"STIA1113", "STQS1023", "STQM1203"};
    int t1 [ ] = {36,20,15};
    int t2 [ ] = {36,20,15};
    int cw [ ] = {18,16,14};
    int totMark [ ] = {90,56,44};
    double GPA [ ] = {4.00,2.33,1.33};
    int attTime [ ] = {18,15,20};
SET minAttRate = 80, totAttTime = 20;
FOR (int i=0; i<course.length; i++)
    OUTPUT course[i]
    OUTPUT t1[i]
    OUTPUT t2[i]
    OUTPUT cw[i]
    OUTPUT totMark[i]
    OUTPUT GPA[i]
    OUTPUT attTime[i]
    OUTPUT totAttTime
    CALCULATE attTime[i] / totAttTime)*100
    OUTPUT "Attendance rate: "
ENDFOR
FOR (int i = 0; i < 60; i++)
    OUTPUT "_"
ENDFOR
RETURN

method void secondelevelcourse()
Declare
    int minAttRate = 80;
    double minGPA = 2.00;
    String cName [ ] = {"STIA1113", "STQS1023", "STQM2103"};
    String scdCName [ ] = {"STIA1123", "STQS1023", "STQM1203"};
    int totAttTime = 20;
    double GPA [ ] = {4.00,2.33,1.33};
CALCULATE
    int minAttRate = 80;
    double minGPA = 2.00;
    String cName [ ] = {"STIA1113", "STQS1023", "STQM2103"};

```

```

String scdCName [ ] = {"STIA1123", "STQS1023", "STQM1203"};
int totAttTime = 20;
double att1 = 18 / totAttTime;
double attRate1 = att1 * 100;
double att2 = 15 / totAttTime;
double attRate2 = att2 * 100;
double att3 = 20 / totAttTime;
double attRate3 = att3 * 100;

OUTPUT "Which second-level course you would like to register?"
OUTPUT "Press: (1) STIA1123 (2) STID3113 (3) STQM2103"
OUTPUT "Your answer: "
SET scdLvlCourse = chooseCourse()
WHILE scdLvlCourse = 1 OR scdLvlCourse = 2 OR scdLvlCourse = 3
    OUTPUT "Invalid course."
    OUTPUT "Please enter a valid number (1-3): "
    INPUT scdLvlCourse
ENDWHILE

CASE scdLvlCourse = 1 OF
    OUTPUT "STIA1123 requirements: "
    OUTPUT "Completed STIA1113 with GPA 2.00 and attendance rate 80% or above.");
    OUTPUT "STIA1113 GPA: "
    OUTPUT "STIA1113 Attendance Rate: "
condition GPA[0]>=2.00 AND attRate1>=80:
    OUTPUT "You've passed the GPA and attendance rate requirements."
    OUTPUT "STIA1123 registered successfully!"
condition GPA[0]>=2.00 AND attRate1<=79:
    OUTPUT "You've passed the GPA requirement but failed to fulfilled attendance rate, please retake the course."
condition GPA[0]<=1.99 AND attRate1>=80:
    OUTPUT "You've passed the attendance rate requirement but failed to fulfilled GPA, please retake the course."
OTHERS:
    OUTPUT "You've failed both GPA and attendance rate requirements, please retake the course."
CASE scdLvlCourse = 2 OF
    OUTPUT "STID3113 requirements: "
    OUTPUT "Completed STQS1023 with GPA 2.00 and attendance rate 80% or above.");
    OUTPUT "STQS1023 GPA: "
    OUTPUT "STQS1023 Attendance Rate: "
condition GPA[1]>=2.00 AND attRate2>=80:
    OUTPUT "You've passed the GPA and attendance rate requirements."
    OUTPUT "STIA1123 registered successfully!"
condition GPA[1]>=2.00 AND attRate2<=79:

```

```

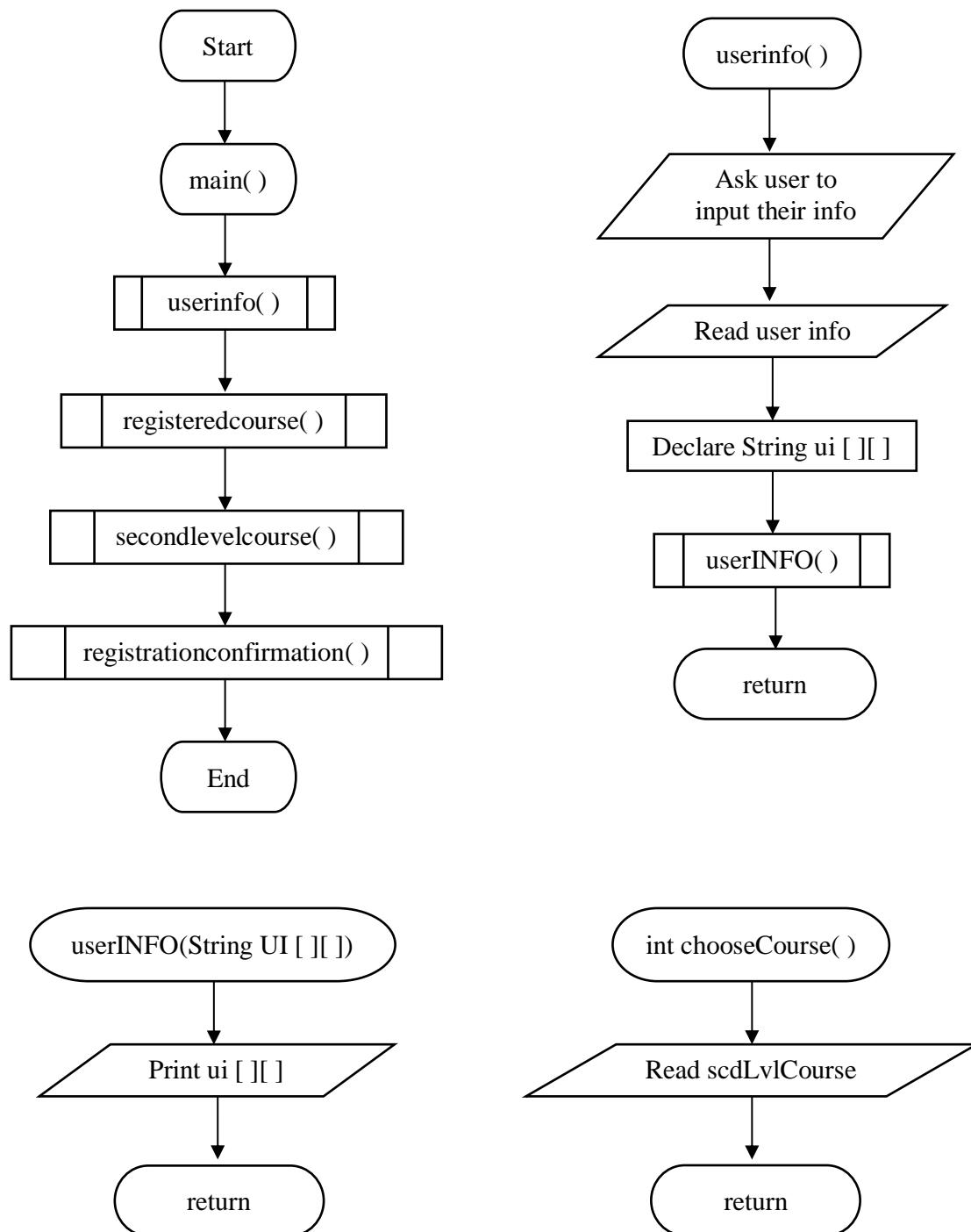
        OUTPUT "You've passed the GPA requirement but failed to fulfilled
              attendance rate, please retake the course."
    condition GPA[1]<=1.99 AND attRate2>=80:
        OUTPUT "You've passed the attendance rate requirement but failed to
              fulfilled GPA, please retake the course."
    OTHERS:
        OUTPUT "You've failed both GPA and attendance rate requirements,
              please retake the course."
CASE scdLvlCourse = 3 OF
    OUTPUT "STQM2103 requirements: "
    OUTPUT "Completed STQM1203 with GPA 2.00 and attendance rate
          80% or above.");
    OUTPUT "STQM1203 GPA: "
    OUTPUT "STQM1203 Attendance Rate: "
condition GPA[2]>=2.00 AND attRate3>=80:
    OUTPUT "You've passed the GPA and attendance rate requirements."
    OUTPUT "STIA1123 registered successfully!"
condition GPA[2]>=2.00 AND attRate3<=79:
    OUTPUT "You've passed the GPA requirement but failed to fulfilled
          attendance rate, please retake the course."
condition GPA[2]<=1.99 AND attRate3>=80:
    OUTPUT "You've passed the attendance rate requirement but failed to
          fulfilled GPA, please retake the course."
OTHERS:
    OUTPUT "You've failed both GPA and attendance rate requirements,
          please retake the course."
ENDCASE
RETURN

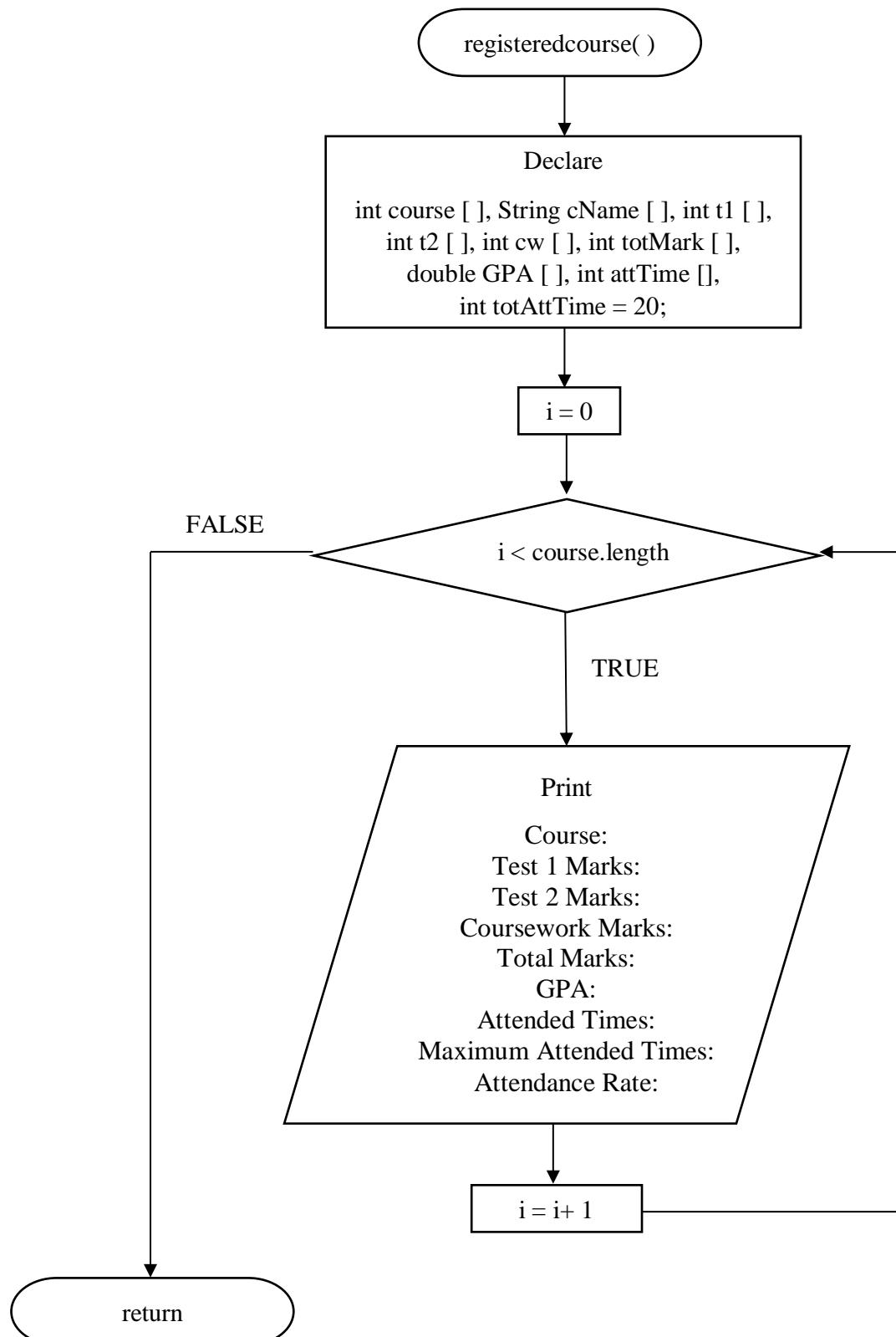
method int chooseCourse()
    GET scdLvlCourse
RETURN scdLvlCourse

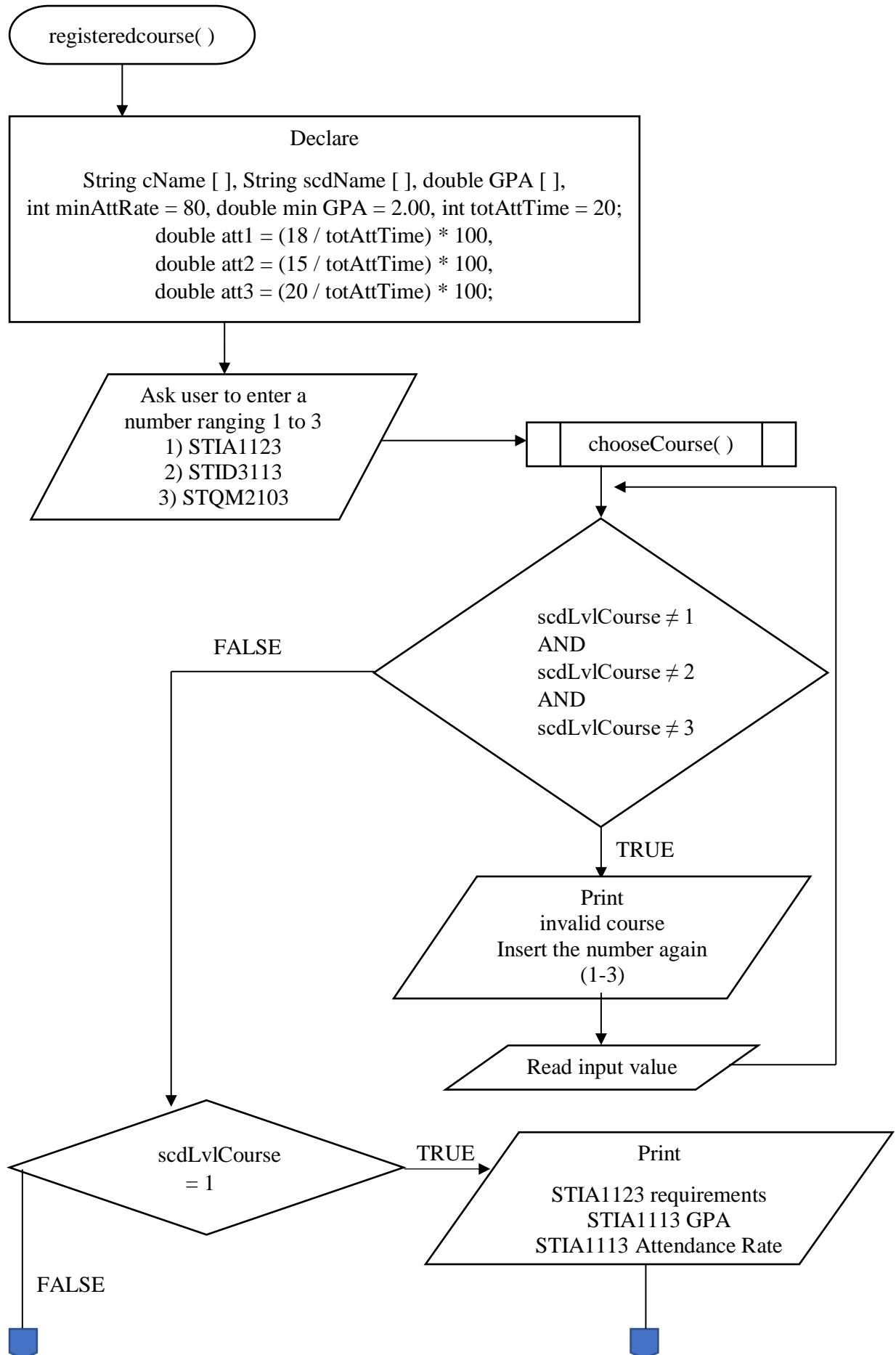
method void registrationconfirmation()
    SET answer = " "
    REPEAT
        OUTPUT "Do you wish to register another course? (Y/N): "
        INPUT answer
        IF answer = y OR answer =Y THEN
            CALL secondlevelcourse()
        ELSE
            OUTPUT "Thanks for using the system."
        ENDIF
    UNTIL answer = y OR answer =Y
RETURN
END

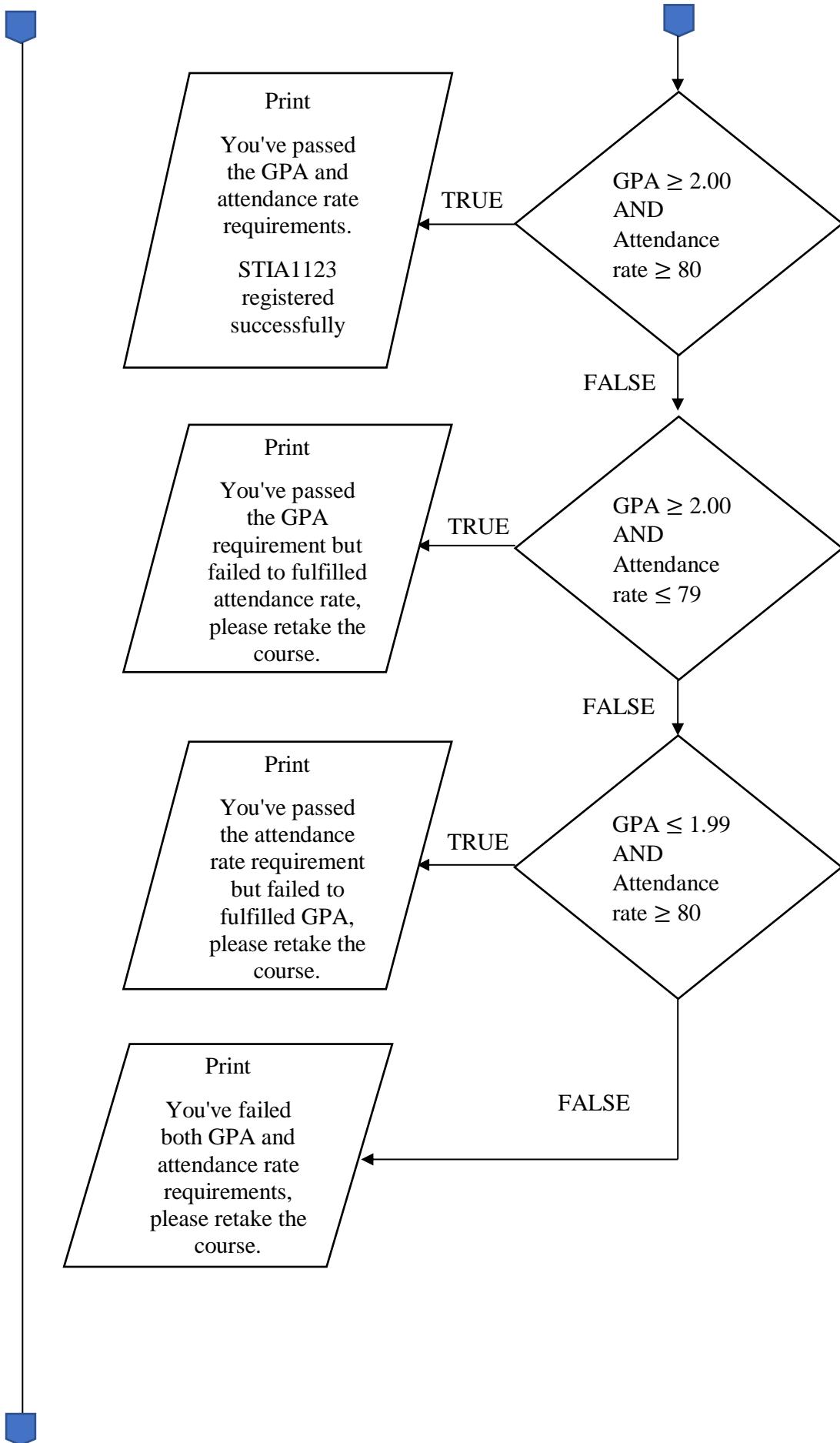
```

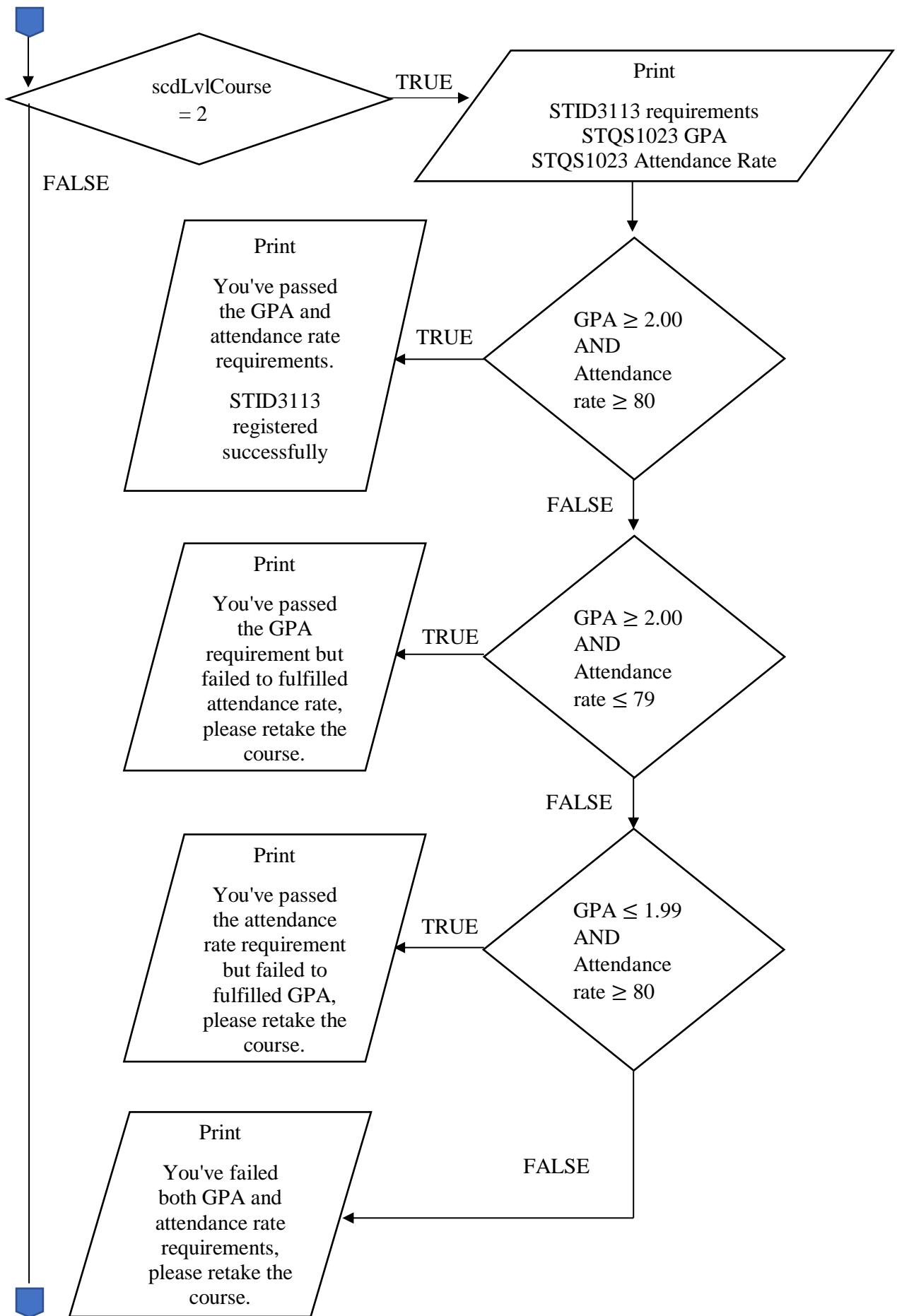
## 9. Flowchart

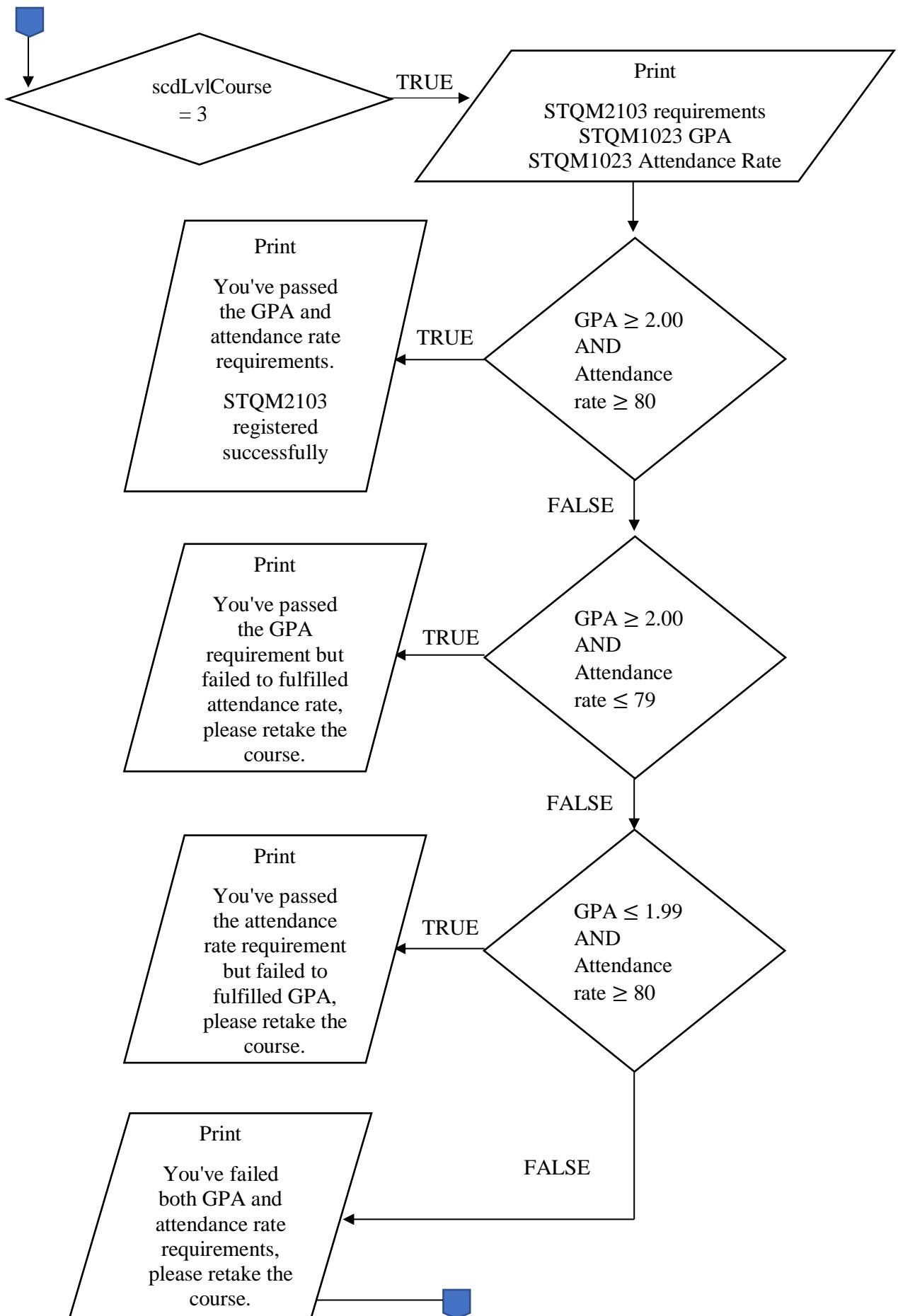


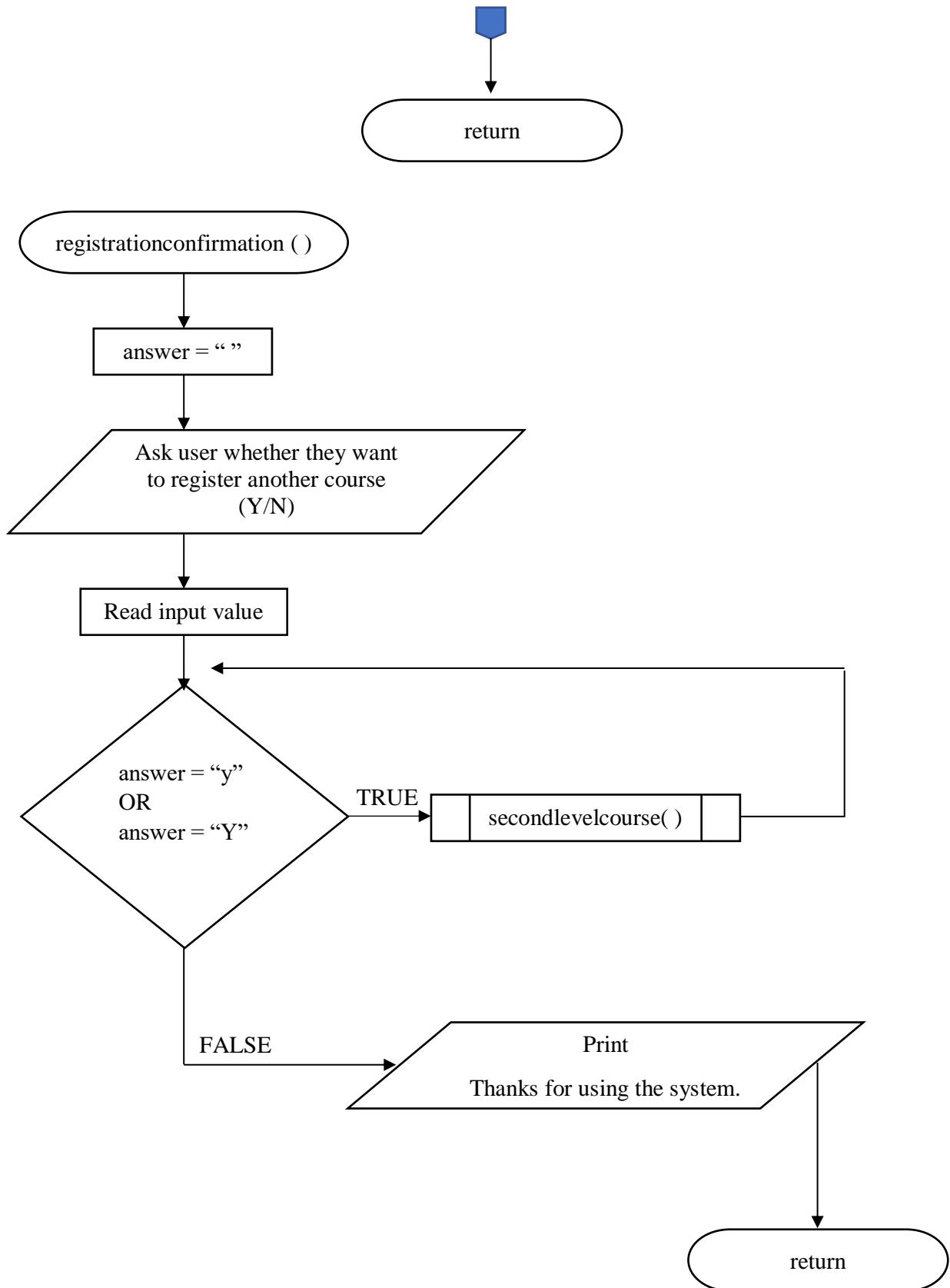












## 10. Coding

```
1 package TOPIC_UNIVERSITY;
2 import java.util.Scanner;
3 public class Assignment_3 {
4
5     private static Scanner sc;
6     //Main method
7     public static void main(String[] args) {
8         // TODO Auto-generated method stub
9         userinfo();
10        registeredcourse();
11        secondlevelcourse();
12        registrationconfirmation();
13    }
14
15    //User info method
16    public static void userinfo() {
17        sc = new Scanner (System.in);
18
19        System.out.println("Welcome!");
20        System.out.println("We would like to know your information.");
21        System.out.print("Enter your name: ");
22        String name = sc.nextLine();
23        System.out.print("Enter your id: ");
24        String id = sc.next();
25        System.out.print("Enter your semester: ");
26        String sem = sc.next();
27        System.out.println();
28
29        String ui [][] = {{"Name\t": " , "ID\t": " , "Semester: "},
30                           {name, id, sem}};
31
32        userINFO(ui);
33        System.out.println();
34    }
35
36    public static void userINFO(String UI [][]){
37        System.out.println("USER INFO:");
38        System.out.println(UI[0][0] + UI[1][0]);
39        System.out.println(UI[0][1] + UI[1][1]);
40        System.out.println(UI[0][2] + UI[1][2]);
41    }
42
43    //Registered course method
44    public static void registeredcourse() {
45        sc = new Scanner (System.in);
46
47        System.out.print("REGISTERED COURSE:\n");
48        System.out.println("You've registered 3 course in last semester");
49        System.out.println("These are the courses that you've registered.");
50        for (int i = 0; i < 60; i++) {
51            System.out.print("_");
52        }
53        System.out.println();
54
55        int course [] = {1,2,3};
56        String cName [] = {"STIA1113", "STQS1023", "STQM1203"};
57        int t1 [] = {36,20,15};
58        int t2 [] = {36,20,15};
59        int cw [] = {18,16,14};
60        int totMark [] = {90,56,44};
61        double GPA [] = {4.00,2.33,1.33};
62        int attTime [] = {18,15,20};
63        int totAttTime = 20;
64
65        for(int i=0; i<course.length; i++) {
66            System.out.println("\nCourse " +course[i]+ "\t\t\t: " +cName[i]);
67            System.out.println("Test 1 Marks\t\t\t: " +t1[i]+ "%");
68            System.out.println("Test 2 Marks\t\t\t: " +t2[i]+ "%");
69            System.out.println("Coursework Marks\t\t: " +cw[i]+ "%");
70            System.out.println("Total Marks\t\t\t: " +totMark[i]+ "%");
71            System.out.printf("GPA\t\t\t: %.2f\n",GPA[i]);
72            System.out.println("Attended Times\t\t\t: " +attTime[i]);
73            System.out.println("Maximum Attended Times\t\t: " +totAttTime+ " days");
74            System.out.println("Attendance rate\t\t\t: " +((double) attTime[i] / totAttTime)*100+ "%");
75        }
76
77        for (int i = 0; i < 60; i++) {
78            System.out.print("_");
79        }
80        System.out.println();
81    }
82
83    // Second level course registration method
84    public static void secondlevelcourse() {
85        sc = new Scanner (System.in);
86    }
```

```

87     int minAttRate = 80;
88     double minGPA = 2.00;
89     String cName [] = {"STIA1113", "STQS1023", "STQM2103"};
90     String scdCName [] = {"STIA1123", "STQS1023", "STQM1203"};
91     int totAttTime = 20;
92     double GPA [] = {4.00,2.33,1.33};
93     double att1 = (double) 18 / totAttTime;
94     double attRate1 = att1 * 100;
95     double att2 = (double) 15 / totAttTime;
96     double attRate2 = att2 * 100;
97     double att3 = (double) 20 / totAttTime;
98     double attRate3 = att3 * 100;
99
100    System.out.println("Which second-level course you would like to register?");
101    System.out.println("Press:\n (1) STIA1123 \n (2) STID3113 \n (3) STQM2103");
102    System.out.print("Your answer: ");
103    int scdLvlCourse = chooseCourse();
104    System.out.println();
105
106    while((!(scdLvlCourse == 1)) && (!(scdLvlCourse == 2)) && (!(scdLvlCourse == 3))){
107        System.out.println("Invalid course.");
108        System.out.print("Please enter a valid number (1-3): ");
109        scdLvlCourse = sc.nextInt();
110        System.out.println();
111    }
112
113    if(scdLvlCourse == 1){
114        System.out.println(scdCName[0]+ " requirements: ");
115        System.out.println("Completed STIA1113 with GPA " +String.format("%.2f",minGPA)+"
116                                         and attendance rate " +minAttRate+ "% or above.");
117        System.out.println();
118        System.out.printf(cName[0]+ " GPA\t\t: %.2f\n" ,GPA[0]);
119        System.out.println(cName[0]+ " Attendance Rate: " +attRate1+ "%");
120
121        if ((GPA[0]>=2.00) && (attRate1>=80)) {
122            System.out.print("You've passed the GPA and attendance rate requirements.\n");
123            System.out.print(scdCName[0]+ " registered successfully!\n");
124        }
125
126        else if ((GPA[0]>=2.00) && (attRate1<=79)) {
127            System.out.print("You've passed the GPA requirement but failed to fulfilled "
128                           + "attendance rate, please retake the course.\n");
129        }
130
131        else if ((GPA[0]<=1.99) && (attRate1>=80)) {
132            System.out.print("You've passed the attendance rate requirement but failed to "
133                           + "fulfilled GPA, please retake the course.\n");
134        }
135
136        else {
137            System.out.print("You've failed both GPA and attendance rate requirements, "
138                           + "please retake the course.\n");
139        }
140    }
141
142    else if(scdLvlCourse == 2){
143        System.out.println(scdCName[1]+ " requirements: ");
144        System.out.println("Completed STQS1023 with GPA " +String.format("%.2f",minGPA)+"
145                                         and attendance rate " +minAttRate+ "% or above.");
146        System.out.println();
147        System.out.printf(cName[1]+ " GPA\t\t: %.2f\n" ,GPA[1]);
148        System.out.println(cName[1]+ " Attendance Rate: " +attRate2+ "%");
149
150        if ((GPA[1]>=2.00) && (attRate2>=80)) {
151            System.out.print("You've passed the GPA and attendance rate requirements.\n");
152            System.out.print(scdCName[0]+ " registered successfully!\n");
153        }
154
155        else if ((GPA[1]>=2.00) && (attRate2<=79)) {
156            System.out.print("You've passed the GPA requirement but failed to fulfilled "
157                           + "attendance rate, please retake the course.\n");
158        }
159
160        else if ((GPA[1]<=1.99) && (attRate2>=80)) {
161            System.out.print("You've passed the attendance rate requirement but failed to "
162                           + "fulfilled GPA, please retake the course.\n");
163        }
164        else {
165            System.out.print("You've failed both GPA and attendance rate requirements, "
166                           + "please retake the course.\n");
167        }
168    }
169
170    else if(scdLvlCourse == 3){
171        System.out.println(scdCName[2]+ " requirements: ");
172        System.out.println("Completed STQM1203 with GPA " +String.format("%.2f",minGPA)+"

```

```

173             " and attendance rate " +minAttRate+ "% or above.");
174     System.out.println();
175     System.out.printf(cName[2]+ " GPA\t:t: %.2f\n" ,GPA[2]);
176     System.out.println(cName[2]+ " Attendance Rate: " +attRate3+ "%");
177
178     if ((GPA[2]>=2.00) && (attRate3>=80)) {
179         System.out.print("You've passed the GPA and attendance rate requirements.\n");
180         System.out.print(scdCName[0]+ " registered successfully!\n");
181     }
182
183     else if ((GPA[2]>=2.00) && (attRate3<=79)) {
184         System.out.print("You've passed the GPA requirement but failed to fulfilled "
185                         + "attendance rate, please retake the course.\n");
186     }
187
188     else if ((GPA[2]<=1.99) && (attRate3>=80)) {
189         System.out.print("You've passed the attendance rate requirement but failed to "
190                         + "fulfilled GPA, please retake the course.\n");
191     }
192     else {
193         System.out.print("You've failed both GPA and attendance rate requirements, "
194                         + "please retake the course.\n");
195     }
196 }
197
198 public static int chooseCourse() {
199     sc = new Scanner (System.in);
200     int scdLvlCourse = sc.nextInt();
201     return scdLvlCourse;
202 }
203
204
205 // Registration confirmation
206 @
207 public static void registrationconfirmation() {
208     sc = new Scanner (System.in);
209
210     String answer = " ";
211     do {
212         System.out.print("\nDo you wish to register another course? (Y/Any key): ");
213         answer = sc.nextLine();
214         System.out.println();
215         if ((answer.equals("y")) || (answer.equals("Y"))) {
216             secondlevelcourse();
217         }
218         else {
219             System.out.println("Thanks for using the system.");
220         }
221     }
222     while ((answer.equals("y")) || (answer.equals("Y")));
223 }
224 }
```

## Output

```
Welcome!
We would like to know your information.
Enter your name: TANG WEI CHIANG
Enter your id: 286841
Enter your semester: 2
```

```
USER INFO:
Name      : TANG WEI CHIANG
ID        : 286841
Semester: 2
```

---

```
REGISTERED COURSE:
You've registered 3 course in last semester
These are the courses that you've registered.
```

---

```
Course 1          : STIA1113
Test 1 Marks     : 36%
Test 2 Marks     : 36%
Coursework Marks : 18%
Total Marks      : 90%
GPA              : 4.00
Attended Times   : 18
Maximum Attended Times : 20 days
Attendance rate  : 90.0%

Course 2          : STQS1023
Test 1 Marks     : 20%
Test 2 Marks     : 20%
Coursework Marks : 16%
Total Marks      : 56%
GPA              : 2.33
Attended Times   : 15
Maximum Attended Times : 20 days
Attendance rate  : 75.0%

Course 3          : STQM1203
Test 1 Marks     : 15%
Test 2 Marks     : 15%
Coursework Marks : 14%
Total Marks      : 44%
GPA              : 1.33
Attended Times   : 20
Maximum Attended Times : 20 days
Attendance rate  : 100.0%
```

---

```
Which second-level course you would like to register?
```

```
Which second-level course you would like to register?  
Press:  
(1) STIA1123  
(2) STID3113  
(3) STQM2103  
Your answer: 0  
  
Invalid course.  
Please enter a valid number (1-3): 1  
  
STIA1123 requirements:  
Completed STIA1113 with GPA 2.00 and attendance rate 80% or above.  
  
STIA1113 GPA : 4.00  
STIA1113 Attendance Rate: 90.0%  
You've passed the GPA and attendance rate requirements.  
STIA1123 registered successfully!  
  
Do you wish to register another course? (Y/Any key): y  
  
Which second-level course you would like to register?  
Press:  
(1) STIA1123  
(2) STID3113  
(3) STQM2103  
Your answer: 2  
  
STQS1023 requirements:  
Completed STQS1023 with GPA 2.00 and attendance rate 80% or above.  
  
STQS1023 GPA : 2.33  
STQS1023 Attendance Rate: 75.0%  
You've passed the GPA requirement but failed to fulfilled attendance rate, please retake the course.  
  
Do you wish to register another course? (Y/Any key): y  
  
Which second-level course you would like to register?  
Press:  
(1) STIA1123  
(2) STID3113  
(3) STQM2103  
Your answer: -1  
  
Invalid course.  
Please enter a valid number (1-3): 3  
  
STQM1203 requirements:  
Completed STQM1203 with GPA 2.00 and attendance rate 80% or above.  
  
STQM2103 GPA : 1.33  
STQM2103 Attendance Rate: 100.0%  
You've passed the attendance rate requirement but failed to fulfilled GPA, please retake the course.  
  
Do you wish to register another course? (Y/Any key): i  
  
Thanks for using the system.
```

## **LIBRARY- FARA AYEESHA BINTI AHMAD YUSNI**

### **1. Identify the Problem**

A library is a place where people read and borrow books. It is a specially made location to store books and information so that anyone can easily access it no matter their status. However, in allowing people to borrow books, there is a problem wherein books are not being checked in according to the designated times. This creates a headache for librarians in being unable to lend the books to other people who has requested for it.

A lot of ways has been done to help mitigate this problem such as sending a reminder to the borrower's home address, banning them from future borrowing of books from the library, or charging fines to cover the loss of the books.

### **2. Understand the Problem**

The librarian in a local university has made a decision to charge students who return books late to the library with a fine. The fine is different for every student. The base fine for each days late is RM1.00. An additional fine will be imposed based on the student's years of study. For first years, the additional fine is RM1.00 per day. For second years, the additional fine is RM2.00 per day. For third years, the additional fine is RM3.00 per day. If they have different books with different check out times, it will be calculated independent of each other.

Year of Study	1st Year	2nd Year	3rd Year
Base Fine Per Day	RM1.00	RM1.00	RM1.00
Additional Fine Per Day	RM1.00	RM2.00	RM3.00

### **3. Alternative Method**

- Ways:
1. Write a program that can calculate the total fine based on the student's year of study, number of days late, and fine per day.
  2. Write a program that can calculate the total fine based on the student's year of study, number of days late, and fine per day, calculating independently if there are more than 1 book.
  3. Write a program that can calculate the total fine for all students and listing their name in one huge list.

### **4. Best Method**

(2.) way because it is more detailed and clearer compared to (1.) and (3.). It fulfills the librarian's request of charging each student according to the accumulated fines.

### **5. Instructions**

1. User enters the student's name, student ID, year of study
2. User enters number of books due
3. User inputs the book title and ISBN number, and number of days late based on number of books due
4. The program calculates the total fine with the formula

$$\text{total fine} = (\text{RM}1.00 * \text{number of days late}) + (\text{additional fine} * \text{number of days late})$$

5. System prints out a slip containing the student's name, student ID, years of study, total fine, and number of days late.

### **6. Evaluate the Solution**

The solution meets the requirement to solve the problems stated. The fine for the late delivery of one book is calculated based on the student's year of study and the number of days late. With books of different duration of late time, the fine will be calculated

independent of the first book. The system will then display the student's info, the books' info, the total fine, and the number of days late for each book.

## 7. Algorithm

count = 0

sum = 0

totalFine = sum

discountedFine = (float) (totalFine \* 0.8)

## 8. Pseudocode

1. Start

2. Declare int yearCode, float totalFine, char excuse, float discountedFine = 0,int numBooks, String excuseDesc, float bookFine, float sum = 0, String a[] = new String [3], String [][] b= new String [100][], int bookfee[][]

3. Output "Enter student's name, ID, and year of study(separated by ENTER key):"

4. while i < a.length

    input a[i]

    i = i + 1

Repeat while

5. Output "Does the student have a valid excuse? Enter y or n"

6. Input excuse

7. if (excuse == 'y') {

        Output "Enter student's excuse. "

        Input excuseDesc

    else

        Input " "

8. Output "Enter number of books late:"

9. Input numBooks

10. for (int i = 0; i < numBooks; i++) {

    b[i] = new String [3];

    Output "Enter book title, book ISBN, and number of days late of book " , (i + 1) " , (separated by ENTER key)"

    for (int j = 0; j < b[i].length; j++) {

        Input b[i][j]

11. int bookfee [][] = new int [100][]

for (int i = 0; i < numBooks; i++) {

    bookfee[i] = new int [1];

    bookfee[i][0] = Integer.parseInt(b[i][2])

}

12. for (int i = 0; i < numBooks; i++) {

    Output "Book " , (i + 1) , " title: " , b[i][0]

    Output "Book " , (i + 1) , " ISBN: " , b[i][1]

    Output "Number of days late for book " , (i + 1) , " : " , b[i][2]

    Output "Fee for this book: RM" , (float)bookfee[i][0] \* (float)yearCode)

13. for (int i = 0; i < numBooks; i++) {

    bookFine = bookfee[i][0] \* yearCode

    sum = sum + bookFine

}

14. if (excuse == 'y') {

    totalFine = sum;

```
discountedFine = (float) (totalFine * 0.8)

}

else

    totalFine = sum;

15. if (excuse == 'y') {

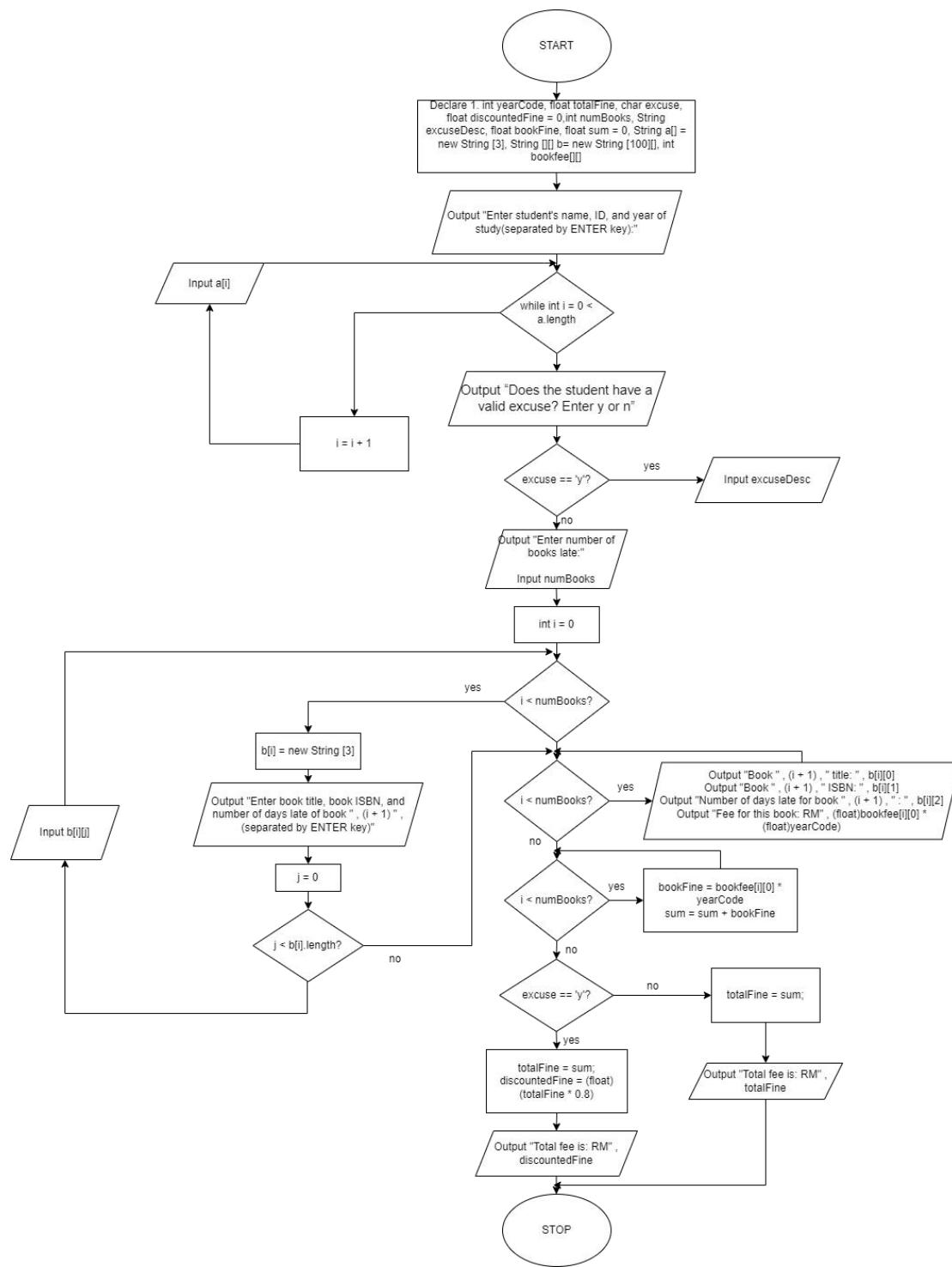
    Output "Total fee is: RM" , discountedFine

}

else

    Output "Total fee is: RM" , totalFine
```

## 9. Flowchart



## 10. Coding

```
1 package university;
2 import java.util.Arrays;
3
4 public class Library3Test {
5
6     public static void main(String[] args) {
7         // TODO Auto-generated method stub
8
9         Scanner sc = new Scanner(System.in);
10
11         int yearCode;
12         float totalfine;
13         char excuse;
14         float discountedFine = 0;
15         int numBooks;
16         String excuseDesc;
17         float bookFine;
18         float sum = 0;
19
20         String [] a;
21         a = studentInfo();
22
23         yearCode = Integer.parseInt(a[2]);
24
25         System.out.println("Does the student have a valid excuse? Enter y or n");
26         excuse = sc.next().charAt(0);
27         sc.nextLine();
28
29         if (excuse == 'y') {
30             System.out.println("Enter student's excuse. ");
31             excuseDesc = sc.next();
32             sc.nextLine();
33         }
34         else
35             System.out.println();
36
37         System.out.println("Enter number of books late: ");
38         numBooks = sc.nextInt();
39         sc.nextLine();
40
41         /*if (numBooks > 3) {
42             System.out.println("Max number of books allowed to be borrowed is 3. Try again.");
43         }*/
44
45         String b[][];
46         b = bookinfo(numBooks);
47
48         int bookfee [][] = new int [100][];
49         for (int i = 0; i < numBooks; i++) {
50             bookfee[i] = new int [3];
51             bookfee[i][0] = Integer.parseInt(b[i][2]);
52         }
53
54         for (int i = 0; i < b.length; i++) {
55             System.out.println("bookinfo" + i + ":" + Arrays.toString(b[i]));
56         }
57
58         System.out.println();
59
60         System.out.println("*****");
61         System.out.println();
62         System.out.println("**Student Info");
63
64         System.out.println("Student's name: " + a[0]);
65         System.out.println("Student's ID: " + a[1]);
66         System.out.println("Student's year of study: " + a[2]);
67         System.out.println();
68
69         System.out.println("*****");
70         System.out.println("**Book Info");
71
72         for (int i = 0; i < numBooks; i++) {
73             System.out.println("Book " + (i + 1) + " title: " + b[i][0]);
74             System.out.println("Book " + (i + 1) + " ISBN: " + b[i][1]);
75             System.out.println("Number of days late for book " + (i + 1) + " : " + b[i][2]);
76             System.out.printf("Fee for this book: RM" + "%2f", (float)bookfee[i][0] * (float)yearCode);
77         }
78
79         for (int i = 0; i < numBooks; i++) {
80             bookFine = bookfee[i][0] * yearCode;
81             sum = sum + bookFine;
82         }
83
84         if (excuse == 'y') {
85             totalfine = sum;
86             discountedFine = (float) (totalFine * 0.8);
87         }
88         else
89             totalFine = sum;
90         System.out.println();
91
92         if (excuse == 'y') {
93             System.out.printf("Total fee is: RM" + "%2f", discountedFine);
94         }
95         else
96             System.out.printf("Total fee is: RM" + "%2f", totalFine);
97
98         System.out.println();
99         System.out.println("*****");
100        System.out.println();
101        System.out.println("*****");
102
103    }
104
105
106    public static String[] studentInfo () {
107        Scanner sc = new Scanner (System.in);
108        String [] studentinfo = new String [3];
109
110        System.out.println("Enter student's name, ID, and year of study(separated by ENTER key): ");
111
112        for (int i = 0; i < studentinfo.length; i++) {
113            studentinfo[i] = sc.nextLine();
114        }
115        return studentinfo;
116    }
117
118    public static String[][] bookinfo (int x) {
119        Scanner sc = new Scanner (System.in);
120        String [][] bookInfo = new String [100][];
121        for (int i = 0; i < x; i++) {
122            bookInfo[i] = new String [3];
123            System.out.println("Enter book title, book ISBN, and number of days late of book " + (i + 1) + " (separated by ENTER key)");
124            for (int j = 0; j < bookInfo[i].length; j++) {
125                bookInfo[i][j] = sc.nextLine();
126            }
127        }
128        return bookInfo;
129    }
130
131 }
```

## Output

```
Enter student's name, ID, and year of study(separated by ENTER key):
Eri
283948
3
Does the student have a valid excuse? Enter y or n
n

Enter number of books late:
3
Enter book title, book ISBN, and number of days late of book 1 (separated by ENTER key)
Girl A
475819375839
7
Enter book title, book ISBN, and number of days late of book 2 (separated by ENTER key)
Hayloft II
273847184758
5
Enter book title, book ISBN, and number of days late of book 3 (separated by ENTER key)
Alien Blues
284718495728
10
=====
*Student Info
Student's name: Eri
Student's ID: 283948
Student's year of study: 3
=====
*Book Info
Book 1 title: Girl A
Book 1 ISBN: 475819375839
Number of days late for book 1 : 7
Fee for this book: RM21.00

Book 2 title: Hayloft II
Book 2 ISBN: 273847184758
Number of days late for book 2 : 5
Fee for this book: RM15.00

Book 3 title: Alien Blues
Book 3 ISBN: 284718495728
Number of days late for book 3 : 10
Fee for this book: RM30.00

Total fee is: RM66.00
=====|
```

## **TOPIC MEDICAL - NIK MOHAMAD HANIS BIN NIK YAHYA**

### **1. Identify the problem**

The outbreak of corona virus diseases (COVID-19) has been substantially influencing the life and living of people across the world, especially after the declaration of a global pandemic by the World Health Organization in the second week of March 2020. This unprecedented 'home isolation' under lockdown, along with the uncertainty of academic and professional careers, has had a variety of effects on students' mental health. Based on many published studies, longer duration of quarantine has made some of the students affected by mental health disorders such as stress, anxiety, and depression (SAD).

Most of the students in Malaysia are having a problem with online class during pandemic because they have to adapt to a new situation which is more struggling and harder for them. Learning through online platforms have given rise to depression and anxiety disorders among undergraduate university students, where there was a significant correlation between student satisfaction and prevalence of depression, anxiety, and stress.

### **2. Understand the problem**

Ahmad is a medical student who studied at University Utara Malaysia (UUM) and currently in semester 3. According to current situation where students must study through online platforms and cannot attend physical class because of covid-19, Ahmad and his groupmate must do a survey and analysis as a medical student on depression and anxiety among UUM students as their assignment project.

They have made a survey of the level of anxiety and depression among 100 UUM students from different schools, which is 25 students in each school at UUM. All of the students already make responses to their project and Ahmad have been entrusted to keep all the data that the responses made. Unfortunately, Ahmad laptop have been format and only some of the data can be saved.

In conclusion, 25% out of 100 students have reached the anxiety level while 32% of them have reached the depression level. Based on the survey, 2.25% and 1.50% of computing and accounting students have anxiety respectively while law and business students both have the same percentage. 3.52% and 2.88% of students that have depression are from law and

computing students respectively. The remaining students are business and accounting students because both of these schools share the same percentage.

Now, they are facing a problem on how to separate that information and calculate the percentage of students, total number of students, female students and male students from each school who have anxiety and depression.

### **3. Alternative ways**

- i. Ahmad has to do the survey again and saved the data.
- ii. Ahmad just has to make assumptions on the number of students that have anxiety and depression from each school.
- iii. Ahmad has to calculates and display the percentage of students, total number of students, female students and male students that have anxiety and depression from each school which is law, computing, business and accounting based on the data given.

### **4. Best way**

Ahmad has to calculates and display the percentage of students, total number of students, female students and male students that have anxiety and depression from each school which is law, computing, business and accounting based on the data given.

### **5. Instruction**

- i. Users enter the percentage of students who have anxiety in School of Computing (2.25%) and School of Accounting (1.5%) based on the result of the survey.
- ii. Then, the program will calculate the number of students and show the percentage of students who have anxiety in each school.

$(2.25/25 \times 100 = 9 \text{ students})$  - School of Computing

$(1.5/25 \times 100 = 6 \text{ students})$  - School of Accounting

$((25 - 9+6)/2 = 5 \text{ students})$  - School of Business & Law

$(5/100 \times 25 = 1.25\%)$  - Percentage student in School of Business & Law

- iii. Then, the program will calculate and separate the number of male and female students based on the data given that have anxiety in each school.

(5-0 = 5 female students) -School of Law

(9-6 = 3 male students)- School of Computing

(5-1 = 4 female students) - School of Business

(6-4 = 2 male students)- School of Accounting

- iv. Next, users enter the percentage of students who have depression in the School of Law (3.52%) and School of Computing (2.88%) based on the result of the survey.

- v. Then, the program will calculate the number of students and show the percentage of students who have depression in each school.

(3.52/32 x 100 = 11 students) -School of Law

(2.88/32 x 100 = 9 students) - School of Computing

((32 – 11+9)/2 = 6 students) - School of Business & Accounting

(6/100 x 32 = 1.92%) - Percentage student in School of Business, Accounting

- vi. Then, the program will calculate and separate the number of male and female students based on the data given that have depression in each school.

(11-4 = 7 female students) -School of Law

(9-5 = 4 male students)- School of Computing

(6-2 = 4 female students) - School of Business

(6-3 = 3 male students)- School of Accounting

- vii. The program will list all schools with the percentage of students, total number of students, female students and male students who have anxiety and depression.

## 6. Evaluate the solution

The solution meets the requirement to solve the problems stated. Firstly, percentage of all students is equal to total number of students which is 25 students have anxiety and 32 students have depression. The percentage of each school of students that have anxiety and depression will be calculated based on the data remaining that Ahmad have. Next, the system will also calculate total number of students in each school based on the percentage of students.

As the result of the total number of students in each school have been calculated, Ahmad will key in the remaining data that has been saved male and female student to calculate number of male and female student from each school who have anxiety and depression. Lastly, all the data will be displayed completely.

## 7. Algorithm

- i. 100 students done the anxiety and depression test
- ii. 25% out of all students have anxiety
- iii. 32% out of all students have depression

### Anxiety Test

School	Percentage Of Students (%)	Number Of Students	Female student	Male student
School of Law	1.25	5	5	0
School of Computing	2.25	9	6	3
School of Business	1.25	5	4	1
School of Accounting	1.50	6	4	2

### Depression test

School	Percentage Of Students (%)	Number Of Students	Female student	Male student
School of Law	3.52	11	7	4
School of Computing	2.88	9	5	4
School of Business	1.92	6	4	2
School of Accounting	1.92	6	3	3

### **8. Pseudocode**

Start

```
input PercentComAnxiety, PercentAccAnxiety, PercentLawDepress,  
PercentComDepress, LawMaleAnxiety, ComFemaleAnxiety, BusinessMaleAnxiety,  
AccFemaleAnxiety, LawMaleDepress, ComFemaleDepress, BusinessMaleDepress,  
LevelAnxietyBusiness, LevelDepressBusiness,
```

```
AccFemaleDepress numAnxietyCom = (PercentComAnxiety/25) * 100
```

```
numAnxietyAcc = (PercentAccAnxiety/25) * 100
```

```
totalLawBusiness = 25 - (numAnxietyCom+numAnxietyAcc)
```

```
numAnxietyLaw = totalLawBusiness /2
```

```
numAnxietyBusiness = totalLawBusiness /2
```

```
PercentLawBusinessDepress= (numAnxietyLaw * 25) / 100
```

```

LawFemaleAnxiety = numAnxietyLaw - LawMaleAnxiety
ComMaleAnxiety = numAnxietyCom - ComFemaleAnxiety
BusinessFemaleAnxiety = numAnxietyBusiness - BusinessMaleAnxiety
AccMaleAnxiety = numAnxietyAcc - AccFemaleAnxiety
numDepressLaw = (PercentLawDepress/32) * 100;
numDepressCom = (PercentComDepress/32) * 100;
totalBusinessAcc = 32 - (numDepressLaw+numDepressCom)
numDepressBusiness = totalBusinessAcc /2
numDepressAcc = totalBusinessAcc /2
PercentBusinessAccDepress = (numDepressAcc * 32) / 100
LawFemaleDepress = numDepressLaw - LawMaleDepress
ComMaleDepress= numDepressCom - ComFemaleDepress
BusinessFemaleDepress = numDepressBusiness - BusinessMaleDepress
AccMaleDepress = numDepressAcc – AccFemaleDepress

```

Method StudentAnxiety ()

```

String [][] Business = { {"Nabila", "Ching Mei", "Siti", "Kasim", "Printha"},  

                        {"11", "4", "5", "3", "7"}};  

        output ScoreStudentsAnxiety

```

Method int maxAnxiety (int [] array)

Declare

```
int maxAnxiety = 0
```

```
FOR (int i = 0; i < array.length; i++ )
```

```
    IF (array [i] > maxAnxiety)
```

```
        maxAnxiety = array [i]
```

```
RETURN maxAnxiety
```

Method int minAnxiety (int [] array)

Declare

```
int minAnxiety = 0
```

```
FOR (int i = 0; i < array.length; i++ )
```

```
    IF (array [i] < minAnxiety)
```

```
        minAnxiety = array [i]
```

RETURN minAnxiety

Method mainAnxiety (String args[] )

    Declare

        minimalAnxiety = 0

        moderateAnxiety = 0

        severeAnxiety = 0

        input size

        int [] myArray = new int [size]

    FOR (int i = 0; i < size; i++)

        Input myArray[i]

        IF (myArray[i] <= 5)

            minimalAnxiety = 1 + minimalAnxiety

        ELSE IF (myArray[i] <= 10)

            moderateAnxiety = 1 + moderateAnxiety

        ELSE

            severeAnxiety = 1 + severeAnxiety

Method StudentDepress()

String [][] Business = {{ {"Aisyah", "Theva", "Sarah", "Kamal", "Aiman", "Meiying"},  
                          {"10", "11", "7", "5", "3", "2"} }}

output ScoreStudentsDepress

Method int maxDepress (int [] array)

    Declare

        int maxDepress = 0

    FOR (int i = 0; i < array.length; i++ )

        IF (array [i] > maxDepress)

            maxDepress = array [i]

    RETURN maxDepress

Method int minDepress (int [] array)

    Declare

        int minDepress = 0

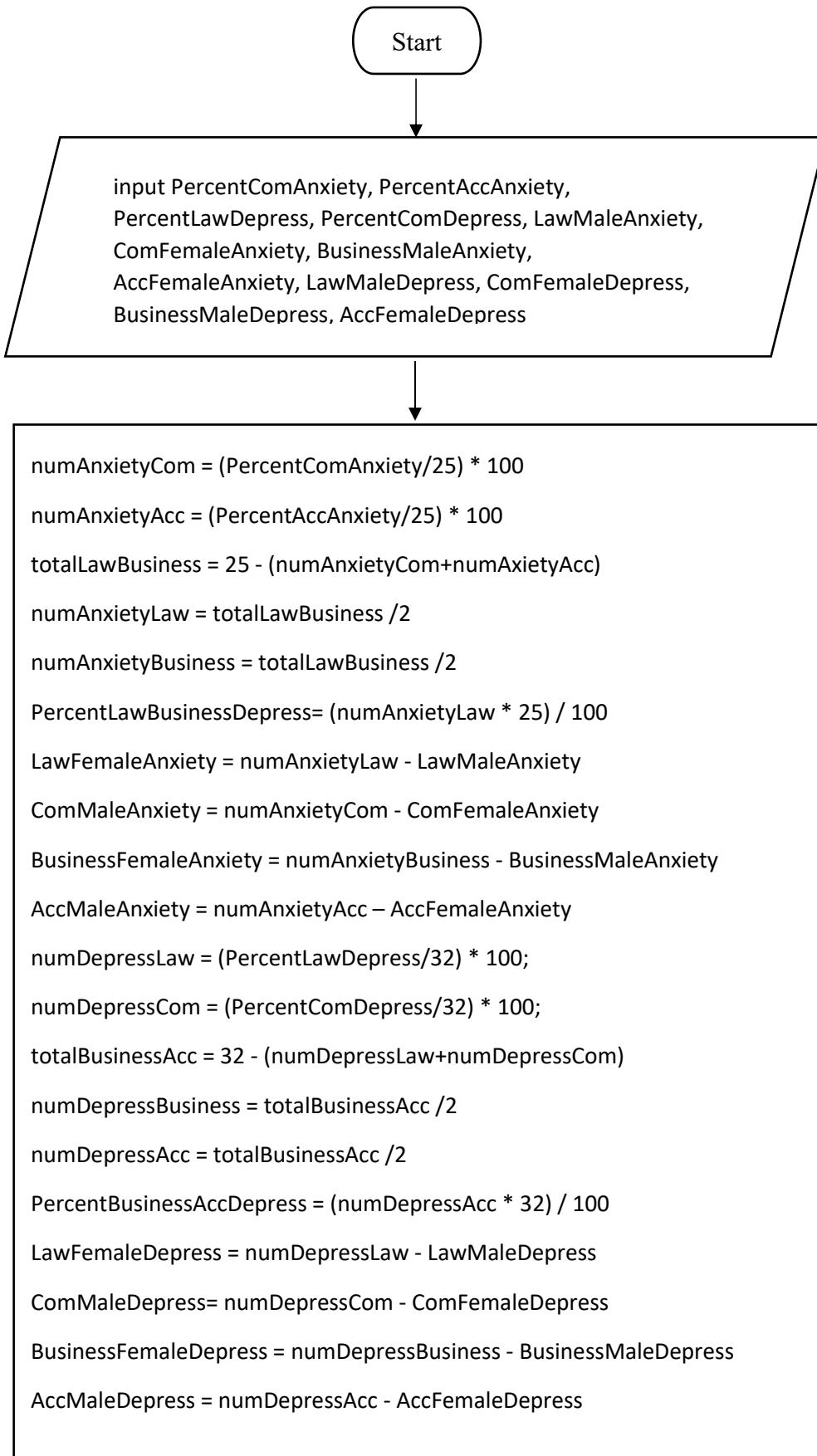
```
FOR (int i = 0; i < array.length; i++)  
    IF (array [i] < minDepress)  
        minDepress = array [i]  
RETURN minDepress
```

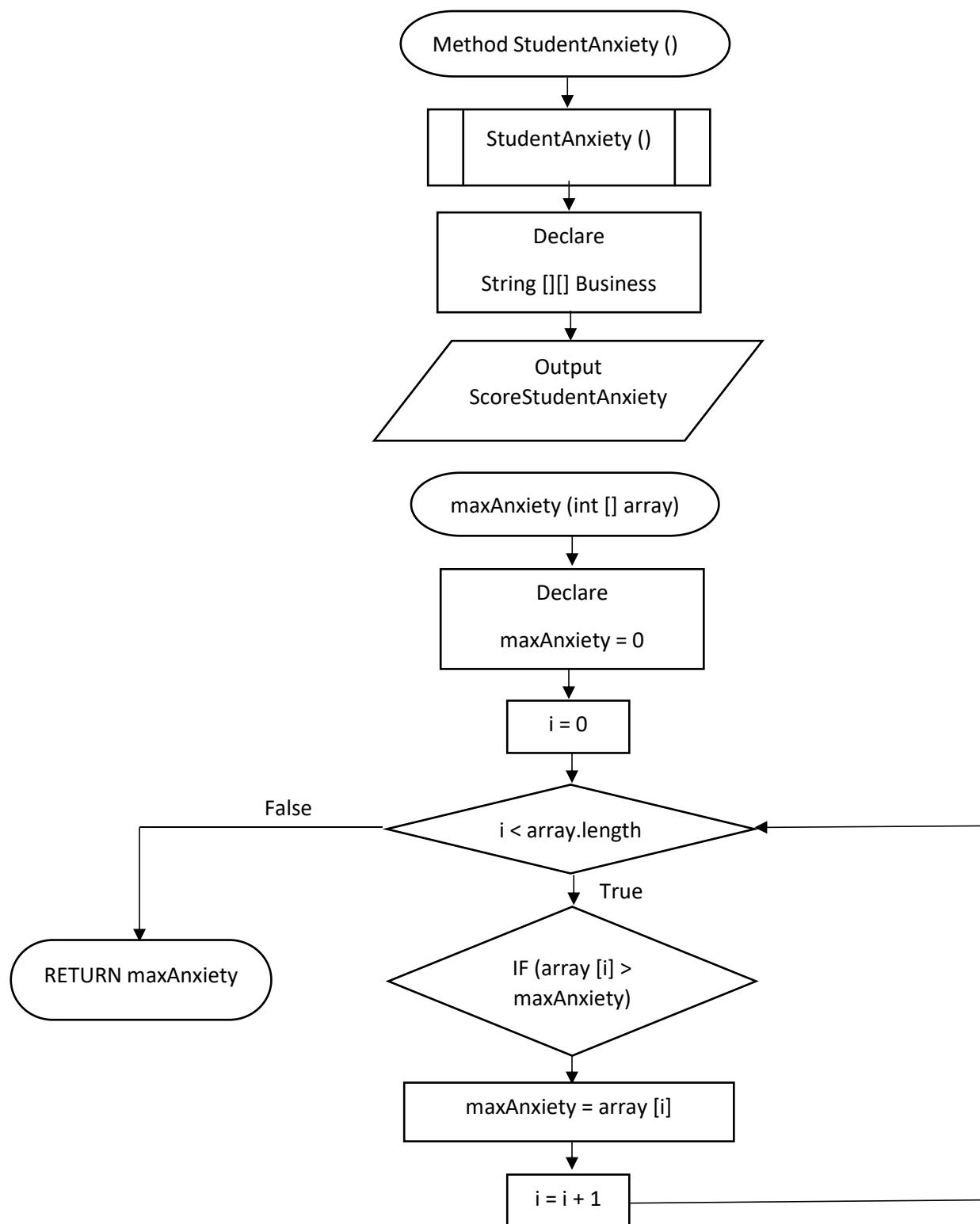
```
Method mainDepress (String args[] )  
    Declare  
        minimalDepress = 0  
        moderateDepress= 0  
        severeDepress = 0  
        input size  
        int [] myArray = new int[size]  
    FOR (int i = 0; i < size; i++)  
        input myArray[i]  
    IF (myArray[i] <= 5)  
        minimalDepress = 1 + minimalDepress  
    ELSE IF (myArray[i] <= 10)  
        moderateDepress = 1 + moderateDepress  
    ELSE  
        severeDepress = 1 + severeDepress
```

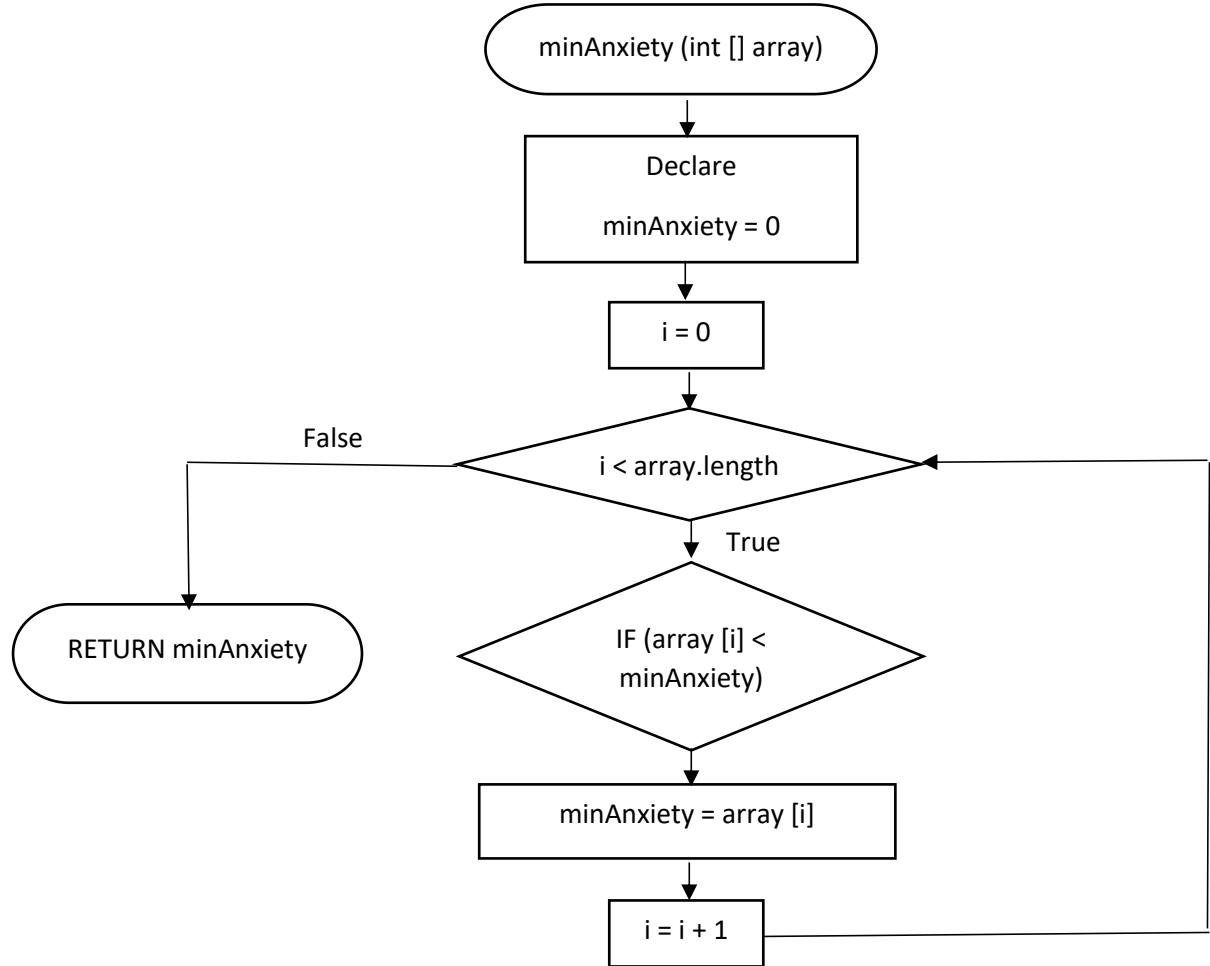
output numAnxietyCom, numAnxietyAcc, numAnxietyBusiness, numAnxietyLaw,  
numDepressLaw, numDepressCom, numDepressAcc, numDepressBusiness,  
LawFemaleAnxiety, ComMaleAnxiety, BusinessFemaleAnxiety, AccMaleAnxiety,  
LawFemaleDepress, ComMaleDepress, BusinessFemaleDepress, AccMaleDepress,  
MinimalDepressBusiness, ModerateDepressBusiness, SevereDepressBusiness,  
MinimalAnxietyBusiness, ModerateAnxietyBusiness, SevereAnxietyBusiness

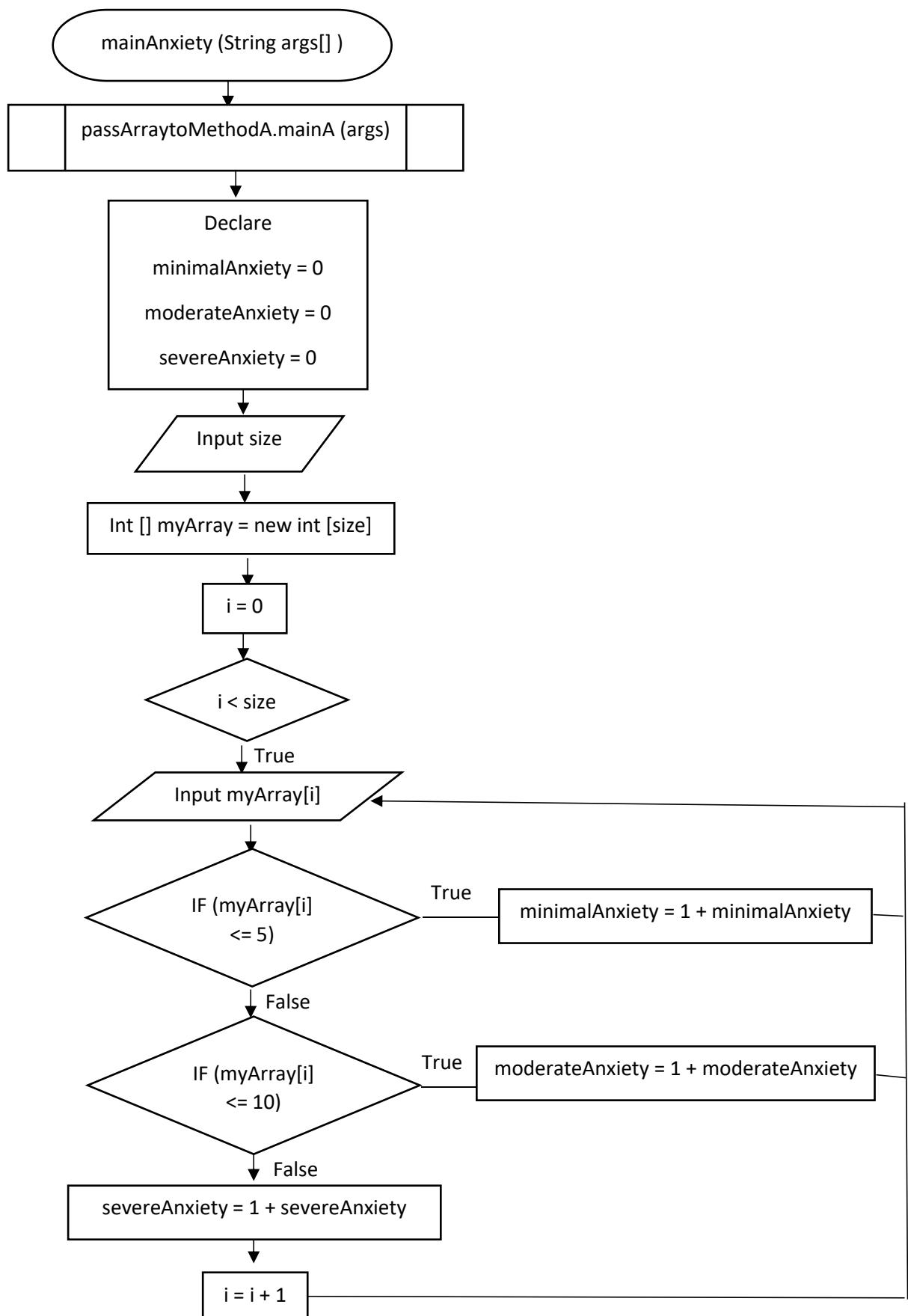
Stop

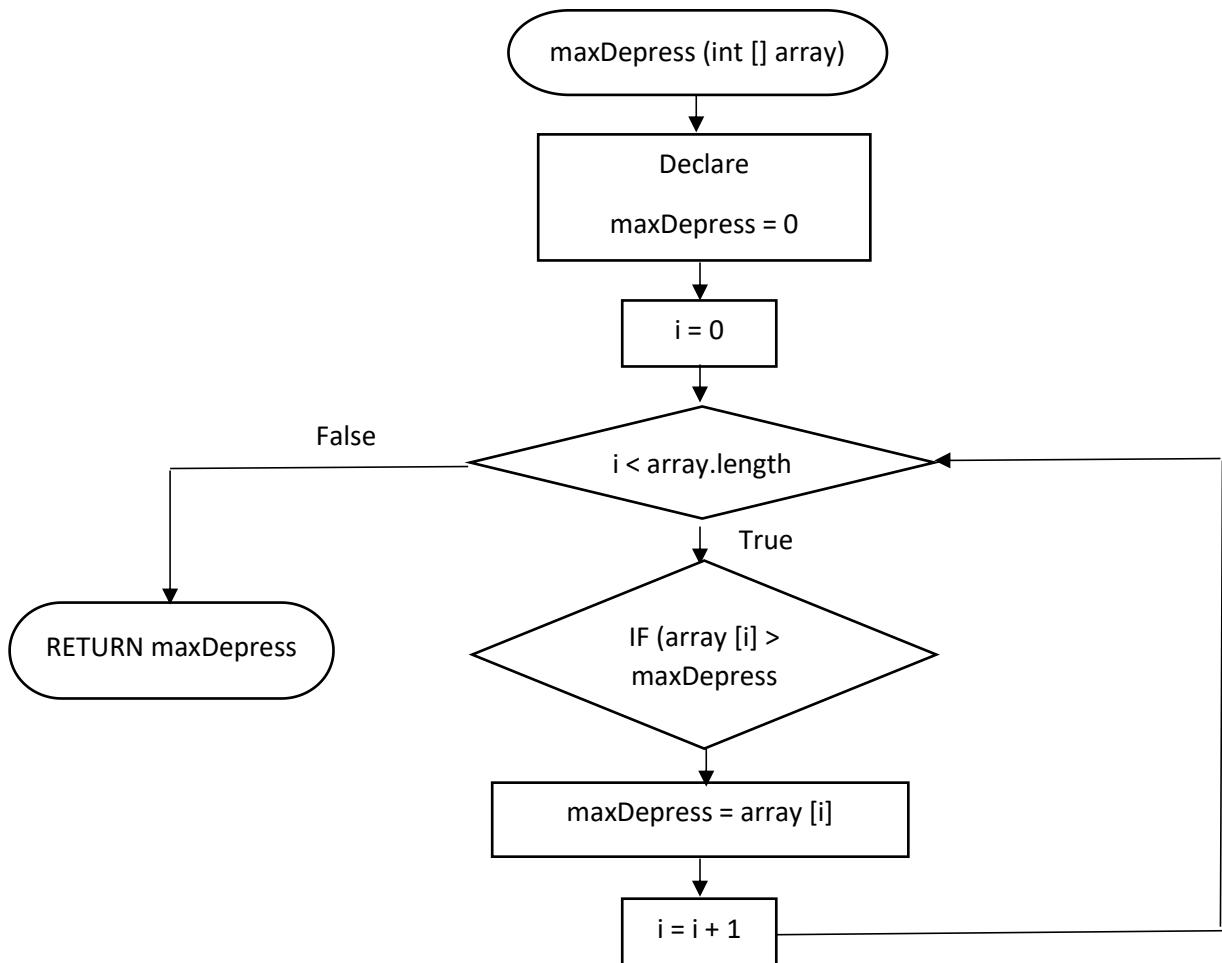
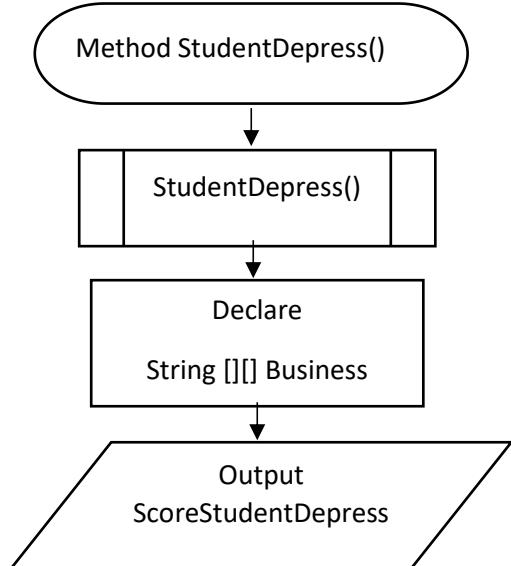
## 9. Flowchart

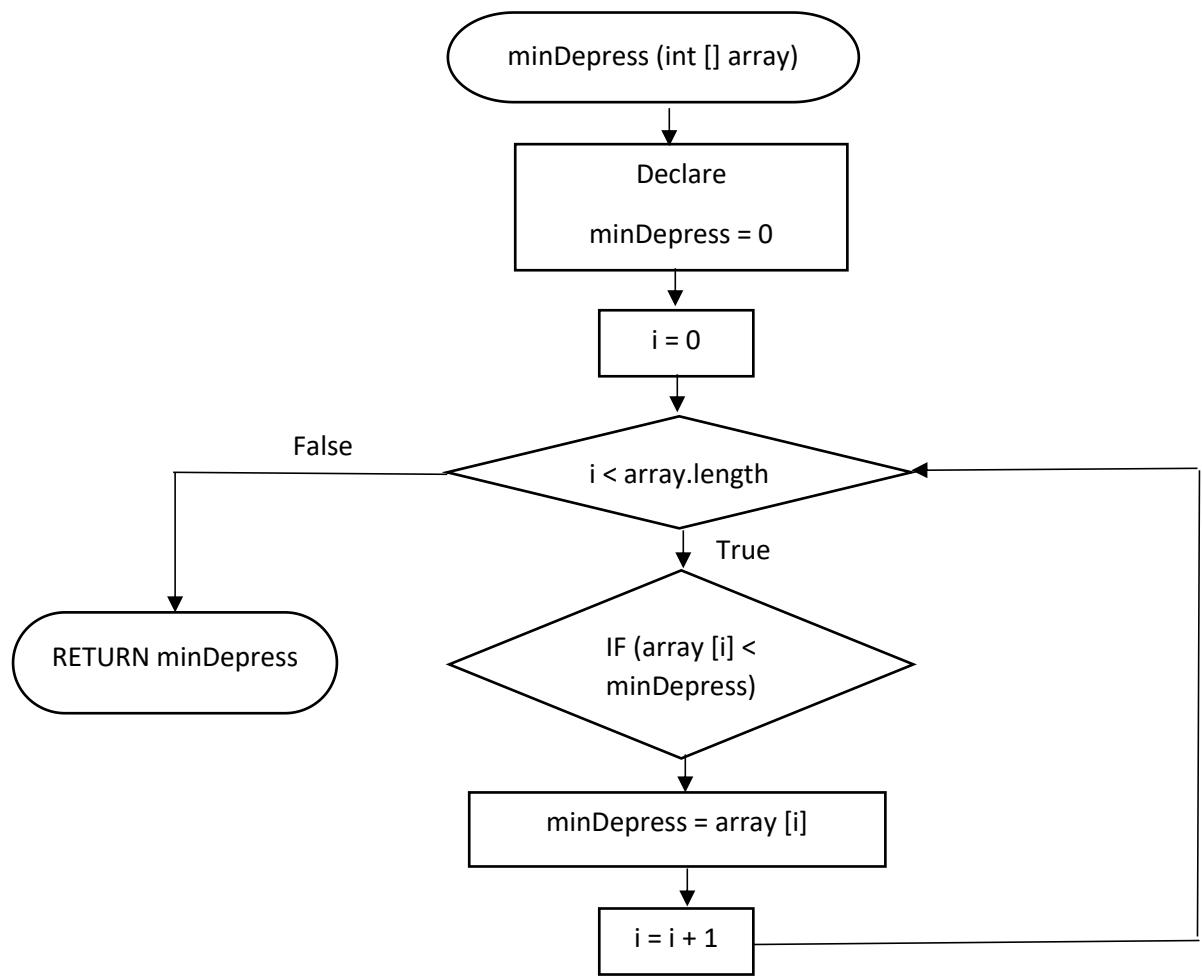


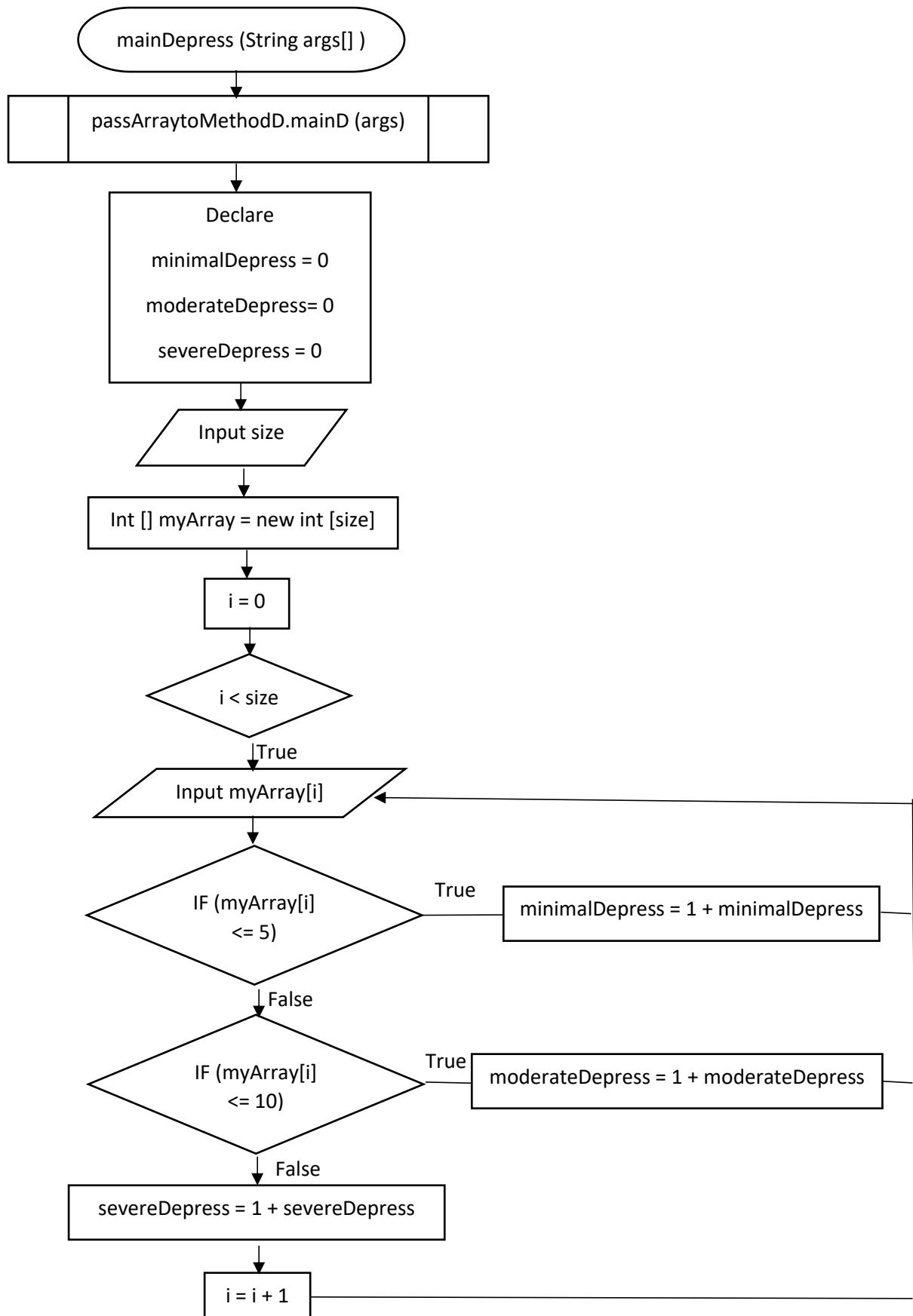










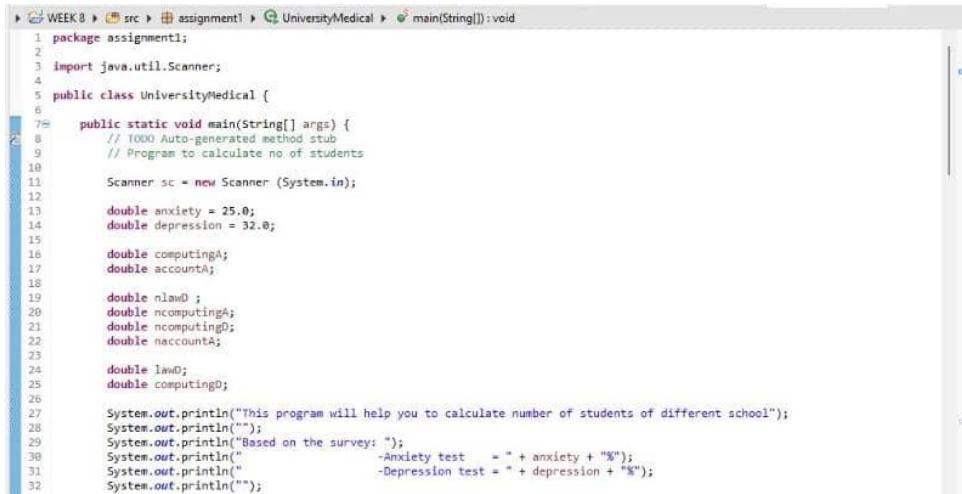


```
output numAnxietyCom, numAnxietyAcc, numAnxietyBusiness,  
numAnxietyLaw numDepressLaw, numDepressCom,  
numDepressAcc, numDepressBusiness, LawFemaleAnxiety,  
ComMaleAnxiety, BusinessFemaleAnxiety, AccMaleAnxiety,  
LawFemaleDepress, ComMaleDepress, BusinessFemaleDepress,  
AccMaleDepress, MinimalDepressBusiness,  
ModerateDepressBusiness, SevereDepressBusiness,  
MinimalAnxietyBusiness, ModerateAnxietyBusiness,  
SevereAnxietyBusiness
```

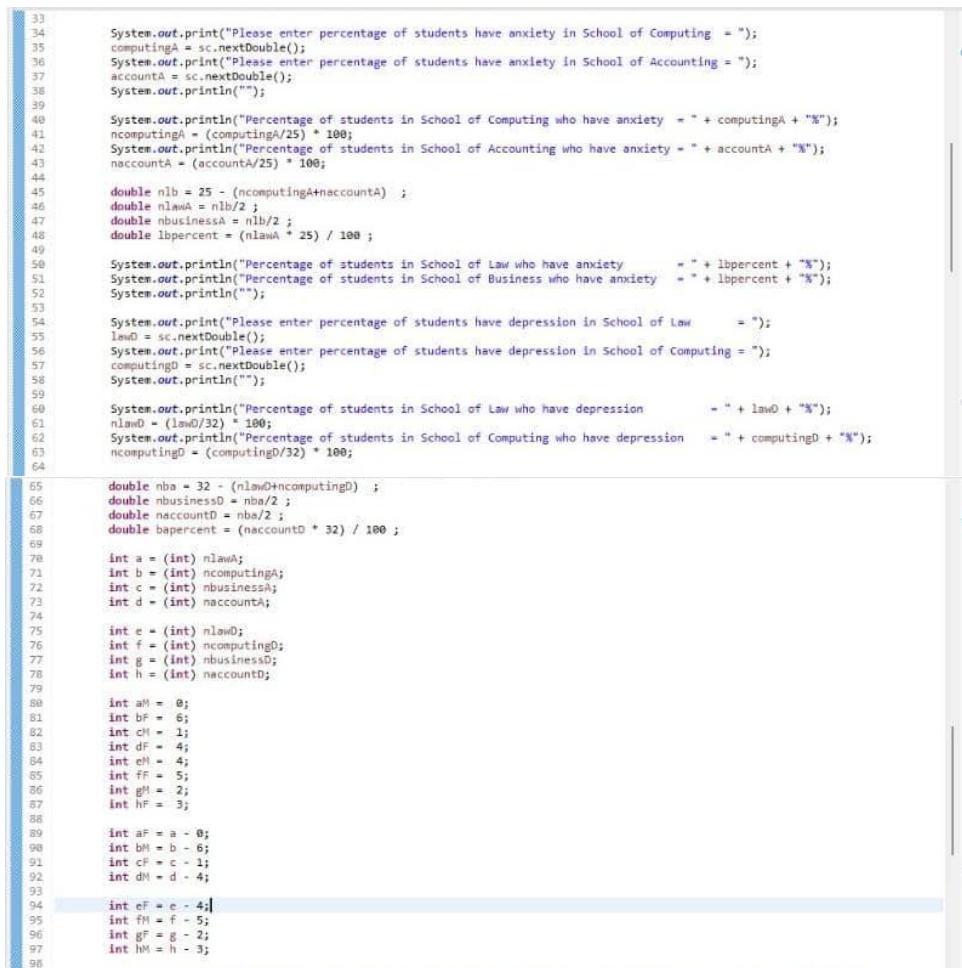
Stop

## 10. Coding – Numerical Computation & Expression

### Coding



```
WEEK8 > src > assignment1 > UniversityMedical > main(String[]): void
1 package assignment1;
2
3 import java.util.Scanner;
4
5 public class UniversityMedical {
6
7     public static void main(String[] args) {
8         // 1000 Auto-generated method stub
9         // Program to calculate no of students
10
11        Scanner sc = new Scanner (System.in);
12
13        double anxiety = 25.0;
14        double depression = 32.0;
15
16        double computingA;
17        double accountA;
18
19        double nlawD ;
20        double ncomputingA;
21        double ncomputingD;
22        double naccountA;
23
24        double lawD;
25        double computingD;
26
27        System.out.println("This program will help you to calculate number of students of different school");
28        System.out.println("");
29        System.out.println("Based on the survey: ");
30        System.out.println("          -Anxiety test    = " + anxiety + "%");
31        System.out.println("          -Depression test = " + depression + "%");
32        System.out.println("");
33
34
35        System.out.print("Please enter percentage of students have anxiety in School of Computing = ");
36        computingA = sc.nextDouble();
37        System.out.print("Please enter percentage of students have anxiety in School of Accounting = ");
38        accountA = sc.nextDouble();
39        System.out.println("");
40
41        System.out.println("Percentage of students in School of Computing who have anxiety = " + computingA + "%");
42        ncomputingA = (computingA/25) * 100;
43        System.out.println("Percentage of students in School of Accounting who have anxiety = " + accountA + "%");
44        naccountA = (accountA/25) * 100;
45
46        double nlb = 25 - (ncomputingA+naccountA) ;
47        double nlawA = nlb/2 ;
48        double nbusinessA = nlb/2 ;
49        double lbpercent = (nlawA + 25) / 100 ;
50
51        System.out.println("Percentage of students in School of Law who have anxiety      = " + lbpercent + "%");
52        System.out.println("Percentage of students in School of Business who have anxiety      = " + lbpercent + "%");
53        System.out.println("");
54
55        System.out.print("Please enter percentage of students have depression in School of Law      = ");
56        lawD = sc.nextDouble();
57        System.out.print("Please enter percentage of students have depression in School of Computing = ");
58        computingD = sc.nextDouble();
59        System.out.println("");
60
61        System.out.println("Percentage of students in School of Law who have depression      = " + lawD + "%");
62        nlawD = (lawD/32) * 100;
63        System.out.println("Percentage of students in School of Computing who have depression      = " + computingD + "%");
64        ncomputingD = (computingD/32) * 100;
65
66        double nba = 32 - (nlawD+ncomputingD) ;
67        double nbusinessD = nba/2 ;
68        double naccountD = nba/2 ;
69        double bapercen = (naccountD + 32) / 100 ;
70
71        int a = (int) nlawD;
72        int b = (int) ncomputingD;
73        int c = (int) nbusinessD;
74        int d = (int) naccountD;
75
76        int e = (int) nlawD;
77        int f = (int) ncomputingD;
78        int g = (int) nbusinessD;
79        int h = (int) naccountD;
80
81        int aM = 0;
82        int bF = 6;
83        int cH = 1;
84        int dF = 4;
85        int eH = 4;
86        int fF = 5;
87        int gH = 2;
88        int hF = 3;
89
90        int aF = a - 0;
91        int bH = b - 6;
92        int cF = c - 1;
93        int dH = d - 4;
94        int eF = e - 4;
95        int fH = f - 5;
96        int gF = g - 2;
97        int hM = h - 3;
98
99
100 }
```



```
33
34
35        System.out.print("Please enter percentage of students have anxiety in School of Computing = ");
36        computingA = sc.nextDouble();
37        System.out.print("Please enter percentage of students have anxiety in School of Accounting = ");
38        accountA = sc.nextDouble();
39        System.out.println("");
40
41        System.out.println("Percentage of students in School of Computing who have anxiety = " + computingA + "%");
42        ncomputingA = (computingA/25) * 100;
43        System.out.println("Percentage of students in School of Accounting who have anxiety = " + accountA + "%");
44        naccountA = (accountA/25) * 100;
45
46        double nlb = 25 - (ncomputingA+naccountA) ;
47        double nlawA = nlb/2 ;
48        double nbusinessA = nlb/2 ;
49        double lbpercent = (nlawA + 25) / 100 ;
50
51        System.out.println("Percentage of students in School of Law who have anxiety      = " + lbpercent + "%");
52        System.out.println("Percentage of students in School of Business who have anxiety      = " + lbpercent + "%");
53        System.out.println("");
54
55        System.out.print("Please enter percentage of students have depression in School of Law      = ");
56        lawD = sc.nextDouble();
57        System.out.print("Please enter percentage of students have depression in School of Computing = ");
58        computingD = sc.nextDouble();
59        System.out.println("");
60
61        System.out.println("Percentage of students in School of Law who have depression      = " + lawD + "%");
62        nlawD = (lawD/32) * 100;
63        System.out.println("Percentage of students in School of Computing who have depression      = " + computingD + "%");
64        ncomputingD = (computingD/32) * 100;
65
66        double nba = 32 - (nlawD+ncomputingD) ;
67        double nbusinessD = nba/2 ;
68        double naccountD = nba/2 ;
69        double bapercen = (naccountD + 32) / 100 ;
70
71        int a = (int) nlawD;
72        int b = (int) ncomputingD;
73        int c = (int) nbusinessD;
74        int d = (int) naccountD;
75
76        int e = (int) nlawD;
77        int f = (int) ncomputingD;
78        int g = (int) nbusinessD;
79        int h = (int) naccountD;
80
81        int aM = 0;
82        int bF = 6;
83        int cH = 1;
84        int dF = 4;
85        int eH = 4;
86        int fF = 5;
87        int gH = 2;
88        int hF = 3;
89
90        int aF = a - 0;
91        int bH = b - 6;
92        int cF = c - 1;
93        int dH = d - 4;
94        int eF = e - 4;
95        int fH = f - 5;
96        int gF = g - 2;
97        int hM = h - 3;
98
99
100 }
```

```

99     System.out.println("Percentage of students in School of Business who have depression = " + bapercent + "%");
100    System.out.println("Percentage of students in School of Accounting who have depression = " + bapercent + "%");
101
102
103    System.out.println("Here is the result : ");
104    System.out.println(" ");
105    System.out.println("Anxiety Test");
106    System.out.println(" ");
107    System.out.println("-----" + "-----" + "-----" + "-----" + "-----");
108    System.out.println("School | Percentage of students(%) | Total Number of students | Female");
109    System.out.println("School of Law |" + " |" + lpercent + " |" + " |" + a + "%");
110    System.out.println("School of Computing |" + " |" + computingA + " |" + " |" + b + "%");
111    System.out.println("School of Business |" + " |" + lpbercent + " |" + " |" + c + "%");
112    System.out.println("School of Accounting |" + " |" + accountA + " |" + " |" + d + "%");
113    System.out.println("-----" + "-----" + "-----" + "-----" + "-----");
114
115    System.out.println(" ");
116    System.out.println("Depression Test");
117    System.out.println(" ");
118    System.out.println("-----" + "-----" + "-----" + "-----" + "-----");
119    System.out.println("School | Percentage of students(%) | Total Number of students | Female");
120    System.out.println("School of Law |" + " |" + lmD + " |" + " |" + e + "%");
121    System.out.println("School of Computing |" + " |" + computingD + " |" + " |" + f + "%");
122    System.out.println("School of Business |" + " |" + bapercent + " |" + " |" + g + "%");
123    System.out.println("School of Accounting |" + " |" + bapercent + " |" + " |" + h + "%");
124    System.out.println("-----" + "-----" + "-----" + "-----" + "-----");
125
126
127
128    sc.close();
129
130 }
131
132 }
133

```

```

132
133    System.out.println("Data below show the level of anxiety and depression of a student");
134    System.out.println("Anxiety level : ");
135    System.out.println("      0-5 -> minimal anxiety");
136    System.out.println("      6-10 -> moderate anxiety");
137    System.out.println("      11-20 -> severe anxiety");
138    System.out.println();
139    System.out.println("Depression level : ");
140    System.out.println("      1-6 -> minimal depression");
141    System.out.println("      7-12 -> moderate depression");
142    System.out.println("      13-20 -> severe depression");
143    System.out.println();
144    System.out.println("Based on the table:");
145    StudentAnxiety();
146    passArraytomethodA(args);
147    System.out.println();
148    StudentDepress();
149    passArraytomethodD(args);
150
151 }


```

```

152
153     public int maxA(int [] array) {
154         int maxA = 0;
155         for(int i=0; i<array.length; i++ ) {
156             if(array[i]>maxA) {
157                 maxA = array[i];
158             }
159         }
160         return maxA;
161     }
162
163     public int minA(int [] array) {
164         int minA = array[0];
165
166         for(int i = 0; i<array.length; i++ ) {
167             if(array[i]<minA) {
168                 minA = array[i];
169             }
170         }
171         return minA;
172     }
173
174     public class passArraytomethodA {
175         public static void mainA (String args[]) {
176
177             Scanner sc = new Scanner (System.in);
178             int minAB = 0;
179             int modAB = 0;
180             int sevAB = 0;
181             System.out.print("Enter total number of students who have anxiety : ");
182             int size = sc.nextInt();
183             int[] myArray = new int[size];
184             System.out.print("Enter their score : ");
185
186             for(int i=0; i<size; i++) {
187                 System.out.print("Result for the " + (i + 1) + " student (0-20) = ");
188                 myArray[i] = sc.nextInt();
189
190                 if (myArray[i] <= 5) {
191                     minAB += 1;
192                 }
193                 else if (myArray[i] <= 10 ) {
194                     modAB += 1;
195                 }
196                 else {
197                     sevAB += 1;
198                 }
199             }

```

```

199     LastUniversity m = new LastUniversity();
200     System.out.println();
201     System.out.println(minAB + "/" + "5 students in School of Business has minimal anxiety");
202     System.out.println(modAB + "/" + "5 students in School of Business has moderate anxiety");
203     System.out.println(sevAB + "/" + "5 students in School of Business has severe anxiety");
204     System.out.println();
205     System.out.println("The largest score : "+ m.maxA(myArray));
206     System.out.println("The lowest score : "+ m.minA(myArray));
207
208 }
209
210 }
211
212 --~
213
214 public int maxD(int [] array) {
215     int maxD = 0;
216
217     for(int i=0; i<array.length; i++ ) {
218         if(array[i]>maxD) {
219             maxD = array[i];
220         }
221     }
222     return maxD;
223 }
224
225 public int minD(int [] array) {
226     int minD = array[0];
227
228     for(int i = 0; i<array.length; i++ ) {
229         if(array[i]<minD) {
230             minD = array[i];
231         }
232     }
233     return minD;
234 }
235

236 public class passArraytomethodD {
237     public static void mainD (String args[]) {
238         Scanner sc = new Scanner (System.in);
239
240         int minDB = 0;
241         int modDB = 0;
242         int sevDB = 0;
243         System.out.print("Enter total number of students who have depression : ");
244         int size = sc.nextInt();
245         int[] myArray = new int[size];
246         System.out.println("Enter their score : ");
247
248         for(int i=0; i<size; i++) {
249             System.out.print("Result for the " + (i + 1) + " student (0-20) = ");
250             myArray[i] = sc.nextInt();
251
252             if (myArray[i] <= 6) {
253                 minDB += 1;
254             }
255             else if (myArray[i] <= 12 ) {
256                 modDB += 1;
257             }
258             else {
259                 sevDB += 1;
260             }
261         }
262
263         LastUniversity m = new LastUniversity();
264         System.out.println();
265         System.out.println(minDB + "/" + "6 students in School of Business has minimal depression");
266         System.out.println(modDB + "/" + "6 students in School of Business has moderate depression");
267         System.out.println(sevDB + "/" + "6 students in School of Business has severe depression");
268         System.out.println();
269         System.out.println("The largest score : "+ m.maxD(myArray));
270         System.out.println("The lowest score : "+ m.minD(myArray));
271
272 }
273
274 }

275
276 public static void StudentAnxiety() {
277     String[][] Business = {"Nabilah", "Ching Mei", "Siti", "Kasim", "Printhaan"}, 
278     {"11", "4", "5", "3", "7"};
279
280     System.out.println("Here are result for students in School of Business in anxiety test");
281     System.out.println();
282
283     System.out.println("1.Score for " + Business[0][0] + ".....= " + Business[1][0]);
284     System.out.println("2.Score for " + Business[0][1] + "...= " + Business[1][1]);
285     System.out.println("3.Score for " + Business[0][2] + ".....= " + Business[1][2]);
286     System.out.println("4.Score for " + Business[0][3] + ".....= " + Business[1][3]);
287     System.out.println("5.Score for " + Business[0][4] + "...= " + Business[1][4]);
288     System.out.println();
289
290 }
291
292
293
294 public static void StudentDepress() {
295     String[][] Business = {"Aisyah", "Theva", "Sarah", "Kamal", "Aiman", "Mei Ying"}, 
296     {"10", "11", "7", "5", "3", "2"};
297
298     System.out.println("Here are result for students in School of Business in depression test");
299     System.out.println();
300
301     System.out.println("1.Score for " + Business[0][0] + ".....= " + Business[1][0]);
302     System.out.println("2.Score for " + Business[0][1] + "...= " + Business[1][1]);
303     System.out.println("3.Score for " + Business[0][2] + ".....= " + Business[1][2]);
304     System.out.println("4.Score for " + Business[0][3] + ".....= " + Business[1][3]);
305     System.out.println("5.Score for " + Business[0][4] + "...= " + Business[1][4]);
306     System.out.println("6.Score for " + Business[0][5] + "...= " + Business[1][5]);
307     System.out.println();
308
309 }
310
311
312

```

## Output

```
Console X
<terminated> UniversityMedical [Java Application] C:\Users\USER1.p2\pool\plugins\org.eclipse.jdt.launching\refl... 16.0.2.v20210721-1149\rebin\javaw.exe (17 Dec 2021, 3:12:26 pm - 3:12:42 pm)
This program will help you to calculate number of students of different school

Based on the survey:
-Anxiety test = 25.0%
-Depression test = 32.0%

Please enter percentage of students have anxiety in School of Computing = 2.25
Please enter percentage of students have anxiety in School of Accounting = 1.50

Percentage of students in School of Computing who have anxiety = 2.25%
Percentage of students in School of Accounting who have anxiety = 1.5%
Percentage of students in School of Law who have anxiety = 1.25%
Percentage of students in School of Business who have anxiety = 1.25%

Please enter percentage of students have depression in School of Law = 3.52
Please enter percentage of students have depression in School of Computing = 2.88

Percentage of students in School of Law who have depression = 3.52%
Percentage of students in School of Computing who have depression = 2.88%
Percentage of students in School of Business who have depression = 1.92%
Percentage of students in School of Accounting who have depression = 1.92%
```

Here is the result :

Anxiety Test

School	Percentage of students(%)	Total Number of students	Female students	Male students
School of Law	1.25	9	5	4
School of Computing	2.25	9	6	3
School of Business	1.25	6	4	1
School of Accounting	1.5	6	4	2

Depression Test

School	Percentage of students(%)	Total Number of students	Female students	Male students
School of Law	3.52	11	7	4
School of Computing	2.88	9	5	4
School of Business	1.92	6	4	2
School of Accounting	1.92	6	3	3

Data below show the level of anxiety and depression of a student

Anxiety level :

- 0-5 -> minimal anxiety
- 6-10 -> moderate anxiety
- 11-20 -> severe anxiety

Depression level :

- 1-8 -> minimal depression
- 7-12 -> moderate depression
- 13-20 -> severe depression

```
<terminated> LastRunUniversity [Java Application] C:\Users\USER1.p2\pool\plugins\org.eclipse.jdt.launching\refl... 16.0.2.v20210721-1149\rebin\javaw.exe (17 Jan 2022, 10:22:40 pm)
Based on the table:
```

Here are result for students in School of Business in anxiety test

- 1.Score for Nabila.....= 11
- 2.Score for Ching Mei...= 4
- 3.Score for Siti.....= 5
- 4.Score for Kasim.....= 3
- 5.Score for Printha...= 7

Enter total number of students who have anxiety : 5

Enter their score :

- Result for the 1 student (0-20) = 11  
Result for the 2 student (0-20) = 4  
Result for the 3 student (0-20) = 5  
Result for the 4 student (0-20) = 3  
Result for the 5 student (0-20) = 7

3/5 students in School of Business has minimal anxiety  
1/5 students in School of Business has moderate anxiety  
1/5 students in School of Business has severe anxiety

The largest score : 11

The lowest score : 3

Here are result for students in School of Business in depression test

1.Score for Aisyah....= 10  
2.Score for Theva....= 11  
3.Score for Sarah....= 7  
4.Score for Kamal....= 5  
5.Score for Aiman....= 3  
6.Score for Mei Ying...= 2

Enter total number of students who have depression : 6

Enter their score :

Result for the 1 student (0-20) = 10  
Result for the 2 student (0-20) = 11  
Result for the 3 student (0-20) = 7  
Result for the 4 student (0-20) = 5  
Result for the 5 student (0-20) = 3  
Result for the 6 student (0-20) = 2

3/6 students in School of Business has minimal depression  
3/6 students in School of Business has moderate depression  
0/6 students in School of Business has severe depression

The largest score : 11

The lowest score : 2