SGPA:

```java
import java.util.Scanner;

class Subject {
    int subM;
    int cred;
    int grade;

    void setSubDet(int marks, int cred) {
        this.subM = marks;
        this.cred = cred;

        if (subM >= 90) {
            grade = 10;
        } else if (subM >= 80) {
            grade = 9;
        } else if (subM >= 70) {
            grade = 8;
        } else if (subM >= 60) {
            grade = 7;
        } else if (subM >= 50) {
            grade = 6;
        } else if (subM >= 40) {
            grade = 5;
        } else {
            grade = 0;
        }
    }
}
```

```java
class Student {

    Scanner s = new Scanner(System.in);
    Subject[] subjects = new Subject[8];

    Student() {
        for (int i = 0; i < subjects.length; i++) {
            subjects[i] = new Subject();
        }
    }

    void getMarks() {
        for (int i = 0; i < subjects.length; i++) {
            System.out.print("Enter marks for subject " + (i + 1) + ": ");
            int marks = s.nextInt();
            System.out.print("Enter credit for subject " + (i + 1) + ": ");
            int cred = s.nextInt();
            subjects[i].setSubDet(marks, cred);
        }
    }

    double calSGPA() {
        double Score = 0;
        int totalCred = 0;
        double SGPA = 0.0;

        for (Subject subject : subjects) {
            Score += (subject.grade * subject.cred);
            totalCred += subject.cred;
        }
```

```java
        if (totalCred > 0) {

            SGPA = Score / totalCred;

        } else {

            SGPA = 0;

        }

        return SGPA;

    }

}


public class StudentDetails {

    public static void main(String[] arg) {

        Scanner sc = new Scanner(System.in);


        // Prompt for number of semesters

        System.out.print("Enter number of semesters: ");

        int numSems = sc.nextInt();


        Student[] students = new Student[numSems];

        double cumulativeSGPA = 0.0;


        // Input details for USN and Name

        System.out.print("Enter USN: ");

        String usn = sc.next();


        System.out.print("Enter Name: ");

        String name = sc.next();


        // Loop for each semester

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

            System.out.println("Enter details for semester " + (i + 1));
```

```java
        students[i] = new Student();

        students[i].getMarks();

        double semSGPA = students[i].calSGPA();

        cumulativeSGPA += semSGPA;

    }


    // Printing the results for each semester

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

        System.out.println("USN: " + usn);

        System.out.println("Name: " + name);

        System.out.println("SGPA for sem " + (i + 1) + ": " + students[i].calSGPA());

    }


    // Calculating and printing CGPA

    double CGPA = cumulativeSGPA / numSems;

    System.out.println("CGPA: " + CGPA);

  }

}
```

```
C:\Users\Admin\Documents\23cs310>java StudentDetails
Enter number of semesters: 1
Enter USN: 1bm23cs310
Enter Name: sharada koundinya
Enter details for semester 1
Enter marks for subject 1: 98
Enter credit for subject 1: 4
Enter marks for subject 2: 95
Enter credit for subject 2: 4
Enter marks for subject 3: 91
Enter credit for subject 3: 3
Enter marks for subject 4: 92
Enter credit for subject 4: 3
Enter marks for subject 5: 96
Enter credit for subject 5: 2
Enter marks for subject 6: 88
Enter credit for subject 6: 2
Enter marks for subject 7: 76
Enter credit for subject 7: 3
Enter marks for subject 8: 61
Enter credit for subject 8: 3
USN: 1bm23cs310
Name: sharada
SGPA for sem 1: 9.291666666666666
CGPA: 9.291666666666666
```

Program II

Q. Develop java program to create a class student w/ members usn, name, array credits and array marks. Include methods to accept and display details and a method to calculate SGPA of a student

```java
import java.util.Scanner;

class student
{
    String name;
    String usn;
    int numsub;
    int [] credits;
    int [] marks;

    student (int num)
    {
        numsub = num;
        credits = new int [numsub];
        marks = new int [numsub];
    }

    void Details()
    {
        Scanner sc = new Scanner (System.in);
        System.out.println ("Enter USN : ");
        usn = sc.nextline ();
        System.out.println ("Enter Name : ");
        name = sc.nextline ();
        System.out.println ("Enter credits for
                                each subject : ");
        for (int i = 0 ; i < numsub ; i++)
        {
            System.out.println ("Credits for subject "+
                    (i+1)+ " : ");
            credits[i] = sc.nextInt ();
        }
        System.out.println ("Enter marks for each
                                subject : ");
        for (int i = 0 ; i < numsub ; i++)
        {
            System.out.println ("Marks for subject "
                    + (i+1)+ " : ");
            marks[i] = sc.nextInt ();
        }
    }

    void display ()
    {
        System.out.println (" \n Student details : ");
        System.out.println ("USN : " + usn );
        System.out.println ("Name " + name );
        System.out.println ("\n Subject wise credits and
                                marks ");
        for (int i = 0 ; i < numsub ; i++)
        {
            System.out.println (" Subject "+ (i+1)+": Credit
                = " + credits[i] + " Marks = "+ marks[i]);
        }
        System.out.println ("SGPA : " + calculateSGPA);
    }

    double calculate SGPA()
    {
        int totalCredits = 0 ;
        int totalGradePoints = 0;
        for (int i = 0 ; i < numsum ; i++)
        {
            totalcredits += credits[i];
            int gradepoint = calculateGradepoint (marks[i]);
            totalGradepoint += gradepoint * credits[i];
        }
        return (double) totalgradepoints / totalgrade ;
    }

    int CalculateGradepoint (int marks)
    {
        if (marks >= 90)
            return 10;
        else if (marks >= 80)
            return 9;
        else if (marks >= 70)
            return 8;
        else if (marks >= 60)
            return 7;
        else if (marks >= 50)
            return 6;
        else if (marks >= 40)
            return 5;
        else return 0;
    }

    public static void main (String [] args){
        Scanner sc = new Scanner (System.in);
        System.out.println ("Enter number of subjects ");
        int numsub = sc.nextInt();
        student S = new student (numsub);
        S.details();
        S.display();
    }
}
```

output

```
Enter number of subjects : 5
Enter USN : 1BY23CS310
Enter name : Sharada Kaundinya
Enter credits for each subject :
Credits for subject1 : 4
            subject2 : 4
            subject 3 : 3
            subject 4 : 3
            subject 5 : 2
Enter marks for each subject :
Marks for subject 1 : 98
            subject 2 : 95
            subject 3 : 91
            subject 4 : 92
            subject 5 : 96

Student Details
USN : 1BY23CS310
Name : Sharada Kaundinya

Subjectwise Credit & Marks :
Subject 1 : Credits = 4 , Marks = 98
Subject 2 : Credits = 4 , Marks = 95
Subject 3 : Credits = 3 , Marks = 91
Subject 4 : Credits = 3 , Marks = 92
Subject 5 : Credits = 2 , Marks = 96

SGPA = 10.0
```