SGPA:

```
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;
      }
```

```
    }
}

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;
        }

        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));
            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);
    }
}
```

PROGRAM 2

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

```
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+1)
        {
          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("Student details:");
      System.out.println("USN:"+usn);
      System.out.println("Name:"+name);
      System.out.println("Subject wise credits and marks");
      for(int i=0; i<numsub; i++)
        {
          System.out.println("Subject"+(i+1)+": Credits:"
              +credits[i]+"Marks:"+marks[i]);
        }
      System.out.println("SGPA:"+calculate SGPA());
    }
    double calculate SGPA()
    {
      int totalCredits=0;
      int totalGradePoints=0;
      for(int i=0; i<numSub; i++)
      {
        totalCredits += credits[i];
        int gradepoint = calculateGradePoint(marks[i]);
        totalGradepoint += gradepoint * credits[i];
      }
      return (double) totalGradepoint/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 the number of subjects");
        int numsub = sc.nextInt();
        Student S = new Student(numsub);
        S.details();
        S.display();
    }
}
```

Output

```
Enter the number of subjects: 5
Enter USN: 1BM23CS318
Enter credits for each subject:
    Credits for subject 1: 4
              Subject 2: 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: 1BM23CS318
Name: Shreya Satyanarayana

Subject wise 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
```