Q. Write a program to create a class student with members usn, name, an array credits and an array marks. Calculate SGPA of student.

```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;
        }
    }
}

class Student {
    Scanner s = new Scanner (System.in);
```

```java
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.println("Enter marks for student subject " + (i+1) + ": ");
        int marks = s.nextInt();
        System.out.println("Enter credit for subject " + (i+1) + ": ");
        int cred = s.nextInt();
        subjects[i].setSubDet(marks, cred); }
}
double calSGPA() {
    double Score = 0;
    int total Cred = 0;
    double SGPA = 0.0;
    for (Subject subject : subjects) {
        Score += (subject.grade * subject.cred);
        total_cred += subject.cred; }
    if (total_cred > 0) {
        SGPA = Score / totalCred; }
    else {
        SGPA = 0; }
    return SGPA;
}
public class StudentDetails {
    public static void main (String[] args) {
    Scanner sc = new Scanner (System.in);
    System.out.println("Enter number of semesters: ");
    int numSems = sc.nextInt();
    Student[] students = new Student [numSems];
    double c = 0.0;
    String usn, name;
    System.out.println("Enter USN: ");
    usn = sc.next();
    System.out.println("Enter name: ");
    name = sc.next();
```

```java
        for (int i = 0; i < numSems; i++) {
            System.out.println("Enter semester details : " + (i+1));
            students[i] = new Student();
            students[i].getMarks();
            double s = students[i].calSGPA();
            c += s;
        }
        c = c/numSems;
        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());
        }
        System.out.println("CGPA: " + c);
    }
}
```

Output:

```
Enter number of semesters : 1
Enter USN = 319
Enter Name = Raj
Enter details for semester 1
Enter marks for subject 1 : 80
Enter credit for subject 1 : 4
Enter marks for subject 2 : 85
Enter credit for subject 2 : 4
Enter marks for subject 3 : 87
Enter credit for subject 3 : 3
Enter marks for subject 4 : 70
Enter credit for subject 4 : 3
Enter marks for subject 5 : 78
Enter credit for subject 5 : 3
Enter marks for subject 6 : 98
Enter credit for subject 6 : 1
Enter marks for subject 7 : 99
Enter credit for subject 7 : 1
Enter marks for subject 8 : 93
Enter credit for subject 8 : 1

USN: 319

Name : Raj
SGPA for sem 1: 8.85
CGPA: 8.85
```

```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;
        }
    }
}

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() {
```

```java
        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);


        System.out.print("Enter number of semesters: ");
        int numSems = sc.nextInt();

        Student[] students = new Student[numSems];
        double cumulativeSGPA = 0.0;


        System.out.print("Enter USN: ");
        String usn = sc.next();

        System.out.print("Enter Name: ");
        String name = sc.next();


        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;
        }


        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());
```

```java
        }

        double CGPA = cumulativeSGPA / numSems;
        System.out.println("CGPA: " + CGPA);
    }
}
```