import java.util.Scanner;

class Student

{

    String usn;

    String name;

    int sem;

    public Student(String usn, String name, int sem) {

        this.usn = usn;

        this.name = name;

        this.sem = sem;

    }

}

class Test extends Student {

    int [] cie\_marks;

    int [] credits;

    public Test(String usn, String name, int sem, int[] cie\_marks, int[] credits) {

        super(usn, name, sem);

        this.cie\_marks = cie\_marks;

        this.credits = credits;

    }

}

class Exam extends Test {

    int [] see\_marks;

    public Exam(String usn, String name, int sem, int[] cie\_marks, int[] credits, int[] see\_marks) {

        super(usn, name, sem, cie\_marks, credits);

        this.see\_marks = see\_marks;

    }

}

class Result extends Exam {

    public Result(String usn, String name, int sem, int[] cie\_marks, int[] credits, int[] see\_marks) {

        super(usn, name, sem, cie\_marks, credits, see\_marks);

    }

    double sgpa;

    char [] grade = new char[credits.length];

    public void cal\_grade\_sgpa(int tot\_credits){

        int sum=0;

        for(int i=0;i<credits.length;i++) {

            double marks = cie\_marks[i] + (see\_marks[i] / 2.0);

            if (marks >= 90) {

                sum += credits[i] \* 10;

                grade[i] = 'S';

            } else if (marks >= 80 && marks < 90) {

                sum += credits[i] \* 9;

                grade[i] = 'A';

            } else if (marks >= 70 && marks < 80) {

                sum += credits[i] \* 8;

                grade[i] = 'B';

            } else if (marks >= 60 && marks < 70) {

                sum += credits[i] \* 7;

                grade[i] = 'C';

            } else if (marks >= 50 && marks < 60){

                sum += credits[i] \* 6;

                grade[i] = 'D';

            }

            else if(marks>=40 && marks<50) {

                sum += credits[i] \* 5;

                grade[i] = 'E';

            }

            else {

                sum += credits[i] \* 0;

                grade[i] = 'F';

            }

        }

        sgpa = sum\*1.0/tot\_credits;

    }

    public void display()

    {

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

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

        System.out.println("SEM:"+sem);

        System.out.println("Grades of each subject:");

        for(int i=0;i<credits.length;i++)

        {

            System.out.println("Subject "+(i+1)+":"+grade[i]);

        }

        System.out.println("SGPA:"+sgpa);

    }

}

class STUDENTDET {

    public static void main(String args[]) {

           Scanner sc = new Scanner(System.in);

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

           int n = sc.nextInt();

           Result [] s = new Result[n];

           int [] tot\_credits = new int[n];

           for(int i=0;i<n;i++)

           {

               System.out.println("------Student "+(i+1)+"-------");

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

               String usn = sc.next();

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

               String name = sc.next();

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

               int sem=sc.nextInt();

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

               int n1 = sc.nextInt();

               System.out.println("Enter cie\_marks:");

               int [] cie\_marks = new int[n1];

               for(int j=0;j<n1;j++)

               {

                   int marks1 = sc.nextInt();

                   cie\_marks[j] = marks1;

               }

               System.out.println("Enter credits:");

               int [] credits = new int[n1];

               int sum = 0;

               for(int j=0;j<n1;j++)

               {

                   int marks1 = sc.nextInt();

                   credits[j] = marks1;

                    sum += credits[j];

               }

               tot\_credits[i] = sum;

               System.out.println("Enter see\_marks:");

               int [] see\_marks = new int[n1];

               for(int j=0;j<n1;j++)

               {

                   int marks1 = sc.nextInt();

                   see\_marks[j] = marks1;

               }

               s[i] = new Result(usn,name,sem,cie\_marks,credits,see\_marks);

           }

           for(int k=0;k<n;k++)

           {

               System.out.println("Details of Student "+(k+1)+":");

               s[k].cal\_grade\_sgpa(tot\_credits[k]);

               s[k].display();

           }

        }

    }