```java
1   /*Develop a Java program to create a class Student whose variables are usn, name and sem.
2   Derive a class Test from Student to include an array of cie marks of each course and their
3   corresponding credits in another array. Derive a class Exam from Test which includes an
4   array of see marks. Derive a class Result which calculates the grade for each course and the
5   SGPA. Create n student objects and displays all the above details.*/
6
7   import java.util.Scanner;
8   class Student
9   {
10      String usn,name;
11      int sem;
12      void accept(String u,String n,int s)
13      {
14          usn=u;
15          name=n;
16          sem=s;
17      }
18  }
19  class Test extends Student
20  {
21      int cie[],credits[];
22      void accept_cie(int n)
23      {
24          Scanner ss=new Scanner(System.in);
25          cie=new int[n];
26          credits=new int[n];
27          for(int i=0;i<n;i++)
28          {
29              System.out.println("Enter cie marks with credits of course"+(i+1));
30              cie[i]=ss.nextInt();
31              credits[i]=ss.nextInt();
32          }
33      }
34  }
35  class Exam extends Test
36  {
37      int see[];
38      void accept_see(int n)
39      {
40          Scanner ss=new Scanner(System.in);
```

```java
38    void accept_see(int n)
39    {
40        Scanner ss=new Scanner(System.in);
41        see=new int[n];
42        for(int i=0;i<n;i++)
43        {
44            System.out.println("enter see marks of course"+(i+1));
45            see[i]=ss.nextInt();
46        }
47    }
48  }
49  class Result extends Exam
50  {
51    float sgpa;
52    void sgpa_cal(int n)
53    {
54        int sum=0,c=0;
55        int gp=0;
56        int tot;
57        for(int i=0;i<n;i++)
58        {
59            tot=cie[i]+see[i]/2;
60            if(tot>=90)
61            gp=10;
62            else if(tot>=80)
63            gp=9;
64            else if(tot>=70)
65            gp=8;
66            else if(tot>=60)
67            gp=7;
68            else if(tot>=50)
69            gp=6;
70            else if(tot>=40)
71            gp=4;
72            else
73            gp=0;
74            sum=sum+gp*credits[i];
75            c=c+credits[i];
76        }
```

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75              c=c+credits[i];
76          }
77          sgpa=(float)sum/c;
78      }
79      void display()
80      {
81          System.out.println("****Student Details****");
82          System.out.println("Student USN: "+usn);
83          System.out.println("Student Name: "+name);
84          System.out.println("Student Sem: "+sem);
85          System.out.println("Student sgpa: "+sgpa);
86
87      }
88  }
89  class Main
    Run | Debug
90  {
91      public static void main(String args[])
92      {
93          Scanner xx=new Scanner(System.in);
94          System.out.println("Enter no of students");
95          int n=xx.nextInt();
96          Result []r=new Result[n];
97          String u,nam;
98          int s;
99          for(int i=0;i<n;i++)
100         {
101             System.out.println("Enter details of student "+(i+1));
102             System.out.println("Enter usn: ");
103             u=xx.next();
104             System.out.println("Enter name: ");
105             nam=xx.next();
106             System.out.println("Enter sem ");
107             s=xx.nextInt();
108             System.out.println("Enter no of courses");
109             int courses=xx.nextInt();
110             r[i]=new Result();
111             r[i].accept(u,nam,s);
112             r[i].accept_cie(courses);
```

```java
86
87        }
88    }
89    class Main
      Run | Debug
90    {
91        public static void main(String args[])
92        {
93            Scanner xx=new Scanner(System.in);
94            System.out.println("Enter no of students");
95            int n=xx.nextInt();
96            Result []r=new Result[n];
97            String u,nam;
98            int s;
99            for(int i=0;i<n;i++)
100           {
101               System.out.println("Enter details of student "+(i+1));
102               System.out.println("Enter usn: ");
103               u=xx.next();
104               System.out.println("Enter name: ");
105               nam=xx.next();
106               System.out.println("Enter sem ");
107               s=xx.nextInt();
108               System.out.println("Enter no of courses");
109               int courses=xx.nextInt();
110               r[i]=new Result();
111               r[i].accept(u,nam,s);
112               r[i].accept_cie(courses);
113               r[i].accept_see(courses);
114               r[i].sgpa_cal(courses);
115           }
116           for(int i=0;i<n;i++)
117           {
118           r[i].display();
119           }
120       }
121   }
```

```
C:\Users\akki\Desktop\PROJECT WORK>javac sgpainhe.java

C:\Users\akki\Desktop\PROJECT WORK>java Main
Enter no of students
2
Enter details of student 1
Enter usn:
6816
Enter name:
Mukund
Enter sem
2
Enter no of courses
4
Enter cie marks with credits of course1
34 4
Enter cie marks with credits of course2
25 5
Enter cie marks with credits of course3
29 4
Enter cie marks with credits of course4
26 3
enter see marks of course1
78
enter see marks of course2
87
enter see marks of course3
68
enter see marks of course4
69
Enter details of student 2
Enter usn:
572920
Enter name:
Minni
Enter sem
3
Enter no of courses
4
Enter cie marks with credits of course1
34 3
Enter cie marks with credits of course2
29 4
Enter cie marks with credits of course3
```

```
enter see marks of course2
87
enter see marks of course3
68
enter see marks of course4
69
Enter details of student 2
Enter usn:
572920
Enter name:
Minni
Enter sem
3
Enter no of courses
4
Enter cie marks with credits of course1
34 3
Enter cie marks with credits of course2
29 4
Enter cie marks with credits of course3
27 5
Enter cie marks with credits of course4
32 4
enter see marks of course1
78
enter see marks of course2
69
enter see marks of course3
70
enter see marks of course4
84
****Student Details****
Student USN: 6816
Student Name: Mukund
Student Sem: 2
Student sgpa: 7.25
****Student Details****
Student USN: 572920
Student Name: Minni
Student Sem: 3
Student sgpa: 7.4375

C:\Users\akki\Desktop\PROJECT WORK>
```