

## Week 7: (enhancement practice)

1. Develop a Java program to create a class student who variables are USN, name and sem. Derive a class Test from Student to include an array of six marks of each course and their corresponding credits in another array. Derive a class Exam from Test which includes an array of six marks. Derive a class Result which calculates the grade for each course and the CGPA. Create n object and displays all the above details.

```
import java.util.Scanner;
class Student {
    String USN, name;
    int sem;
    Scanner sc = new Scanner(System.in);
    void setstudentdetails() {
        System.out.println("Enter USN of student");
        this.USN = sc.nextLine();
        System.out.println("Enter name of student");
        this.name = sc.nextLine();
    }
}
```

System.out.println("Enter Semester of student");  
this.sem = sc.nextInt();

y  
y

void getStdDetails()

System.out.println("USN:" + this.USN);  
System.out.println("Name:" + this.name);  
System.out.println("Sem:" + this.sem);

y  
y

Class Test extends Student {

double cieMarks[] = new double[5];  
int credits[] = new int[5];  
int totalCredits = 0;

void setCieDetails()

for(int i=0; i < cieMarks.length; i++) {  
System.out.print("Enter CIE marks (5) in course " + (i+1) + ":" );  
cieMarks[i] = sc.nextDouble();

System.out.print("Enter credits of course " + (i+1) + ":" );  
credits[i] = sc.nextInt();

totalCredits += credits[i];

y  
y

class Exam extends Test {

    double seeMarks[] = new double [5];

    double totalMarks[] = new double [5];

    int totalCredits = super.totalCredits;

    void setSeeDetails() {

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

            System.out.println("Enter SEE marks (100) in  
                course " + (i+1) + ": ");

            seeMarks[i] = sc.nextDouble() / 2;

    }

    calcTotalMarks();

    void calcTotalMarks() {

        for (int i=0; i < 5; i++) {

            totalMarks[i] = cieMarks[i] + seeMarks[i];

        }

    class Result extends Exam {

        char grades[] = new char [5];

        double SGPA = 0;

        int points[] = new int [5];

        void calcSGPA() {

            for (int i=0; i < 5; i++) {

                if (totalMarks[i] > 100) {

System.out.println("Error: Marks are  
above 100");  
return;  
} else if (totalMarks[i] >= 90) {  
points[i] = 10;  
} else if (totalMarks[i] >= 80) {  
points[i] = 9;  
} else if (totalMarks[i] >= 70) {  
points[i] = 8;  
} else if (totalMarks[i] >= 60) {  
points[i] = 7;  
} else if (totalMarks[i] >= 50) {  
points[i] = 5;  
} else if (totalMarks[i] >= 40) {  
points[i] = 4;  
} else {  
points[i] = 0;  
}  
sgpa = (points[i] \* credits[i]);  
}  
}  
void calculate() {  
for (int i = 0; i < 5; i++) {  
if (totalMarks[i] > 100) {  
}

System.out.println("Max Marks are above 100");  
return;

    } else if (totalMarks[i] >= 90) {  
        grades[i] = 'S';

    } else if (totalMarks[i] >= 80) {  
        grades[i] = 'A';

    } else if (totalMarks[i] >= 70) {  
        grades[i] = 'B';

    } else if (totalMarks[i] >= 60) {  
        grades[i] = 'C';

    } else if (totalMarks[i] >= 50) {  
        grades[i] = 'D';

    } else if (totalMarks[i] >= 40) {  
        grades[i] = 'E';

    } else {  
        grades[i] = 'F';

    }

    }

    void getSGPA() {

        System.out.println("SGPA is " + (sgpa / totalCredits));

    }

    void getGrades() {

        for (int i = 0; i < 5; i++) {

Teachers Signature.....

System.out.println ("Subject " + (p+1) + ":"  
+ grades[i]),

Y  
y  
y

public class Classmate {  
public static void main (String [] args)  
int n=0;

Scanner sc = new Scanner (System.in);  
System.out.println ("Enter no. of  
students"),

n = sc.nextInt();

Result results [] = new Result [n];  
for (int i=0; i<n; i++) {  
results[i] = new Result();  
results[i].setStudentDetails();  
results[i].setClassDetails();  
results[i].setSectionDetails();  
results[i].calcSGPA();  
results[i].calcGrade();  
y

for (int l=0; l<n; l++) {  
results[l].getStudentDetails();  
results[l].getSGPA();



results(1).getGrade()

y

y

y

Teachers Signature.....



Welcome

CircedemoMain.java

ActorMain.java

clmain.java X

```
c > Users > Appy > Desktop > java lab > clmain.java
1 import java.util.Scanner;
2
3 class Student{
4     String USN,name;
5     int sem;
6     Scanner sc = new Scanner(System.in);
7     void setStuDetails(){
8         System.out.println("Enter USN of Student: ");
9         this.USN = sc.nextLine();
10        System.out.println("Enter Name of Student: ");
11        this.name = sc.nextLine();
12        System.out.println("Enter Semester of Student: ");
13        this.sem = sc.nextInt();
14    }
15
16    void getStuDetails(){
17        System.out.println("USN: " + this.USN);
18        System.out.println("Name: " + this.name);
19        System.out.println("Semester: " + this.sem);
20    }
21 }
22
23 class Test extends Student{
24     double cieMarks[] = new double[5];
25     int credits[] = new int[5];
26     int totalCredits = 0;
27     void setCieDetails(){
28         for(int i=0;i<cieMarks.length;i++){
29             System.out.println("Enter CIE marks(50) in course" + (i+1) + ": ");
30             cieMarks[i] = sc.nextDouble();
31             System.out.println("Enter credits of course" + (i+1) + ": ");
32             credits[i] = sc.nextInt();
33             totalCredits += credits[i];
34         }
35     }
36 }
```

```
C:\Users\Appy\Desktop\java lab>java Clmain
Enter number of students
2
Enter USN of Student:
1bm19cs001
Enter Name of Student:
john
Enter Semester of Student:
3
Enter CIE marks(50) in course1:
48
Enter credits of course1:
3
Enter CIE marks(50) in course2:
47
Enter credits of course2:
5
Enter CIE marks(50) in course3:
50
Enter credits of course3:
4
Enter CIE marks(50) in course4:
49
Enter credits of course4:
4
Enter CIE marks(50) in course5:
46
Enter credits of course5:
4
Enter SEE marks(100) in course1:
95
Enter SEE marks(100) in course2:
98
Enter SEE marks(100) in course3:
96
Enter SEE marks(100) in course4:
100
Enter SEE marks(100) in course5:
9
Activate Windows
Enter SEE marks(100) in course5 to activate Windows.
```

Welcome

CircedemoMain.java

ActorMain.java

clmain.java X

```

c > Users > Appy > Desktop > java lab > clmain.java
    totalCredits += credits[i];

}
}

class Exam extends Test{
    double seeMarks[] = new double[5];
    double totalMarks[] = new double[5];
    int totCredits = super.totalCredits;
    void setSeeDetails(){
        for(int i=0;i<cieMarks.length;i++){
            System.out.println("Enter SEE marks(100) in course" + (i+1) + ": ");
            seeMarks[i] = sc.nextDouble()/2;
        }
        calcTotalMarks();
    }
    void calcTotalMarks(){
        for(int i=0;i<5;i++){
            totalMarks[i] = cieMarks[i] + seeMarks[i];
        }
    }
}

class Result extends Exam{
    char grades[] = new char[5];
    double sgpa = 0;
    int points[] = new int[5];
    void calcSGPA(){
        for(int i = 0;i<5;i++){
            if(totalMarks[i] > 100){
                System.out.println("Error: Marks are above 100");
                return;
            }
        }
    }
}

```

```

97
Enter USN of Student:
1bm19cs002
Enter Name of Student:
harry
Enter Semester of Student:
3
Enter CIE marks(50) in course1:
42
Enter credits of course1:
3
Enter CIE marks(50) in course2:
44
Enter credits of course2:
5
Enter CIE marks(50) in course3:
43
Enter credits of course3:
4
Enter CIE marks(50) in course4:
41
Enter credits of course4:
4
Enter CIE marks(50) in course5:
40
Enter credits of course5:
4
Enter SEE marks(100) in course1:
88
Enter SEE marks(100) in course2:
86
Enter SEE marks(100) in course3:
84
Enter SEE marks(100) in course4:
82
Enter SEE marks(100) in course5:
80
USN: 1bm19cs001      Activate Windows
Name: john           Go to Settings to activate Windows.
Semester: 3

```

Welcome C:\Users\Appy\Desktop\java lab clmain.java ActorMain.java

```

c > Users > Appy > Desktop > java lab > clmain.java
66     }else if(totalMarks[i] >= 90){
67         points[i] = 10;
68     }else if(totalMarks[i] >= 80){
69         points[i] = 9;
70     }else if(totalMarks[i] >= 70){
71         points[i] = 8;
72     }else if(totalMarks[i] >= 60){
73         points[i] = 7;
74     }else if(totalMarks[i] >= 50){
75         points[i] = 5;
76     }else if(totalMarks[i] >= 40){
77         points[i] = 4;
78     }else{
79         points[i] = 0;
80     }
81
82     sgpa += (points[i]*credits[i]);
83 }
84
85
86 void calcGrade(){
87     for(int i = 0;i<5;i++){
88         if(totalMarks[i] > 100){
89             System.out.println("Error: Marks are above 100");
90             return;
91         }else if(totalMarks[i] >= 90){
92             grades[i] = 'S';
93         }else if(totalMarks[i] >= 80){
94             grades[i] = 'A';
95         }else if(totalMarks[i] >= 70){
96             grades[i] = 'B';
97         }else if(totalMarks[i] >= 60){
98             grades[i] = 'C';
}
}

```

```

Enter CIE marks(50) in course4: 41
Enter credits of course4: 4
Enter CIE marks(50) in course5: 40
Enter credits of course5: 4
Enter SEE marks(100) in course1: 88
Enter SEE marks(100) in course2: 86
Enter SEE marks(100) in course3: 84
Enter SEE marks(100) in course4: 82
Enter SEE marks(100) in course5: 80
USN: 1bm19cs001
Name: john
Semester: 3
SGPA is 10.00
Subject 1: S
Subject 2: S
Subject 3: S
Subject 4: S
Subject 5: S
USN: 1bm19cs002
Name: harry
Semester: 3
SGPA is 9.00
Subject 1: A
Subject 2: A
Subject 3: A
Subject 4: A
Subject 5: A

```

C:\Users\Appy\Desktop\java lab> Activate Windows  
Go to Settings to activate Windows.

Welcome C:\Users\Appy\Desktop\java lab\clmain.java ActorMain.java clmain.java X

```
c > Users > Appy > Desktop > java lab > clmain.java
97         }else if(totalMarks[i] >= 60){
98             grades[i] = 'C';
99         }else if(totalMarks[i] >= 50){
100            grades[i] = 'D';
101        }else if(totalMarks[i] >= 40){
102            grades[i] = 'E';
103        }else{
104            points[i] = 'F';
105        }
106    }
107
108
109    void getSGPA(){
110        System.out.format("SGPA is %.2f\n", (sgpa/totalCredits));
111    }
112
113    void getGrades(){
114        for(int i=0;i<5;i++){
115            System.out.println("Subject "+(i+1)+": " + grades[i]);
116        }
117    }
118
119 public class Clmain{
120     public static void main(String[] args) {
121         int n = 0;
122         Scanner sc = new Scanner(System.in);
123         System.out.println("Enter number of students");
124         n = sc.nextInt();
125         Result results[] = new Result[n];
126         for(int i=0;i<n;i++){
127             results[i] = new Result();
128             results[i].setStuDetails();
129             results[i].setCieDetails();
```

Activate Windows  
Go to Settings to activate Windows.

Welcome C:\Users\Appy\Desktop\java lab\clmain.java ActorMain.java

```
c > Users > Appy > Desktop > java lab > clmain.java
110     System.out.format("SGPA is %.2f\n", (sgpa/totalCredits));
111 }
112
113 void getGrades(){
114     for(int i=0;i<5;i++){
115         System.out.println("Subject "+(i+1)+": " + grades[i]);
116     }
117 }
118
119 public class Clmain{
120     public static void main(String[] args) {
121         int n = 0;
122         Scanner sc = new Scanner(System.in);
123         System.out.println("Enter number of students");
124         n = sc.nextInt();
125         Result results[] = new Result[n];
126         for(int i=0;i<n;i++){
127             results[i] = new Result();
128             results[i].setStuDetails();
129             results[i].setCieDetails();
130             results[i].setSeeDetails();
131             results[i].calcSGPA();
132             results[i].calcGrade();
133         }
134         for(int i=0;i<n;i++){
135             results[i].getStuDetails();
136             results[i].getSGPA();
137             results[i].getGrades();
138         }
139     }
140 }
141 }
```

Activate Windows  
Go to Settings to activate Windows.

