Main.java

```java
/*Develop a Java program to create a class Student whose variables are usn, name and sem.
Derive a class Test from Student to  include an array of cie marks of each course and
their corresponding credits in another array. Derive a class Exam from Test  which
includes an array of see marks. Derive a class Result which calculates the grade
for each course and the SGPA.Create n student objects and displays all the above details.*/

import java.util.Scanner;
class Student{
    String usn, name;
    int sem, cor;
    Scanner scan = new Scanner(System.in);

    void general()
    {
        System.out.print("Enter USN of the student: ");
        usn = scan.nextLine();
        System.out.print("Enter Name of the student: ");
        name = scan.nextLine();
        System.out.print("Enter Sem of the student: ");
        sem = scan.nextInt();
        System.out.print("Enter the number of courses: ");
        cor = scan.nextInt();
        System.out.println();
        }
}

class Test extends Student{
    double [] ciemarks;
    int [] credits;

    void ciedet(){
```

```
        System.out.println("Enter details of the subjects:");
        ciemarks = new double[cor];
        credits = new int[cor];
        for(int i=0; i<cor; i++)
        {
            System.out.println("Enter credits for subject "+(i+1));
            credits[i] = scan.nextInt();
            System.out.println("Enter cie marks of subject "+(i+1));
            ciemarks[i] = scan.nextDouble();
        }
        System.out.println();
    }
}

class Exam extends Test{
    double [] seemarks;

    void seedet(){
        seemarks = new double[cor];
        for(int i=0; i<cor; i++){
            System.out.println("Enter see marks of subject "+(i+1));
            seemarks[i] = scan.nextDouble();
        }
    }
}

class Result extends Exam{
    float SGPA;
    char grade;
    double [] fmarks;
    int totalCredits, i;
```

```
    void cal(){

        fmarks = new double[cor];
        for(i=0; i<cor; i++)
        {
            fmarks[i] = ciemarks[i] + seemarks[i];
            Calculate();
            System.out.println("The grade for "+(i+1)+" subject is: "+grade);
        }
        System.out.println("The final sgpa = "+ SGPA/totalCredits);
    }

    void display(){
        System.out.println();
        System.out.println("Details: ");
        System.out.println("USN: "+usn+"\nName: "+name+"\nSem: "+sem);
    }

    void Calculate()
    {
        totalCredits = totalCredits + credits[i];
        if(fmarks[i]>=90){
        SGPA = SGPA + (10*credits[i]);
        grade = 'S';}
        else if(fmarks[i]>=80){
        SGPA = SGPA + (9*credits[i]);
        grade = 'A';}
        else if(fmarks[i]>=70){
        SGPA = SGPA + (8*credits[i]);
        grade = 'B';}
        else if(fmarks[i]>=60){
```

```
96          SGPA = SGPA + (7*credits[i]);
97          grade = 'C';}
98          else if(fmarks[i]>=50){
99          SGPA = SGPA + (6*credits[i]);
100         grade = 'D';}
101         else if(fmarks[i]>=40){
102         SGPA = SGPA + (5*credits[i]);
103         grade = 'E';}
104         else{
105         grade = 'F';
106         System.out.println("Failed in this Subject ");}
107     }
108 }
109
110 public class Main
111 {
112     public static void main(String[] args) {
113         int n;
114         System.out.print("Enter the number of students: ");
115         Scanner scan = new Scanner(System.in);
116         n = scan.nextInt();
117         Result o[]=new Result[n];
118             for(int i=0;i<n;i++)
119             {
120                 o[i]=new Result();
121                 o[i].general();
122                 o[i].ciedet();
123                 o[i].seedet();
124                 o[i].display();
125                 o[i].cal();
126             }
```

```
Enter the number of students: 1
Enter USN of the student: 1bm
Enter Name of the student: abc
Enter Sem of the student: 3
Enter the number of courses: 2

Enter details of the subjects:
Enter credits for subject 1
4
Enter cie marks of subject 1
40
Enter credits for subject 2
3
Enter cie marks of subject 2
30

Enter see marks of subject 1
45
Enter see marks of subject 2
33

Details:
USN: 1bm
Name: abc
Sem: 3
The grade for 1 subject is: A
The grade for 2 subject is: C
The final sgpa = 8.142858


...Program finished with exit code 0
```

Main.java

```java
/*Create a class PLAYER with member variables name,matches_played and average.
This class has an abstract method cal_average(String,int,int). Derive two
classes BATSMAN and BOWLER from PLAYER. Class BATSMAN has a member variable
runs_scored. Class BOWLER has a member variable runs_given. Create m BATSMAN
objects and n BOWLER objects. Calculate and display the average runs scored by
each BATSMAN and average runs given by each BOWLER.*/

import java.util.Scanner;
abstract class PLAYER{
    String name;
    int matches_played;
    double  average;
    Scanner scan = new Scanner(System.in);

    void general()
    {
        System.out.print("Enter Name of the player: ");
        name = scan.nextLine();
        System.out.print("Enter number of matches played: ");
        matches_played = scan.nextInt();
    }

    abstract void cal_average();
}

class BATSMAN extends PLAYER{
    int runs_scored;

    void bat(){
        System.out.print("Enter the total runs scored: ");
        runs_scored = scan.nextInt();
    }
```

```
32      }
33
34      void cal_average(){
35          average = runs_scored/matches_played;
36          System.out.println("The average is "+average);
37          System.out.println();
38      }
39  }
40
41  class BOWLER extends PLAYER{
42      int runs_given;
43
44      void ball(){
45          System.out.print("Enter the total runs given: ");
46          runs_given = scan.nextInt();
47      }
48
49      void cal_average(){
50          average = runs_given/matches_played;
51          System.out.println("The average is "+average);
52          System.out.println();
53      }
54  }
55
56  public class Main
57  {
58      public static void main(String[] args) {
59          int n, m;
60          System.out.print("Enter the number of batsmen: ");
61          Scanner scan = new Scanner(System.in);
62          n = scan.nextInt();
63          BATSMAN a[]=new BATSMAN[n];
```

```
61          Scanner scan = new Scanner(System.in);
62          n = scan.nextInt();
63          BATSMAN o[]=new BATSMAN[n];
64              for(int i=0;i<n;i++)
65              {
66                  o[i]=new BATSMAN();
67                  o[i].general();
68                  o[i].bat();
69                  o[i].cal_average();
70              }
71
72          System.out.print("Enter the number of bowler: ");
73          m = scan.nextInt();
74          BOWLER b[]=new BOWLER[m];
75              for(int i=0;i<m;i++)
76              {
77                  b[i]=new BOWLER();
78                  b[i].general();
79                  b[i].ball();
80                  b[i].cal_average();
81              }
82      }
83  }
```

```
Enter the number of batsmen: 2
Enter Name of the player: abc
Enter number of matches played: 3
Enter the total runs scored: 100
The average is 33.0

Enter Name of the player: xyz
Enter number of matches played: 4
Enter the total runs scored: 100
The average is 25.0

Enter the number of bowler: 1
Enter Name of the player: pqr
Enter number of matches played: 6
Enter the total runs given: 500
The average is 83.0



...Program finished with exit code 0
Press ENTER to exit console.
```