Lab 6

Q) Create a package CIE which has two classes - Student and Internals. The class Student has members like USN, name, sem. The class Internals derived from student has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

CIE / Student.java

```java
package CIE;
import java.util.scanner;


public class Student {
    protected String usn;
    protected String name;
    protected int sem;


    public void inputStudentDetails() {
        Scanner s = new Scanner(System.in)
        System.out.print("Enter USN: ");
        usn = s.nextLine();
        System.out.print("Enter Name: ");
        name = s.nextLine();
        System.out.print("Enter Semester: ");
        sem = s.nextInt();
    }


    public void displayStudentDetails() {
        System.out.println("USN:    " + usn);
        System.out.println(" Name:    " + name);
        System.out.println(" Semester: " + sem);
    }
}
```

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```java
CIE/Internals.java
package CIE;
import java.util.Scanner;


public class Internals extends Student {
    protected int[] internalMarks = new int[5];


    public void inputCIEmarks() {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter Internal Marks for 5
        Subjects : ");
        for (int i=0; i<5; i++) {
            System.out.print("Subject " + (i+1) + ":");
            internalMarks[i] = s.nextInt();
        }
    }
}
```

```java
SEE/Externals.java
package SEE;
import CIE.internals;
import java.util.Scanner;
```

```java
public class Externals extends Internals {
        protected int[] seeMarks = new int[5];
        protected int[] finalMarks = new int[5];


        public void inputSEEmarks() {
            Scanner s = new Scanner(System.in);
            System.out.println("Enter SEE Marks for 5
            Subjects");
            for(int i=0; i<5; i++) {
                    System.out.println("Subject " + (i+1) + ":");
                    seeMarks[i]=s.nextInt();
            }
        }


        public void calculateFinalMarks() {
            for(int i=0; i<5; i++) {
                finalMarks[i] = internalMarks[i] + seeMarks[i];
            }
        }


        public void displayFinalMarks() {
            displayStudentDetails();
            System.out.println("Final Marks for 5 Subjects: ");
            for(int i=0; i<5; i++)
```

```
            {
                System.out.println("Subject" + (i+1) + ":" +
                finalMarks[i]);
            }
        }
    }
}
```

Main.java

```
import SEE.ext

import SEE.Externals;

import java.util.Scanner;


class Main {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.print("Enter Number of Students: ");
        int n = s.nextInt();

        Externals[] students = new Externals[n];

        for(int i=0; i<n; i++) {
            System.out.println("Enter Details for Student " +
            (i+1) + ":");
```

```java
        students [i]= new External();
        students [i] = inputStudentDetails();
        students [i]. inputCIEmarks();
        students [i]. input SEEmarks();
        students [i]. calculate finalMarks ();
    }


    System.out.println("\n Final Marks of Students:  ");
    for (int i=0; i<n; i++)
    {
        System.out.println("\n Student " + (i+1) + ":");
        students [i]. display finalMarks();
    }
}
}
```

Ser

Output

Enter number of students: 1

Enter details for student 1:

Enter USN: Aaryan

Enter Name: 1BM23CS006

Enter Semester: 3

Enter Internal Marks for 5 Subjects:

Subject 1: 45

Subject 2: 49

Subject 3: 42

Subject 4: 45

Subject 5: 46

Enter SEE Marks for 5 Subjects:

Subject 1: 44

Subject 2: 48

Subject 3: 50

Subject 4: 48

Subject 5: 49

Final Marks of Students:

Student 1:

USN: 1BM23CS006

Name: Aaryan

Semester: 3

Subject 1: 89

Subject 2: 97

Subject 3: 92

Subject 4: 96

Subject 5: 95

Executed

13/11/24