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Class: 3A

Lab 2 Question: Create a package CIE which has two classes- Student and Internals- a subclass of Student. The class Student has members like usn, name, sem. The class internals 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 Internals. 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.

Program:

Packages

Create a package CIE which has two classes - student and internal. The class ~~Personal~~^{Student} has members like usn, Name, sem. The class internal 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 ~~SEE~~ External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses. Import the two packages into a file that declares the final marks of n students in five courses.

Student.java:

```
package CIE;
import java.util.Scanner;
public class Student {
    protected String usn = new String();
    protected String name = new String();
    protected int sem;

    public void inputStudentDetails()
    {
        Scanner s = new Scanner(System.in);
        usn = s.next();
        name = s.next();
        sem = s.nextInt();
    }
}
```

```

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

```

Internals.java:

```

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

    public void inputCIEMarks()
    {
        Scanner s = new Scanner(System.in);
        for (int i=0; i<5; i++)
        {
            System.out.println("Subject " + (i+1) + " mark: ");
            marks[i] = s.nextInt();
        }
    }
}

```

Externals.java:

```

import CIE.Internals;
package SEE;
import CIE.Internals;
import java.util.Scanner;

```

```

public class Externals extends Internals {
    protected int mark[];
    protected int finalMarks[];

    public Externals() {
        marks = new int[5];
        finalMarks = new int[5];
    }

    public void inputSEEMarks()
    {
        Scanner s = new Scanner(System.in);
        for (int i=0; i<5; i++)
        {
            System.out.println("Here n=");
            System.out.println("Subject " + (i+1) + " marks: ");
            marks[i] = s.nextInt();
        }
    }

    public void calculateFinalMarks()
    {
        for (int i=0; i<5; i++)
        {
            finalMarks[i] = marks[i]/2 + super.marks[i];
        }
    }

    public void displayFinalMarks()
    {
        displayStudentDetails();
        for (int i=0; i<5; i++)
        {
            System.out.println("Subject " + (i+1) + ": " + finalMarks[i]);
        }
    }
}

```


Main.java:

```
import SEE.Externals;
```

```
class Main {
```

```
    public static void main (String args[])
```

```
    {
```

```
        int numOfStudents = 2;
```

```
        Externals finalMarks[] = new Externals [numOfStudents];
```

```
        for (int i=0; i< numOfStudents; i++)
```

```
        {
```

```
            finalMarks[i] = new Externals();
```

```
            finalMarks[i].inputCIEMarksStudentDetails();
```

```
            System.out.println("Enter CIE Marks");
```

```
            finalMarks[i].inputCIEMarks();
```

```
            System.out.println("Enter SEE Marks");
```

```
            finalMarks[i].inputSEEmarks();
```

```
        }
```

```
        System.out.println("Displaying data : \n");
```

```
        for (int i=0; i< numOfStudents; i++)
```

```
        {
```

```
            finalMarks[i].calculateFinalMarks();
```

```
            finalMarks[i].displayFinalMarks();
```

```
        }
```

```
    }
```

```
}
```

Output :

USN : Akram

USN : IBM21CS013

Name : Akram

Sem : 3

Enter CIE Marks :

Subject 1 Marks : 39

Subject 2 Marks : 38

Subject 3 Marks : 40

Subject 4 Marks : 39

Subject 5 Marks : 40

Enter SEE Marks :

Subject 1 Marks : 97

Subject 2 Marks : 96

Subject 3 Marks : 94

Subject 4 Marks : 92

Subject 5 Marks : 98

USN : IBM21CS070

Name : Haaid

Sem : 3

Enter CIE Marks :

Subject 1 Marks : 39

Subject 2 Marks : 39

Subject 3 Marks : 38

Subject 4 Marks : 37

Subject 5 Marks : 40

USN : Akram
USN : IBM21CS013
Name : Akram
Sem : 3
Enter CIE Marks :
Subject 1 Marks : 39
Subject 2 Marks : 38
Subject 3 Marks : 40
Subject 4 Marks : 39
Subject 5 Marks : 40

Enter SEE Marks :
Subject 1 Marks : 97
Subject 2 Marks : 96
Subject 3 Marks : 94
Subject 4 Marks : 92
Subject 5 Marks : 98

USN : Haaid
USN : IBM21CS070
Name : Haaid
Sem : 3
Enter CIE Marks :
Subject 1 Marks : 39
Subject 2 Marks : 39
Subject 3 Marks : 38
Subject 4 Marks : 37
Subject 5 Marks : 40

Enter SEE Marks

Subject 1 Marks: 96

Subject 2 Marks: 98

Subject 3 Marks: 99

Subject 4 Marks: 92

Subject 5 Marks: 93

USN: IBM21CS013

Name: Akram

Sem 3: 3

Subject 1: 87

Subject 2: 86

Subject 3: 87

Subject 4: 85

Subject 5: 89

USN: IBM21CS070

Name: Haaid

Sem: 3

Subject 1: 87

Subject 2: 88

Subject 3: 87

Subject 4: 83

Subject 5: 86

Output:

```
Command Prompt

D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab6_Packages_demo>javac Student.java
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab6_Packages_demo>javac Internals.java
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab6_Packages_demo>javac Externals.java
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab6_Packages_demo>javac Main.java

D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab6_Packages_demo>java Main
USN: 1BM21CS013
Name: Akram
Sem: 3
Enter CIE marks
Subject 1 marks: 39
Subject 2 marks: 38
Subject 3 marks: 40
Subject 4 marks: 39
Subject 5 marks: 40
Enter SEE marks
Subject 1 marks: 97
Subject 2 marks: 96
Subject 3 marks: 94
Subject 4 marks: 92
Subject 5 marks: 98
USN: 1BM21CS070
Name: Haaïd
Sem: 3
Enter CIE marks
Subject 1 marks: 49
Subject 2 marks: 39
Subject 3 marks: 38
Subject 4 marks: 37
Subject 5 marks: 40
Enter SEE marks
Subject 1 marks: 96
Subject 2 marks: 98
Subject 3 marks: 99
Subject 4 marks: 92
Subject 5 marks: 93
Displaying data:

USN: 1BM21CS013
Name: Akram
Sem: 3
Subject 1: 87
Subject 2: 86
Subject 3: 87
Subject 4: 85
Subject 5: 89
USN: 1BM21CS070
Name: Haaïd
Sem: 3
Subject 1: 97
Subject 2: 88
Subject 3: 87
Subject 4: 83
Subject 5: 86

D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab6_Packages_demo>
```