Q Create a package CIE which has two classes – Personal and Internals. The class Personal (Student) has members like usn, name, sem. The class Internals has an array that stores the internal marks scored in 5 courses of the current semester of the student. Create another package SEE which has the class External which is derived class of Personal (Student). This class has an array that stores the SEE marks stored in 5 courses of current semester of the student. Import the two packages in a file that declares the final marks of 'n' students in all five courses

Ans

```
package cie;
public class Internals{
    int[] marks = new int[5];

    public internals (int[] masks)
        {
            this.masks = masks;
        }

public void display(){

    System.out.println("CIE Marks:\n");
    for(int num:marks){
        System.out.println(num);
    }
}

public int getTotalCIEMarks(){
    int total=0;
    for(int num:marks){
            total+= num;
    }
} return total;
```

```
package see;
import cie.student;
public class External extends Student{
        int[] seemarks = new int[5];
    public External(String USN, String name,
      int sem, int[] seemarks)
        {
          super(USN, name, sem);
          this.seemarks = seemarks;
        }
    public void display(){
System.out.println("SEE marks are :\n");
for (int num : seemarks)
        {
          System.out.println(num);
        }
}
                public int getTotal(){
                    int total=0;
                for (int num : seemarks)
                        {
                            total += num;
                        }
                    return total/2;
                }
            }
```

Date | Page No.

```
package cie;

public class Student {

    public String USN;
    public String name;
    public int sem;

    public Student ( String USN, String name,
                     int sem) {
        this.USN = USN;
        this.name = name;
        this.sem = sem;
    }

    public void display () {

        System.out.println (" Student Details: ");
        System.out.println ("USN: " + USN);
        System.out.println ("Name: " + name);
        System.out.println ("Semester: " + sem);
    }
}
```

```
import java.util.Scanner
import cie.Student
import cie.Internals
import see.External

public class lab6q{

    public static void main(String[] args)
    {
        Scanner s = new Scanner(System.in);

        System.out.println("Enter number of
                            students:");
        int n = s.nextInt();
        s.nextLine();
        for(int i=1; i<=n; i++)
        {
            System.out.println("Enter details
            of Student" + i + ":");

        System.out.println("Enter USN:");
        String USN = s.nextLine();

        System.out.println("Enter name:");
        String name = s.nextInt();
        s.nextLine();

        Student stud = new Student(USN,
                                   name, sem);
        stud.display();
```

```
System.out.println("Enter CIE marks for 5
                    subjects:");
int[] Smarks = new int[5];
for(int j = 0; j < 5; j++)
    {
        Smarks[j] = S.nextInt();
    }

External externalmarks = new External(
                    USN, name, Sem, Smarks);

externalmarks.display();

S.nextLine();
}

S.close();
}
}
```

Output :→ Enter number of students:
2
Enter details of Student 1:
Enter USN:
1bm23cs222
Enter Name:
xyz
Enter semester:
3

Student Details:
USN: 1bm23cs222
Name: xyz
Semester: 3
Enter CIE marks for 5 subjects:
45
46
47
48
49

CIE Marks:

45
46
47
48
49

Enter the SEE marks for 5 subjects:
89
90
96
94
78

SEE marks are as follows:

89
90
96
94
78

Enter details for Student 2:
Enter USN:
1bm23cs123
Enter Name:
abc
Enter Semester:
3
Student Details:
USN: 1bm23cs123
Name: abc
Semester: 3

Enter CIE marks for 5 subjects:
50
45
34
23
48

CIE Marks:
50
45
34
23
48
Enter SEE Marks for 5 subjects:
90
92
88
78
49

VISION
Date | Page No.

SEE marks are as follows:

90
92
88
78
~~96~~ 96

28/11/24

```java
package cie;
public class Internals {
    int[] marks = new int[5];

    public Internals(int[] marks) {
        this.marks = marks;
    }

    public void display() {
        System.out.println("CIE Marks: \n");
        for (int num : marks) {
            System.out.println(num);
        }
    }

    public int getTotalCieMarks() {
        int total = 0;
        for (int num : marks) {
            total += num;
        }
        return total;
    }
}
```

```java
package cie;

public class Student {
    public String USN;
    public String name;
    public int sem;

    public Student(String USN, String name, int sem) {
        this.USN = USN;
        this.name = name;
        this.sem = sem;
    }

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

```java
package see;
import cie.Student;

public class External extends Student {
    int[] seemarks = new int[5];

    public External(String USN, String name, int sem, int[] seemarks) {
        super(USN, name, sem);
        this.seemarks = seemarks;
    }

    public void display() {
        System.out.println("SEE Marks are: \n");
        for (int num : seemarks) {
            System.out.println(num);
        }
    }

    public int getHalfOfSeeMarks() {
        int total = 0;
        for (int num : seemarks) {
            total += num;
        }
        return total / 2;
    }
}
```

```java
import java.util.Scanner;
import cie.Student;
import cie.Internals;
import see.External;

public class lab6 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);

        System.out.println("Enter the number of students:");
        int n = s.nextInt();
        s.nextLine();

        for (int i = 1; i <= n; i++) {
            System.out.println("\nEnter details for Student " + i + ":");

            System.out.println("Enter USN: ");
            String USN = s.nextLine();

            System.out.println("Enter Name: ");
            String name = s.nextLine();

            System.out.println("Enter Semester: ");
            int sem = s.nextInt();
            s.nextLine();

            Student stud = new Student(USN, name, sem);
            stud.display();

            int[] marks = readMarks(s, "CIE");
            Internals internalMarks = new Internals(marks);
            internalMarks.display();

            int[] smarks = readMarks(s, "SEE");
            External externalMarks = new External(USN, name, sem, smarks);
            externalMarks.display();


            int[] finalMarks = new int[5];
            System.out.println("Final Marks (CIE + 1/2 SEE) for each subject:");
            for (int j = 0; j < 5; j++) {
                finalMarks[j] = marks[j] + (smarks[j] / 2);
                System.out.println("Subject " + (j + 1) + ": " + finalMarks[j]);
            }
        }

        s.close();
    }

    public static int[] readMarks(Scanner s, String examType) {
        System.out.println("Enter the " + examType + " marks (5 subjects): ");
        int[] marks = new int[5];
        for (int i = 0; i < 5; i++) {
            marks[i] = s.nextInt();
        }
        return marks;
    }
}
```

```
Enter the number of students: 2
Enter details for student 1:
USN: 1bm23
Name: sam
Semester: 3
Enter internal marks for 5 courses:
30 39 29 28 30
Enter SEE marks for 5 courses:
86 87 89 90 99
Enter details for student 2:
USN: 1bm24
Name: xyz
Semester: 2
Enter internal marks for 5 courses:
39 34 35 36 34
Enter SEE marks for 5 courses:
99 98 87 86 80

Final Marks of Students:
USN: 1bm23
Name: sam
Semester: 3
Internal Marks: 30 39 29 28 30
SEE Marks: 86 87 89 90 99
Final Marks: 116 126 118 118 129

USN: 1bm24
Name: xyz
Semester: 2
Internal Marks: 39 34 35 36 34
SEE Marks: 99 98 87 86 80
Final Marks: 138 132 122 122 114
```