WEEK 6 :

Create a package CIE which has two classes- Student and Internals. The class Personal 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 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.

Source Code :

```
import CIE.Internals;
import SEE.External;
import java.util.Scanner;

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


        System.out.print("Enter number of students: ");
        int n = scanner.nextInt();
        scanner.nextLine();


        Internals[] cieStudents = new Internals[n];
        External[] seeStudents = new External[n];


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

            System.out.println("Enter details for CIE Student " + (i + 1) + ":
");
            System.out.print("USN: ");
            String usn = scanner.nextLine();
            System.out.print("Name: ");
            String name = scanner.nextLine();
            System.out.print("Semester: ");
            int sem = scanner.nextInt();
            int[] internalMarks = new int[5];
            System.out.println("Enter internal marks for 5 courses: ");
            for (int j = 0; j < 5; j++) {
                internalMarks[j] = scanner.nextInt();
            }
            cieStudents[i] = new Internals(usn, name, sem, internalMarks);
```

```
            scanner.nextLine();


            System.out.println("Enter details for SEE Student " + (i + 1) + ":
");
            System.out.print("USN: ");
            usn = scanner.nextLine();
            System.out.print("Name: ");
            name = scanner.nextLine();
            System.out.print("Semester: ");
            sem = scanner.nextInt();
            int[] externalMarks = new int[5];
            System.out.println("Enter external marks for 5 courses: ");
            for (int j = 0; j < 5; j++) {
                externalMarks[j] = scanner.nextInt();
            }
            seeStudents[i] = new External(usn, name, sem, externalMarks);
            scanner.nextLine();
        }


        System.out.println("\nFinal Marks for all students:");

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

            cieStudents[i].displayStudentDetails();
            cieStudents[i].displayInternalMarks();


            seeStudents[i].displayStudentDetails();
            seeStudents[i].displayExternalMarks();


            int[] internalMarks = cieStudents[i].getInternalMarks();
            int[] externalMarks = seeStudents[i].getExternalMarks();
            int[] finalMarks = new int[5];

            for (int j = 0; j < 5; j++) {
                finalMarks[j] = internalMarks[j] + externalMarks[j];
            }


            System.out.print("Final Marks: ");
            for (int mark : finalMarks) {
                System.out.print(mark + " ");
            }
            System.out.println("\n");
        }
```

```
        scanner.close();
    }
}
```

```
package CIE;

public class Internals extends Student {

    private int[] internalMarks = new int[5];


    public Internals(String usn, String name, int sem, int[] internalMarks) {
        super(usn, name, sem); // Call parent constructor
        this.internalMarks = internalMarks;
    }


    public void displayInternalMarks() {
        System.out.print("Internal Marks: ");
        for (int mark : internalMarks) {
            System.out.print(mark + " ");
        }
        System.out.println();
    }


    public int[] getInternalMarks() {
        return internalMarks;
    }
}
```

```
package CIE;

public class Student {

    protected String usn;
    protected String name;
    protected int sem;

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

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

```
package SEE;

import CIE.Student;

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

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

    public void displayExternalMarks() {
        System.out.print("External Marks: ");
        for (int mark : externalMarks) {
            System.out.print(mark + " ");
        }
        System.out.println();
    }

    public int[] getExternalMarks() {
        return externalMarks;
    }
}
```

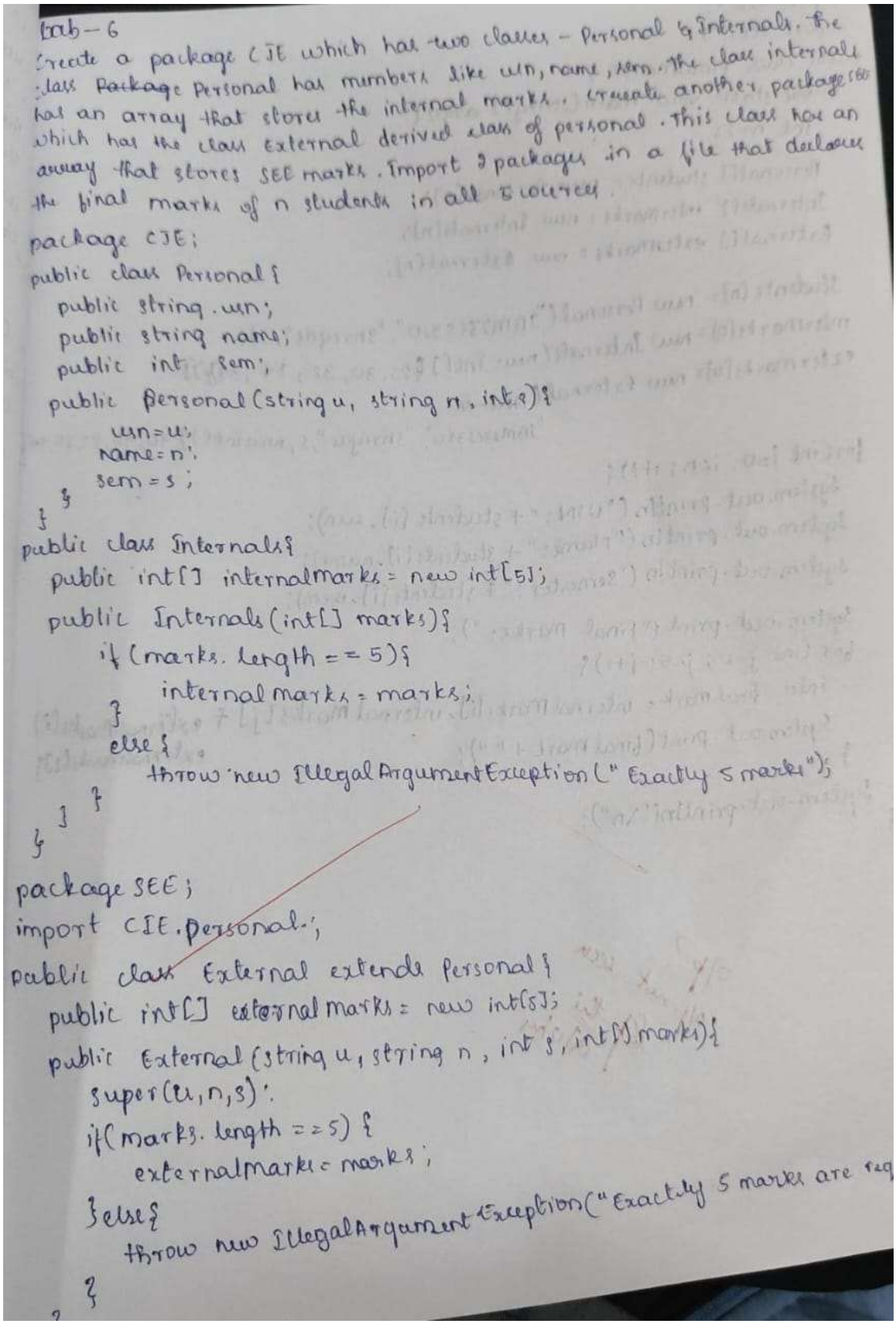
Output :

```
Enter number of students: 2
Enter details for CIE Student 1:
USN: 1
Name: sagar
Semester: 2
Enter internal marks for 5 courses:
38 40 41 45 46
Enter details for SEE Student 1:
USN: 1
Name: sagar
Semester: 2
Enter external marks for 5 courses:
39 42 45 50 48
Enter details for CIE Student 2:
USN: 2
Name: chetan
Semester: 3
Enter internal marks for 5 courses:
40 44 46 47 50
Enter details for SEE Student 2:
USN: 2
Name: chetan
Semester: 3
Enter external marks for 5 courses:
40 44 46 47 50

Final Marks for all students:
USN: 1, Name: sagar, Semester: 2
Internal Marks: 38 40 41 45 46
USN: 1, Name: sagar, Semester: 2
External Marks: 39 42 45 50 48
Final Marks: 77 82 86 95 94

USN: 2, Name: chetan, Semester: 3
Internal Marks: 40 44 46 47 50
USN: 2, Name: chetan, Semester: 3
External Marks: 40 44 46 47 50
Final Marks: 80 88 92 94 100
```

Written code and output:



Lab – 6

Create a package CIE which has two classes – Personal & Internals. The class Package Personal has members like usn, name, sem. The class internals has an array that stores the internal marks. Create another package SEE which has the class external derived class of personal. This class has an array that stores SEE marks. Import 2 packages in a file that declares the final marks of n students in all 5 courses.

```
package CIE;
public class Personal{
  public string usn;
  public string name;
  public int sem;
  public Personal(string u, string n, int s){
      usn=u;
      name=n;
      sem=s;
  }
}
public class Internals{
  public int[] internalmarks = new int[5];
  public Internals(int[] marks){
      if(marks.length==5){
          internalmarks=marks;
      }
      else{
          throw new IllegalArgumentException("Exactly 5 marks");
      }
  }
}
```

```
package SEE;
import CIE.Personal.*;
public class External extends Personal{
  public int[] externalmarks = new int[5];
  public External(string u, string n, int s, int[] marks){
      super(u,n,s);
      if(marks.length==5){
          externalmarks=marks;
      }else{
          throw new IllegalArgumentException("Exactly 5 marks are req
      }
```

```
import CIE.*;
import SEE.*;
public class finalmarks {
public static void main(String[] args) {
   int n=2;
  Personal[] students = new Personal[n];
  Internals[] intermarks = new Internals[n];
  External[] extermarks = new External[n];

  students[0]= new Personal("1BM23CS320", "shreyas",5);
  intermarks[0]= new Internals(new int[]{25, 30, 32 , 35 ,39});
  extermarks[0]= new External( ~~new in~~
                    "1BM23CS320", "shreyas",5, new int[]{70,

for(int i=0; i<n; i++){
  System.out.println("USN:" + students[i].usn);
  System.out.println("Name:" + students[i].name);
  System.out.println("Semester:" + students[i].usem);
  System.out.print("Final marks:");
  for(int j=0; j<5; j++){
    inte finalmark= internalmarks[i].internalmarks[j] + external
    System.out.print(finalmark + " ");
  }
System.out.println("\n");
}
```

external

o/p?
o/p not seen
by sir
19/2/24