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LAB-6

Internals

```
package CIE;

public class Internals {
    private int[] internalMarks = new int[5];

    public Internals() {
    }

    public void setInternalMarks(int[] internalMarks) {
        this.internalMarks = internalMarks;
    }

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

}
```

// Student

```
package CIE;

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

    public Student()
    {
        this("", "", 0);
    }

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

    public void setUsn(String usn)
    {
        this.usn = usn;
    }
    public void setName(String name)
    {
        this.name = name;
    }
```

```
public void setSem(int sem)
{
    this.sem = sem;
}

public String getUsn()
{
    return usn;
}

public String getName()
{
    return name;
}

public int getSem()
{
    return sem;
}
}
```

External

```
package SEE;

import CIE.Student;

public class External extends Student
{
    public int[] seeMarks = new int[5];
    public External()
    {
        this("", "", 0, new int[5]);
    }
    public External(String usn, String name,
                    int sem, int[] seeMarks)
    {
        super(usn, name, sem);
        this.seeMarks = seeMarks;
    }

    public void setSeeMarks(int[] seeMarks)
    {
        this.seeMarks = seeMarks;
    }
    public int[] getSeeMarks()
    {
        return seeMarks;
    }
}
```

Final Marks

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

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

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

  Student [] students = new Student[n];
  Internals [] internals = new Internals[n];
  External [] externals = new External[n];

  for(int i=0; i<n; i++)
  {
      students[i] = new Student();
      System.out.print("Enter USN for
                        Student " +
                        (i+1) + ":");
      students[i].setUsn(scanner.next());

      System.out.print("Enter name for
                        Student" + (i+1)
                        + ":");
      students[i].setName(scanner.
                          nextInt());
```

```
System.out.printf("Enter semester for student
        + (i+1) + " : ");
Students[i].setSem(scanner.nextInt());

internals[i] = new Internals();

internals[i].setInternalMarks(inputMarks
                    withValidation
                    ("internal",
                    i, scanner,
                    50));

externals[i].setSeeMarks(inputMarks
                    withValidation
                    ("external",
                    scanner, 0, 100));

int[] finalMarks = new int[5];
for(int j=0; j<5; j++)
{
    finalMarks[j] = internals[i].get
                    InternalMarks()[j] +
                    externals[i].
                    getSeeMarks()[j] /2;
}

System.out.println("Student " + (i+1) +
                "Final Marks: " +
                "finalMarks[0] " +
                "finalMarks[1] " +
                "finalMarks[2] " +
                "finalMarks[3] " +
                "finalMarks[4]");
```

```
    }
    scanner.close();
}

private static int[] inputMarksWithValidation
        (String type, int
         StudentIndex,
         Scanner scanner,
         int min, int max) {
    {
        int[] marks = new int[5];
        System.out.println("Enter " + type +
                " marks of Student
                + (StudentIndex
                + 1) + ": ");
        for (int i = 0; i < 5 ; i++) {
            int mark;
            do {
                System.out.println("Subject
                        + (i + 1) + ": ");

                mark = scanner.nextInt();
                if (mark < 0 || mark > max)
                {

                System.out.println("Invalid Input");
                }
                while (mark < 0 || mark > max);
                marks[i] = mark;
                }
        } return marks;
```

Output:

Enter the number of Students: 1
Enter USN for Student 1: 101
Enter name for Student 1: Nithya
Enter semester for Student 1: 2
Enter internal marks for Student 1:
Subject 1: 45
Subject 2: 44
Subject 3: 43
Subject 4: 42
Subject 5, 41
Enter external marks for Student 1:
Subject 1: 89
Subject 2: 88
Subject 3: 87
Subject 4: 88
Subject 5: 78
Student 1 Final Marks: 89, 88, 87, 88, 83

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