#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;
```

```java
        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

```java
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;
    }
}
```

#FinalMarks

```java
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);

        // Allow the user to enter the number of students
        System.out.print("Enter the number of students: ");
```

```java
int n = scanner.nextInt();


Student[] students = new Student[n];

Internals[] internals = new Internals[n];

External[] externals = new External[n];


// Initialize students, internals, and externals

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.next());


    System.out.print("Enter semester for student " + (i + 1) + ": ");

    students[i].setSem(scanner.nextInt());


    internals[i] = new Internals();

    // Assuming a simple method to input internal marks with validation

    internals[i].setInternalMarks(inputMarksWithValidation("internal", i, scanner, 0, 50));


    externals[i] = new External(students[i].getUsn(), students[i].getName(), students[i].getSem(), new int[5]);

    // Assuming a simple method to input external marks with validation

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


    // Calculate final marks for the ith student and display

    int[] finalMarks = new int[5];

    for (int j = 0; j < 5; j++) {

        finalMarks[j] = internals[i].getInternalMarks()[j] + externals[i].getSeeMarks()[j] / 2;
```

```java
        }

        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 for student " + (studentIndex + 1) + ": ");
    for (int i = 0; i < 5; i++) {
        int mark;
        do {
            System.out.print("Subject " + (i + 1) + ": ");
            mark = scanner.nextInt();
            if (mark < 0 || mark > max) {
                System.out.println("Invalid input. " + type + " marks should be between 0 and " + max + ". Please try again.");
            }
        } while (mark < 0 || mark > max);
        marks[i] = mark;
    }
    return marks;
}
}
```

OUTPUT:

```
Windows PowerShell
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PS C:\Users\bmsce\Desktop\PACKAGE> javac -d C:\Users\bmsce\Desktop\PACKAGE FinalMarks.java
PS C:\Users\bmsce\Desktop\PACKAGE> java FinalMarks
Enter the number of students: 2
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, 86, 86, 80
Enter USN for student 2: 102
Enter name for student 2: Pooja
Enter semester for student 2: 2
Enter internal marks for student 2:
Subject 1: 43
Subject 2: 44
Subject 3: 39
Subject 4: 44
Subject 5: 44
Enter external marks for student 2:
Subject 1: 98
Subject 2: 88
Subject 3: 99
Subject 4: 89
Subject 5: 89
Student 2 Final Marks: 92, 88, 88, 88, 88
PS C:\Users\bmsce\Desktop\PACKAGE>
```