PARVATHAM RAM CHARAN

Assignment -3

Solve using both else if ladder and switch considering all input validations:

1. Grading System

Problem Statement:

Write a program that takes a student's percentage as input and assigns a grade based on the following criteria:

90% and above → A

80% to 89% → B

70% to 79% → C

60% to 69% → D

Below 60% → F

Code:

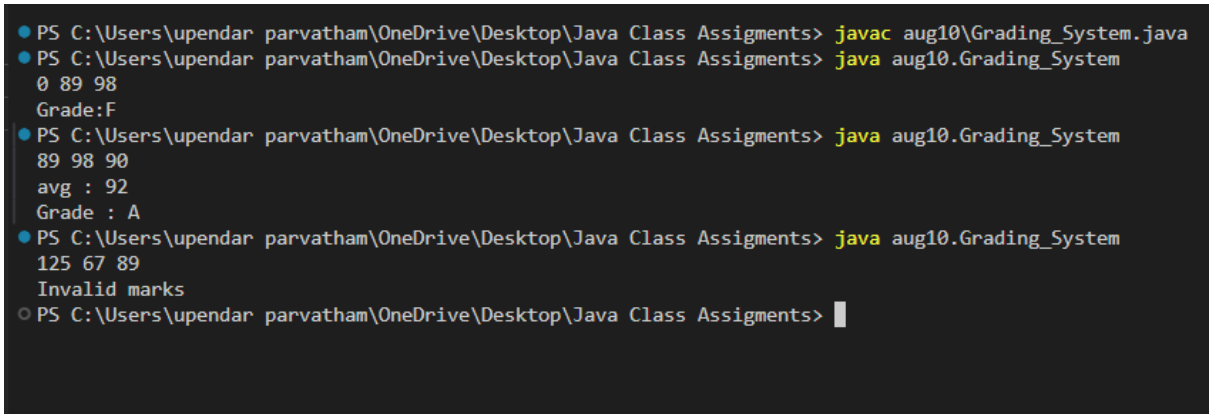
```
package aug10;


import java.util.*;


public class Grading_System {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int m1 = scanner.nextInt();
      int m2 = scanner.nextInt();
      int m3 = scanner.nextInt();
      if ((m1 < 0 || m1 > 100) ||
            (m2 < 0 || m2 > 100) ||
            (m3 < 0 || m3 > 100)) {
         System.out.println("Invalid marks");
         return;
      }
      if (m1 <= 60 || m2 <= 60 || m3 <= 60) {
         System.out.println("Grade:F");
```

```
            return;
        }
        int avg = (m1 + m2 + m3) / 3;
        System.out.println("avg : " + avg);
        switch (avg / 10) {
            case 10:
            case 9:
                System.out.println("Grade : A");
                break;
            case 8:
                System.out.println("Grade : B");
                break;
            case 7:
                System.out.println("Grade : C");
                break;
            case 6:
                System.out.println("Grade : D");
            default:
                System.out.println("Fail : F");
                break;
        }

    }
}
```



// 2. Electricity Bill Calculation

// Problem Statement:

// Write a program that calculates the electricity bill based on the number

// of units consumed. The charges per unit are:

// Up to 100 units: ₹5 per unit

// 101 to 200 units: ₹6 per unit

// 201 to 300 units: ₹7 per unit

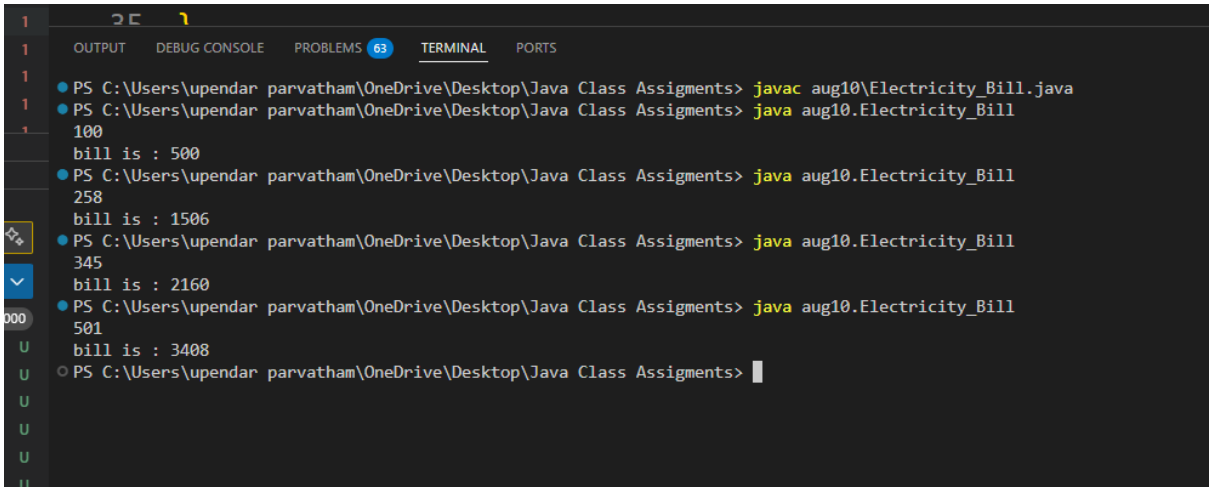
// Above 300 units: ₹8 per unit

Code:

```
package aug10;
import java.util.*;
public class Electricity_Bill {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int units = scanner.nextInt();
      if (units < 0 || units > 1000) {
         System.out.println("Invalid");
         return;
      }
      int bill = 0;
      switch (units / 100) {
```

```
            case 0:
                bill = units * 5;
                break;
            case 1:
                bill = (100 * 5) + (units - 100) * 6;
                break;
            case 2:
                bill = (100 * 5) + (100 * 6) + ((units - 200) * 7);
                break;
            default:
                bill = (100 * 5) + (100 * 6) + (100 * 7) + ((units - 300) * 8);
        }
        System.out.println("bill is : " + bill);
    }
}
```

Output:



3. // 3. Income Tax Calculation

// Problem Statement:

// Write a program that calculates the income tax payable based on the annual salary:

// Income ≤ ₹2,50,000 → No tax

```
// ₹2,50,001 to ₹5,00,000 → 5% tax
// ₹5,00,001 to ₹10,00,000 → 20% tax
// Above ₹10,00,000 → 30% tax
package aug10;

import java.util.*;

public class Income_Tax {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int income = scanner.nextInt();
        double tax = 0.0;
        int slab;
        if (income <= 250000)
            slab = 0;
        else if (income <= 500000)
            slab = 1;
        else if (income <= 1000000)
            slab = 2;
        else
            slab = 3;

        switch (slab) {
            case 0:
                tax = 0.0;
                break;
            case 1:
                tax = (income - 250000) * 0.05;
                break;
            case 2:
                tax = (250000 * 0.05) + (income - 500000) * 0.20;
```

```
            break;
        case 3:
            tax = (250000 * 0.05) + (500000 * 0.20) + (income - 1000000) * 0.30;
            break;
    }
    System.out.println("Income : " + income);
    System.out.println("Tax Payable : " + tax);

  }
}
```

Output: