

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;
    }

}

}
```

```

● PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> javac aug10\Grading_System.java
● PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Grading_System
0 89 98
Grade:F
● PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Grading_System
89 98 90
avg : 92
Grade : A
● PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Grading_System
125 67 89
Invalid marks
○ PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments>

```

// 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:

```

1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> javac aug10\Electricity_Bill.java
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Electricity_Bill
1  100
1  bill is : 500
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Electricity_Bill
1  150
1  bill is : 258
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Electricity_Bill
1  216
1  bill is : 345
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Electricity_Bill
1  345
1  bill is : 2160
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Electricity_Bill
1  501
1  bill is : 3408
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments>

```

### 3. // 3. Income Tax Calculation

// Problem Statement:

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

// Income  $\leq$  ₹2,50,000  $\rightarrow$  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);

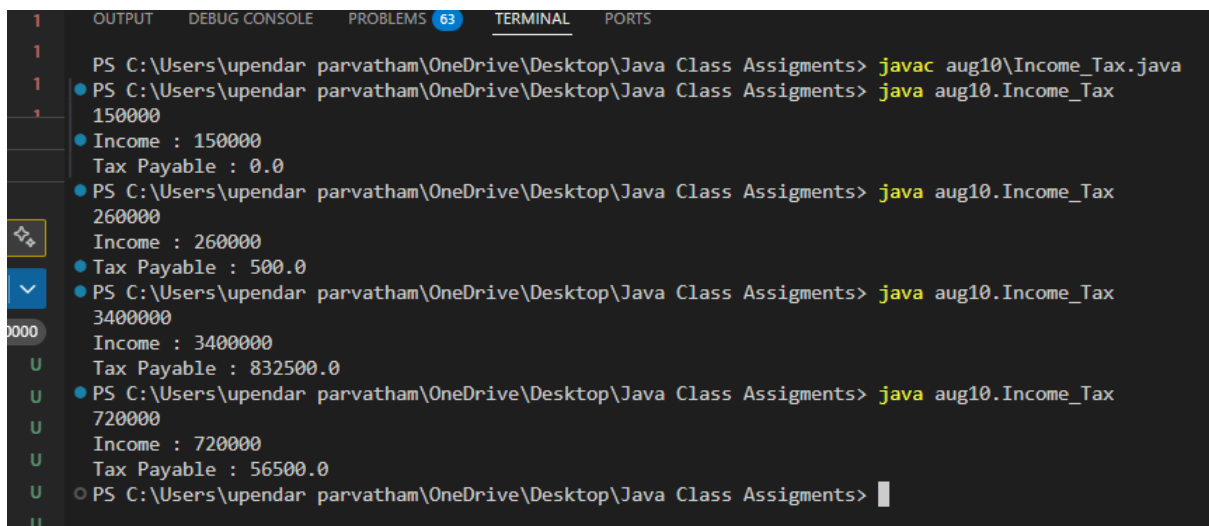
    System.out.println("Tax Payable : " + tax);

}

}

```

Output:



```

1  OUTPUT  DEBUG CONSOLE  PROBLEMS 63  TERMINAL  PORTS
1
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> javac aug10\Income_Tax.java
1  PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Income_Tax
1  150000
Income : 150000
Tax Payable : 0.0
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Income_Tax
260000
Income : 260000
Tax Payable : 500.0
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Income_Tax
3400000
Income : 3400000
Tax Payable : 832500.0
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments> java aug10.Income_Tax
720000
Income : 720000
Tax Payable : 56500.0
PS C:\Users\upendar parvatham\OneDrive\Desktop\Java Class Assignments>

```