C-DAC Mumbai

Lab Assignment: 2

Problem 1: Grade Evaluation System

Problem Statement:

Write a Java program that calculates the average marks of a student and determines the grade based on the following criteria:

Grade A: Average marks ≥ 90

Grade B: Average marks between 70 and 89

Grade C: Average marks between 50 and 69

Grade D: Average marks between 30 and 49

Fail: Average marks < 30

Predefined Values (Try with different values as well):

- Marks in Maths = 80
- Marks in Science = 85
- Marks in History = 90

Expected Output:

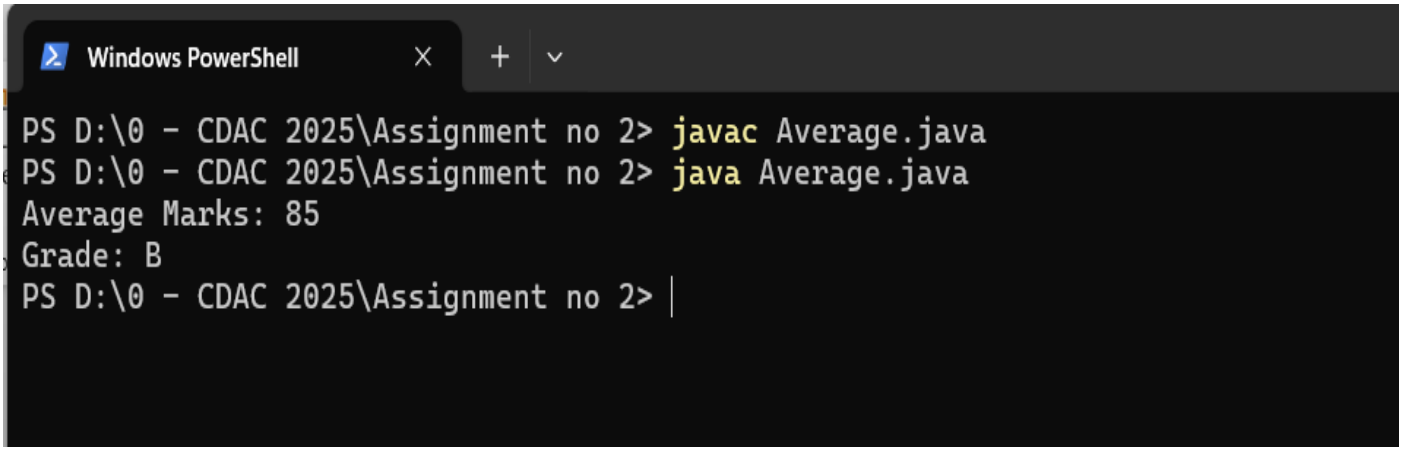
Average Marks: 85

Grade: B

Average.java

```java
class Average {
    public static void main(String args[])
    {
        int maths = 80;
        int science = 85;
        int history = 90;

        int average = (maths + science + history) / 3;


        System.out.println("Average Marks: " + average);


        if (average >= 90)
        {
            System.out.println("Grade: A");
        }
        else if (average >= 70 && average <= 89)
        {
            System.out.println("Grade: B");
        }
        else if (average >= 50 && average <= 69)
        {
            System.out.println("Grade: C");
        }
        else if (average >= 30 && average <= 49)
        {
            System.out.println("Grade: D");
        }
        else
        {
            System.out.println("Fail");
        }
    }
}
```

Output:



Problem 2: Leap Year

Problem Statement:

Write a Java program that checks whether the year is a leap year or not. A year is a leap year if:

It is divisible by 4, but not divisible by 100, orIt is divisible by 400.

Predefined Value (Try with different values as well):

- Year = 2024
- Year = 1900

Expected Output:

2024 is a leap year.

1900 is not a leap year.

Average.java LeapYear.java

```java
public class LeapYear {
    public static void main(String[] args)
    {
        int year1 = 2024;
        int year2 = 1900;


        if ((year1 % 4 == 0 && year1 % 100 != 0) || (year1 % 400 == 0))
        {
            System.out.println(year1 + " is a leap year.");
        }
        else
        {
            System.out.println(year1 + " is not a leap year.");
        }


        if ((year2 % 4 == 0 && year2 % 100 != 0) || (year2 % 400 == 0))
        {
            System.out.println(year2 + " is a leap year.");
        }
        else
        {
            System.out.println(year2 + " is not a leap year.");
        }
    }
}

```

Output:

```
Windows PowerShell
PS D:\0 - CDAC 2025\Assignment no 2> javac LeapYear.java
PS D:\0 - CDAC 2025\Assignment no 2> java LeapYear.java
2024 is a leap year.
1900 is not a leap year.
PS D:\0 - CDAC 2025\Assignment no 2>
```

Problem 3: Days of the Week

Problem Statement:

Write a Java program that takes an integer between 1 and 7 and prints the corresponding day of the week using a switch-case statement. If the input is outside the range of 1 to 7, the program should display "Invalid day number".

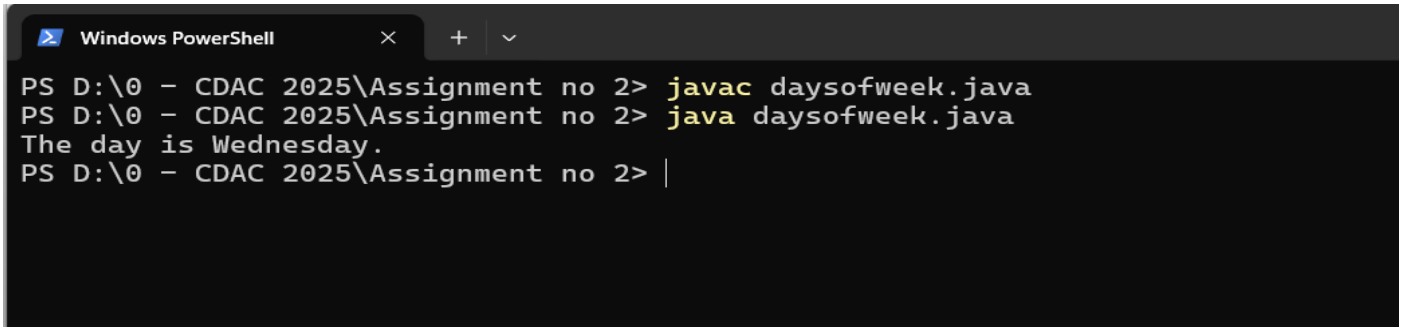
Predefined Value:

Day number = 3

Expected Output:

The day is Wednesday.

```java
public class daysofweek
{
    public static void main(String[] args)
    {
        int daynum = 3;

        switch (daynum)
        {
            case 1:
                System.out.println("The day is Monday.");
                break;

            case 2:
                System.out.println("The day is Tuesday.");
                break;

            case 3:
                System.out.println("The day is Wednesday.");
                break;

            case 4:
                System.out.println("The day is Thursday.");
                break;

            case 5:
                System.out.println("The day is Friday.");
                break;

            case 6:
                System.out.println("The day is Saturday.");
                break;

            case 7:
                System.out.println("The day is Sunday.");
                break;

            default:
                System.out.println("Invalid day number.");
        }
    }
}
```



Problem 4: Identify the Values of Uninitialized Variables

Scenario:
You are working on a program that handles different data types. Your manager has asked you to quickly check the values of various variables, but you're in a rush and forget to initialize them. As you go through the code, you expect some values to show up, but Java has something else in mind. Your task is to fix the issue and ensure the variables hold proper values.

Instructions:

1. **Declare the following variables:**
   byte a;
   short b;
   int c;
   long d;
   float e;
   double f;
   char g;
   boolean h;

2. **Print out their values.**

UninitializedValues.java

```java
public class UninitializedValues {
    public static void main(String[] args) {

        byte a = 0;
        short b = 0;
        int c = 0;
        long d = 0L;
        float e = 0.0f;
        double f = 0.0;
        char g = ' ';
        boolean h = false;

        System.out.println("byte = " + a);

        System.out.println("short = " + b);

        System.out.println("int = " + c);

        System.out.println("long = " + d);

        System.out.println("float = " + e);

        System.out.println("double = " + f);

        System.out.println("char = '" + g + "'");

        System.out.println("boolean = " + h);
    }
}
```

Windows PowerShell

```
PS D:\0 - CDAC 2025\Assignment no 2> javac UninitializedValues.java
PS D:\0 - CDAC 2025\Assignment no 2> java UninitializedValues.java
byte = 0
short = 0
int = 0
long = 0
float = 0.0
double = 0.0
char = ' '
boolean = false
PS D:\0 - CDAC 2025\Assignment no 2>
```