

C-DAC Mumbai

Lab Assignment

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

The screenshot shows a Java IDE with a file named `Grade.java` and a command prompt window. The Java code defines a `Grade` class with a `main` method that calculates the average of three marks (Maths, Science, History) and determines the grade based on the criteria specified in the problem statement. The command prompt shows the execution of the program with the predefined values (80, 85, 90), resulting in an average of 85 and a grade of B.

```
1 public class Grade{
2     public static void main(String[] args){
3         int maths = 80;
4         int science = 85;
5         int english = 90;
6
7         double average = (maths + science + english) / 3.0;
8
9         char grade;
10        if (average >= 90){
11            grade = 'A';
12        } else if (average >= 70){
13            grade = 'B';
14        } else if (average >= 50){
15            grade = 'C';
16        } else if (average >= 30){
17            grade = 'D';
18        } else {
19            grade = 'F';
20        }
21
22        System.out.println(" average marks: " + average);
23        if (grade == 'F') {
24            System.out.println("grade: fail");
25        } else {
26            System.out.println("grade:" + grade);
27        }
28    }
29 }
30
31
32
```

Microsoft Windows [Version 10.0.26100.4946]
(c) Microsoft Corporation. All rights reserved.

C:\Users\PC\OneDrive\Documents>javac Grade.java
Grade.java:26: error: cannot find symbol
 System.out.orientln("grade:" + average);
 ^
symbol: method orientln(String)
location: variable out of type PrintStream
1 error

C:\Users\PC\OneDrive\Documents>javac grade.java

C:\Users\PC\OneDrive\Documents>java Grade
average marks: 71.33333333333333
grade:71.33333333333333

C:\Users\PC\OneDrive\Documents>javac grade.java

C:\Users\PC\OneDrive\Documents>java grade
Error: Could not find or load main class grade
Caused by: java.lang.NoClassDefFoundError: grade (wrong name: Grade)

C:\Users\PC\OneDrive\Documents>javac Grade.java

C:\Users\PC\OneDrive\Documents>java Grade
average marks: 71.33333333333333
grade:B

C:\Users\PC\OneDrive\Documents>

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, **or**
It 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.

```
C:\Users\PC\OneDrive\Documents\Leap.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Best.java Check.java One.java Grade.java Leap.java X
1 public class Leap{
2     public static void main(String[] args){
3
4         int year1 = 2024;
5         int year2 = 1900;
6
7         checkLeap(year1);
8         checkLeap(year2);
9
10    }
11
12    public static void checkLeap(int year){
13
14        if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
15            System.out.println(year + " is a leap year");
16        } else {
17            System.out.println(year + " is not a leap year.");
18        }
19    }
20 }
21

Java Console
8 errors
>>> ERROR: Failed to compile file "Leap.java", exit code = 1
>>> INFO: Compiling File "Leap.java"...
>>> SUCCESS: File "Leap.java" compiled successfully.
>>> INFO: Running File "Leap.java" in command prompt...
>>> SUCCESS: Executed java file "C:\Users\PC\OneDrive\Documents\Leap.class"

C:\Windows\System32\cmd.exe
Leap.java:14: error: ';' expected
        if ((year % 4 == 0 && year 100 != 0) || ( year % 400 =
= 0 )) {
        ^
Leap.java:15: error: ')' or ',' expected
        System.out.println(+year " is a leap year");
                           ^
Leap.java:17: error: ')' or ',' expected
        System.out.println(+year " is not a leap year.
");
                           ^
Leap.java:16: error: 'else' without 'if'
        } else {
        ^
8 errors

C:\Users\PC\OneDrive\Documents>javac Leap.java

C:\Users\PC\OneDrive\Documents>java leap
Error: Could not find or load main class leap
Caused by: java.lang.NoClassDefFoundError: leap (wrong name: Leap)

C:\Users\PC\OneDrive\Documents>java Leap
2024 is a leap year
1900 is not a leap year.

C:\Users\PC\OneDrive\Documents>
```

Problem 3: Days of the Week

Problem Statement:

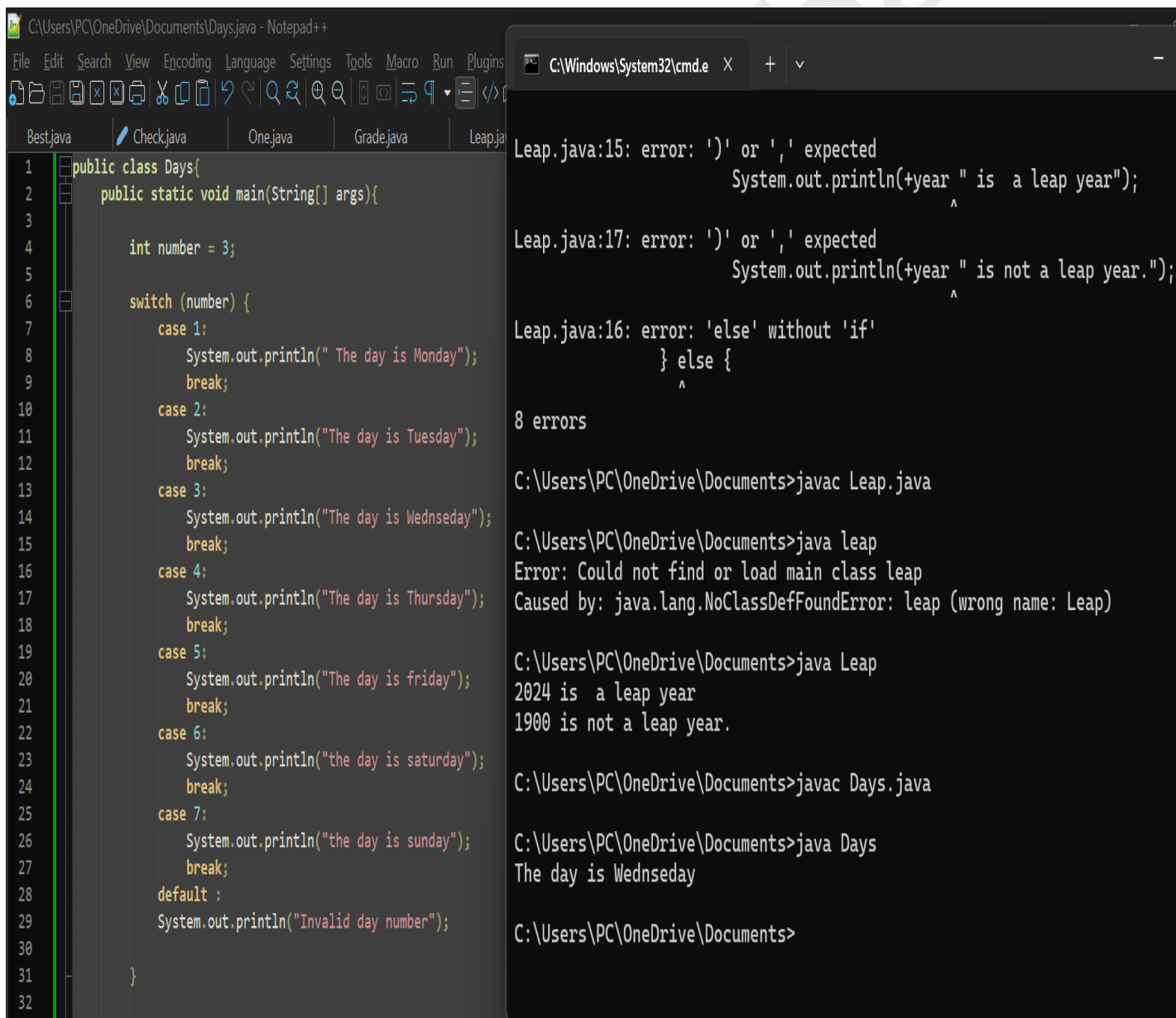
Write a Java program that takes an integer between 1 and 7 and prints the corresponding day of the week using a switch-case statement. If the input is outside the range of 1 to 7, the program should display "Invalid day number".

Predefined Value:

Day number = 3

Expected Output:

The day is Wednesday.



The image shows a screenshot of a code editor (Notepad++) and a command prompt window. The code editor displays the following Java code:

```
1 public class Days{
2     public static void main(String[] args){
3
4         int number = 3;
5
6         switch (number) {
7             case 1:
8                 System.out.println(" The day is Monday");
9                 break;
10            case 2:
11                System.out.println("The day is Tuesday");
12                break;
13            case 3:
14                System.out.println("The day is Wednesday");
15                break;
16            case 4:
17                System.out.println("The day is Thursday");
18                break;
19            case 5:
20                System.out.println("The day is friday");
21                break;
22            case 6:
23                System.out.println("the day is saturday");
24                break;
25            case 7:
26                System.out.println("the day is sunday");
27                break;
28            default :
29                System.out.println("Invalid day number");
30
31        }
32    }
```

The command prompt window shows the following output:

```
C:\Windows\System32\cmd.e X + v
Leap.java:15: error: ')' or ',' expected
        System.out.println(+year " is a leap year");
                           ^
Leap.java:17: error: ')' or ',' expected
        System.out.println(+year " is not a leap year.");
                           ^
Leap.java:16: error: 'else' without 'if'
        } else {
          ^
8 errors
C:\Users\PC\OneDrive\Documents>javac Leap.java
C:\Users\PC\OneDrive\Documents>java leap
Error: Could not find or load main class leap
Caused by: java.lang.NoClassDefFoundError: leap (wrong name: Leap)
C:\Users\PC\OneDrive\Documents>java Leap
2024 is a leap year
1900 is not a leap year.
C:\Users\PC\OneDrive\Documents>javac Days.java
C:\Users\PC\OneDrive\Documents>java Days
The day is Wednesday
C:\Users\PC\OneDrive\Documents>
```

Problem 4: Identify the Values of Uninitialized Variables

Scenario:

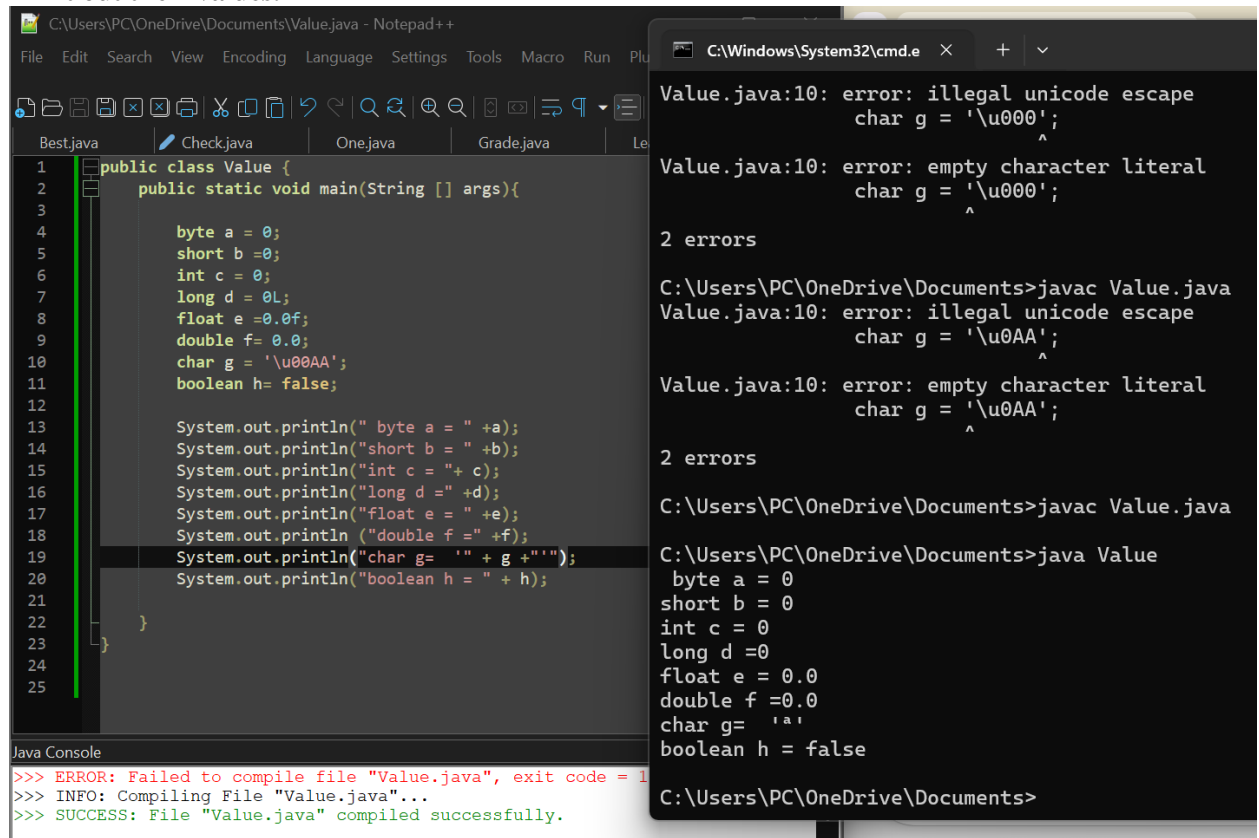
You are working on a program that handles different data types. Your manager has asked you to quickly check the values of various variables, but you're in a rush and forget to initialize them. As you go through the code, you expect some values to show up, but Java has something else in mind. Your task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



```
C:\Users\PC\OneDrive\Documents\Value.java - Notepad++  
File Edit Search View Encoding Language Settings Tools Macro Run Plu  
Best.java Check.java One.java Grade.java Le  
1 public class Value {  
2     public static void main(String [] args){  
3  
4         byte a = 0;  
5         short b = 0;  
6         int c = 0;  
7         long d = 0L;  
8         float e = 0.0f;  
9         double f = 0.0;  
10        char g = '\u00AA';  
11        boolean h = false;  
12  
13        System.out.println(" byte a = " + a);  
14        System.out.println("short b = " + b);  
15        System.out.println("int c = " + c);  
16        System.out.println("long d = " + d);  
17        System.out.println("float e = " + e);  
18        System.out.println("double f = " + f);  
19        System.out.println("char g=  " + g + "");  
20        System.out.println("boolean h = " + h);  
21  
22    }  
23 }  
24  
25  
Java Console  
>>> ERROR: Failed to compile file "Value.java", exit code = 1  
>>> INFO: Compiling File "Value.java"...  
>>> SUCCESS: File "Value.java" compiled successfully.  
  
C:\Windows\System32\cmd.e X + v  
Value.java:10: error: illegal unicode escape  
char g = '\u000';  
          ^  
Value.java:10: error: empty character literal  
char g = '\u000';  
          ^  
2 errors  
C:\Users\PC\OneDrive\Documents>javac Value.java  
Value.java:10: error: illegal unicode escape  
char g = '\u0AA';  
          ^  
Value.java:10: error: empty character literal  
char g = '\u0AA';  
          ^  
2 errors  
C:\Users\PC\OneDrive\Documents>javac Value.java  
C:\Users\PC\OneDrive\Documents>java Value  
byte a = 0  
short b = 0  
int c = 0  
long d = 0  
float e = 0.0  
double f = 0.0  
char g= 'a'  
boolean h = false  
C:\Users\PC\OneDrive\Documents>
```