ASSINGMENT-1

(OOPJ)

1. Create a program that declares and initializes all primitive data types in Java and prints their default and assigned values.

```java
public class PrimitiveDataTypes{
public static void main(String[] args){
boolean booleanVar = true;
char charVar = 'A';
byte byteVar = 10;
short shortVar = 20;
int intVar = 30;
long longVar = 40L;
float floatVar = 3.14f;
double doubleVar = 6.28;

boolean defaultBoolean = false;
char defaultChar = '\u0000';
byte defaultByte = 0;
short defaultShort = 0;
int defaultInt = 0;
long defaultLong = 0;
float defaultFloat = 0.0f;
double defaultDouble = 0.0;

System.out.println("Default values of primitive data types: ");
System.out.println("boolean: " + defaultBoolean);
System.out.println("char: " + defaultChar);
System.out.println("byte: " + defaultByte);
System.out.println("short: " + defaultShort);
System.out.println("int: " + defaultInt);
System.out.println("long: " + defaultLong);
System.out.println("float: " + defaultFloat);
System.out.println("double: " + defaultDouble);

System.out.println("\nAssigned values of primitve data types:");
System.out.println("boolean: " + booleanVar);
System.out.println("char: " + charVar);
System.out.println("byte: " + booleanVar);
System.out.println("short: " + shortVar);
System.out.println("int: " + intVar);
System.out.println("long: " + longVar);
System.out.println("float: " + floatVar);
}
}
```

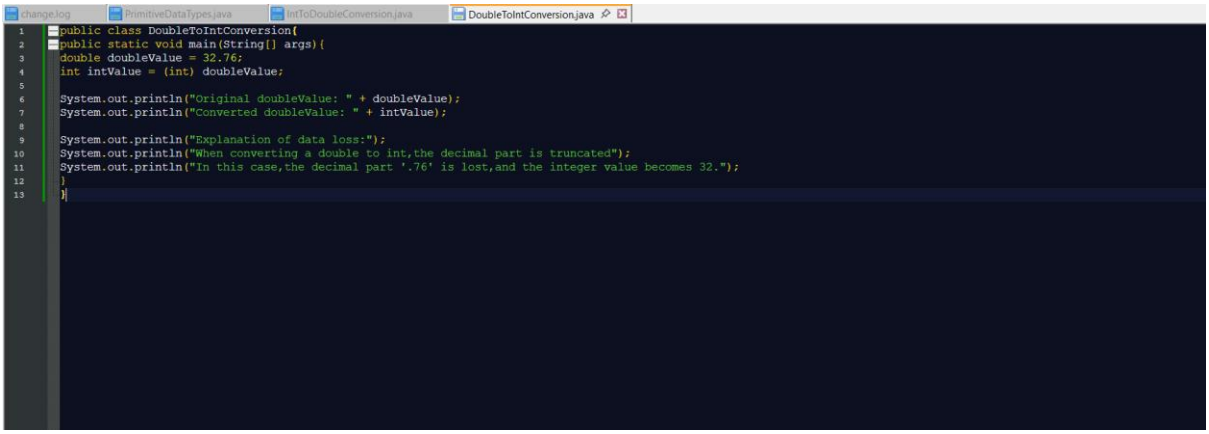
```
C:\Windows\System32\cmd.e

C:\Users\HP\Documents>java  PrimitiveDatatypes
Error: Could not find or load main class PrimitiveDatatypes
Caused by: java.lang.NoClassDefFoundError: PrimitiveDataTypes (wrong name: PrimitiveDatatypes)

C:\Users\HP\Documents>javac PrimitiveDatatypes.java

C:\Users\HP\Documents>javac PrimitiveDataTypes.java

C:\Users\HP\Documents>java PrimitiveDataTypes
Default values of primitive data types:
boolean: false
char:
byte: 0
short: 0
int: 0
long: 0
float: 0.0
double: 0.0

Assigned values of primitve data types:
boolean: true
char: A
byte: true
short: 20
int: 30
long: 40
float: 3.14

C:\Users\HP\Documents>
```

2. Write a program to convert an int value to double automatically and display both values

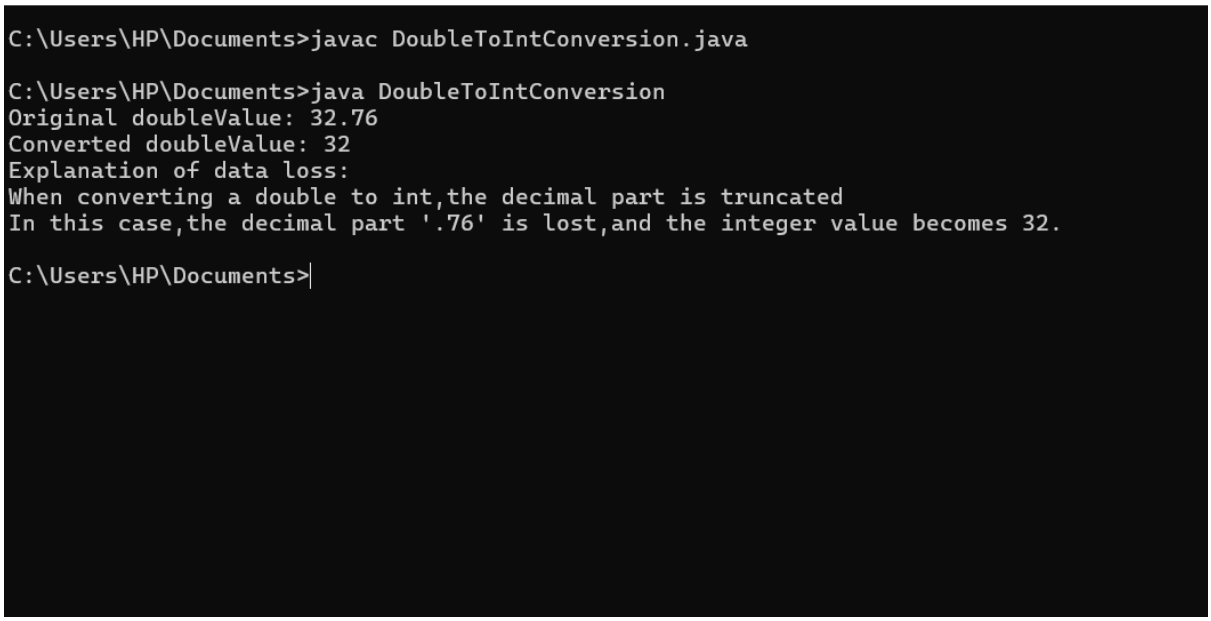
```java
public class IntToDoubleConversion{
public static void main(String[] args){
int intValue = 42;

double doubleValue = intValue;

System.out.println("Integer value: " + intValue);
System.out.println("Converted double value: " + doubleValue);
}
}
```

```
C:\Users\HP\Documents>javac IntToDoubleConversion.java

C:\Users\HP\Documents>java IntToDoubleConversion
Integer value: 42
Converted double value: 42.0

C:\Users\HP\Documents>
```

3. Write a program to convert a double value to int using typecasting and explain the data loss.



```java
public class DoubleToIntConversion{
public static void main(String[] args){
double doubleValue = 32.76;
int intValue = (int) doubleValue;

System.out.println("Original doubleValue: " + doubleValue);
System.out.println("Converted doubleValue: " + intValue);

System.out.println("Explanation of data loss:");
System.out.println("When converting a double to int,the decimal part is truncated");
System.out.println("In this case,the decimal part '.76' is lost,and the integer value becomes 32.");
}
}
```



```
C:\Users\HP\Documents>javac DoubleToIntConversion.java

C:\Users\HP\Documents>java DoubleToIntConversion
Original doubleValue: 32.76
Converted doubleValue: 32
Explanation of data loss:
When converting a double to int,the decimal part is truncated
In this case,the decimal part '.76' is lost,and the integer value becomes 32.

C:\Users\HP\Documents>
```

4. Write a program to calculate the average of three int numbers using typecasting to display the result in double.

change.log | PrimitiveDataTypes.java | IntToDoubleConversion.java | DoubleToIntConversion.java | AverageCalculator.java

```java
public class AverageCalculator{
public static void main(String[] args){
int num1 = 10;
int num2 = 20;
int num3 = 30;

int sum = num1 + num2 + num3;

double average = (double) sum/3;

System.out.println("The average of " + num1 + ", " + num2 + ", and " + num3 + " is: " + average);
}
}
```

```
C:\Users\HP\Documents>javac AverageCalculator.java

C:\Users\HP\Documents>java AverageCalculator
The average of 10, 20, and 30 is: 20.0

C:\Users\HP\Documents>
```

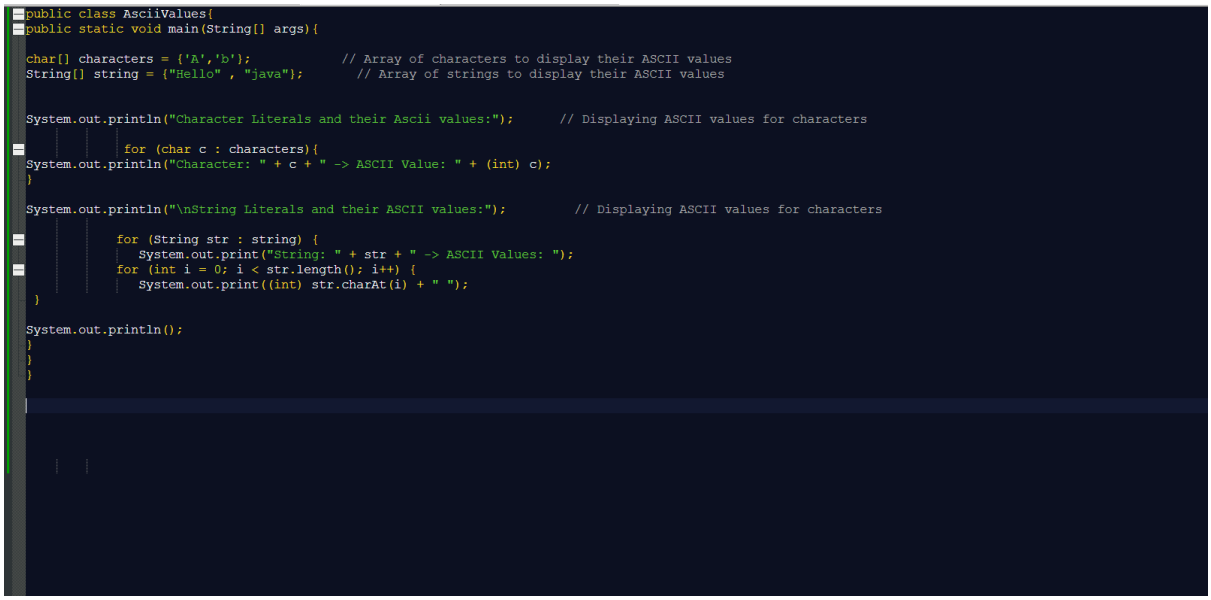
5. Write a program to demonstrate binary, octal, hexadecimal, and floating-point literals in Java.

change.log | PrimitiveDataTypes.java | IntToDoubleConversion.java | DoubleToIntConversion.java | AverageCalculator.j

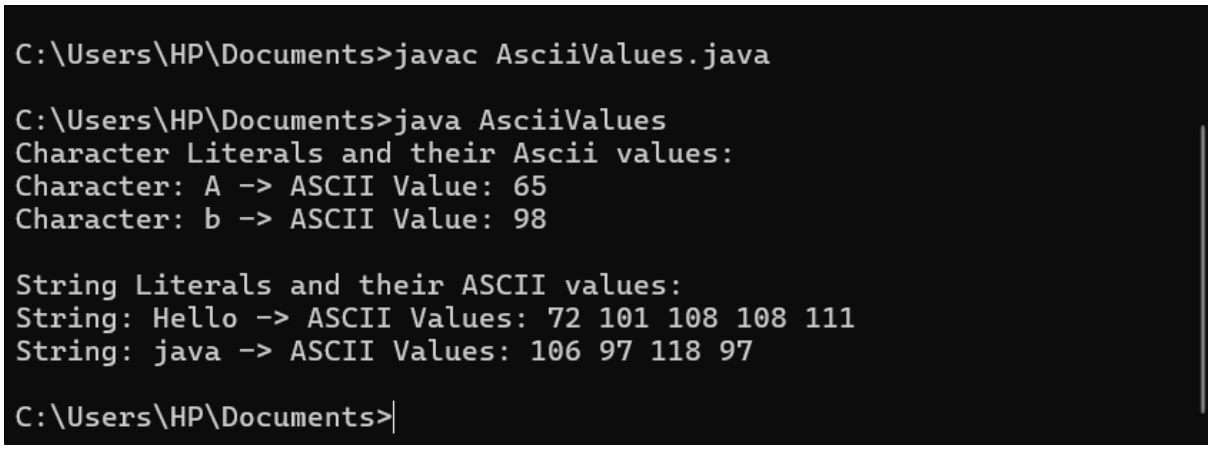
```java
public class LiteralsDemo{
public static void main(String[] args){
int binaryValue = 0b1011;
System.out.println("Binary Literal (0b1011) = " + binaryValue);

int octalValue = 011;
System.out.println("Octal Literal (011) = " + octalValue);

int hexValue = 0x1F;
System.out.println("Hexadecimal Literal (0x1F) = " + hexValue);

float floatValue = 3.14f;
double doubleValue = 3.14159;

System.out.println("Floating-point Literal (3.14) = " + floatValue);
System.out.println("Floating-point Literal (3.14159) = " + doubleValue);
}
}
```

```
C:\Users\HP\Documents>javac  LiteralsDemo.java

C:\Users\HP\Documents>java  LiteralsDemo
Binary Literal (0b1011) = 11
Octal Literal (011) = 9
Hexadecimal Literal (0x1F) = 31
Floating-point Literal (3.14) = 3.14
Floating-point Literal (3.14159) = 3.14159

C:\Users\HP\Documents>
```

6. Write a program to display character and string literals along with their ASCII values.



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

char[] characters = {'A','b'};            // Array of characters to display their ASCII values
String[] string = {"Hello" , "java"};       // Array of strings to display their ASCII values


System.out.println("Character Literals and their Ascii values:");      // Displaying ASCII values for characters

           for (char c : characters){
System.out.println("Character: " + c + " -> ASCII Value: " + (int) c);
}

System.out.println("\nString Literals and their ASCII values:");         // Displaying ASCII values for characters

           for (String str : string) {
              System.out.print("String: " + str + " -> ASCII Values: ");
           for (int i = 0; i < str.length(); i++) {
              System.out.print((int) str.charAt(i) + " ");
 }

System.out.println();
}
}
}
```



```
C:\Users\HP\Documents>javac AsciiValues.java

C:\Users\HP\Documents>java AsciiValues
Character Literals and their Ascii values:
Character: A -> ASCII Value: 65
Character: b -> ASCII Value: 98

String Literals and their ASCII values:
String: Hello -> ASCII Values: 72 101 108 108 111
String: java -> ASCII Values: 106 97 118 97

C:\Users\HP\Documents>
```

7. Write a program that uses boolean literals to control program flow in an if-else statement.

ArithmeticOperations.java | AsciiValues.java | new 1 | new 2 | BooleanControlFlow.java

```java
public class BooleanControlFlow{
public static void main (String[] args){
boolean isRainy = true;
boolean isSunny = false;
if (isRainy){
    System.out.println("It's rainy,take an umbrella!");
    }
    else {
    System.out.println("It's not rainy,enjoy!");
    }
    if (isSunny) {
    System.out.println("It's sunny ,go outside!");
    }else{
    System.out.println("It's not sunny ,stay inside!");
    }
    }
    }
```

```
C:\Users\HP\Documents>javac BooleanControlFlow.java

C:\Users\HP\Documents>java BooleanControlFlow
It's rainy,take an umbrella!
It's not sunny ,stay inside!

C:\Users\HP\Documents>
```

8. Write a program to perform addition, subtraction, multiplication, division, and modulus operations on two integer numbers and display the results.

change.log | PrimitiveDataTypes.java | IntToDoubleConversion.java | DoubleToIntConversion.java | AverageCalculator.java | LiteralsDemo.java | ArithmeticOperations.java

```java
public class ArithmeticOperations{
public static void main(String[] args){
 int num1 = 50;
 int num2 = 25;

 int sum = num1 + num2;
 System.out.println("Addition: " + num1 + " + " + num2 + " = " + sum);

 int difference = num1 - num2;
 System.out.println("Subtraction: " + num1 + " - " + num2 + " = " + difference);

 int product = num1 * num2;
 System.out.println("Multiplication: " + num1 + " * " + num2 + " = " + product);

 int quotient = num1 / num2;
 System.out.println("Division: " + num1 + " / " + num2 + " = " + quotient);

 int remainder = num1 % num2;
 System.out.println("Modulus: " + num1 + " % " + num2 + " = " + remainder);
 }
 }
```

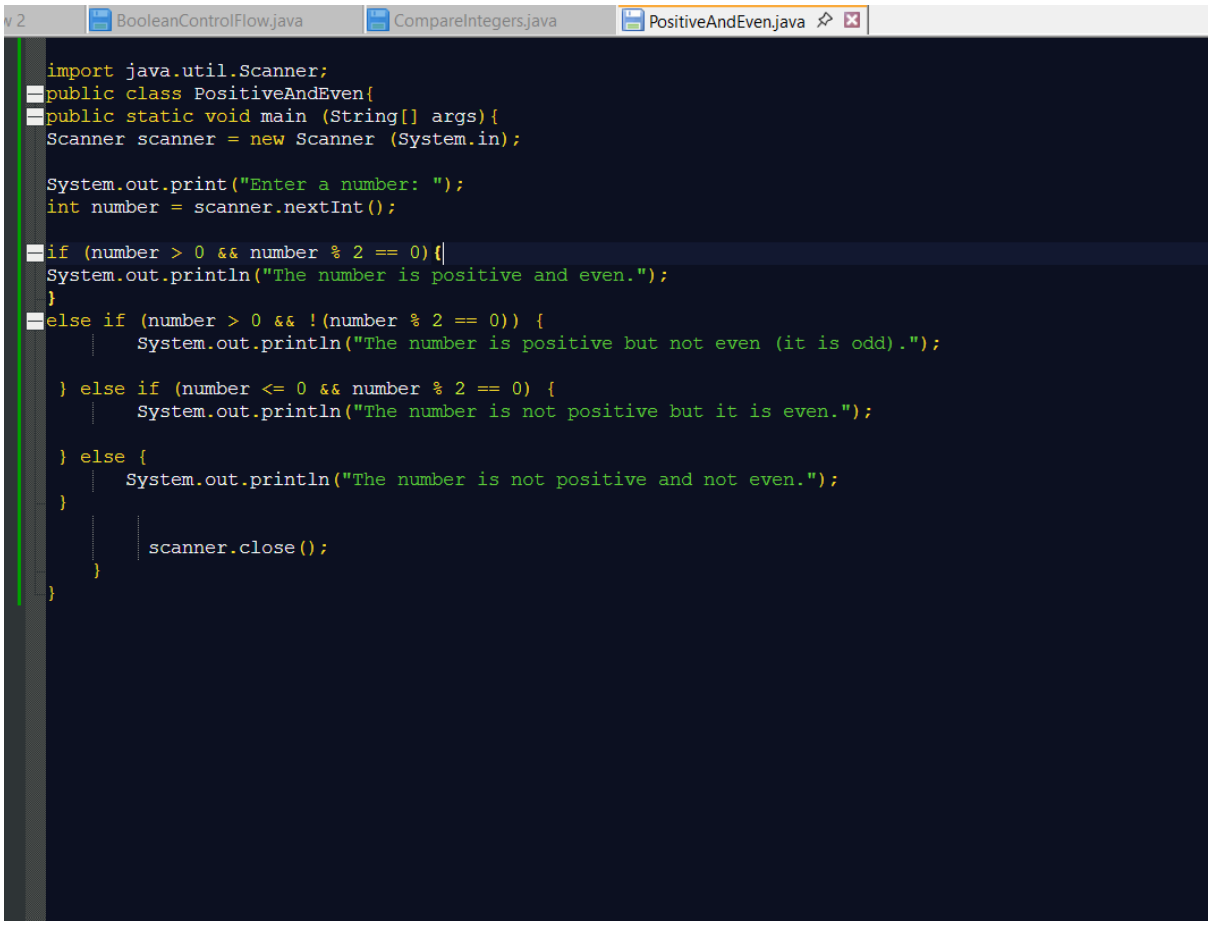
```
C:\Users\HP\Documents>javac ArithmeticOperations.java

C:\Users\HP\Documents>java ArithmeticOperations
Addition: 50 + 25 = 75
Subtraction: 50 - 25 = 25
Multiplication: 50 * 25 = 1250
Division: 50 / 25 = 2
Modulus: 50 % 25 = 0

C:\Users\HP\Documents>
```

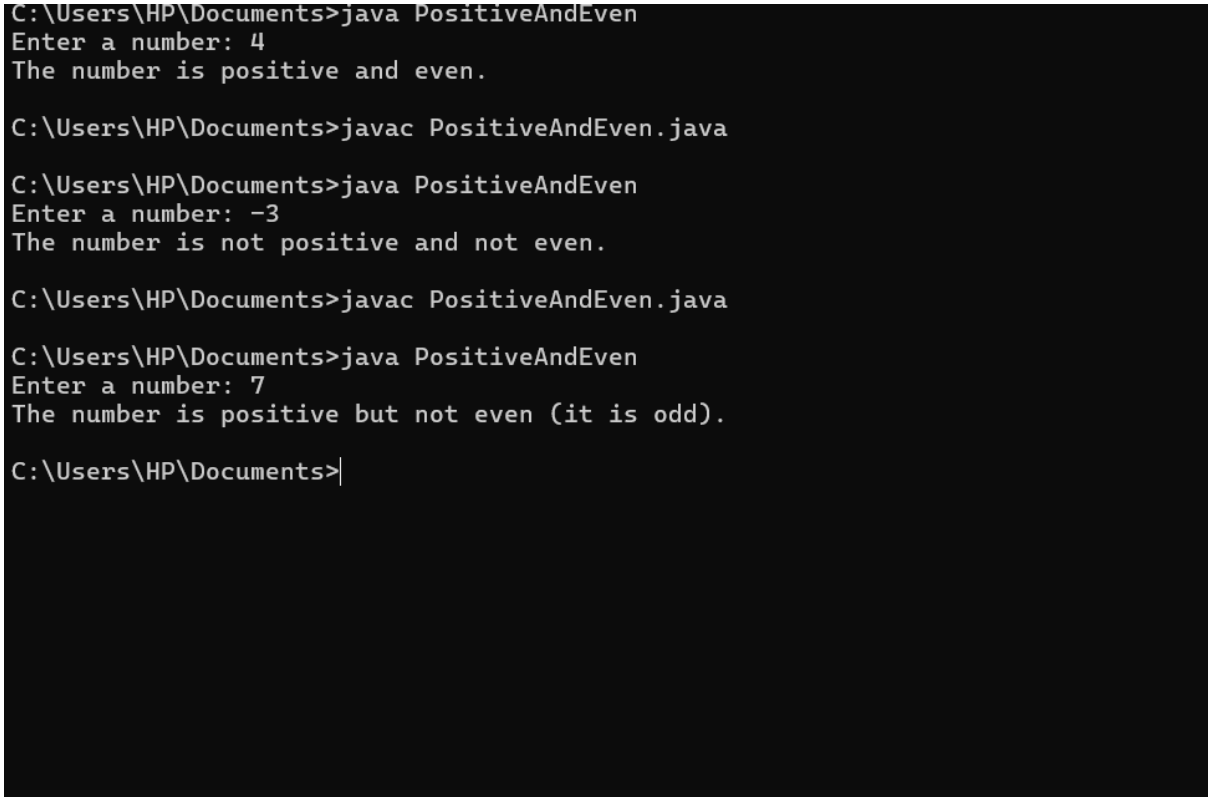
10. Write a program to compare two integers using all relational operators (==, !=, >, <, >=, <=) and display the results.

```java
public class CompareIntegers {
public static void main(String[] args){
int num1 = 10;
int num2 = 20;
System.out.println("Comparing integers: num1 = " + num1 + ", num2 = " + num2);
System.out.println("num1 == num2: " + (num1 == num2));

System.out.println("num1 != num2: " + (num1 != num2));

System.out.println("num1 > num2: " + (num1 > num2));

System.out.println("num1 < num2: " + (num1 < num2));

System.out.println("num1 >= num2: " + (num1 >= num2));

System.out.println("num1 <= num2: " + (num1 <= num2));
}
}
```

```
C:\Users\HP\Documents>javac CompareIntegers.java

C:\Users\HP\Documents>java CompareIntegers
Comparing integers: num1 = 10, num2 = 20
num1 == num2: false
num1 != num2: true
num1 > num2: false
num1 < num2: true
num1 >= num2: false
num1 <= num2: true

C:\Users\HP\Documents>
```

11. Write a program to check if a number is positive and even using logical operators (&&, ||, !).




C:\Users\HP\Documents>java PositiveAndEven
Enter a number: 4
The number is positive and even.
C:\Users\HP\Documents>javac PositiveAndEven.java
C:\Users\HP\Documents>java PositiveAndEven
Enter a number: -3
The number is not positive and not even.
C:\Users\HP\Documents>javac PositiveAndEven.java
C:\Users\HP\Documents>java PositiveAndEven
Enter a number: 7
The number is positive but not even (it is odd).
C:\Users\HP\Documents>

12. Write a program to demonstrate the use of assignment operators (=, +=, -=, *=, /=, %=) on two integers.

```java
public class AssignmentOperators{
    public static void main(String[] args) {
        // Initialize two integers
        int num1 = 10;
        int num2 = 5;

        System.out.println("Initial values: num1 = " + num1 + ", num2 = " + num2);         // Display initial values

        // Using the '=' assignment operator
            num1 = num2;
            System.out.println("\nAfter num1 = num2: num1 = " + num1 + ", num2 = " + num2);

        // Using the '+=' assignment operator (num1 += num2 means num1 = num1 + num2)
            num1 += num2;
            System.out.println("\nAfter num1 += num2: num1 = " + num1 + ", num2 = " + num2);

        // Using the '-=' assignment operator (num1 -= num2 means num1 = num1 - num2)
            num1 -= num2;
            System.out.println("\nAfter num1 -= num2: num1 = " + num1 + ", num2 = " + num2);

        // Using the '*=' assignment operator (num1 *= num2 means num1 = num1 * num2)
            num1 *= num2;
            System.out.println("\nAfter num1 *= num2: num1 = " + num1 + ", num2 = " + num2);

        // Using the '/=' assignment operator (num1 /= num2 means num1 = num1 / num2)
            num1 /= num2;
            System.out.println("\nAfter num1 /= num2: num1 = " + num1 + ", num2 = " + num2);

        // Using the '%=' assignment operator (num1 %= num2 means num1 = num1 % num2)
            num1 %= num2;
            System.out.println("\nAfter num1 %= num2: num1 = " + num1 + ", num2 = " + num2);
    }
}
```

```
C:\Users\HP\Documents>javac AssignmentOperators.java

C:\Users\HP\Documents>java AssignmentOperators
Initial values: num1 = 10, num2 = 5

After num1 = num2: num1 = 5, num2 = 5

After num1 += num2: num1 = 10, num2 = 5

After num1 -= num2: num1 = 5, num2 = 5

After num1 *= num2: num1 = 25, num2 = 5

After num1 /= num2: num1 = 5, num2 = 5

After num1 %= num2: num1 = 0, num2 = 5

C:\Users\HP\Documents>
```