Java Lab

if Statements

IMPORTANT! Save all your work to a safe location such as oneDrive.

Create a folder for SDPD into which you will save all your work for this module, arranged how you wish. Ideally you should create a folder each week for your lab exercises. Note that you should create **a separate file** for each exercise.

Exercise 1

Goal: Create a program in Java that uses a simple *if* statement.

Create a new file called JavaIf1 for this exercise.

Following the guide below, create a program that has the following specification:

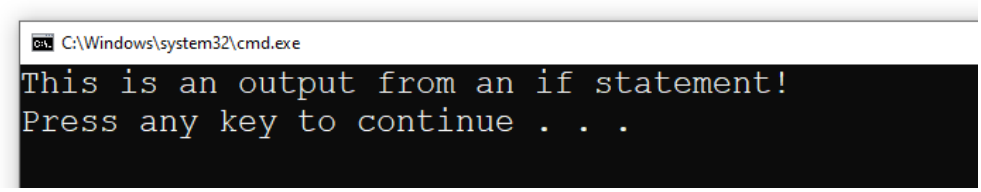
- Create an int variable, and assign the value 55 to it

```
int number1;
number1 = 55;
```

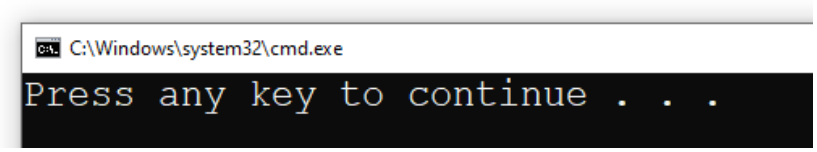
- Create an if statement, as shown (note the use of the **double** equals):

```
if(number1 == 55)
{
    System.out.println("This is an output from an if statement!");
}
```

- Compile and run your program. Your output should be similar to as shown below.



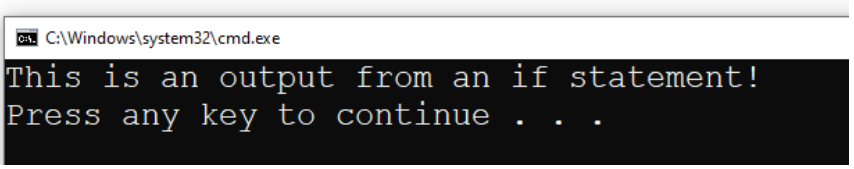
Change the value of the number1 variable to 10. Compile and run your program. The ***if*** statement should no longer run as the condition is not true (because number1 is no longer equals to 55):



Change the conditional test so that the ***if*** statement will be true if number1 is less than 55, eg:

```
if(number1 < 55)
```

Compile and run your program again – the output on the screen should print the line inside the if statement:



Test each operator below to confirm that each performs as expected:
Operators for an ***if*** statement:

```
==      equal to
!=      not equal to
>       greater than
>=      greater than or equal to
<       less than
<=      less than or equal to
```

Exercise 2

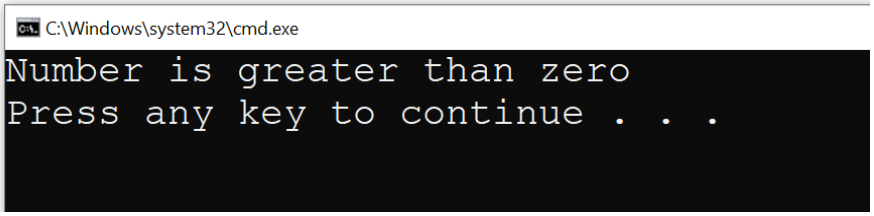
Goal: Create a program in Java that uses multiple if statements.

Create a new file called JavaIf2 for this exercise.

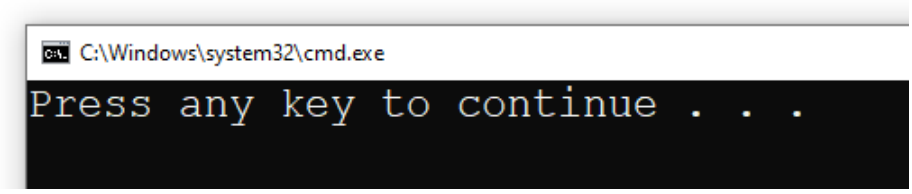
1. Following the guide below, create a program that has the following specification:
    - Create a **double** variable called num1, and assign the value 10 to it
    - Create an ***if*** statement, as shown. This is going to test to see if the value of the variable num1 is greater than zero:

```
if(num1 > 0)
{
    System.out.println("Number is greater than zero");
}
```

    - Compile and run your program. Your output should be similar to as shown below.



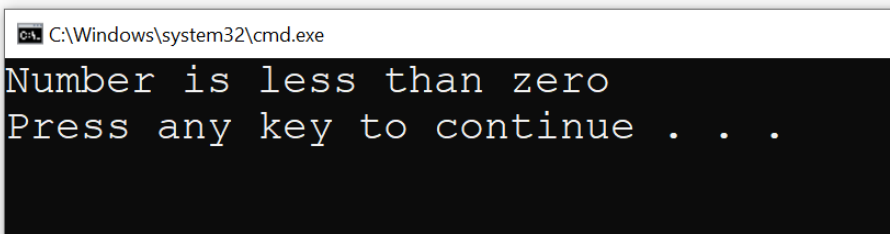
2. **Change the value of the num1 to minus 10 (-10)**, and test your program. Compile and run your program. The if statement should no longer run as the condition (num1 is no longer greater than zero) is no longer true:



3. Add a second ***if*** statement that will determine if the num1 variable is less than zero, eg:

```
if(num1 < 0)
{
    System.out.println("Number is less than zero");
}
```

Compile and run your program. The second if statement should now run:



4. **Change the value of the num1 to zero (0)**, and test your program. Compile and run your program. Neither of the if statements should run as the neither condition is true.

`if(num1 > 0)` is false: num1 is not greater than zero

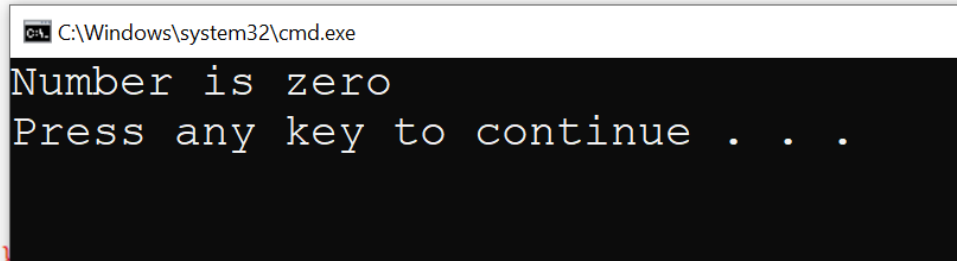
`if(num1 < 0)` is false: num1 is not less than zero

Why? Because num1 is zero!

5. Create a third *if* statement that will determine if the variable num1 is zero:

```
if(num1 == 0)
{
    System.out.println("Number is zero");
}
```

Compile and run your program. The third ***if*** statement should now run:



Test your program! Amend the value of num1 to a range of values to ensure that it works for any numerical value assigned to the variable num1.

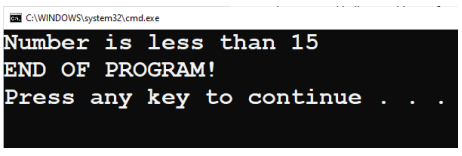
Exercise 3

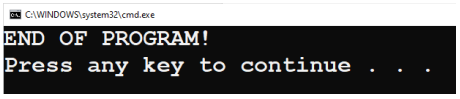
Goal: Create a program in Java that uses an if statement to determine if a number is less than or equals to 15.

Create a new file called JavaIf3 for this exercise.

Following the guide below, create a program that has the following specification:

- Create a double variable called number1, and assign the value 12.25 to it.
- Create a single ***if*** statement that will determine if the value of the variable number1 is less than or equal to 15. Your output should be similar to as shown below. Try with larger and smaller values to ensure your program works with a range of values.





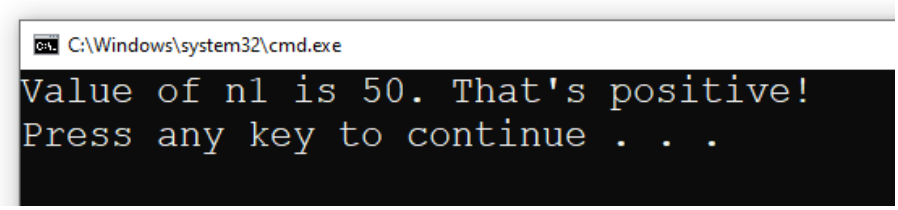
Exercise 4

Goal: Create a program in Java that uses an if statement to determine if a number is positive or negative.

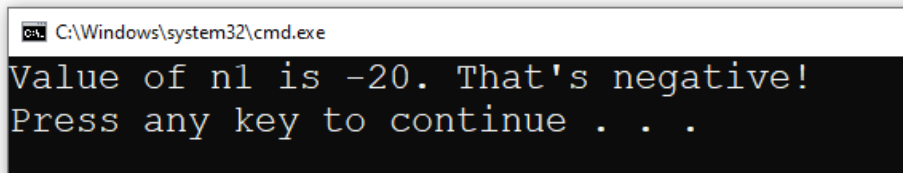
Create a new file called JavaIf4 for this exercise.

Following the guide below, create a program that has the following specification:

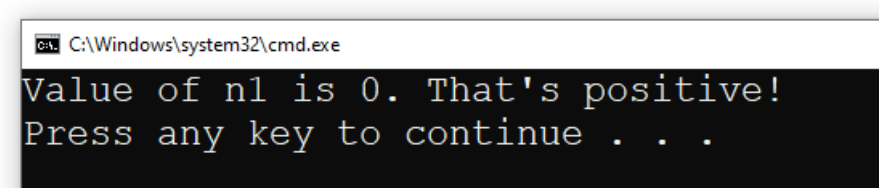
- Create an int variable called n1, and assign the value 50 to it.
- Create 2 ***if*** statements that will determine if the value of the variable n1 is either positive or negative. (Zero can be considered positive for this exercise)
- Your output should be similar to as shown below.



Or when the value of n1 is -20, it should produce a result as shown:



Or when the value of n1 is 0, it should produce a result as shown:



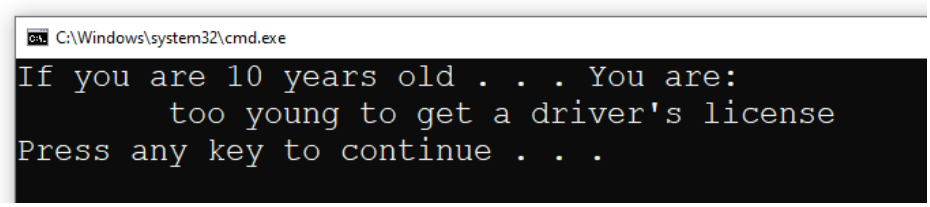
Exercise 5

Goal: Create a program in Java that uses an *if* statement to output information to the user based on the value of a variable called *age*.

Create a new file called JavaIf5 for this exercise.

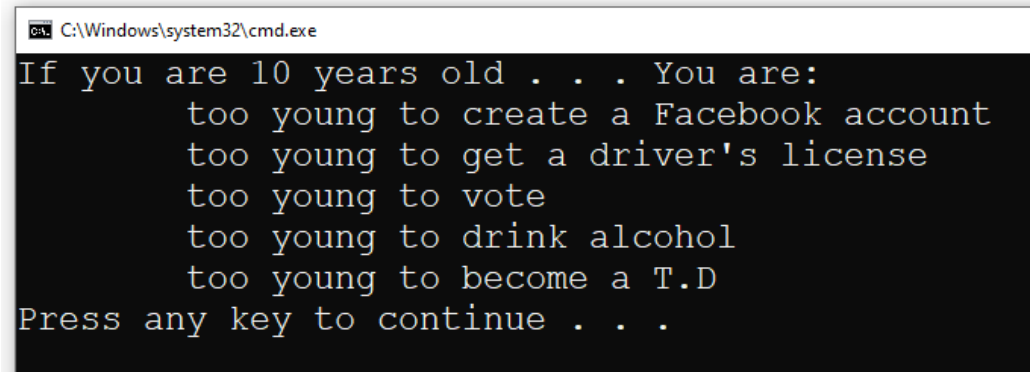
Following the guide below, create a program that has the following specification:

- Create an int variable called age. Give this an initial value of 10
- Create an ***if*** statement that will output the following if the value of the age variable is less than 16:

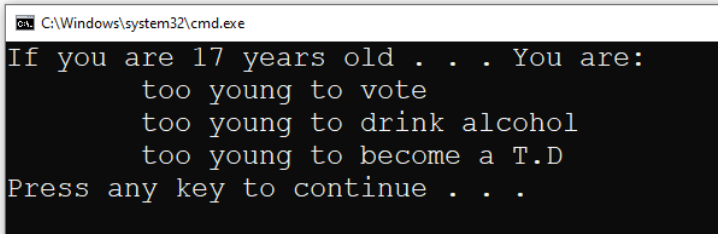


Amend your program with additional if statements so that the following outputs are produced:

If age is less than thirteen, then output that they are too young to create a facebook page
If age is less than eighteen, then output that they are too young to vote
If age is less than eighteen, then output that they are too young to buy alcohol
If age is less than twenty-one, then output that they are too young to become a TD
If age is greater than fifty, then output that they are getting old



Try this with various values in the age variable to check that program works as expected, eg, 17:



2. For each if statement, add another if statement that says the opposite. For example, if their age is greater than or equal to 13, say “old enough to create a Facebook account” When you are done, your program should show multiple messages every time, no matter what age is entered.

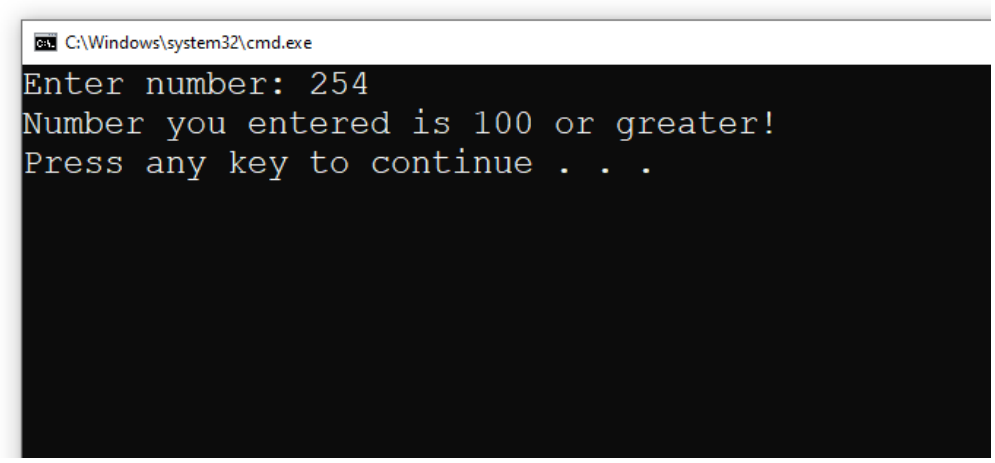
Exercise 6

Goal: Create a program in Java that uses a simple if statement.

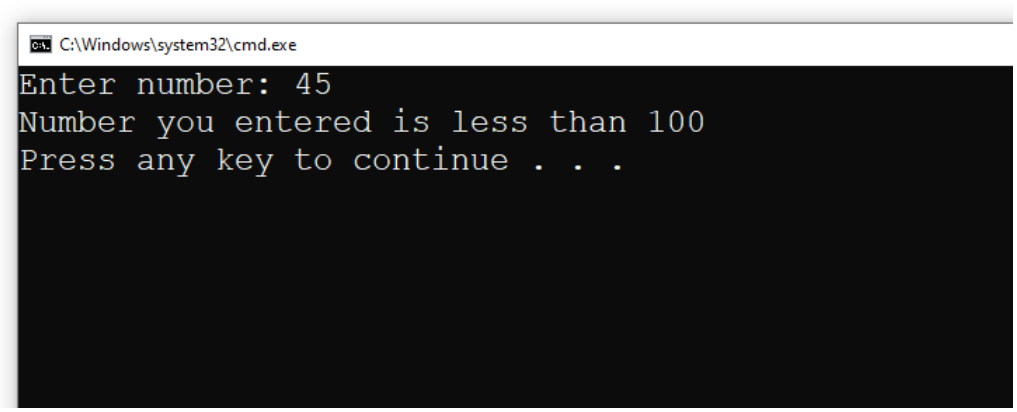
Create a new file called JavaIf6 for this exercise.

Following the guide below, create a program that has the following specification:

- Your program should allow the user to enter a number with a decimal point
- The program should then produce the output shown below if the number entered is greater than or equal to 100:



Amend your program so that the program also produces the output below, if the number entered is below 100.



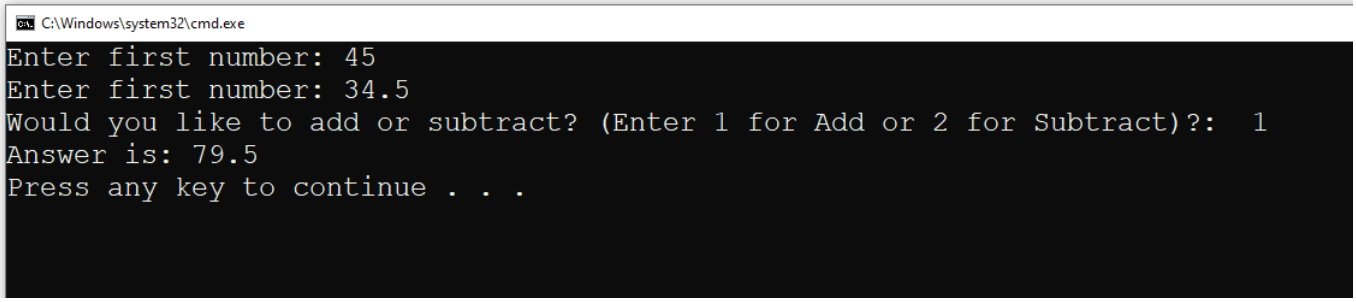
Exercise 7

Goal: Create a calculation program in Java that uses ***if*** statements.

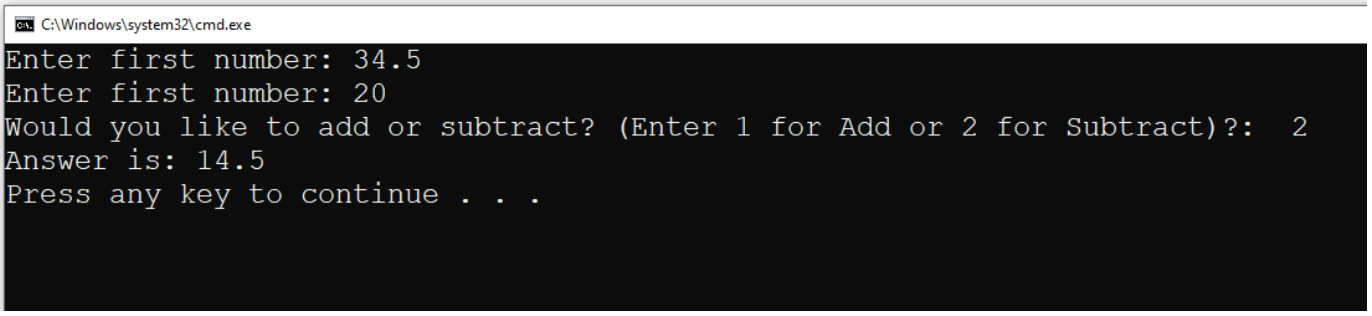
Create a new file called JavaIf7 for this exercise.

Following the guide below, create a program that has the following specification:

- Your program should allow the user to enter a first number with a decimal point
- Your program should allow the user to enter a second number with a decimal point
- Your program should give the user the two options of add or subtract (Enter 1 for Add or 2 for subtract)
- The program should then produce the output shown below (Add):



or subtract if user selects option 2:



Amend your program so that there are options 3, 4 and 5 – where option 3 is for division, options 4 is for multiply, and option 5 is for modulo (%).

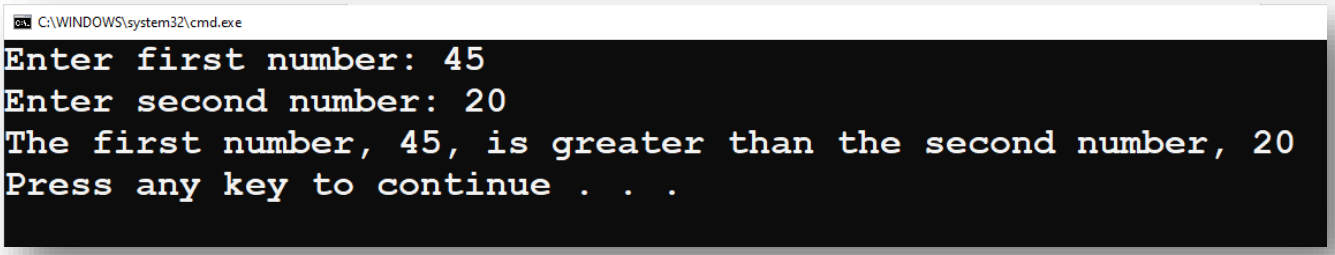
Exercise 8

Goal: Create a program in Java that uses if statements.

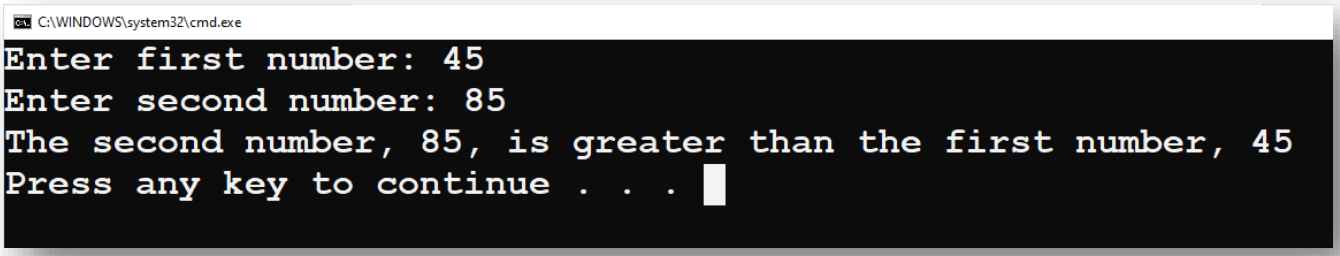
Create a new file called JavaIf8 for this exercise.

Following the guide below, create a program that has the following specification:

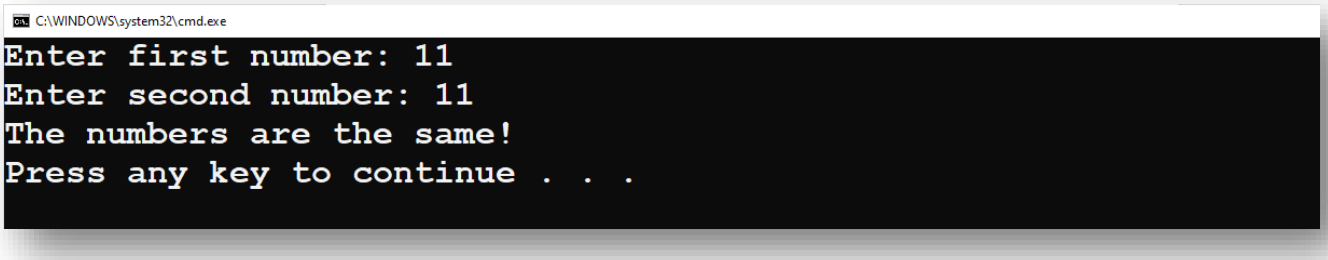
- Your program should allow the user to enter a first number with a decimal point
- Your program should allow the user to enter a second number with a decimal point
- Your program should then produce the following output, where appropriate:



or



or

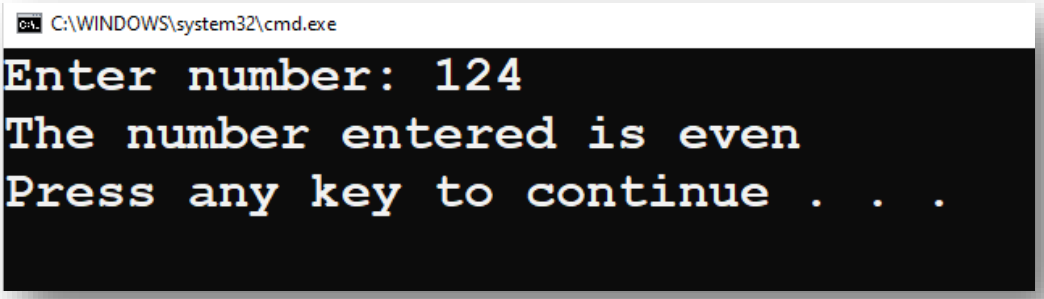


Exercise 9

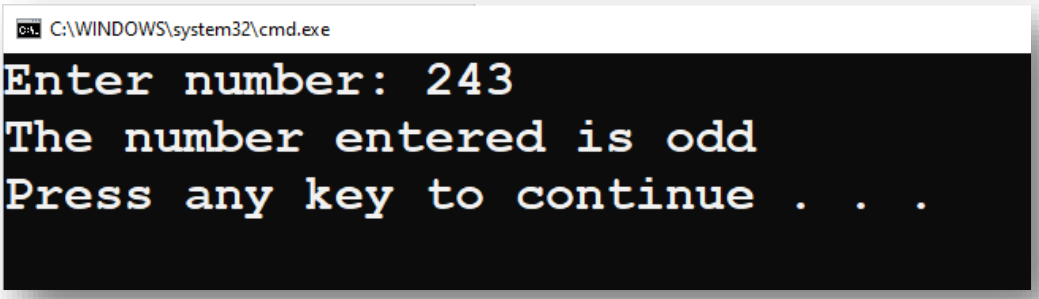
Goal: Create a program in Java that uses if statements.

Create a new file called JavaIf9 for this exercise.

Your program should prompt the user to enter a number, and then check if the number is odd or if it is even. It should output a message accordingly.



or

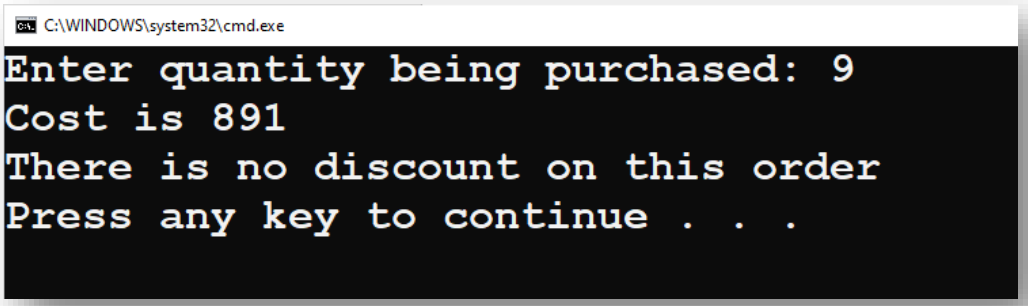


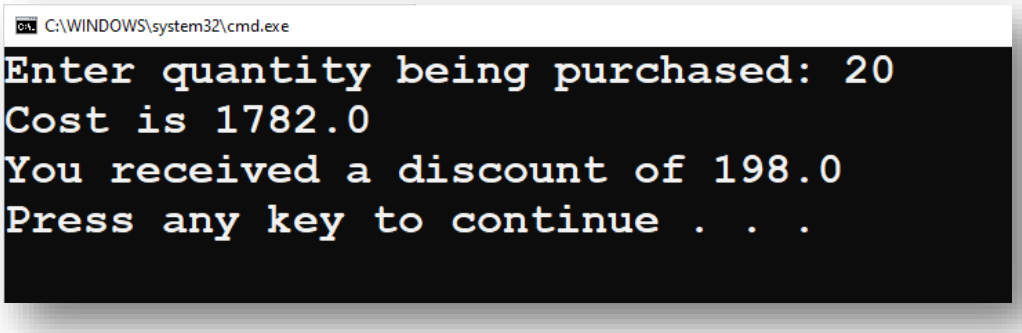
Exercise 10

Goal: Create a program in Java that uses *if* statements.

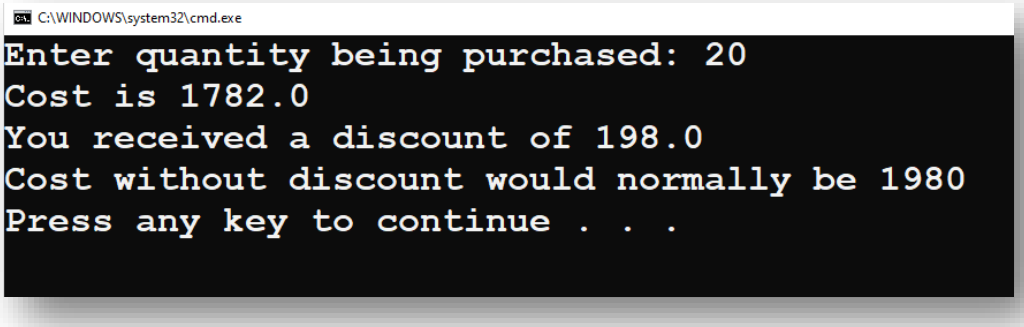
Create a new file called JavaIf10 for this exercise.

A software company sells a package that retails for $99. Quantity discounts are given when more than 10 items are purchased. Your program should allow the user to specify the quantity being purchased, and output an appropriate message depending on the quantity:





Amend your code so that the pre-discounted price is shown when a discount is applied:

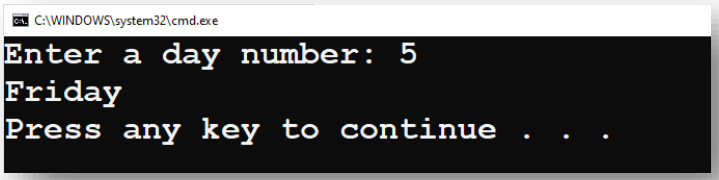


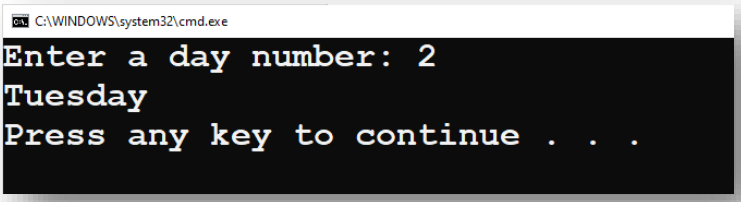
Exercise 11

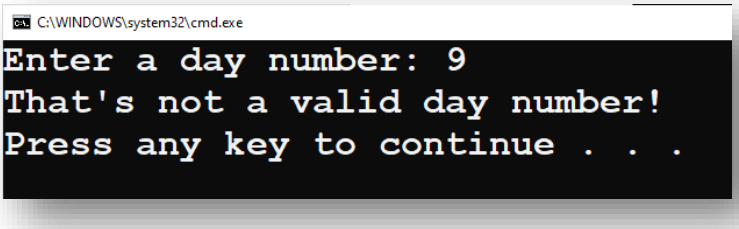
Goal: Create a program in Java that uses *if* statements.

Create a new file called JavaIf11 for this exercise.

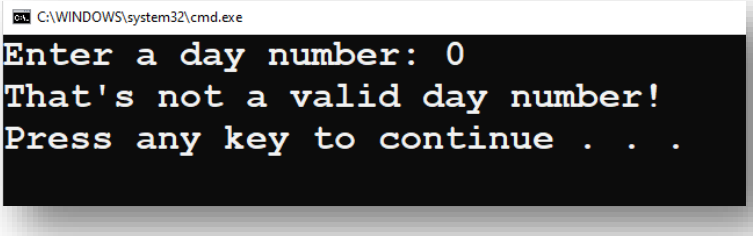
Your program should prompt the user to input a number between 1 and 7, and print the corresponding day of the week to the console, using if statements. Assume that Monday is day 1, Tuesday is day 2, and so on. Sample output:







or



Exercise 12

Goal: Create a program in Java that uses *if* statements.

Create a new file called JavaIf12 for this exercise.

Write a program that will accept a number from 1 to 12. The program should then display the month and the number of days in the month. For example: