Java Lab

Increment, Decrement and Basic While Loops

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

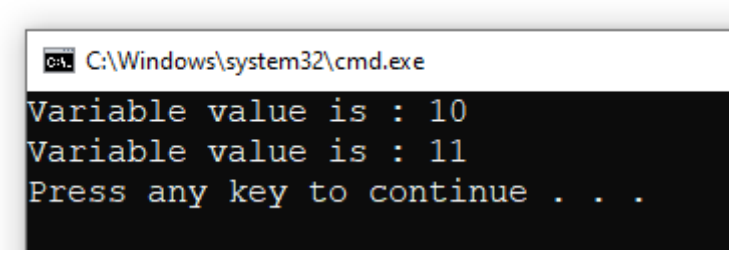
Create a folder for SDPD into which you will save all your work for this module, arranged how you wish. Ideally you should create a folder each week for your lab exercises. Note that you should create **a separate file** for each exercise.

Exercise 1

Goal: Create a program in Java, using increment and decrement.

Create a new a Java program called JavaIncrement1. Create a variable called number1 and assign the value 10 to it. Using a printf statement as shown below, output the value of the variable. Increment the variable using ***number1++***. Following that, once again output the value of the variable number1 - this should show that the variable has incremented by 1 – the new value is 11.

```
int number1 = 10;

System.out.printf("Variable value is : %d \n", number1);
number1++;
System.out.printf("Variable value is : %d \n", number1);
```

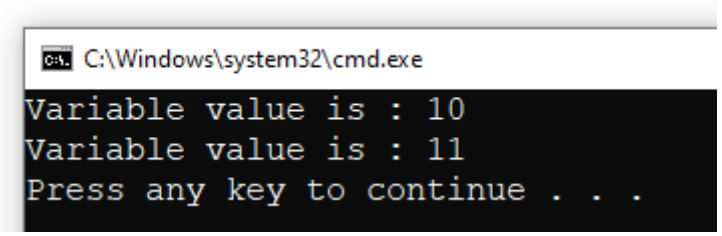


Change the increment to decrement by using number--. Recompile and run your code to confirm that the value has decreased by one to 9.

Amend your code (remove the number1++ line, and change the second printf statement so that it includes a prefix incrementor on the variable, eg: **++number1**) so that it is as shown:

```
System.out.printf("Variable value is : %d \n", number1);
System.out.printf("Variable value is : %d \n", ++number1);
```

Compile and run your program again, Your output should show that the value of the variable has increased by one:



Amend your code so dash the incrementor becomes a postfix incrementor. Compile and output your code again, and examine the difference in the output. What is different, and why?

```
System.out.printf("Variable value is : %d \n", number1);
System.out.printf("Variable value is : %d \n", number1++);
```

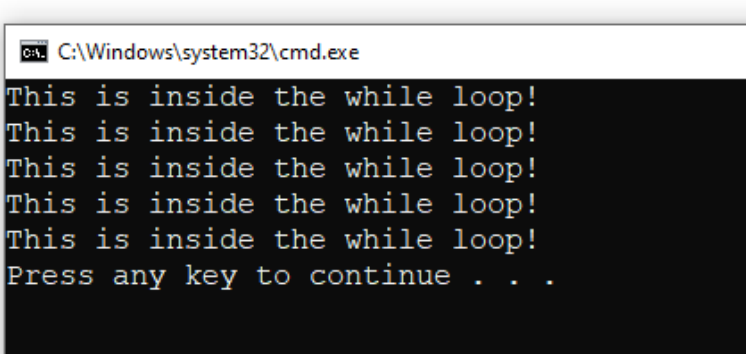
Exercise 2

Goal: Create a program in Java Using a while loop

Create a new a Java program called JavaWhile1. Create an integer variable called test and assign the value 5 to this variable. Create while loop that will run while the value of the variable called *test* is greater than 0, as shown below:

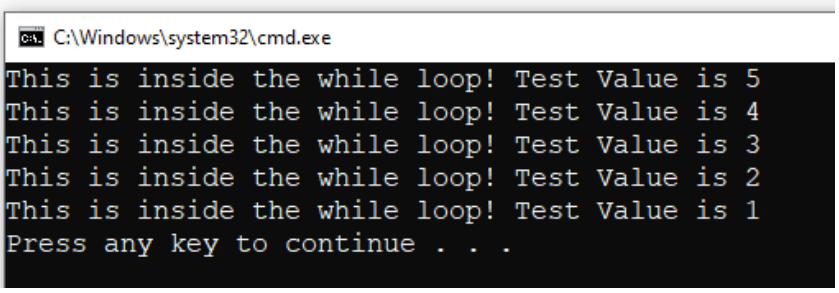
```
int test = 5;

while (test > 0)
{
    System.out.println("This is inside the while loop!");
    test--;
}
```

Compile and execute your code, your output should be similar to as shown below:



This loop will run five times. The first time the loop ran, the *test* variable had a value of five. Then it was decremented (`test--`), after which it had the value of four. The while test condition was performed again. This loop continued outputting the *println* and decrementing the *test* value on each cycle, until the value of test was zero. Then the loop ended, as the while condition (`test > 0`) was no longer true.

Amend your code so that the value of test is output on each cycle, for example:

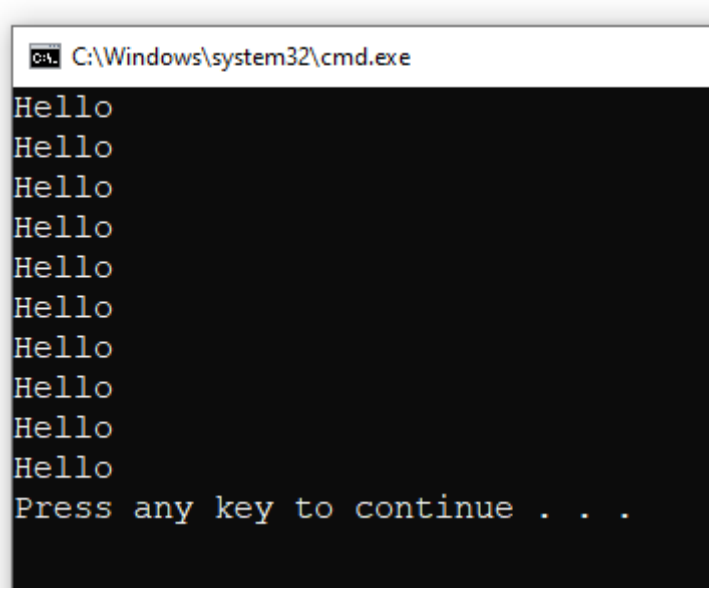


Amend your code (if you haven't done so already) so that the above output is produced with only a single line of code inside the while loop. Hint: use either prefix or postfix inside your print statement.

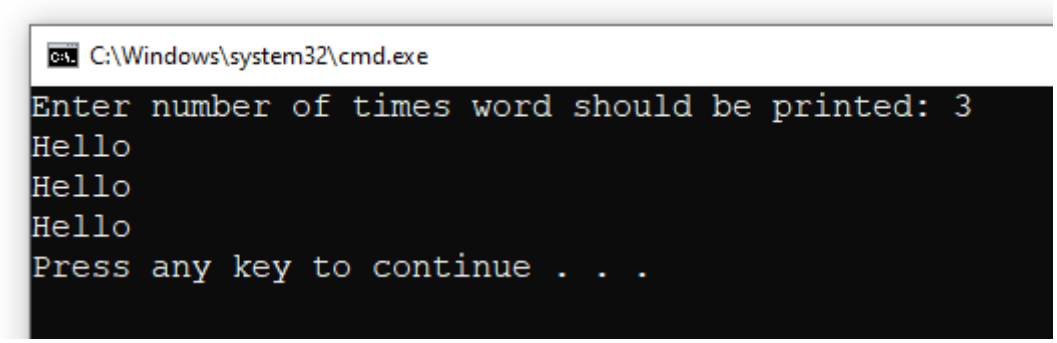
Exercise 3

Goal: Create a program in Java using a while loop

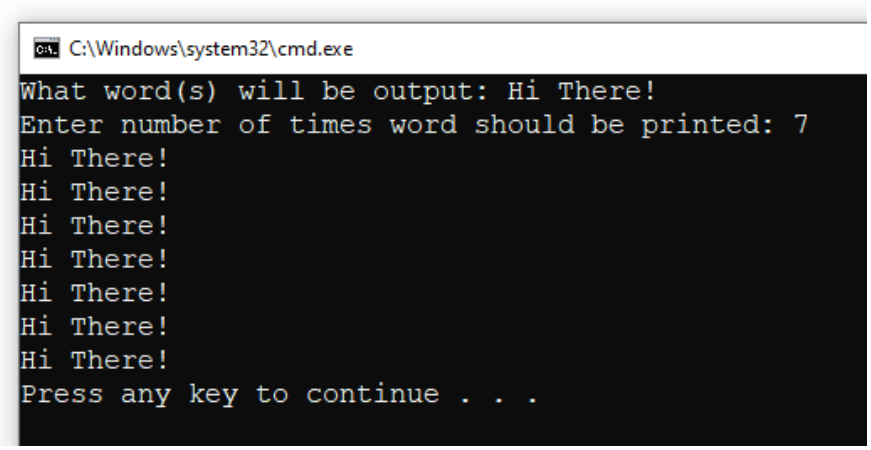
Create a program in Java called JavaWhile2 using a while loop that will print out the word hello 10 times.



Amend your code so that the user gets prompted for the number of times the word hello is output, similar to as shown below:



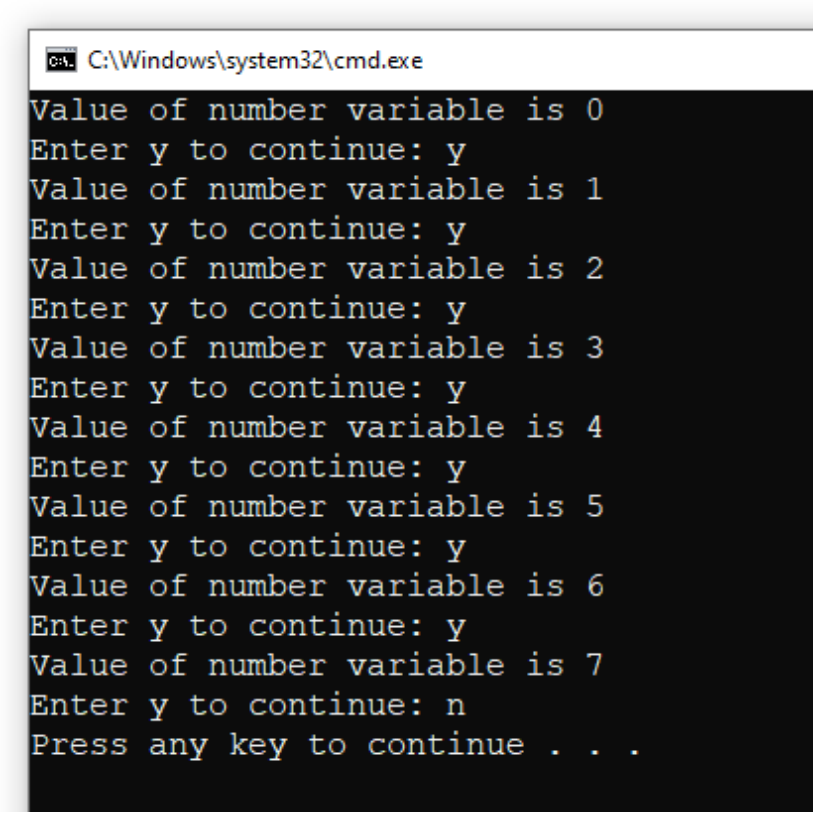
Amend your code so that the user is also prompted as to what word (or sentence) is output - for example:



Exercise 4

Goal: Create a program in Java using a while loop

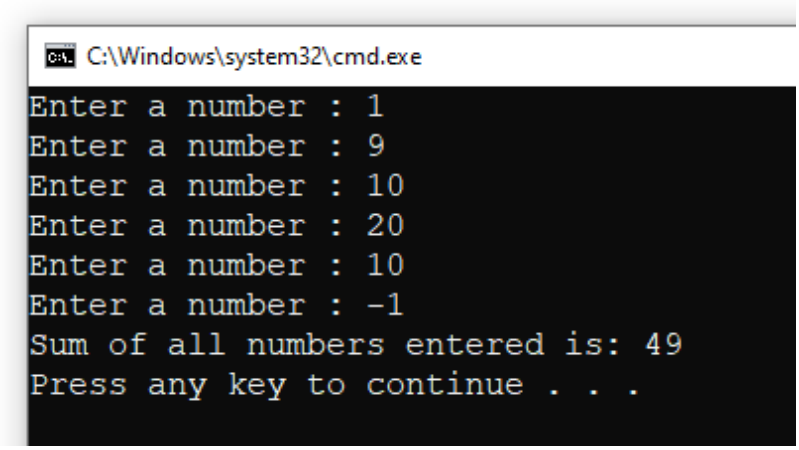
Create a program called JavaWhile3, that uses a while loop to check whether a user wishes to continue with an output. The program should have a variable called number1 that is assigned the value of 0. With each iteration of the loop, the number variable should be incremented, and the user should be prompted to continue, or to end the loop by entering 'Y' to continue or any other character to end. The output should be similar to as shown below:



Exercise 4

Goal: Create a program in Java, using a while loop.

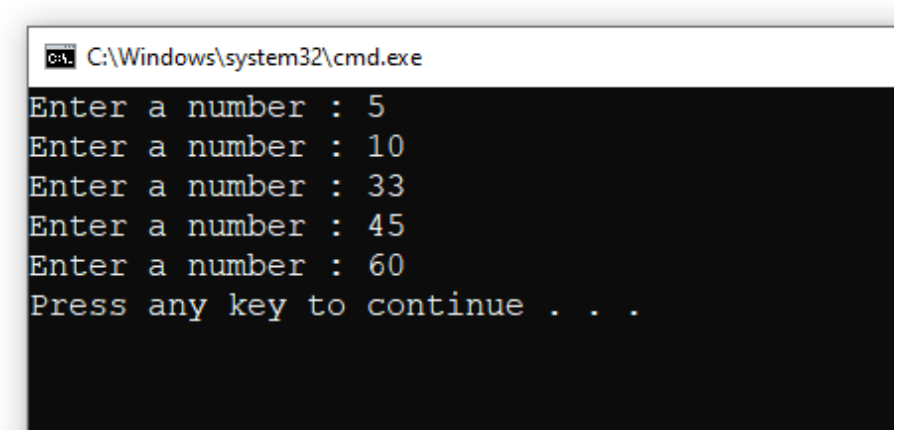
Write a program using a while loop called JavaWhile4 to keep asking for a number until a negative number is entered. At the end of the program, print the sum of all entered numbers.



Exercise 5

Goal: Create a program in Java, using a do while loop.

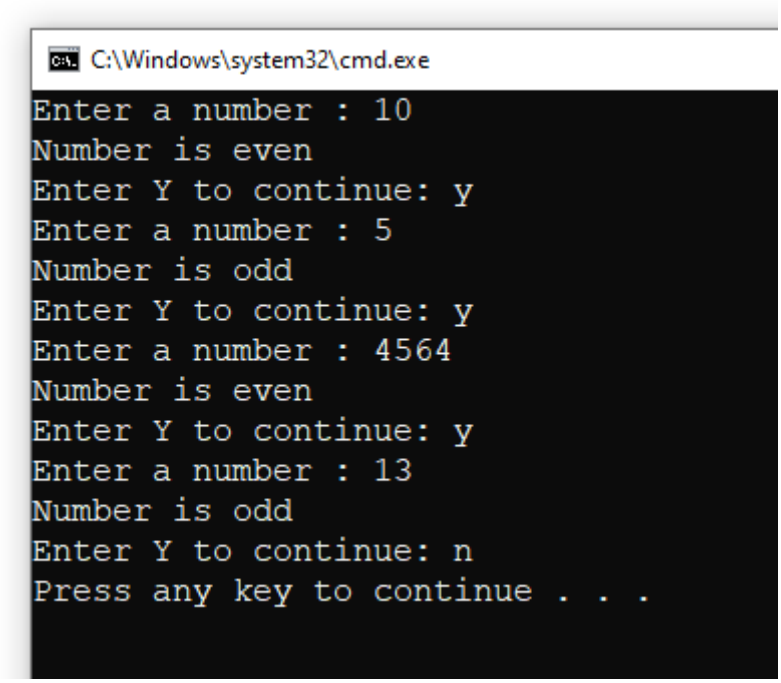
Write a program using a ***do while*** loop called JavaDoWhile1 to keep asking for a number between 0 and 50. If a number outside of that range is entered, the program ends. Your output should be similar to as shown below:



Exercise 6

Goal: Create a program in Java, using a *do while* loop

Create a new program called JavaWhile2. The user should be prompted to enter a number, and the program should output whether or not the number is odd or even (hint: use the modulus operator to work out whether a number is odd or even). The user should then be prompted continue by typing in Y. The output should be similar to as shown below:



Exercise 7

Goal: Create a program in Java, using a do while loop

Create a program called *JavaDoWhilePass* that will prompt the user to enter a password. If the password entered is “mypass”, then an appropriate message is displayed. Otherwise, the user is prompted again to enter a password, until the correct password is entered.