Java Lab – For 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.

For Loops

Quick Reference

```
for (int i = 0; i < 5; i++)
{
   System.out.println(i);
}
```

initialization section
allows the loop to initialize its own *control variable*

test section
condition section of the loop, eg, while i is less than 5

update section
of the for loop is the last part to execute at the end of each loop.

```
for (int i = 0; i < 5; i++)
{
   System.out.println(i);
}
```

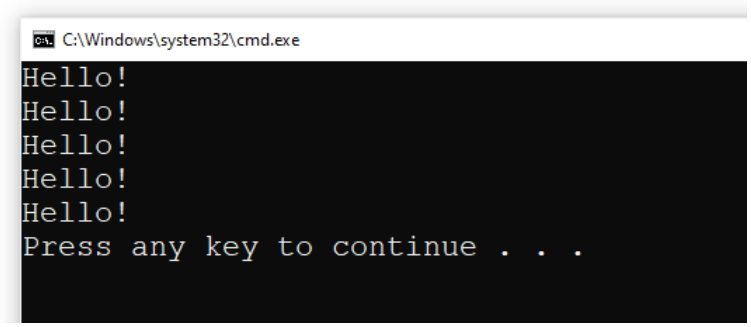
Exercise 1

Goal: Create a program in Java, using a for loop to output "Hello!" multiple times.

Create a new a Java program called JavaFor1. Create a ***for*** loop as shown below that will output "Hello!" five times:

```
for (int i = 1; i <= 5; i++)
{
  System.out.println("Hello!");
}
```

Your output should be similar to as shown below:

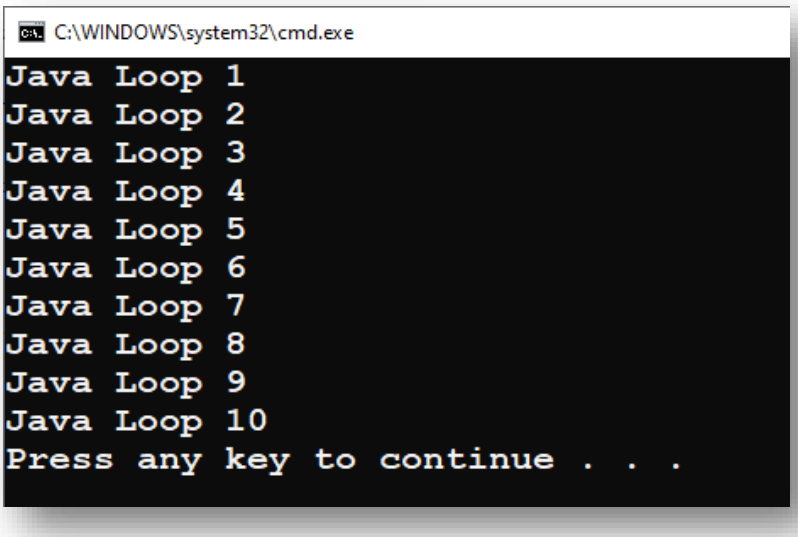


Exercise 2

Goal: Create a program in Java, using a for loop to output "Java Loop" multiple times.

Create a new a Java program called JavaFor2. Create a ***for*** loop as shown below that will output "Java loop" 10 times.

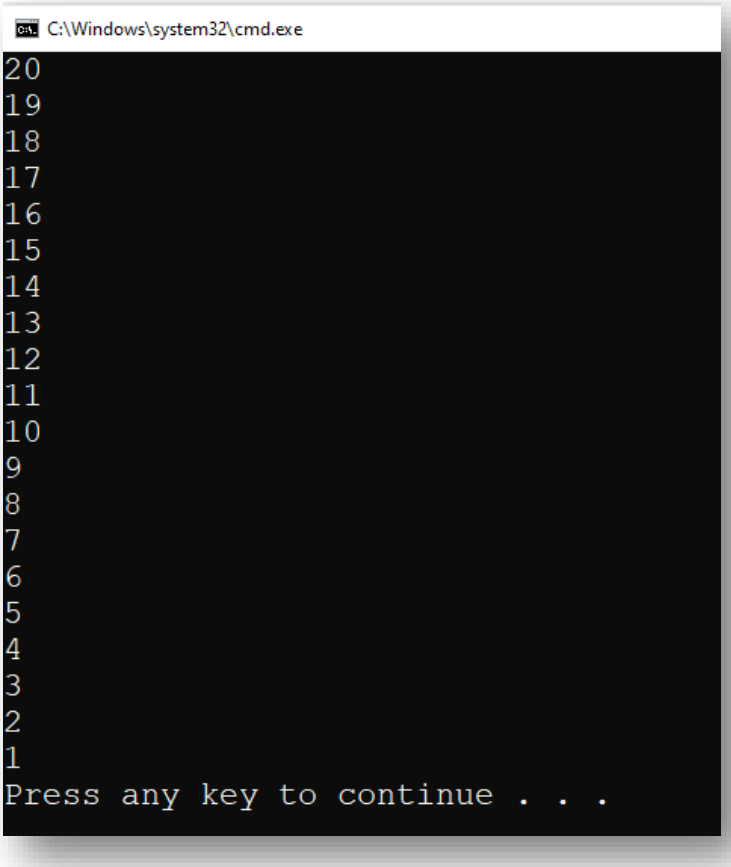
Amend your code so that it outputs it ten times, and includes the value of the ***i*** variable created in initialization section with each output:



Exercise 3

Goal: Create a program in Java using a for loop

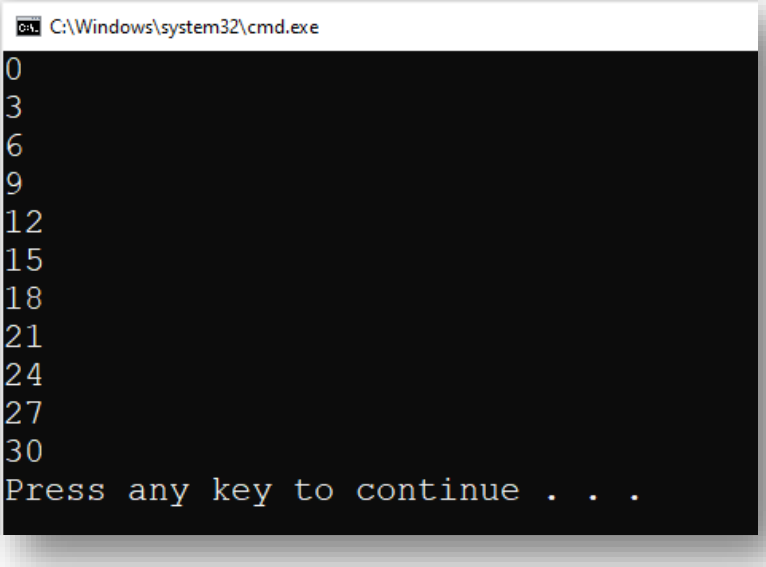
Create a new Java program called JavaFor3. The program should output a countdown from 20 to 1 (use decrement on the update section), for example:



Exercise 4

Goal: Create a program in Java using a for loop

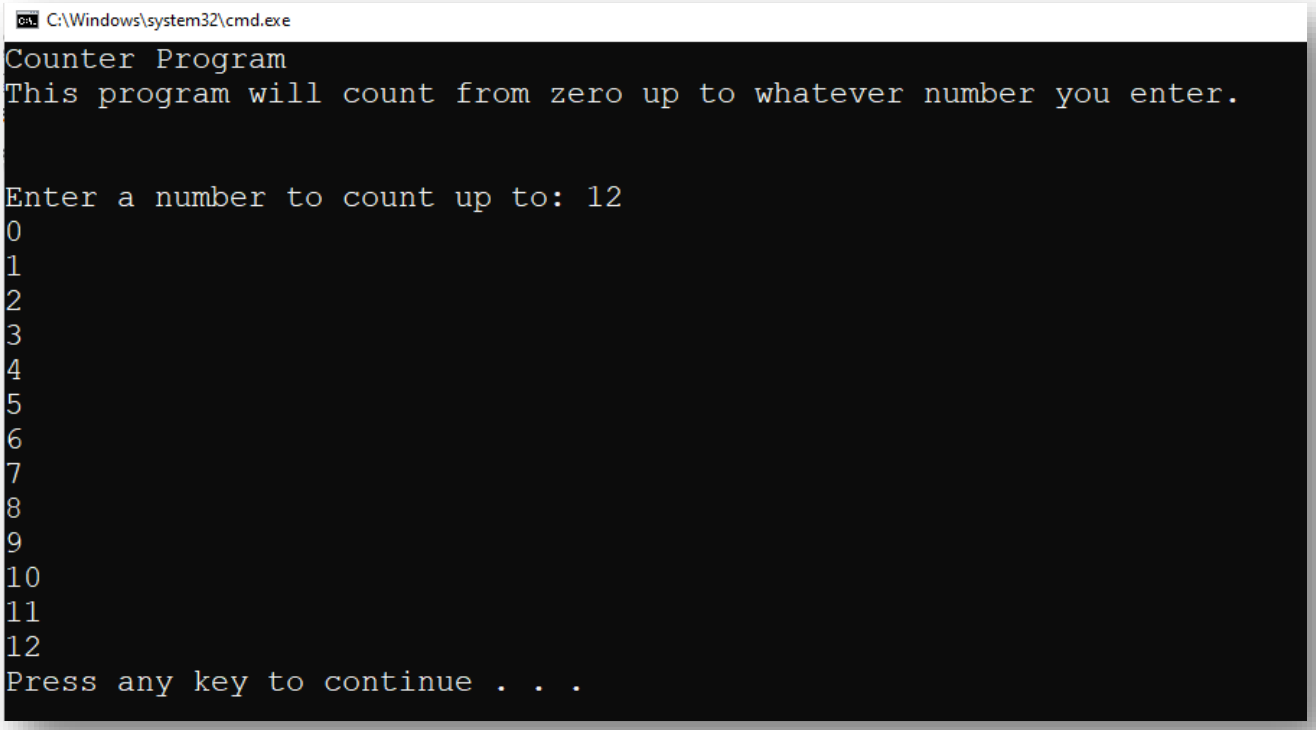
Create a new Java program called JavaFor4. The program should output every **third** number between 0 and 30 by changing the update section of the loop to **i = i + 3**. For example:



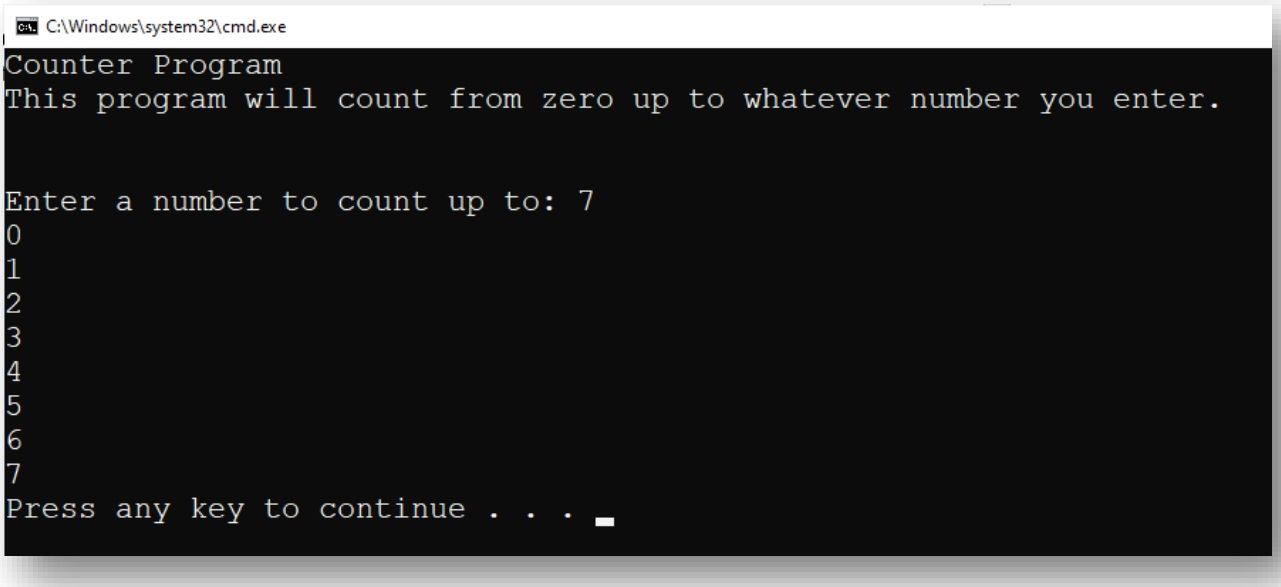
Exercise 5

Goal: Create a program in Java using a for loop

Create a new Java program called JavaFor5. The program should prompt the user to enter a number where it will count up to, after **beginning counting from zero**. Your output should be similar to as shown below:



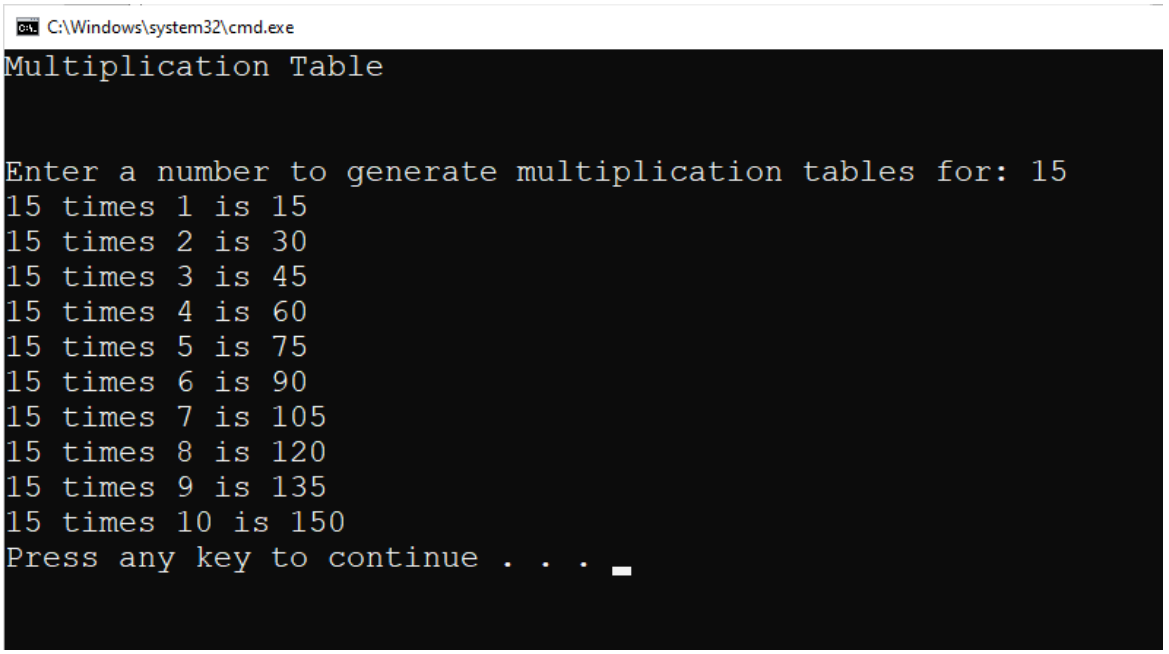
or



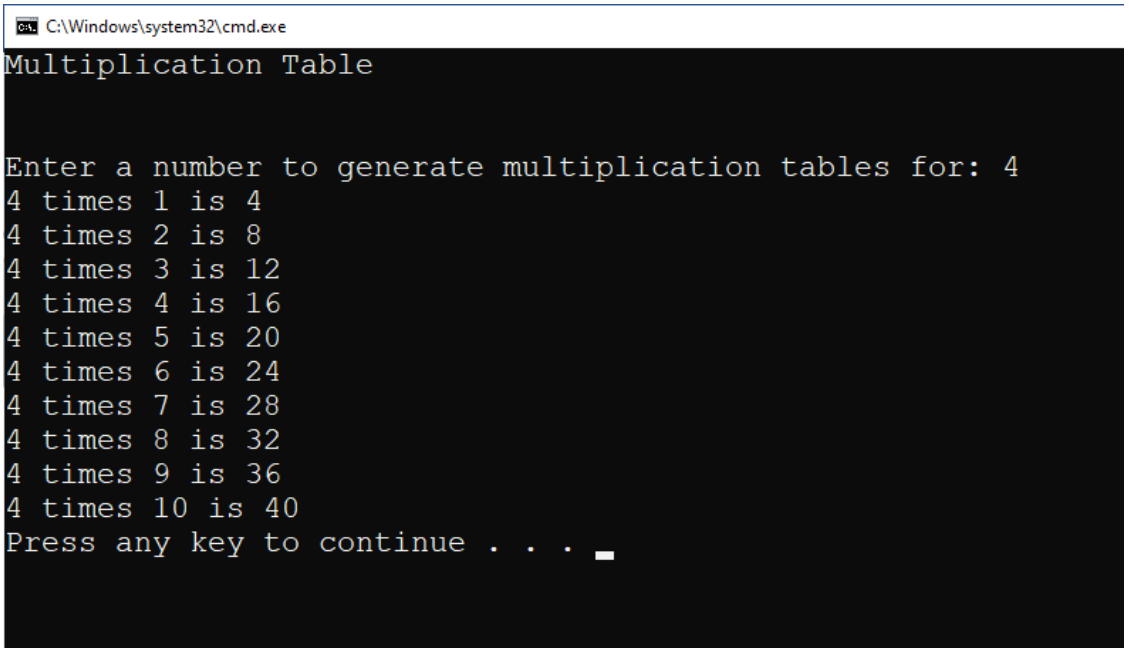
Exercise 6

Goal: Create a program in Java using a for loop that generates a multiplication table

Create a new program in Java called JavaFor6 that will display the multiplication table from 1 to 10 of an integer that has been provided by the user. Your output should be similar to as shown below:



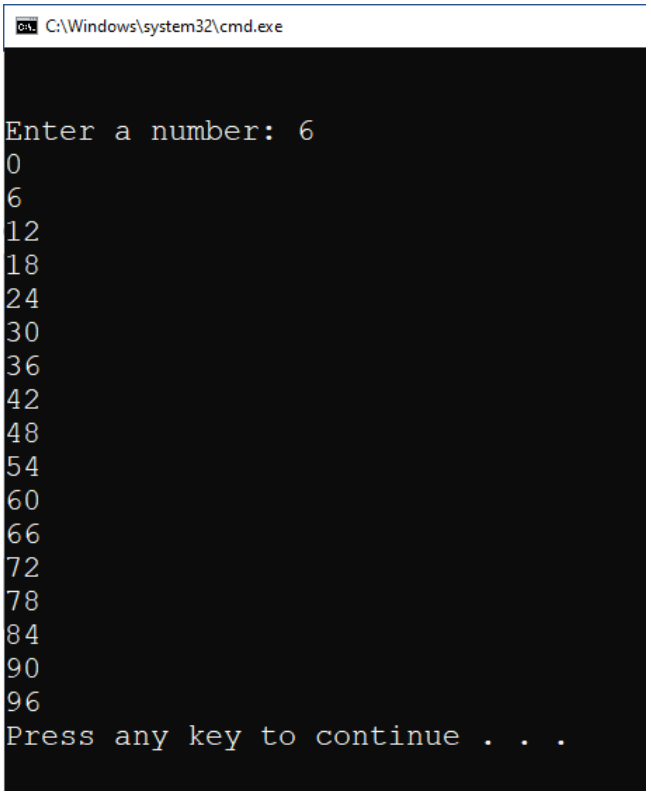
or



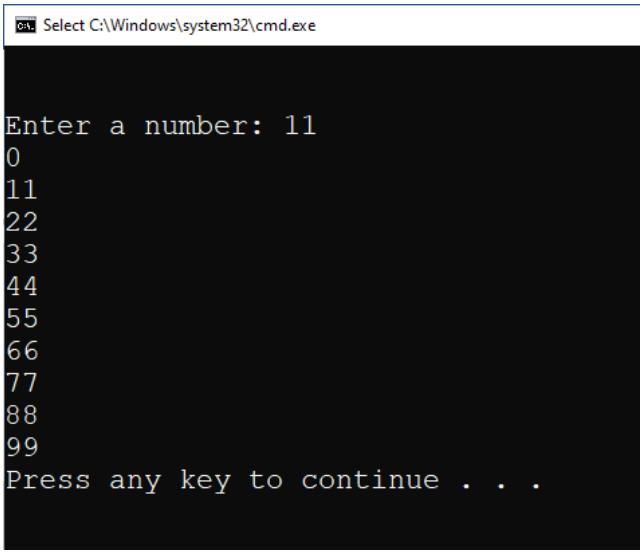
Exercise 7

Goal: Create a program in Java using a for loop that skips a specified number

Create a new program in Java called JavaFor7 that will output every *Nth* number between 0 and 100. The user will be asked to input a number - for example, if the user enters the number 6, then the program will output every 6th number between 0 and 100. Your output should be similar to as shown below



or



Exercise 8

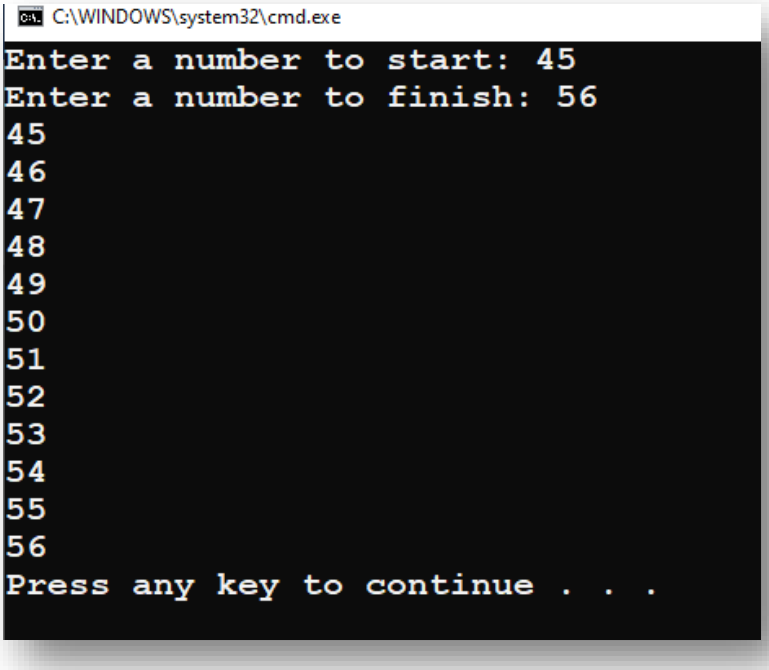
Goal: Create a program in Java using a for loop

Create a program in java using a for loop that will count from 50 to 65, similar to as shown below:

Exercise 9

Goal: Create a program in Java using a for loop

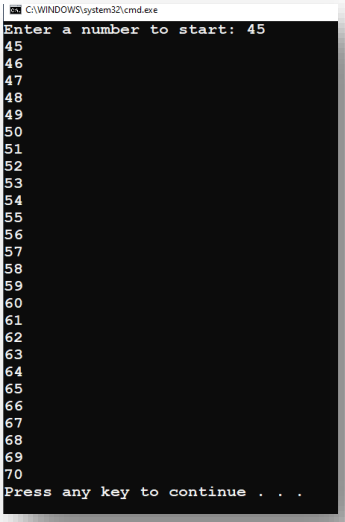
Create a program called JavaFor9 that will produce the output shown below. The user should be prompted for 2 numbers – a number to start counting from, and a number to finish counting to.

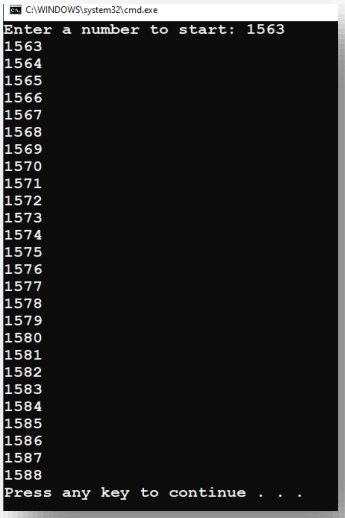


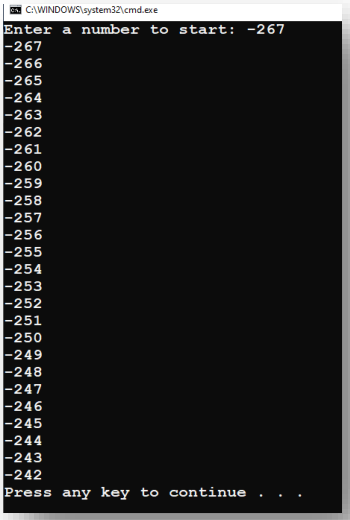
Exercise 10

Goal: Create a program in Java using a for loop

Create a program called JavaFor10 using a for loop. The user should be prompted to enter 1 number – where the loop should start counting from. The program will then count from that number to plus 25 numbers after, for example:





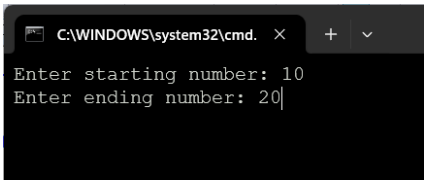


Exercise 11

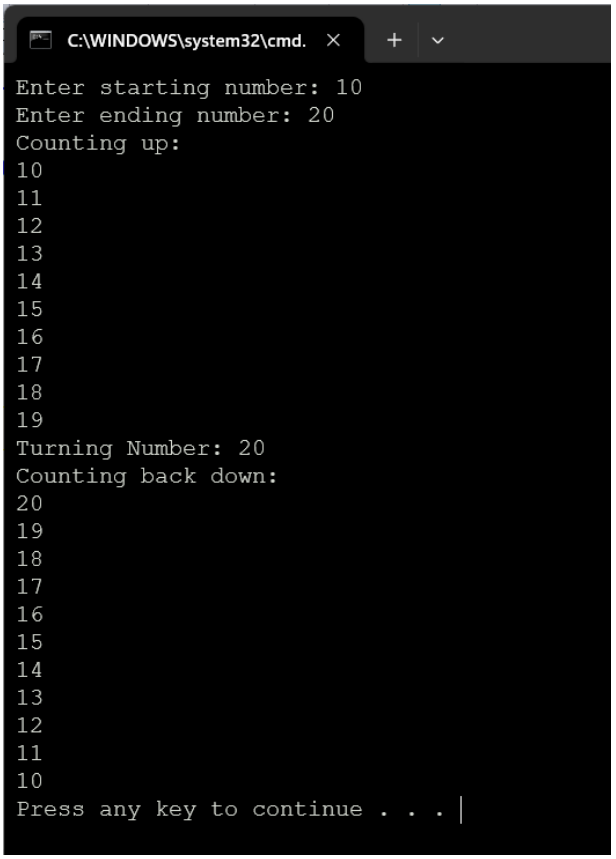
Goal: Create a program in Java using two for loops

Write a Java program named CountUpCountDown that sequentially performs a count-up and a count-down. The program should:

Prompt the user to enter two integers: a starting number and an ending number.



Count up from the starting number, printing each number.
After reaching the ending number, print it out as a "turning number."
Then, count back down from this turning number to the starting number, printing each number.
Ensure that the program prints each number on a separate line and includes clear prompts for the user inputs. The counting sequences and the turning number should be displayed as distinct sections in the output.



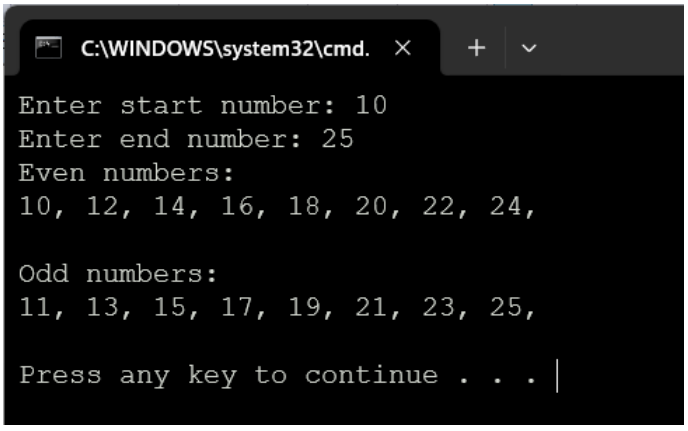
Amend your program so that the user must enter a positive number as the starting number, and the second ending number must be greater than the first.

Exercise 12

Goal: Create a program in Java using two for loops

Write a Java program named *EvenOddSequences* that separates and prints even and odd numbers within a given range. The program should:

- Prompt the user to enter two integers: a start number and an end number to define the range.
- Use one for loop to iterate through the range and print all even numbers in the range on the same line, separated by commas.
- Use another for loop (not nested within the first loop) to iterate through the same range and print all odd numbers in the range on the same line, also separated by commas.
- The even and odd numbers should be printed in two separate sections. Your output should be similar to as shown below:



*Your program should also ensure that the **end** number entered is greater than the start number, and continue to prompt the user until this is the case:*