Loops and the while statement Assignments

Exercise 1 — Run of Integers

Write a program that asks the user for a starting value and an ending value and then writes all the integers (inclusive) between those two values.

```
Enter Start:
5
Enter End:
9

5
6
7
8
9
```

Exercise 2 — Sum of Sequential Integers

Write a program that asks the user for N and then sum all the integers (inclusive) between 1 and N.

```
Enter N:
10
Sum = 55
```

Do this in a loop that counts up 1 to N and in each iteration adds the current count to the sum.

Another way to calculate the same thing is through a formula:

```
sum = (n*(n+1))/2
```

Modify your program so that it calculates the sum both ways:

```
Enter N:
10
Loop Sum = 55
Formula Sum = 55
```

You might worry that the formula will lead to integer division problems. But it works as is. Why? (Hint: think about even and odd.)

The sum of sequential integers 1 to N is called a **triangle number**. See the exercises for chapter 25.

Exercise 3 — Sum of a Range of Sequential Integers

Write a program that asks the user for two integers, low and high and then sums all the integers (inclusive) low through N.

```
Enter low:
5
Enter high:
10
Sum = 45
```

Do this by noticing that the sum from low to high is the same as the sum from one to high minus the sum from one to (low-1). Calculate each of these by using the formula:

```
sum = (n*(n+1))/2
```

Exercise 4 — Repeatedly Echo a Word

Write a program that asks the user to enter a word. The program will then repeat word for as many times as it has characters:

```
Enter a word:
Hello
```

```
Hello
Hello
Hello
Hello
Hello
```

To do this you will need to use the `length()` method of `String` that counts the number of characters in a string:

```
String inputString;
int times;

 . . . .

times = inputString.length()
```

Exercise 3 — Words Separated by Dots

Write a program that asks the user to enter two words. The program then prints out both words on one line. The words will be separated by enough dots so that the total line length is 30:

```
Enter first word:
turtle
Enter second word
153

turtle...................153
```

This could be used as part of an index for a book. To print out the dots, use `System.out.print(".")` inside a loop body.

Exercise 4 — One Letter per Line

Write a program that asks the user to enter a word. The program then writes that word one character per line:

```
Enter a word: turtle
t
u
r
t
l
e
```

Use the `length()` method that counts the number of characters in a string and the `charAt( int index )` that returns the character at `index`. Recall that `String` indexes start at zero.

Exercise 5:

1. Write program to print alphabets from a to z using while loop

Exercise 6:

2. Write program to print multiplication table of a given number

Exercise 7:

3. Write program to check a enter number is Prime number or not using while & for loop

Exercise 8:

4. Write program to calculate power of number (a raise to b) using while & for loop

Exercise 9:

5. Write program to find Armstrong numbers between 1 to n

Exercise 10:

6. Write   program to find the sum of first and last digit of any number(number may contain 3 digit,4 digit or 5 digit)

Exercise 11:

7. Write program to print Fibonacci series