



Exercise 1. Short Answers

- 1- What is wrong with the following statement? Provide the correct statement to add one to the sum of x and y.

```
System.out.println( ++(x + y) )
```

- 2- The following code may result in an infinite loop. Explain why.

```
for(double i = 0.1; i != 1; i+=0.1)
    System.out.print(i + " ");
```

- 3- Trace the following method and explain what will it give as output:

```
public static void traceMe(int x)
{
    for(int i=1; i<=x; i++)
    {
        for(int j=1; j<=i; j++)
            System.out.print("*");

        for(int j=1; j<=2*x - 2 * i; j++)
            System.out.print("-");

        for(int j=1; j<=i; j++)
            System.out.print("*");

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

Exercise 2. Basic Loops

- 1- Write a for loop to display all the multiple of three **between 1 and 100** on one line, separated with space.
- 2- Write a for loop to display all the numbers from **100 to 1, separated with tabs**. Display 5 integers per line.
- 3- Add another for loop to write all the **odd numbers between 1 and 100**, separated by space.
- 4- Write a for loop that prints the **squares of all the numbers from 1 to 10** separated by space, as follows:

1 4 9 16 25 36 49 64 81 100

Exercise 3. Multiplication Table

Write the corresponding program to display the multiplication table for the numbers between 1 and 10 as shown below (remember that you can use \t to add a tab):

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Exercise 4. Factorial

Write a method that takes an integer n and returns its factorial. Test your method on different input.

Exercise 5. Triangle of Stars

Create a program that takes a positive integer n from the user and displays a triangle of stars with n lines as follows: (if n is 4):

```
*
**
***
****
*****
*****
```

Exercise 6. Palindrome

Write a method that takes a string, and returns **true if it is a palindrome and false otherwise**. Note that, a string is said to be a palindrome if the **reverse of the string is the same as the string itself**. The function should

be case insensitive. For example: “Civic” and “radar” are palindromes, but “local” and “digital” are not. Test your method on different user input.

Exercise 7. Longest Substring

Write a program that reads a string and checks the longest substring starting with “a” and ending with “z” included in it. Note that, the substring cannot contain another a or another z in it. For example:

If $s = \text{“bcd bbccdd bade fgze tabdz”}$, the longest substring is: 6