

# Introduction to Computer Programming

## 02. C# basics

### Exercises

When solving the exercises remember to make sure your program doesn't crash regardless of user's input.

1. Write a program checking if a number given by the user is even or odd.
2. Write a program calculating the following equation  $\frac{ab}{a+b}$ , where a and b are values given by the user.
3. Write a program which reads 3 numbers from the user and prints them out in an ascending order.
4. Write a simple calculator, which will allow for basic arithmetic's (+, -, \*, /) on two numbers.
5. Modify the solution to the previous exercise so that the program runs as long as the user wants.
6. Write a program which calculates the factorial of a number from range <1,10> given by the user.
7. Write a program which will draw a rectangle out of '\*' with width and height provided by the user.  
Example for height=3, width=6:

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

8. Write a program which will draw a pyramid out of '\*' with the height given by the user.  
Example for height 4.

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

9. Write a program verifying if a number given by the user is prime.
10. Modify the tic-tac-toe game from the previous set of exercises. Now, instead of asking the user to provide the whole state of the game at once, the user should place each symbol one move at a time – just like in a normal tic-tac-toe game – X and O in turns. For now, you don't have to check if anyone has won – just write "Game over!" when the board is filled. Just remember to prevent the user from making an illegal move! Below is an example game:

Welcome to tic-tac-toe!

```
| |  
---+---+---  
| |  
---+---+---  
| |
```

X's move > 2

```
| X |  
---+---+---  
| |  
---+---+---  
| |
```

O's move > 1

```
O | X |  
---+---+---  
| |  
---+---+---  
| |
```

X's move > 1

Illegal move! Try again.

X's move > 23

Illegal move! Try again.

X's move > 5

```
O | X |  
---+---+---  
| X |  
---+---+---  
| |
```

O's move > 3

...

O's move > 8

```
O | X | O  
---+---+---  
O | X | X  
---+---+---  
X | O | X
```

Game over!