Hands-on Python – Exercises – Day 2

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Exercise 1

Guess my number - part 2!
Extend your guessing program in a way, that you can repeat to enter a number until you have the right one.

Exercise 2

Write a function, that takes a number as input (by default 5) and returns its factorial.

$$n! = n \cdot (n-1) \cdot (n-2) \cdot \ldots \cdot 1$$

You have to check, that the number is not negative. Also we can only compute the factorial of integers, so turn the inputnumber into a int.

Hint: there are two ways to compute it:

- iteratively - use a for loop;
- recursively - you can call a function from itself ($n! = n \cdot (n-1)!$)

Exercise 3

Write function, that compute the arithmetic mean of a arbitrary number of numbers.

$$\overline{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

Exercise 4

Copy your functions for factorial and mean one file. Extend it to a program, that asks the user if he wants to compute the factorial of a number or the arithmetic mean of a series of numbers or exit. According to the user's input, ask for one number and print `The factorial of {input number} is {factorial}.`

or ask for many numbers and print `The arithmetic mean of {list of numbers} is {mean}.` Ask again till the user chooses to exit.
Hint: if you want to use a list as input for a function that expects a series of numbers (for example your arithmetic mean function), you can use the unpacking operator (e.g. function(∗ list))

Exercise 5

Modify your program, to add an option to compute the arithmetic mean of numbers saved to a file on your computer.
Here you should take the name of the file as userinput.

Exercise 6

Guess my number - part 3!

- Extend your guessing program in a way, that you have only 5 attempts. Also print the information about how many attempts are left. (Use a for loop!)
- Make the number of guesses variable. Add a second input line in the beginning to enter a number of possible attempts. Print `You lost!` if the number was not guessed.

Exercise 7

```
def foo(x, y):
    global a
    a = 42
    x,y = y,x
    b = 33
    b = 17
    c = 100
    print("Inside a:", a)
    print("Inside b:", b)
    print("Inside x:", x,)
    print("Inside y:", y)

a,b,x,y = 1,15,3,4
foo(17,4)
print("Outside a:", a)
print("Outside b:", b)
print("Outside x:", x,)
print("Outside y:", y)
```

Write the output you expect to a piece of paper. **Afterwards** check by executing the program.

Exercise 8

Find out how to open a webbrowser, write a program, that waits for 10 seconds, and then opens the webbrowser with your favorite youtube video

Exercise 9

If there's time left, solve some exercises from http://codingbat.com/python. You should be able to solve exercises from Warmup-2, String-2, Logic-2 and List-2