TFL115 - Exercise 1

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1 Introduction

In this exercise there are assignments which should help you understand what we covered in the lecture. This exercise is not mandatory and should not be delivered, however it will help you manage the mandatory exercise which is introduced later on. Please let us know if there are any problems with the exercise or you feel unable to solve the tasks.

General tip: Focus your time on learning, do not waste your time on exercises you have full control over. (Time is a valuable resource).

2 Preparation

2.1 Installing Python 3

The first you need to do is download and install Python3, which can be done from:

`https://www.python.org/downloads/`

If you have trouble installing it, ask for help during the exercise on monday. *Remember to ADD TO PATH (checkbox) when installing on Windows.*

2.2 Installing PyCharm

Install PyCharm from the JetBrains toolbox installed with Christian Auby in DAT111/113. *Install the educational package, which we will use later.* If you are unable to find it in the toolbox, it can be downloaded directly from the JetBrains homepage.

3 Exercise 1

- Open PyCharm and create a new project. See Figure 1
- Give it a suitable name. See Figure 2

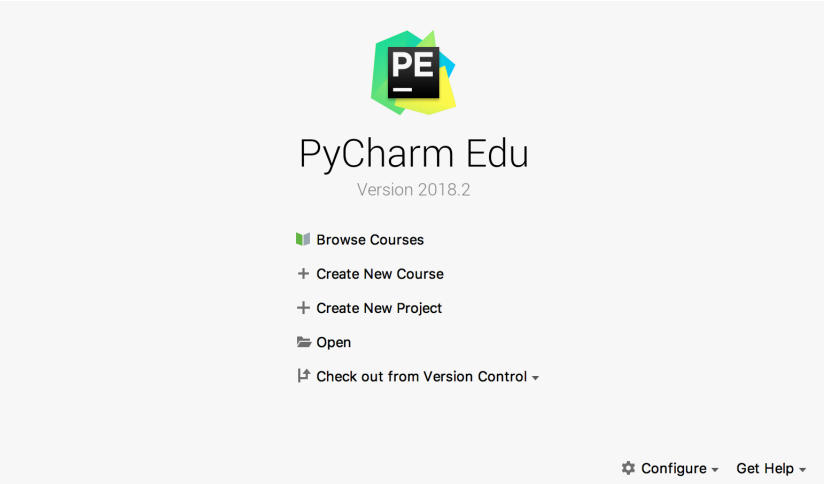

Figure 1:

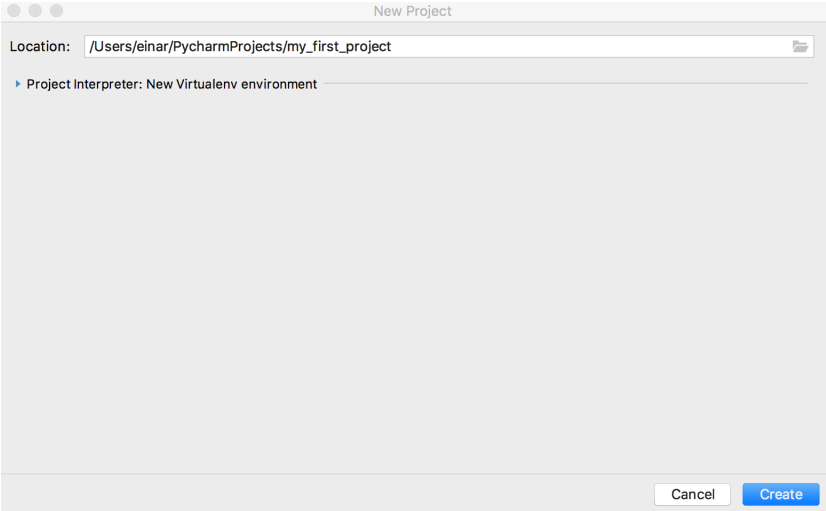

Figure 2:

- When you see the following project as in Figure 3, right click on *my_first_project* (or the name of your project) and choose new. From there choose Python file and give it a name.
- Then you should see something as in Figure 4. Write something like `print("hello world")` and press the little green icon to the left of Line number 1.
- Then you should see the print of "hello world" or the message you printed

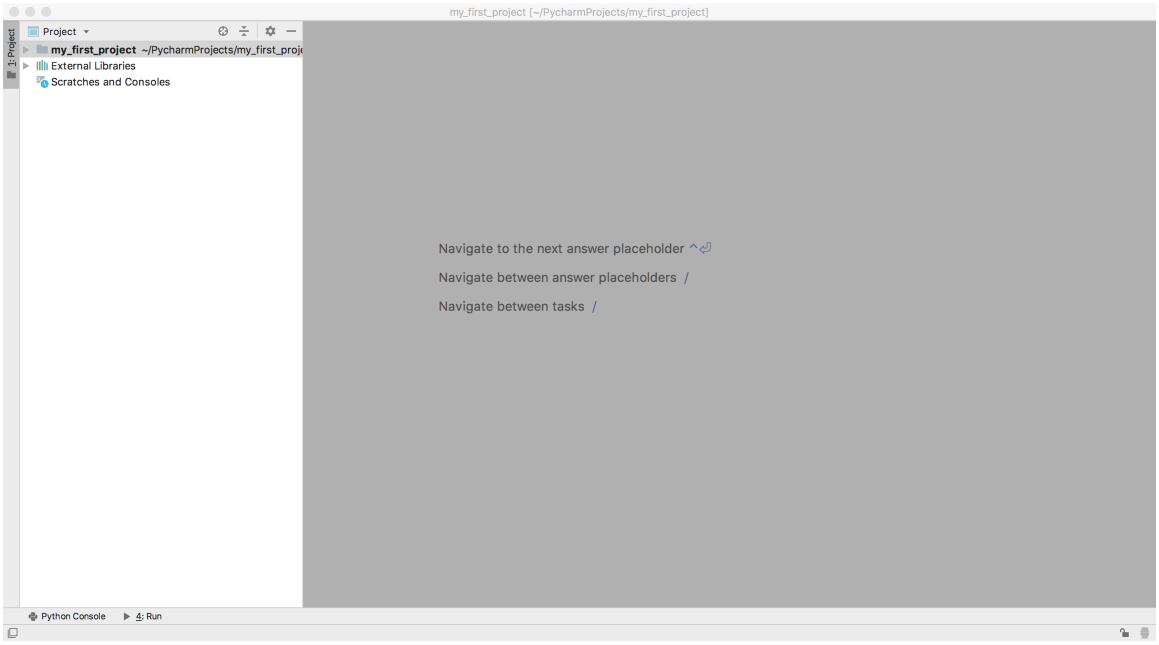

Figure 3:

on the bottom. See Figure 5

4 Exercise 2

Take the code from lecture1 (Uploaded on canvas) and play around with it. Try to understand variables, assignments, operators, statements and loops. If you have any question, do not hesitate to ask.

5 Exercise 3

JetBrains provides an interactive tutorial in PyCharm that some of you might find helpful. Recommended topics for now:

- Introduction
- Variables
- Strings
- Data structures (Many of these have not been addressed in lectures yet)
- Conditional expressions
- Loops

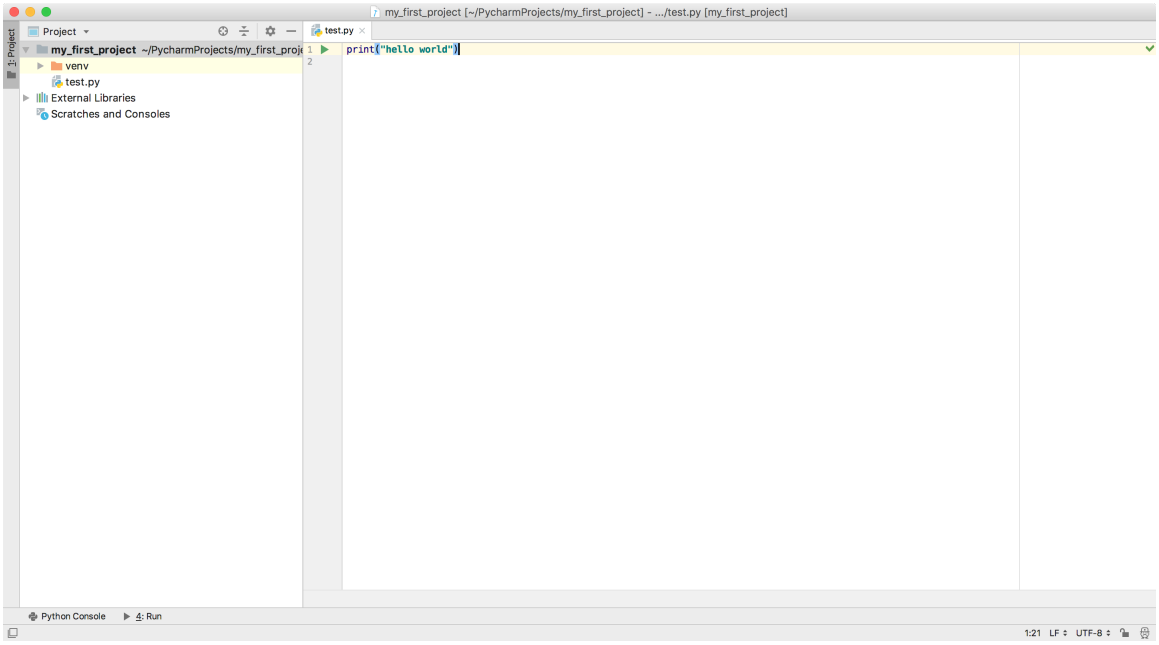

Figure 4:

6 Exercise 4

- Create an integer variable `a` with value `15`
- Create another integer variable `b` with value `12`
- Print the sum of `a` and `b`
- Print the multiplication of `a` and `b`
- Print the subtraction of `b` minus `a`.
- Print the modulus of `a` and `b` (`a % b`), then `b % a`. Try to understand the modulus.
- Create a program that prints `2` if a variable `x` has the value `2`. Otherwise it should print `"Not 2"`.
- Create a program which has a list of the numbers 1-10. Print all of the values in the list. Hint: for-loop
- Create a program which has a list of the numbers 1-10. Print the sum of the whole list.
- Create a program which has a variable `stop=10` and prints `"new print"` while the variable stop is larger than `0`.

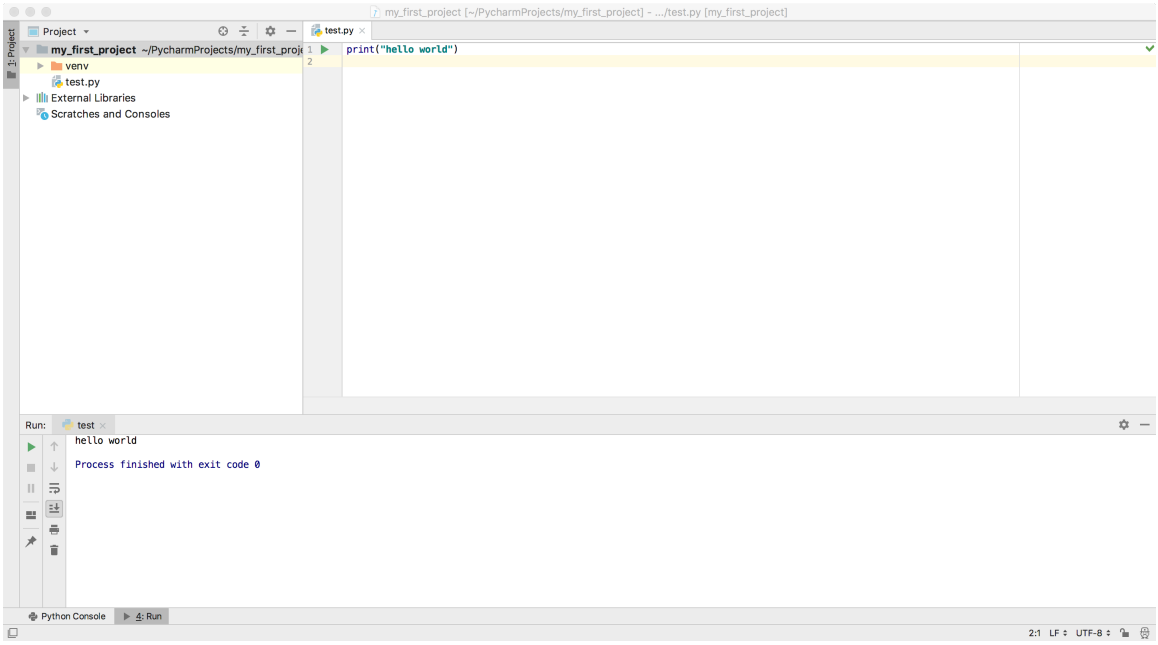

Figure 5:

- Create a program which finds all the even integers in a list with numbers 1-10
- Create a program which finds all the odd integers in a list with numbers 1-10
- Create a program which calculates the distance if the speed is `34` km/h and the time used is `1.5` hour. (v = s/t)

7 Exercise 5 - Doing math

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23. Find the sum of all the multiples of 3 or 5 below 1000.

8 Exercise 6 - More `list`

- Create a program which starts with an empty list and ends up with a list containing the numbers 1-10.000. This should not be done manually like mylist=[1,2,...,10.000]. Hint use a for-loop and append.

- Create a program which has a list with the numbers 1-10 and prints them in the reverse order, starting with 10.
- Create a program which starts with an empty list and ends up with a list containing the numbers 1-100 in reverse order. It should look like [100, 99, ..., 1]