DAIS2021: Assignment #1
Introduction to Python

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Introduction

In this assignment, we want to get familiar with Python, its basic commands, how to write functions and the package *NumPy*.

The assignment has 100 points in total, distributed over the tasks. You need to get at least 50 points to pass this assignment.

1 Basic Commands

In the following, you will find a list of computations that you should execute and inspect the output. Before we jump into jupyter notebooks, lets work with the python interpreter on the command line. You can invoke it with the appropriate Python binary (e.g. *python*).

1.1 Values (20 Points)

Please note down the output of each line and the type of the output value (Hint: the in-built function "type()" is helpful here.).

7 / 2	Output:		Type:	
7 / 2.0	Output:		Type:	
7 // 2	Output:		Type:	
7 // 2.0	Output:		Type:	
7 % 2	Output:		Type:	
16**2	Output:		Type:	
2 + 3 * 4	Output:		Type:	
(2+3) * 4	Output:		Type:	
2**2 * 2+2	Output:		Type:	
(2**2) * (2 + 2)	Output:		Type:	
1 + 2 + 3 * 4 + 5	Output:		Type:	
(1 + 2 + 3) * (4 + 5)	Output:		Type:	
2 < 3 or 5 < 4	Output:		Type:	
2 < 3 and 5 < 4	Output:		Type:	
2 < 3 and 3 > 1	Output:		Type:	
2 < 3 and not 3 > 1	Output:		Type:	
"2" + "3" * 4	Output:		Type:	
"2" + "3" * 4	Output:		Type:	
len("2" + "3" * 4)	Output:		Type:	

1.2 Variable assignments (10 Points)

Please note down the output of the following code snippets.

1.2a.py

```
x = 4
y = x + 1
x = 2
print(x, y)
```

Output:

1.2b.py

```
x, y = 2, 6
x, y = y, x + 2
print(x, y)
```

Output:

1.2c.py

```
a, b = 2, 3
c, b = a, c + 1
print(a, b, c)
```

Output:

1.2d.py

```
x = 4
y = 5
p = x < y or x < z
print(p)
```

Output:

2 Jupyter Notebooks

This task is aimed at familiarising you with the workflow of Jupyter Notebooks.
Open the provided jupyter notebook file "JupyterIntro.ipynb" with Jupyter notebooks.
If you have not yet installed Jupyter notebooks, please refer to the respective document in the Moodle.

3 Functions (35 Points)

This task should be done in the provided Jupyter notebook file "PythonFunctions.ipynb".

4 NumPy (35 Points)

This task should be done in the provided Jupyter notebook file "NumpyIntro.ipynb".

Important: Make sure to install the appropriate version of NumPy, i.e. 1.20.2 (it should be referenced in the respective notebooks).

5 Next Assignment

You should prepare the following topics for the next assignment:

- Different attribute/feature types and their visualization
- Correlation analysis, causal relationships
- Statistical tests, Chi-Square Test

Note: the lecture script serves only as an orientation and you may need additional material (books, online tutorials) in case you did not fully understand the concepts. We will provide you with literature recommendations in the following tutorials.