

## Python for Data Analysis

ESILV S1 2021–2022

### [Tutorial 1: The Basics of Python]

#### Exercise 1 [List]

- Write a program to print a specified list after removing the 0th, 4th and 5th elements.  
**Sample List:** ['Red', 'Green', 'White', 'Black', 'Pink', 'Yellow']  
**Expected Output:** ['Green', 'White', 'Black']
- Write a program to check whether two lists are circularly identical.
- Giving the following list [33, 56, 4, 80, 23, 100, 1, 0, 40, 11], write a program to extract:
  - the elements from 0 (included) to 7 (excluded),
  - the last element of the list,
  - the last 3 elements of the list.
- Write a program to get a list, sorted in increasing order by the last element in each tuple from a given list of non-empty tuples.  
**Sample List :** [(2, 5), (1, 2), (4, 4), (2, 3), (2, 1)]  
**Expected Result :** [(2, 1), (1, 2), (2, 3), (4, 4), (2, 5)]

#### Exercise 2 [Lambda]

- Write a program to square and cube every number in a given list of integers using Lambda.  
**Original list of integers:**  
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]  
**Square every number of the said list:**  
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]  
**Cube every number of the said list:**  
[1, 8, 27, 64, 125, 216, 343, 512, 729, 1000]

#### Exercise 3 [Dictionary]

- Write a script to check whether a given key already exists in a dictionary.
- Write a program to iterate over dictionaries using for loops.
- Write a script to generate and print a dictionary that contains a number (between 1 and n) in the form (x, x\*x).  
**Sample Dictionary:** (n = 5)  
**Expected Output:** {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}
- Write a program to map two lists into a dictionary.

#### **Exercise 4 [Tuple, Sets]**

- Write a program to compute element-wise sum of given tuples.

**Original lists:**

(1, 2, 3, 4)

(3, 5, 2, 1)

(2, 2, 3, 1)

**Element-wise sum of the said tuples:**

(6, 9, 8, 6)

- Write a Python program to convert a tuple to a dictionary

#### **Exercise 5 [Dates]**

- Write a Python program to get the current time.

**Sample Format:** 13:19:49.078205

- Write a Python program to subtract five days from current date.

**Sample Date:**

**Current Date:** 2015-06-22

**5 days before Current Date :** 2015-06-1

- Write a Python program to print yesterday, today, tomorrow
- Write a Python program to get week number.

**Sample Date :** 2015, 6, 16

**Expected Output :** 25

- Write a Python program to calculate a number of days between two dates

#### **Exercise 6 [File I/O]**

- Write a Python program to count the number of lines in a text file
- Write a Python program to assess if a file is closed or not
- Write a Python program to append text to a file and display the text
- Write a Python program to count the frequency of words in a file.