

# Exercise 00

## 1 Numbers

1.a. What is the *type* of the result of the expression  $3 + 1.5 + 4$ ?  
(without typing code)

type Float

1.b. How do you get it with code? (method?)

```
In [1]: # get the type of the result from 1.a  
type(3 + 1.5 + 4)
```

```
Out[1]: float
```

1.c. Ask the user for an input and then save to input to an integer called "user\_in" and then print the value multiplied by 5.

```
In [2]: # value multiplied by 5  
user_in = int(input())  
print(user_in*5)
```

5

1.d. Ask the user for an input and then save to input to an integer called "square\_root\_value" and calculate the square\_root of the number from the user (without using the sqrt function in the python library, just with standard operations)

```
In [9]: # Square root  
square_root_value = int(input())  
square_root = square_root_value ** 0,5  
print(square_root)
```

(1, 5)

1.e. Ask the user for an input and then save to input to an integer called "square\_value" and calculate the square of the number from the user (without using the sqrt function in the python library, just with standard operations)

```
In [7]: # Square  
square_value = int(input())  
print(square_value ** 2)
```

49

## 2 Strings

2.a. Given the string 'hello' give an index command that returns 'e'. Enter your code in the cell below:

```
In [10]: greeting = 'hello'
# Print out 'e' using indexing
print(greeting[1])
```

Out[10]: 'e'

2.b. Given the string 'hello' give an index command that returns 'hell'. Enter your code in the cell below:

```
In [11]: greeting = 'hello'
# Print out 'hell' using indexing
print(greeting[:4])
```

hell

2.c Given the string 'hello', create a new string variable called 'greeting\_rest' from it to and save 'llo' in the new variable

```
In [12]: greeting = 'hello'
# Save the part 'llo' in a new variable called 'greeting_rest' using indexing
greeting_rest = greeting[2:]
print(greeting_rest)
```

llo

2.d. Ask the user for his or her name and then save the input to a variable named "user\_name". Then print "Hello, *user\_name* !"

```
In [15]: user_name = input("What is your name?: ")
print("Hello, {}!".format(user_name))
```

Hello, Angelina!

2.e. Ask the user for his or her 'first\_name', 'last\_name' and 'age' and print the reust in a multi-line string like:

'Hello, first\_name last\_name .

You are age years old. '

```
In [16]: # hint: 3 inputs => 3 variables
first_name = input("First name: ")
last_name = input("Last name: ")
age = input("Age: ")
print("""Hello, {} {}.
You are {} years old.""").format(first_name, last_name, age))
```

Hello, Angelina Ierardi.  
You are 28 years old.

### 3. List

**3.a Create a list with 4 elements "45,25,56" in two different ways and save it to a variable called 'my\_list'**

```
In [59]: # my_list =  
my_list = [0,45,25,56]  
print(my_list)  
  
[0, 45, 25, 56]
```

**3.b. From 'my\_list' change the first value (index 0) to 0.**

```
In [24]: # index 0 must be 0  
my_list[0] = 0  
print(my_list)  
  
[0]
```

**3.c. Save the sum of all number in the list to a variable called 'sum\_of\_my\_list'**

```
In [60]: # sum of 0,25,56  
my_list = [0,25,56]  
sum_of_my_list = sum(my_list)  
print(sum_of_my_list)  
  
81
```

**3.d. sort the list bellow:**

```
In [26]: list1 = [4,5,6,3,6,7,2,9]  
list1.sort()  
print(list1)  
  
[2, 3, 4, 5, 6, 6, 7, 9]
```

**3.e. Get the last 3 elements of the list using indexing and save it to a variable called 'list2'. Then make again the sum of 'list2' and insert the result to 'list2'**

```
In [27]: # hint: you might use 3 different variables  
list2 = list1[-3:]  
list2.append(sum(list2))  
print(list2)  
  
[6, 7, 9, 22]
```

**3.f. swap list elements**

Swap the first and last elements from the list `one_to_five`

```
In [29]: # create list
one_to_five = [5,2,3,4,1]
one_to_five = [5,2,3,4,1]
one_to_five[0], one_to_five[4] = one_to_five[4], one_to_five[0]
print(one_to_five)

[1, 2, 3, 4, 5]
```

## 4. Dictionaries

Using keys and indexing, grab the word *Bremerhaven* from the following dictionaries:

```
In [64]: name = {'university': 'Bremerhaven'}
# Get 'Bremerhaven'
print(name['university'])
```

Bremerhaven

```
In [65]: name = {'institution': {'name': 'Bremerhaven'}}
# Get 'Bremerhaven'
print(name["institution"]["name"])
```

Bremerhaven

```
In [67]: name = {'region': [{'University': 'Oldenburg', 'Hochschule': 'Bremerhaven'}]}
# Get Bremerhaven
print(name['region'][0]['Hochschule'])
```

Bremerhaven

## 5. What is the major difference between tuples and lists?

Lists can be edited and Tuples are immutable.

## 6. Sets

### 6.a. What is unique about a set?

Elements are unique and sets are unordered

### 6.b. Use a set to find the unique values of the list below:

```
In [36]: # create the list
unsorted_list = [1,2,2,1,3,5,4,8,7,74,8,8,9,9,5,4,45,12,4,2]
print(set(unsorted_list))

{1, 2, 3, 4, 5, 7, 8, 9, 74, 12, 45}
```

## 6. Boolean

What will be the value of the following boolean?

```
4*0.5 != 2
```

False

```
a = 1 < 4
```

True

```
b = 'b' < 'c'
```

True

```
c = (a == b)
```

True

```
d = (c or False)
```

True

```
e = (c and False) # equivalent to 'e=((a==b) and False)' <=> 'e=(((1<4)==('b'<'c')) and False)'
```

False