Exercice 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 iput 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 iput 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 iput 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 indexin
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 differents way 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 differents 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, grap 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