Exercice 00

7 / 10 pts

1 Numbers

1.25 pts / 1.25 pts

1.a. What is the *type* of the result of the expression 3 + 1.5 + 4?

(without typing code)

0.25 pts

>Float

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

0.25 pts

In [9]:
```
type(3+1.5+4)
```

Out[9]:
```
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.

0.25 pts

In [ ]:
```
user_in= input()
a= int(user_in)
print(a*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

0.25 pts

In [16]:
```
import math
user_in= input()
a= int(user_in)
square_root_value= math.sqrt(a)
print(square_root_value)
```

// we did not learn about import yet

// print(square_root_value ** (1/2))

```
2.0
```

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

0.25 pts

In [21]:
```
import math
user_in= input()
a= int(user_in)
square_value= a**2
print(square_value)
```

// why do you import it if you do not use it?

```
25
```

2 Strings

(1 / 1.50 pts)

2.a. Given the string 'hello' give an index command that returns 'e'. Enter your code in the cell below: 0.25 pts

In [2]:
```
greeting = 'hello'
# Print out 'e' using indexing
t_str= greeting
t_str[1]
```

Out[2]: 'e'

2.b. Given the string 'hello' give an index command that returns 'hell'. Enter your code in the cell below: 0.25 pts

In [32]:
```
greeting = 'hello'
# Print out 'hell' using indexing
t_str= greeting
t_str[:4]
```

Out[32]: '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 0.25 pts

In [5]:
```
greeting = 'hello'
# Save the part 'llo' in a new variable called 'greeting_rest' using indexing
t_str= 'hello'
greeting_rest= t_str[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* !" 0.25 pts

In [9]:
```
user_name= "Mohammad Nour Aarfeh"
greeting= "Hello, "
t_str= user_name
print(greeting+t_str)
```

// use format next time
// print("Hello, {}!".format(user_name))

```
Hello, Mohammad Nour Aarfeh
```

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: 0 / 0.50 pts

'Hello, first_name last_name .

You are age years old. '

In [20]:
```
# hint: 3 inputs => 3 variables
first = "Hello, Mohammad Arafeh \n"
second= "You are 24 years old"
together = first + second
print(together)
```

// you should ask the user to add the informations.
// first_name = input("Enter your first name: ")
// last_name = input("Enter your last name: ")
// age = input("age: ")
// print("Hello, {0} {1}. \nYou are {2} years old.".format(first_name, last_name, age))

```
Hello, Mohammad Arafeh
You are 24 years old
```

3. List 1.50 pts / 3 pts

3.a Create a list with 4 elements "45,25,56" in two differents way and save it to a variable called 'my_list' 0.25 pts / 0.50 pts

In [24]:
```
my_list = [0,45,25,56]
print(my_list)
```

// this is ok for the first way.

```
# second variation
my_list = []
my_list.append(45)
my_list.append(25)
my_list.append(56)
```

```
[0, 45, 25, 56]
```

3.b. From 'my_list' change the first value (index 0) to 0. 0.25 pts / 0.50 pts

In [25]:
```
# index 0 must be 0
my_list[0]
```

// you should have shown that you can updated a list
// my_list[0] = 0

Out[25]:
```
0
```

3.c. Save the sum of all number in the list to a variable called 'sum_of_my_list' 0 pts / 0.50 pts

In [29]:
```
# sum of 0,25,56
sum_of_my_list= [0,25,56]
print(len(sum_of_my_list))
```

// the sum of the numbers in the list, not the length of the list
// my_list = [0,25,56]
// sum_of_my_list = my_list[0] + my_list[1] + my_list[2]

```
3
```

3.d. sort the list bellow: 0.50 pts

In [33]:
```
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' 0 / 0.50 pts

In [39]:
```
# hint: you might use 3 differents variables
list1 = [4,5,6,3,6,7,2,9]
list1.sort()
list2= list1[5:]
print(list2)
print(len(list2))
list2.append(3)
print(list2)
```

// you do not have to sort the list, it was not asked.
// the last three elements should have been 7,2,9 ; and after the sort it is now corrupt
// you should append the sum of the last three element (list2)
// list2.append(list2[0] + list2[1] + list2[2])

```
[6, 7, 9]
3
[6, 7, 9, 3]
```

3.f. swap list elements 0.50 pts

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

In [47]:
```
# create list
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 2 pts / 3 pts

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

In [59]:
```
name = {'university':'Bremerhaven'}
print(name['university'])
```

```
Bremerhaven
```

In [65]:
```
name = {'institution':{'name':'Bremerhaven'}}
# Get 'Bremerhaven'
a= {'name':'Bremerhaven'} // you should extract it from the dictionary name
inside_dictionary= a      // name["institution"]["name"]
print(a.get('name'))
```

```
Bremerhaven
```

In [66]:
```
name = {'region':[{'University':'Oldenburg','Hochschule':'Bremerhaven'}]}
# Get Bremerhaven
name['region'][0]['Hochschule']
```

Out[66]:
```
'Bremerhaven'
```

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

The tuples are immutable objects, but the lists are mutable. 0.25 pts

6. Sets 1 pt / 1 pt

6.a. What is unique about a set?` 0.25 pts

A set is an unordered collection of items. Every set element is unique (no duplicates) and must be immutable (cannot be changed).

6.b. Use a set to find the unique values of the list below: 0.50 pts

In [67]:
```
# 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]
set(unsorted_list)
```

Out[67]:
```
{1, 2, 3, 4, 5, 7, 8, 9, 12, 45, 74}
```

6. Boolean 0.25 pts

What will be the value of the following boolean?

In [3]:
```
4**0.5 != 2
```

Out[3]: False

In [3]:
```
a = 1 < 4
```

In [4]:
```
b = 'b' < 'c'
```

In [5]:
```
c = (a == b)
```

In [6]:
```
d = (c or False)
```

In [7]:
```
e = (c and False) # equivalent to 'e=((a==b) and False)' <=> 'e=(((1<4)==('b'<'c')) and False'
```

In [8]:
```
e
```

Out[8]: False

In [ ]:
```

```