

# Python for Finance - Exercises to be completed individually

**Marks: 10% of the total for the course**

**Deadline: 3rd of December 2023**

## Section 1 - Quiz

**In the questions below, please select one option.**

1.1 What is a correct syntax to output "Hello World" in Python?

(D) `print("Hello world")`

1.2 How do you create a variable with the numeric value 5?

(C) Both are correct

1.3 How do you create a variable with the floating number 2.8?

(C) Both the other answers are correct

1.3 What is the correct syntax to output the type of a variable or object in Python?

(D) `print(type(x))`

1.5 In Python, 'Hello', is the same as "Hello"

(a) True

1.6 Which of these collections defines a TUPLE?

(d) ("apple", "banana", "cherry")

1.7 Which of these collections defines a SET?

(A) {"apple", "banana", "cherry"}

1.8 Which of these collections defines a DICTIONARY?

(c) {"name": "apple", "color": "green"}

1.9 Which collection is ordered, changeable, and allows duplicate members?

(B) LIST

1.10 Which collection does not allow duplicate members?

(b) SET

1.11 Which statement is used to stop a loop?

(D) break

1.12 Only one of the following statements is true when it comes to Copies in NumPy, which one?

(a) The copy should not be affected by the changes made to the original array

1.13 In NumPy, what does the SHAPE of an array mean?

(a) The shape is the number of elements in each dimension

1.14 What is a correct syntax to return the shape of an array?

(c) arr.shape

1.15 What is a correct syntax to mathematically add the numbers of arr1 to the numbers of arr2?

(a) np.add(arr1, arr2)

1.15 What is a correct syntax to return the entire DataFrame?

(b) to\_string()

## Section 2: Questions with short answers

2.1 The following code example would print the data type of x, what data type would that be?

```
x = 5  
print(type(x))
```

It would be Integer (Int), because 5 is number include in the Integer

2.2 The following code example would print the data type of x, what data type would that be?

```
x = 20.5  
print(type(x))
```

It would be Float (Float), because 20.5 is a decimal point value, so it's include in the Floating Number

2.3 The following code example would print the data type of x, what data type would that be? x = True

```
print(type(x))
```

It would be Boolean (Bool), because the answer could only be True or False

2.4 The following code example would print the data type of x, what data type would that be?

```
x = ["apple", "banana", "cherry"] print(type(x))
```

The data type would be Class, because the datas are surrounded by [],

2.5 The following code example would print the data type of x, what data type would that be? `x = {"name" : "John", "age" : 36}`  
`print(type(x))`

The data type would be Dictionary, because the value are surrounded by {}, and because there is two different type of value associated (Name with John and Age with 36)

2.6 The statement below would print a Boolean value, which one?  
`print(5>3)`

The Boolean value that would be print would be : TRUE

2.7 The statement below would print a Boolean value, which one?  
`print(5==3)`

The Boolean value that would be print would be : FALSE

2.8 The statement below would print a Boolean value, which one?  
`print(bool("abc"))`

The Boolean value that would print would be : TRUE, because the () are not empty

2.9 The statement below would print a Boolean value, which one?  
`print(bool(0))`

The Boolean value that would be print would be : FALSE, because in Boolean, the value 0 is considered as False

2.10 What is printed by the following Python code?

```
print(2 ** 3 ** 2 ** 1)
```

512

In python, \*\* is the function exponentiation function

$2^{**1} = 2$  ;  $3^{**2} = 9$  ;  $2^{**9} = 512$

2.11 What is printed by the following Python code?

```
def func1(x):  
    print(2*x)
```

```
func1(5)func1(4)
```

$\text{Func1}(5) = 5 \times 2 = 10$

$\text{Func1}(4) = 4 \times 2 = 8$

2.12 What is printed by the following Python code?

```
for x in [8,3,5]:  
    print(x+2)
```

The result is :

$8+2 = 10$

$3+2 = 5$

$$5+2 = 7$$

2.13 What is printed by the following Python code?

```
m=4
for x in [8,3,5]:
    m=m+x

print(m)
x = 8 + 3 + 5 = 16
```

$$X+M = 20$$

2.14 What is printed by the following Python code? **ERROR IN THE CODE**

```
def func1(x):
    print(2+x)

print(func1(2)+func(4))
```

$$\text{Func1} = 2+2 = 4$$

$$\text{Func2} = 4+2 = 6$$

$$\text{Print}(\text{func1}(2)+\text{func4})) = 4+6 = 10$$

2.15 What is printed by the following Python code?

```
print('2'+ '3')
```

Result = 23, because 2 and 3 are defined as String, and when we add two string values, Python concatenate them rather than to make an addition.

2.16 What is printed by the following Python code? **ERROR IN THE CODE**

```
For x in range(3):  
    print(x)
```

2.17 What is printed by the following Python code?

```
def f1(x): return  
    x*x
```

```
For y in [4,2,5]:  
    print(f1(y))
```

This function is taking a number, and output the square of this number.  
Then :

$4 * 4 = 16$

$2 * 2 = 4$

$5 * 5 = 25$

2.18. Describe the three types of error that can occur in Python: Syntax error, Runtime error and Semantics Error. **ERROR IN THE CODE**

### Section 3 : Fill the correct syntax in the questions below.

3.1 Insert the correct syntax to convert x into a floating point number.

x = 5

x = float(x)

3.2 Insert the correct syntax to convert x into a integer.

x = 5.5

x = Int(x)

3.3 Use the correct membership operator to check if "Apple" is present in the fruits object. fruits = ["apple", "kiwi"]

```
if "apple" in fruits: print("Yes,  
    apple is a fruit!")
```

3.4 Use the correct comparison operator to check if 4 is not equal to 8.

```
if 4 != 8: print("4 and 8 is not  
    equal")
```

3.5 Use the correct logical operator to check if at least one of two statements is True.

```
if 4 == 5 or 6 == 6:  
    print("At least one of the statements is true")
```



3.6 Use the correct short hand syntax to write the following conditional expression in one line:

```
if 5 > 2:
    print("Yes")
else
    print("No")
```

**Print(« Yes ») if 5>2 else print(« No »)**

3.7 Insert the correct syntax to print i as long as i is less than 6.

```
i = 1
while i < 6
    print(i)
    i += 1
```

3.8 Insert the correct syntax to stop the loop if i is 3.

```
i = 1
while
i < 6:
    if i == 3:
        break
    i += 1
```

3.9 Insert the correct syntax. In the loop, when i is 3, jump directly to the next iteration.

```
i = 0
while
i < 6:
    i += 1
    if i == 3:
        continue
    print(i)
```

3.10 Insert the correct syntax to print a message once the condition is false.

```
i = 1 while
i < 6:
print(i)
    i += 1
else print("i is no longer less than
        6")
```

3.11 Insert the correct syntax. If you do not know the number of arguments that will be passed into your function, there is a prefix you can add in the function definition, which prefix?

```
def my_function(*kids): print("The
    youngest child is " + kids[2]
    )
```

3.12 If you want to refer to a module by using a different name, you can create an alias. What is the correct syntax for creating an alias for a module?

```
import mymodule as mx
```

3.13 What is the correct syntax of importing only the person1 dictionary of the "mymodule" module?

```
from mymodule import person1
```

## **Section 4: Complete the python code files in the location below. The questions are in the comments in these files.**

**Github location:** <https://github.com/uhaz1/pythonfinance2023/tree/main/exercises>

### **Python files:**

1getting\_started.py  
2string.py  
3operators.py  
4collections.py  
5conditionals.py  
6loops.py  
7functions.py

### **How to submit the completed Python files**

To submit these completed Python code files, please create a github account with your EM Normandy email id. Then create a new github repository in your github account called 'PythonFinance'. Please upload your completed Python code files in this github repository.

*Documentation to create a github repository:* <https://docs.github.com/en/get-started/quickstart/create-a-repo>

*Documentation to upload files to a github repository:*  
<https://docs.github.com/en/repositories/working-with-files/managing-files/adding-a-file-to-a-repository#:~:text=On%20GitHub.com%2C%20navigate%20to,or%20click%20choose%20your%20files.>