

TP2 Python: Data Types and if Structure

bingzhi.li@yahoo.com

September 24th 2021

1 Types and operations on types

Reminder: To test the type of a variable or expression you can use the function `type()`. For example, `type(False)` returns: `<class 'bool'>` so `False` is of type `bool`.

1. Determine manually the type and value of the variable `c` given the values of the variables `a` and `b` and the assignment statement. The answers can be checked in the terminal later.

a	b	c = Expression	Type	Value
		c = 'c'		
		c = str(8)		
		c = 8.0		
		c = False		
		c = 15 / 4		
		c = 15 // 4		
3		c = a		
3	2	c = a < b		
1/3	0.33	c = a == b		
'hat'	"hat"	c = a != b		
"three"	"two"	c = a > b		
2	2.5	c = not (a < b)		
True	False	c = a or b		
True	False	c = a and b		
5	7	c = (a < b) and (b != a)		
"abc"	"def"	c = a + b		
2	"wow"	c = b*a		

2 Boolean expressions

2. Analyse manually and determine the value of the variable `c`, here always a boolean. You can check the answers later with the Python interpreter in the terminal.

a	b	c = Expression	value of c
True	False	c = (a and not b) or (not a and b)	
False	True	c = (not a or b) and (a or not b)	
False	False	c = (not a or b) and (a or not b)	
True	True	c = (a and b) or (not a and not b)	
True	False	c = (a and b) or (not a and not b)	

3 Conditional instruction if

For this section, you need to complete the file `TP2_Data_Types.ipynb` file using [Colab](#) (or the file `TP2_Data_Types.py` using PyCharm/any text editor+terminal). Replace `#TODO` lines with your codes.

Reminder: we use the `input()` function to get input from the user. This input is read as a string and can be assigned to a variable.

1. Ask the user to enter a number then display whether it is even or odd?

Expected output:

```
Please enter a number: 4
This is an even number.
```

2. The price for visiting a castle is as following:

- free for children between 0 and 11 years old
- 5 euros for children between 12 and 17 years old and for adults over 60
- 10 euros for adults (18-59)

Write a program that asks for the user's age and returns the price charged.

Expected output:

```
Please enter your age: 68
You need to pay 5 euros.
```

3. Write a program to ask the user for hours and rate per hour to compute gross pay, give the employee 1.5 times the hourly rate for hours worked above 40 hours.

Expected output ($475 = 40 * 10 + 5 * 15$):

```
Enter Hours: 45
Enter Rate: 10
The pay is: 475
```

4. Write a program to check the type of input that the user entered from the keyboard.

Expected output:

```
Please enter something: 5.67
You have entered a float type object.
```

5. Rewrite your pay program of exercise 3 so that your program handles non-numeric input.

Expected output:

```
Enter Hours: 35
Enter Rate: ten
Error, please enter numeric input: 10
The pay is: 350
```