

LENGUAJES DE PROGRAMACIÓN PARA CIENCIAS DE DATOS I

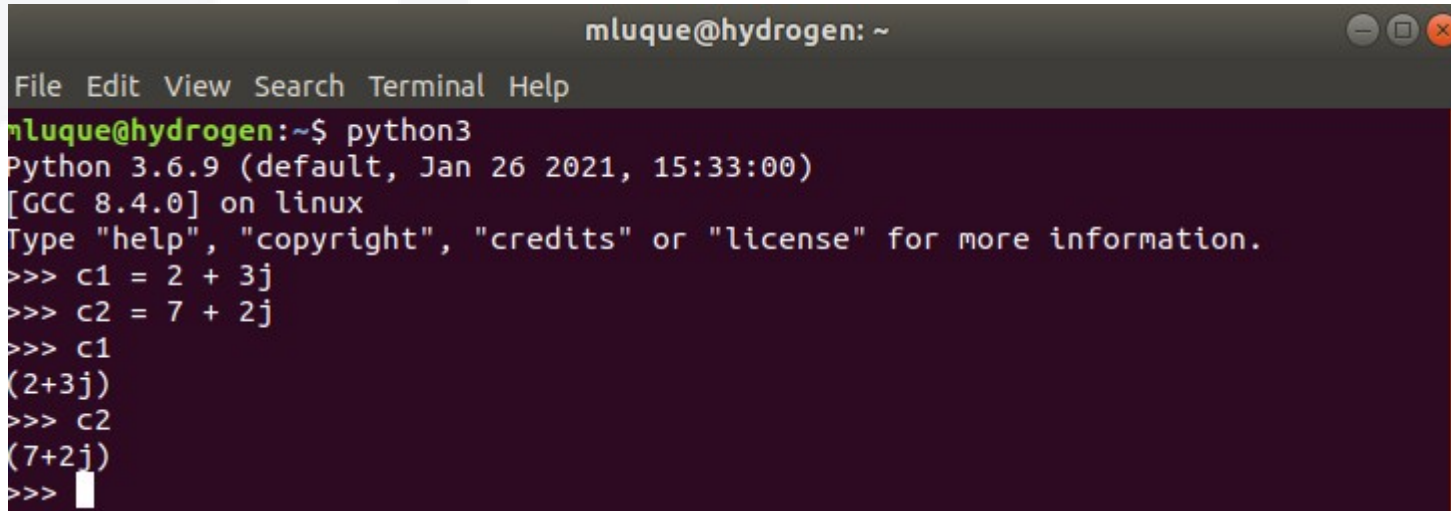
Uso de Python como una calculadora II
Tipos complex y booleano



UCO
ONLINE

Números Complejos

- Complex
 - ◆ parteReal + partelImaginaria j



```
mluque@hydrogen: ~  
File Edit View Search Terminal Help  
mluque@hydrogen:~$ python3  
Python 3.6.9 (default, Jan 26 2021, 15:33:00)  
[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> c1 = 2 + 3j  
>>> c2 = 7 + 2j  
>>> c1  
(2+3j)  
>>> c2  
(7+2j)  
>>>
```

Números Complejos

- Utilizar operadores matemáticos

```
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[GCC 8.4.0] on linux
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>>> c1 = 2 + 3j
>>> c2 = 7 + 2j
>>> c1
(2+3j)
>>> c2
(7+2j)
>>> c1 + c2
(9+5j)
>>> c1 - c2
(-5+1j)
>>> c1 * 2
(4+6j)
>>> c1 * c2
(8+25j)
```

Números Complejos

- Métodos de complex
 - ◆ conjugate()
 - ◆ imag
 - ◆ real

```
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[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> c1 = 2 + 3j  
>>> c1  
(2+3j)  
>>> c1.real  
2.0  
>>> c1.imag  
3.0  
>>> c1.conjugate()  
(2-3j)  
>>> 
```

Booleanos

- Bool
 - ◆ Valores True y False
 - ◆ Cualquier objeto considerarse como una variable booleana
 - Conocer su valor → Función bool()

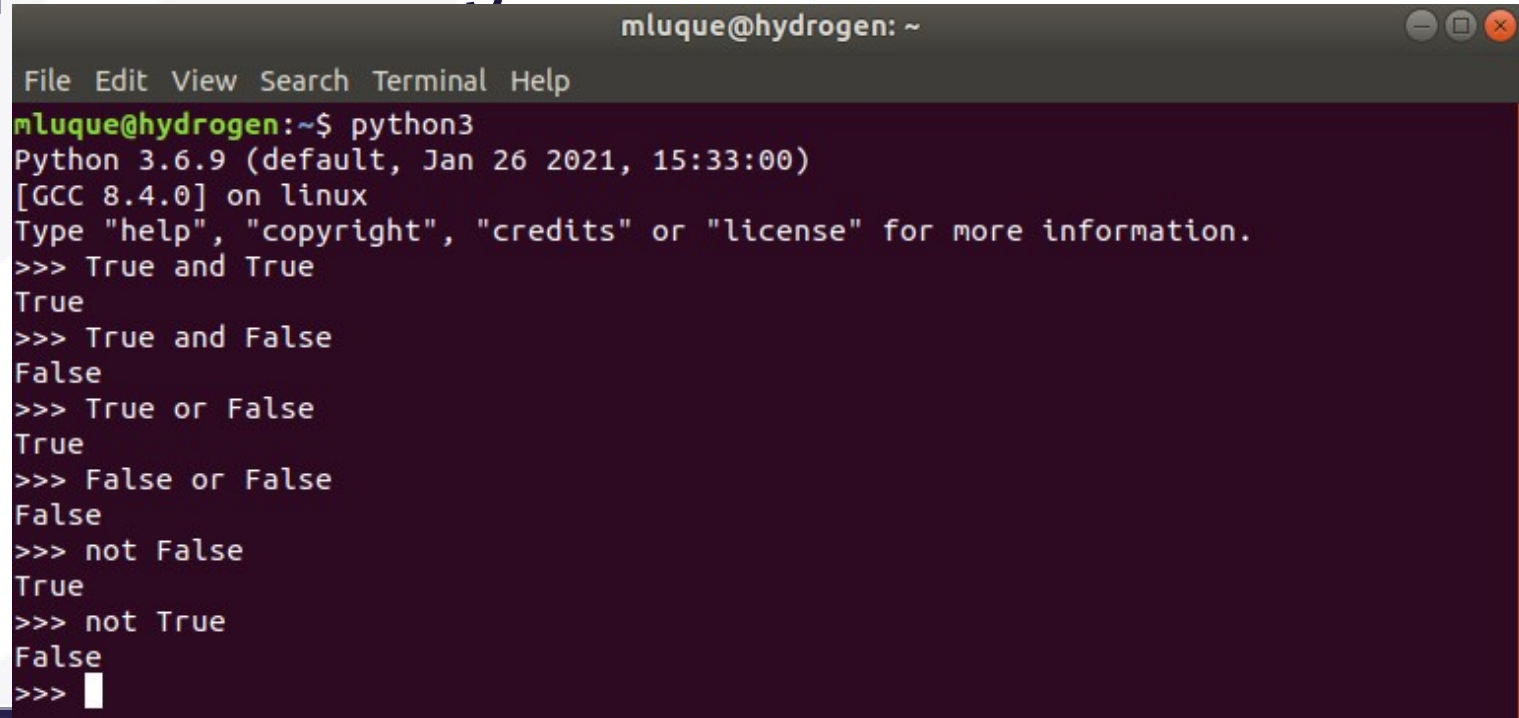
```
>>> bool(0)
False
>>> bool(1)
True
>>> bool(7)
True
>>> bool([])
False
>>> bool(['a', 'b'])
True
>>> █
```

Booleanos

- Operadores lógicos
 - ◆ Trabajan con valores bool y devuelve un valor bool
 - ◆ and
 - True sí y solo si todos sus operandos son True
 - ◆ or
 - True si alguno de sus operandos es True
 - ◆ not
 - True solo si su argumento es False

Booleanos

- Operadores lógicos

A terminal window titled 'mluque@hydrogen: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the execution of 'python3', which starts the Python 3.6.9 interpreter. The user enters several logical expressions: 'True and True' (returns True), 'True and False' (returns False), 'True or False' (returns True), 'False or False' (returns False), 'not False' (returns True), and 'not True' (returns False). The prompt '>>>' is visible at the end of the last line.

```
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File Edit View Search Terminal Help  
mluque@hydrogen:~$ python3  
Python 3.6.9 (default, Jan 26 2021, 15:33:00)  
[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> True and True  
True  
>>> True and False  
False  
>>> True or False  
True  
>>> False or False  
False  
>>> not False  
True  
>>> not True  
False  
>>> 
```

Booleanos

- Expresiones compuestas
 - ◆ Orden de evaluación → not, and, or

```
Type "help", "copyright", "credits" or "license" for more information.
>>> not True and False
False
>>> (not True) and False
False
>>> not (True and False)
True
>>> False and True or True
True
>>> (False and True) or True
True
>>> False and (True or True)
False
>>> █
```


Booleanos

- Operadores de comparación

- ◆ $>$, $<$
- ◆ \geq , \leq
- ◆ $==$, $!=$

```
mLuque@hydrogen: ~  
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mLuque@hydrogen:~$ python3  
Python 3.6.9 (default, Jan 26 2021, 15:33:00)  
[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> 4 == 3+1 > 2  
True  
>>> 2 != 1+1 > 0  
False  
>>> 4 == 3+1 and 3+1 > 2  
True  
>>> 2 != 1+1 and 1+1 > 0  
False  
>>> 
```

- ◆ Se pueden concatenar comparaciones

