

Python Bootcamp & Masterclass

comparison operators



Operators

Arithmetic

+

Comparison

>

Assignment

=

Logical

or

Bitwise

Membership

in

Identity

is

Comparison Operators

$3 < 3$

F

$3 > 3$

F

$3 \leq 3$

T

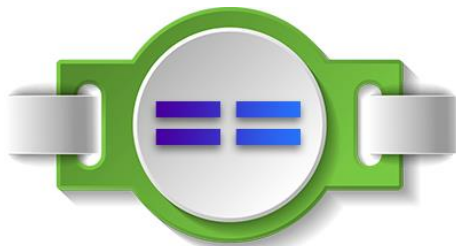
$3 \geq 3$

$3 == 3$

T

$3 != 3$

F



equal to operator (==) returns True if its left operand is equal to its right operand. Otherwise, it returns False. The operator internally calls `__eq__()` magic method.

```
2 == 2
2 == 2.0
1 == True
3.3 == 1.1 + 2.2 # comparing floats for equality is not recommended
a = float('inf')
b = float('inf')
a == b
x = float('-inf')
y = float('-inf')
x == y
a == x
{1, 2} == {2, 1}
{1:'a', 2:'z'} == {2:'z', 1:'a'}
```

```
True
True
True
False
True
True
False
True
True
```

```
x = None
x == None # should use 'is' or 'is not' when comparing singletons
x is None
```

```
True
True
```

```
x, y, z = 42, 42.0, 42 + 0j
x == y == z # efficient shorthand for x == y and y == z as y will be evaluated only once
x == y and y == z # inefficient as y will be evaluated twice
[1, 2] == [2, 1] # comparison is element by element
(1, 2) == (2, 1) # comparison is element by element
```

```
True
True
False
False
```



not equal to operator (**!=**) returns True if its left operand is not equal to its right operand. Otherwise, it returns False. The operator internally calls `__ne__()` magic method.

```
[1, 2] != [2, 1]
(1, 2) != (2, 1)
{1, 2} != {2, 1}
{1:'a', 2:'z'} != {2:'z', 1:'a'}
```

True

True

False

False

```
x = float('inf') % 2
x
x != x      # another way to check for nan
```

nan

True



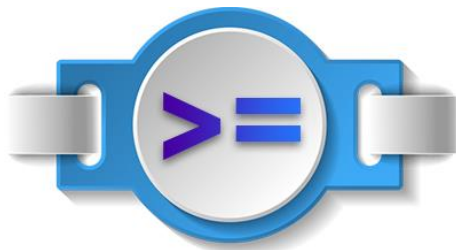
- greater than operator (>) returns True if its left operand is greater than its right operand. Otherwise, it returns False.
- greater than operator (>) internally calls `__gt__()` magic method.

```
3 > 2  
[1, 2] > [1, 1, 3] # list comparison is element by element  
[0, 10, 100] > [1] # list comparison is element by element
```

True

True

False



- greater than operator (>=) returns True if its left operand is greater than or equal to its right operand. Otherwise, it returns False.
- greater than or equal to operator (>=) internally calls `__ge__()` magic method.

```
x = 19  
21 >= x >= 18
```

True

```
[1, 2] >= [1, 1, 3]
```

True



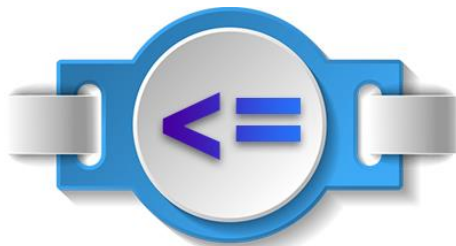
- less than operator (<) returns True if its left operand is less than its right operand. Otherwise, it returns False.
- less than operator (<) internally calls `__lt__()` magic method.

```
3.0 < 3 * True  
float('-inf') < float(0) < float('inf')  
float('-inf') < float('nan') < float('inf')
```

False

True

False



- less than or equal to operator (<=) returns True if its left operand is less than or equal to its right operand. Otherwise, it returns False.
- less than or equal to operator (<=) internally calls `__le__()` magic method.

```
x = 19
21 <= x <= 18
3.0 <= 3 * True
```

False

True



Online Resources

For best python resources, please visit:



gknxt.com/python/

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for your Rating & Review

