

Python Operators

Python Operators

Operators are used to perform operations on variables and values.

In the example below, we use the `+` operator to add together two values:

Example

```
print(10 + 5)
```

Python divides the operators in the following groups:

- Arithmetic operators
- Assignment operators
- Comparison operators
- Logical operators
- Identity operators
- Membership operators
- Bitwise operators

Python Arithmetic Operators

Arithmetic operators are used with numeric values to perform common mathematical operations:

Operator	Name	Example
----------	------	---------

+	Addition	$x + y$
-	Subtraction	$x - y$
*	Multiplication	$x * y$
/	Division	x / y
%	Modulus	$x \% y$
**	Exponentiation	$x ** y$
//	Floor division	$x // y$

Python Assignment Operators

Assignment operators are used to assign values to variables:

Operator	Example	Same As
=	$x = 5$	$x = 5$

`+=` `x += 3` `x = x + 3`

`-=` `x -= 3` `x = x - 3`

`*=` `x *= 3` `x = x * 3`

`/=` `x /= 3` `x = x / 3`

`%=` `x %= 3` `x = x % 3`

`//=` `x //= 3` `x = x // 3`

`**=` `x **= 3` `x = x ** 3`

`&=` `x &= 3` `x = x & 3`

`|=` `x |= 3` `x = x | 3`

`^=` `x ^= 3` `x = x ^ 3`

`>>=` `x >>= 3` `x = x >> 3`

<<=

x <<= 3

x = x << 3

Python Comparison Operators

Comparison operators are used to compare two values:

Operator	Name	Example
==	Equal	x == y
!=	Not equal	x != y
>	Greater than	x > y
<	Less than	x < y
>=	Greater than or equal to	x >= y
<=	Less than or equal to	x <= y

Python Logical Operators

Logical operators are used to combine conditional statements:

Operator	Description	Example
and	Returns True if both statements are true	<code>x < 5 and x < 10</code>
or	Returns True if one of the statements is true	<code>x < 5 or x < 4</code>
not	Reverse the result, returns False if the result is true	<code>not(x < 5 and x < 10)</code>

Python Identity Operators

Identity operators are used to compare the objects, not if they are equal, but if they are actually the same object, with the same memory location:

Operator	Description	Example
-----------------	--------------------	----------------

is	Returns True if both variables are the same object	x is y
is not	Returns True if both variables are not the same object	x is not y

Python Membership Operators

Membership operators are used to test if a sequence is presented in an object:

Operator	Description	Example
in	Returns True if a sequence with the specified value is present in the object	x in y
not in	Returns True if a sequence with the specified value is not present in the object	x not in y

Python Bitwise Operators

Bitwise operators are used to compare (binary) numbers:

Operator	Name	Description
&	AND	Sets each bit to 1 if both bits are 1
	OR	Sets each bit to 1 if one of two bits is 1
^	XOR	Sets each bit to 1 if only one of two bits is 1
~	NOT	Inverts all the bits
<<	Zero fill left shift	Shift left by pushing zeros in from the right and let the leftmost bits fall off
>>	Signed right shift	Shift right by pushing copies of the leftmost bit in from the left, and let the rightmost bits fall off