



# Python Module

Day 7 - 'Immutability and Operators'

## Agenda

- Previous Class Revision
- Python Immutability Example
- Python Operators
- Doubts

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## Python Immutability Example

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## Python Operators

Operators are used to perform operations on variables and values.

Python divides the operators in the following groups:

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

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## 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	$x // y$

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## 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	$x <= y$

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## Logical Operators

Comparison operators are used to compare two values:

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

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## 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	<code>x in y</code>
not in	Returns True if a sequence with the specified value is not present in the object	<code>x not in y</code>

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## Operator Precedence

Operator precedence describes the order in which operations are performed.

The precedence order is described in the table below, starting with the highest precedence at the top:

Operator	Description
()	Parentheses
**	Exponentiation
+x -x ~x	Unary plus, unary minus, and bitwise NOT
* / // %	Multiplication, division, floor division, and modulus
+ -	Addition and subtraction
<< >>	Bitwise left and right shifts
&	Bitwise AND
^	Bitwise XOR
	Bitwise OR
== != > >= < <=	Comparisons, identity, and membership operators
= is is not in not in	
not	Logical NOT
and	AND
or	OR

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*'If two operators have the same precedence, the expression is evaluated from left to right.'*

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## 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

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## 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

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## Bitwise Operators

Bitwise operators are used to compare (binary) numbers:

Operator	Name	Description	Example
&	AND	Sets each bit to 1 if both bits are 1	x & y
	OR	Sets each bit to 1 if one of two bits is 1	x   y
^	XOR	Sets each bit to 1 if only one of two bits is 1	x ^ y
<<	Zero fill left shift	Shift left by pushing zeros in from the right and let the leftmost bits fall off	x << 2
>>	Signed right shift	Shift right by pushing copies of the leftmost bit in from the left, and let the rightmost bits fall off	x >> 2

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