Python Operators

- Python operators are special symbols used to perform operations on variables and values.

- Types of Python Operators
  Here are the different types of Python operators:

1. .Arithmetic Operators: Perform mathematical operations like addition, subtraction, multiplication, etc.
2. Assignment Operators: Assign values to variables.
3. Comparison Operators: Compare two values/variables and return a boolean result.
4. Logical Operators: Check whether an expression is True or False.
5. Bitwise Operators: Act on operands as if they were strings of binary digits.
6. Special Operators: Include identity operators and membership operators.

- Arithmetic Operators

Arithmetic operators perform mathematical operations.

Operator	Operation	Example
+	Addition	5 + 2 = 7
-	Subtraction	4 - 2 = 2
*	Multiplication	2 * 3 = 6
/	Division	4 / 2 = 2
//	Floor Division	10 // 3 = 3
%	Modulo	5 % 2 = 1
**	Power	4 ** 2 = 16

- Assignment Operators

Assignment operators assign values to variables.

Operator	Example
=	x = 5
+=	x += 1 (x = x + 1)
-=	x -= 3 (x = x - 3)
*=	x *= 4 (x = x * 4)
/=	x /= 3 (x = x / 3)
%=	x %= 10 (x = x % 10)
**=	x **= 10 (x = x ** 10)

Comparison Operators

Comparison operators compare two values/variables and return a boolean result.

Operator	Meaning	Example
==	Is Equal To	3 == 5 (False)
!=	Not Equal To	3 != 5 (True)
>	Greater Than	3 > 5 (False)
<	Less Than	3 < 5 (True)
>=	Greater Than or Equal To	3 >= 5 (False)
<=	Less Than or Equal To	3 <= 5 (True)

Logical Operators

Logical operators check whether an expression is True or False.

Operator	Example	Meaning
and	a and b	Logical AND: True only if both operands are True
or	a or b	Logical OR: True if at least one operand is True
not	not a	Logical NOT: True if the operand is False and vice-versa

Bitwise Operators

Bitwise operators act on operands as if they were strings of binary digits.

Operator	Meaning	Example
&	Bitwise AND	x & y
|	Bitwise OR	x | y
~	Bitwise NOT	~x
^	Bitwise XOR	x ^ y
>>	Bitwise right shift	x >> 2
<<	Bitwise left shift	x << 2

Special Operators

Special operators include identity operators and membership operators.

Identity Operators

Identity operators check if two values are located at the same memory location.

Operator	Meaning	Example
is	True if the operands are identical	x is True
is not	True if the operands are not identical	x is not True

Membership Operators

Membership operators test whether a value or variable is found in a sequence.

Operator	Meaning	Example
in	True if value/variable is found in the sequence	5 in x
not in	True if value/variable is not found in the sequence	5 not in x