Data Science with Python Programming

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Operators in Python

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Learning outcomes:

Operators in Python

- 1. Arithmetic Operators
- 2. Relational Operators
- 3. Assignment Operators
- 4. Logical Operators
- 5. Membership Operators
- 6. Identity Operators
- 7. Bitwise Operators

Operators & Types of Operators

Operators are special symbols in **Python** that carry out arithmetic or logical computation. The value that the **operator** operates on is called the operand. Python language supports the following types of operators.

1. **Arithmetic Operators**
2. **Comparison (Relational) Operators**
3. **Assignment Operators**
4. **Logical Operators**
5. **Bitwise Operators**
6. **Membership Operators**
7. **Identity Operators**

Types of Operators

1. Arithmetic Operators:

These Operators are utilised to complete mathematical operations such as addition, division, multiplication, etc.

They can be worked on the essential data types including numerical, Integers, Complex Numbers.

Types of Operators

1. Arithmetic Operators:

Python Arithmetic Operators		
Operator	**Name**	**Example**
+	Addition	a + b
-	Subtraction	a - b
*	Multiplication	a * b
/	Division	a / b
%	Modulus	a % b
**	Exponentiation	a ** b
//	Floor division	a // b

Types of Operators

2. Relational (Comparison) Operators:

Relational operators are symbols that perform operations on data and return a result as true or false depending on the comparison conditions.

Relational Operators are those that discover relationship between the two operands provided to them. Relational operators or comparison operators are used to compare between values.

Types of Operators

2. Relational (Comparison) Operators:

Operator	Description
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to
==	Equal to
!=	Not equal to

Types of Operators

3. Assignment Operators :

Assignment Operators are those that help in assigning a value to the variable.

a = 5 is a simple assignment operator that assigns the value 5 on the right to the variable a on the left.

There are various compound operators in Python like a += 5 that adds to the variable and later assigns the same. It is equivalent to a = a + 5.

Types of Operators

3. Assignment Operators :

Operators	Description
=	Assignment
/=	Divide and Assign
+=	Add and assign
-=	Subtract and Assign
*=	Multiply and assign
%=	Modulus and assign
**=	Exponent and assign
//=	Floor division and assign

Types of Operators

4. Bitwise Operators :

Bitwise operator works on bits and performs bit by bit operation. Assume if a = 60; and b = 13; Now in binary format they will be as follows:

a = 0011 1100

b = 0000 1101

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a&b = 0000 1100

a|b = 0011 1101

a^b = 0011 0001

~a = 1100 0011

Types of Operators

4. Bitwise Operators :

OPERATOR	DESCRIPTION	SYNTAX
&	Bitwise AND	x & y
|	Bitwise OR	x | y
~	Bitwise NOT	~x
^	Bitwise XOR	x ^ y
>>	Bitwise right shift	x>>
<<	Bitwise left shift	x<<

Types of Operators

5. Logical Operators :

Logical Operators are utilised to complete Boolean tasks like AND, OR etc.

Logical Operators are used to perform certain logical operations on values and variables. These are the special reserved keywords that carry out some logical computations. The value the operator operates on is known as Operand. In Python, they are used on conditional statements (either True or False), and as a result, they return Boolean only (True or False). They are used to combine conditional statements

Types of Operators

5. Logical Operators :

There are following logical operators supported by Python language:

Logical AND

Logical OR

Logical NOT

Types of Operators

6. Membership Operators :

Python’s membership operators test for membership in a sequence, such as strings, lists, or tuples. There are two membership operators

in

not in

Types of Operators

6. Membership Operators :

in : Evaluates to true if it finds a variable in the specified sequence and false otherwise.

not in : Evaluates to true if it does not finds a variable in the specified sequence and false otherwise.

Types of Operators

7. Identity Operators :

Identity operators compare the memory locations of two objects. There are two Identity operators

is : Evaluates to true if the variables on either side of the operator point to the same object and false otherwise.

is not : Evaluates to false if the variables on either side of the operator point to the same object and true otherwise.