Operators in Python

OPERATORS

- Operators are special symbols in Python that carry out arithmetic or logical computation.
- An operator is a symbol that represents an operations that may be performed on one or more operands.
- An operand is a value that a given operator is applied to.
- Example: 4+(3*k) □here +, * are operator and 4,3,k are operands

Different forms of operator

- **Unary Operator:**
  - Unary arithmetic operators perform mathematical operations on one operand only.

    Example:

    ```
    >>> x = -5     #Negates the value of X
    >>> x
    >>>-5
    ```

- **Binary operator:**
  - A Binary operator operates on two operands

    Example:

    ```
    >>> 3 + 10
    >>>13
    >>> 10 – 7
    >>> 3
    ```

Types of Operators

1. Arithmetic operator
2. Relational operator
3. Logical operator
4. Bitwise operator
5. Assignment operator
6. Special operator

Arithmetic operator

- Arithmetic operators are basic mathematical operations.

Operator	Meaning	Example	Result
+	Addition	C=12+1	C=13
-	Subtraction	C=12-1	C=11
*	Multiplication	C=12*1	C=12
/	Division	C=12/1	C=12
//	Floor division	C=12//10	1
%	Modulus	C=12%10	C=2
**	Exponentiation	C=10**2	C=100

Relational operator

- Relational operators are also called as Comparison operators for comparing values.
- It either returns True or False according to condition.

Operator	Meaning	Example	Result
>	Greater than	5>6	False
<	Less than	5<6	True
==	Equal to	5==6	False
!=	Not equal to	5!=6	True
>=	Greater than or equal to	5>=6	False
<=	Less than or equal to	5<=6	True

Logical operator

- Logical operator are typically used with Boolean(logical) values.
- They allow a program to make a decision based on multiple condition.

Operator	Meaning	Example	Result
and	True if both the operands are true	10<5 and 10<20	False
or	True if either of the operands is true	10<5 or 10<20	True
not	True if operands is	not (10<20)	False

Bitwise operator

- Bitwise operators act on operands as if they are string of binary digits.
- It operates bit by bit.

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

Assignment operator

- Assignment operators are used to assign values to variables.

Operator	Meaning	Example
=	Assign a value	a=5
+=	Adds and assign the result to the variable	a+=1 (a=a+1)
-=	Subtracts and assign the result to the variable	a-=1 (a=a-1)
*=	Multiplies and assign the result to the variable	a*=5 (a=a*5)
/=	Division and assign the result to the variable	a/= (a=a/5)
//=	Floor division and assign the result to the variable	a//=5(a=a//5)
%=	Find modulus and assign the result to the	a%=5 (a=a%5)

Combining operators

Operator	Meaning	Example
&=	Find Bitwise AND and assign the result to the variable	a&=5(a=a&5)
|=	Find Bitwise OR and assign the result to the variable	a|=5(a=a|5)
^=	Find Bitwise XOR and assign the result to the variable	a^=5(a=a^5)
>>=	Find Bitwise right shift and assign the result to the variable	a>>=5 (a=a>>5)
<<=	Find Bitwise left shift and assign the result to the variable	a<<=5 (a=a<<5)

- Now its time to practice on Jupyter Notebook

Quiz section

1. What are the operators and what are its forms?
2. What are the types of operators?
3. Practice on Notebook the operators below-
   - Arithmetic operator
   - Relational operator
   - Logical operator
   - Bitwise operator
   - Assignment operator
   - Special operator
3. Define the characteristics of different operators
4. Save the file and rename it