Chapter -3: Introduction to Python Language

1. Python Operators

Operators are used to perform operations on variables and values.

Python divides the operators in the following groups:
1. Arithmetic operators
2. Assignment operators
3. Comparison operators
4. Logical operators
5. Identity operators
6. Membership operators
7. Bitwise operators

2. 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

Example

```
a = 21
b = 10
c = 0

c = a + b
print "Line 1 - Value of c is ", c

c = a - b
print "Line 2 - Value of c is ", c

c = a * b
print "Line 3 - Value of c is ", c

c = a / b
print "Line 4 - Value of c is ", c

c = a % b
print "Line 5 - Value of c is ", c

a = 2
b = 3
c = a**b
print "Line 6 - Value of c is ", c

a = 10
b = 5
c = a//b
print "Line 7 - Value of c is ", c
```

When you execute the above program, it produces the following result −

```
Line 1 - Value of c is 31
Line 2 - Value of c is 11
Line 3 - Value of c is 210
Line 4 - Value of c is 2
Line 5 - Value of c is 1
Line 6 - Value of c is 8
Line 7 - Value of c is 2
```

3. 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

```
a = 21
b = 10
c = 0

c = a + b
print "Line 1 - Value of c is ", c

c += a
print "Line 2 - Value of c is ", c

c *= a
print "Line 3 - Value of c is ", c

c /= a
print "Line 4 - Value of c is ", c

c  = 2
c %= a
print "Line 5 - Value of c is ", c

c **= a
print "Line 6 - Value of c is ", c
```

```
c //= a
print "Line 7 - Value of c is ", c
```

When you execute the above program, it produces the following result −

Line 1 - Value of c is 31
Line 2 - Value of c is 52
Line 3 - Value of c is 1092
Line 4 - Value of c is 52
Line 5 - Value of c is 2
Line 6 - Value of c is 2097152
Line 7 - Value of c is 99864

4. 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

```
a = 21
b = 10
c = 0

if ( a == b ):
   print "Line 1 - a is equal to b"
else:
   print "Line 1 - a is not equal to b"

if ( a != b ):
   print "Line 2 - a is not equal to b"
else:
   print "Line 2 - a is equal to b"

if ( a <> b ):
   print "Line 3 - a is not equal to b"
else:
   print "Line 3 - a is equal to b"
```

```
if ( a < b ):
   print "Line 4 - a is less than b"
else:
   print "Line 4 - a is not less than b"

if ( a > b ):
   print "Line 5 - a is greater than b"
else:
   print "Line 5 - a is not greater than b"

a = 5;
b = 20;
if ( a <= b ):
   print "Line 6 - a is either less than or equal to  b"
else:
   print "Line 6 - a is neither less than nor equal to  b"

if ( b >= a ):
   print "Line 7 - b is either greater than  or equal to b"
else:
   print "Line 7 - b is neither greater than  nor equal to b"
```

When you execute the above program it produces the following result −

Line 1 - a is not equal to b
Line 2 - a is not equal to b
Line 3 - a is not equal to b
Line 4 - a is not less than b
Line 5 - a is greater than b
Line 6 - a is either less than or equal to b
Line 7 - b is either greater than or equal to b