In [2]:
```
a=10
b=20

print(a)
print(b)
```
executed in 9ms, finished 15:38:50 2024-08-07

```
10
20
```

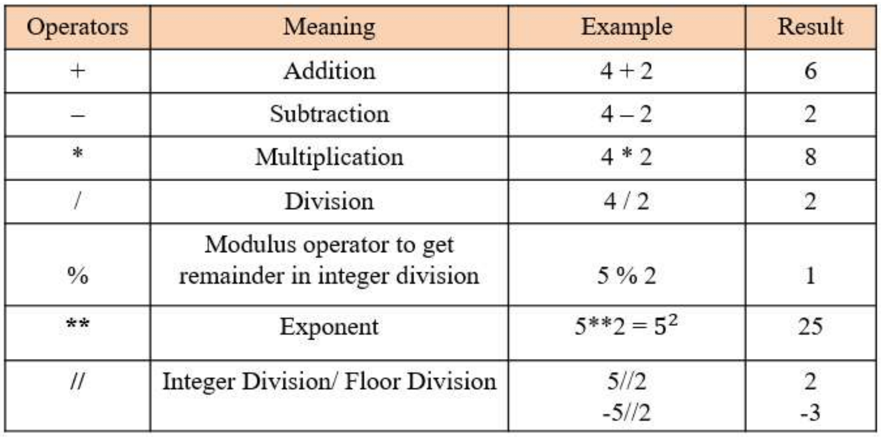
In [7]:
```
a=int(input("enter a:"))
b=float(input())
print(a)
print(type(a))
print(type(b))
```
executed in 3.27s, finished 15:40:28 2024-08-07

```
enter a:10
23.7
10
<class 'int'>
<class 'float'>
```

Operators:

- Arithmetic Operators
- Assignment Operators
- Comparision Operators
- Logical Operators
- Bitwise Operators
- Membership Operators
- Identity Operators

Arithmetic Operators



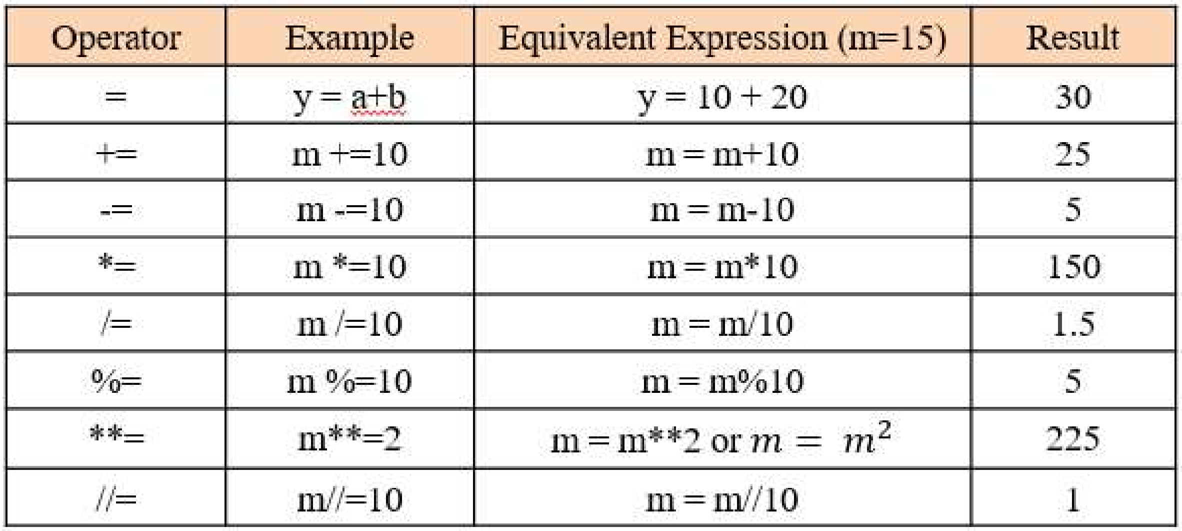
Operators	Meaning	Example	Result
+	Addition	4 + 2	6
–	Subtraction	4 – 2	2
*	Multiplication	4 * 2	8
/	Division	4 / 2	2
%	Modulus operator to get remainder in integer division	5 % 2	1
**	Exponent	5**2 = 5^2	25
//	Integer Division/ Floor Division	5//2 -5//2	2 -3

In [9]:
```
a=15
b=25

print(a+b)
print(a-b)
print(a*b)
print(100/5)
print(25%2)
print(10**3)
print(25//3)
```

executed in 9ms, finished 15:50:03 2024-08-07

```
40
-10
375
20.0
1
1000
8
```

Assignment Operators



Operator	Example	Equivalent Expression (m=15)	Result
=	y = a+b	y = 10 + 20	30
+=	m +=10	m = m+10	25
-=	m -=10	m = m-10	5
*=	m *=10	m = m*10	150
/=	m /=10	m = m/10	1.5
%=	m %=10	m = m%10	5
**=	m**=2	m = m**2 or $m = m^2$	225
//=	m//=10	m = m//10	1

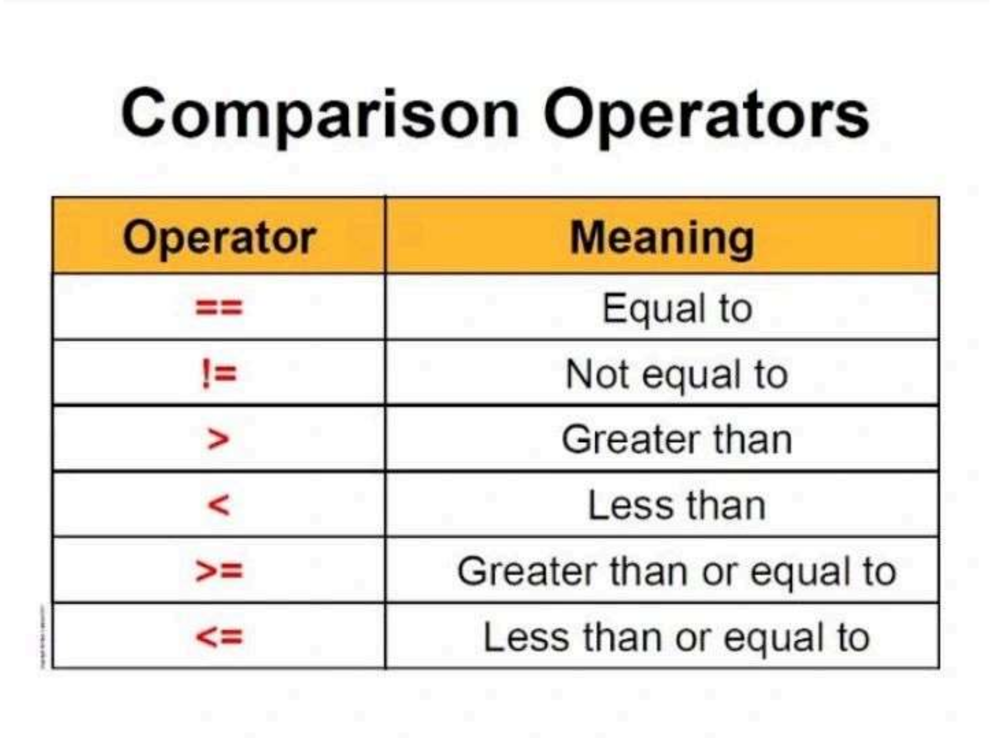
In [16]:

```
a=10
b=100

a+=10   # a=a+10
print(a)

a-=10
print(a)

a*=10
print(a)

a/=2
print(a)

b%=5
print(b)

b//=2
print(b)
```

executed in 10ms, finished 15:56:45 2024-08-07

```
20
10
100
50.0
0
0
```

Comparision Operators



Comparison Operators

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

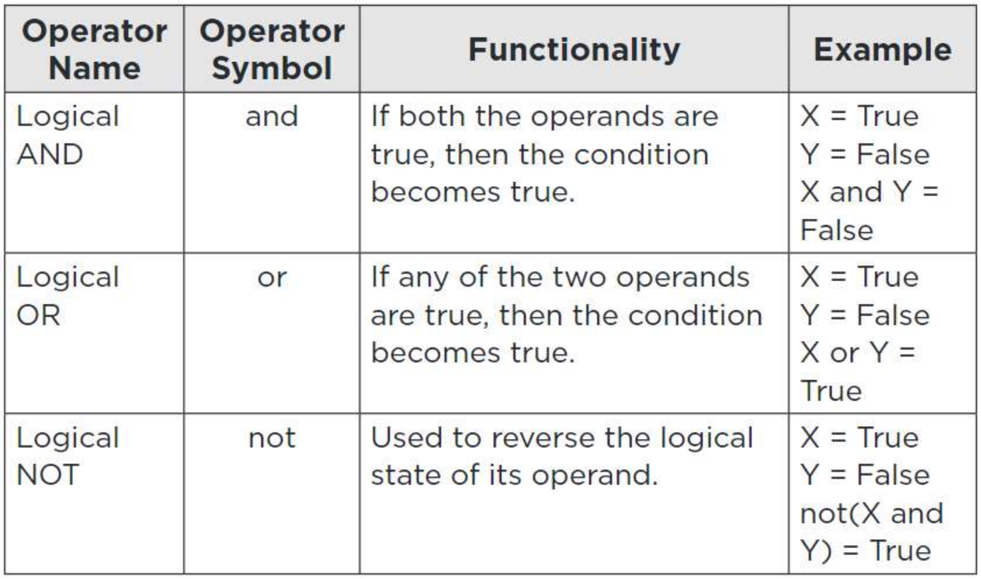
In [19]:

```
a=100
b=50

print(a>b)
print(a<b)
print(a==b)
print(a!=b)
print(a>=b)
print(a<=b)
```

executed in 12ms, finished 15:59:44 2024-08-07

```
True
False
False
True
True
False
```

Logical Operators



Operator Name	Operator Symbol	Functionality	Example

Logical AND	and	If both the operands are true, then the condition becomes true.	X = True
			Y = False
			X and Y = False

Logical OR	or	If any of the two operands are true, then the condition becomes true.	X = True
			Y = False
			X or Y = True

Logical NOT	not	Used to reverse the logical state of its operand.	X = True
			Y = False
			not(X and Y) = True

In [23]:

```
a=10
b=0

print(a and b)
print(a or b)
c=a and b
print(not c)
```

executed in 9ms, finished 16:03:55 2024-08-07

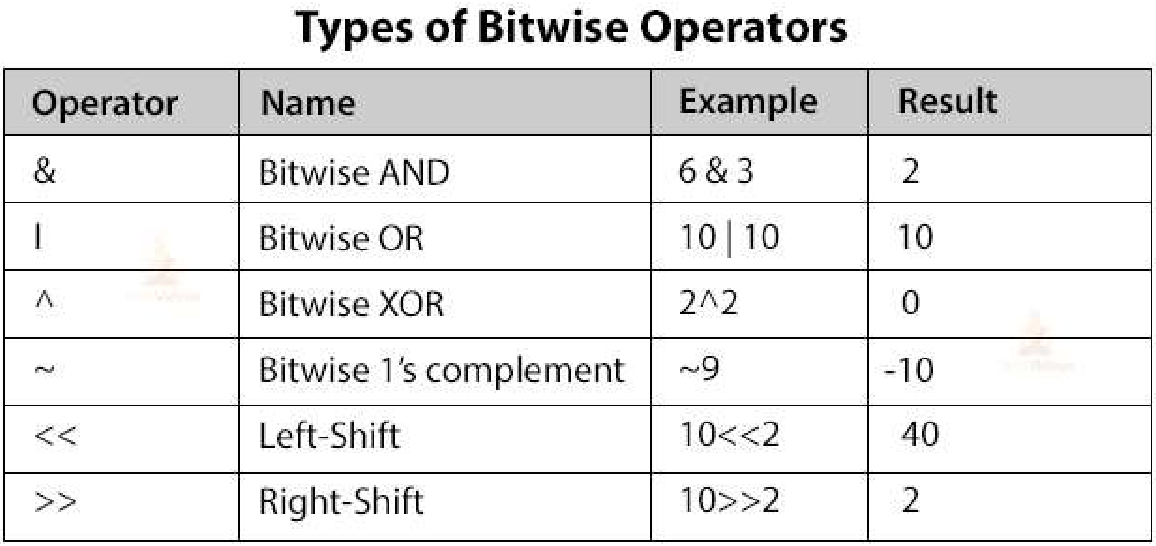
```
0
10
True
```

In [24]:
```
print(0 and 0)
print(0 or 0)
print("True" and "False")
print(True and False)
print(True or False)
print(False or False)
print(not 0)
print(not -19)
print(not(10 or 0))
```

executed in 9ms, finished 16:06:42 2024-08-07

```
0
0
False
False
True
False
True
False
False
```

Bitwise Operators



Types of Bitwise Operators

Operator	Name	Example	Result
&	Bitwise AND	6 & 3	2
I	Bitwise OR	10 | 10	10
^	Bitwise XOR	2^2	0
~	Bitwise 1's complement	~9	-10
<<	Left-Shift	10<<2	40
>>	Right-Shift	10>>2	2

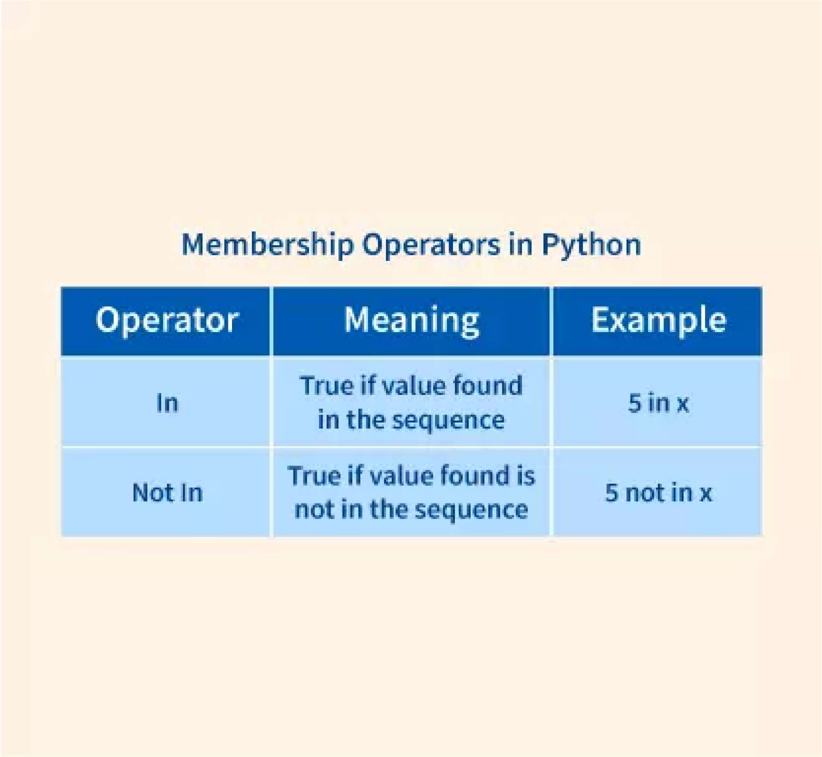
In [35]:

```
print(10&5)
print(12&15)

print(10|15)

print(10^15)

print(~10)  # -(n+1)
print(~(-11))  # - (-11+1)

print(10<<2)  # n<<m = n*2**m  => 10 * 2**2
print(10>>2)  # n>>m = n/2**m  => 10/4
```

executed in 9ms, finished 16:22:22 2024-08-07

```
0
12
15
5
-11
10
40
2
```

Membership Operators



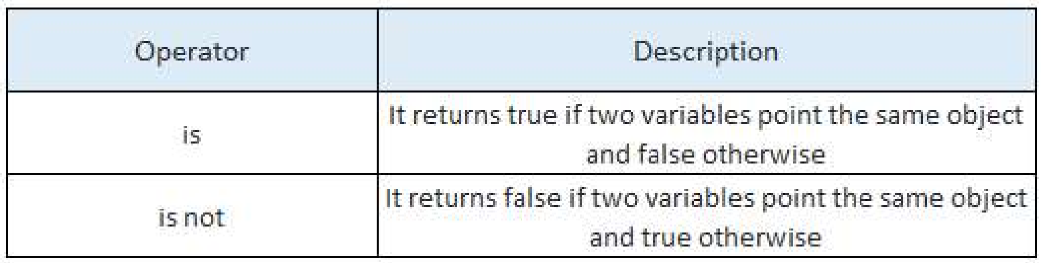
Membership Operators in Python

Operator	Meaning	Example
In	True if value found in the sequence	5 in x
Not In	True if value found is not in the sequence	5 not in x

In [40]:
```
print("i" in "india")
print("i" not in "india")

l=[1,2,3,4,5]

print(5 in l)
```
executed in 9ms, finished 16:25:41 2024-08-07

```
True
False
True
```

Identity Operators



Operator	Description
is	It returns true if two variables point the same object and false otherwise
is not	It returns false if two variables point the same object and true otherwise

In [48]:
```
a=257
b=257

print(a is b)
print(a is not b)

print(id(a))
print(id(b))
```
executed in 8ms, finished 16:29:05 2024-08-07

```
False
True
3163576680784
3163576680720
```

```
1.Python Program to Calculate the Area of a Triangle.
2.Python Program to calculate the square of a number.
3.Python program to calculate The square Root of a number.
4.Python Program to Calculate the Area of a Triangle by taking sides of t
riangle a,b,c from the user input .

    s= (a+b+c)/2     --------->     s: semi-perimeter

    area= ((s(s-a)*(s-b)*(s-c))**0.5)

5.Python program to find the discriminant and solutions for the quadratic
equation. --> ax²+bx+c=0

Take values of a,b and c from user input.

discriminant ---> b²-4ac

solutions ---> sol 1=(-b-(discriminant)**0.5))/2*a)
               sol 2=(-b+(discriminant)**0.5))/2*a)

6. Write a program to find the gross salary of an employee by the followi
ng inputs:

        1. Basic_pay ----> Take from user
        2. House_Allowance -----> 20% of Basic_pay
        3. Dearness_Allowance ----> 30% of Basic_pay
        4. PF ----> 40% of Basic_pay

        Gross_salary= Basic_pay+House_Allowance+Dearness_Allowance+PF
```

In [55]:

```python
base=float(input("enter base:"))
height=float(input("enter height:"))

area=0.5*base*height

print("Area of Triangle is:",area,"m2")
print("Area of Triangle for base {} and height {} is {} m2".format(base,height,are
print(f"Area of triangle is : {area} m2")
```

executed in 2.14s, finished 16:35:55 2024-08-07

```
enter base:10
enter height:25
Area of Triangle is: 125.0 m2
Area of Triangle for base 10.0 and height 25.0 is 125.0 m2
Area of triangle is : 125.0 m2
```

In [57]:

```
import math

num=int(input("enter num:"))
res=math.pow(num,2)

print(f"Square of {num} is {res}")
```

executed in 3.13s, finished 16:38:23 2024-08-07

```
enter num:56
Square of 56 is 3136.0
```

In [58]:

```
math.sqrt(25)
```

executed in 10ms, finished 16:39:14 2024-08-07

Out[58]:

```
5.0
```

In [59]:

```
25**0.5
```

executed in 9ms, finished 16:39:54 2024-08-07

Out[59]:

```
5.0
```

In [ ]: