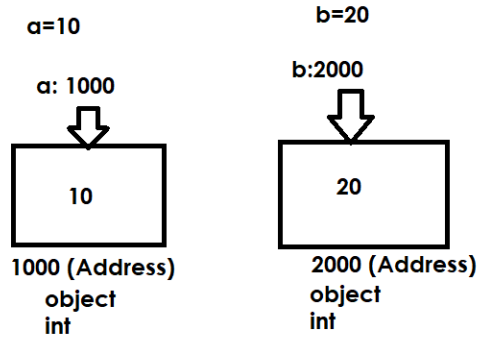
Identity Operator



What is class and object?

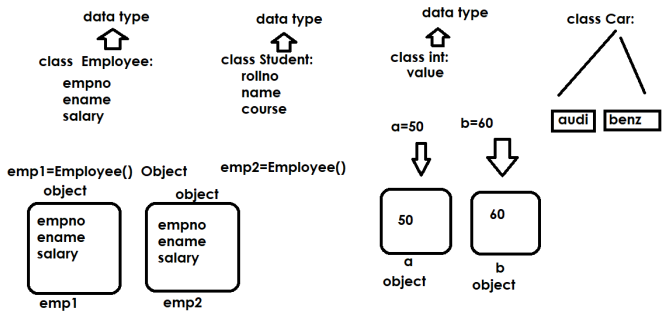
Python is an object oriented programming language.
Object oriented is programming paradigm (set of rules and regulations).
In object oriented programming data is represented as objects and every data type is class.

Class

In python a data type is represented as class
Data type is used for allocating memory for data or object.

Object

An object is an instance of a class
Every object behind there is a class
In side memory data is represented as objects.
Class define the structure of object
Class is blueprint of object



These objects are two types

1. Immutable data types or classes
2. Mutable data types or classes

Immutable data types are used for creating immutable objects
Mutable data types are used for creating mutable objects.

What is immutable object?

An object whose values cannot changed after creating object is called immutable object.

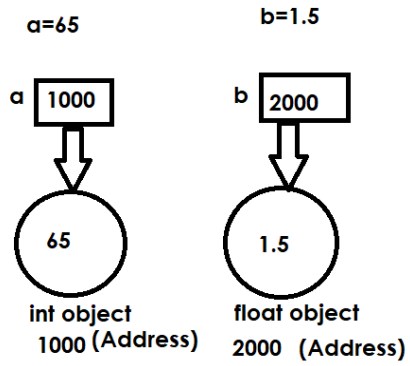
1. Int
2. Float
3. Complex
4. Bool
5. NoneType

All scalar types are immutable

Sequences	**sets**	**mapping**
List (mutable)	set (mutable)	dict (mutable)
Tuple(immutable)	frozenset (immutable)	
Range(immutable)		
String(immutable)		
Bytes(immutable)		
Bytearray(mutable)		

What is mutable object?
An object whose values can be changed after creation is called mutable object.

In python variables do not value, it holds address of value/object.
In python variables are called reference variables.



Every object in memory is identified with unique number called address (id).

How to find id/address of object?
Python provides a predefined function called id(), which returns id/address of object.

Example:

```
a=65
b=1.5
c=1+2j
print(a,b,c)
print(id(a),id(b),id(c))
```

Output

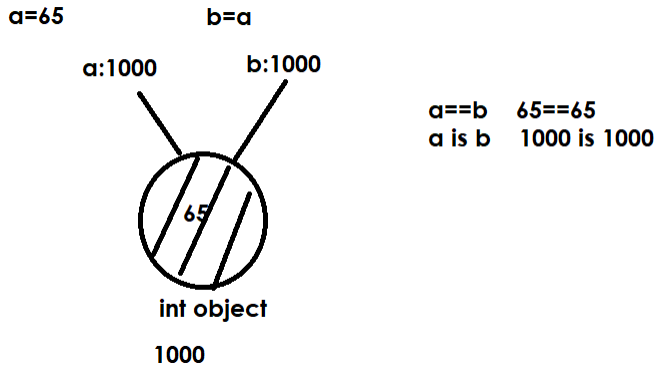
```
65 1.5 (1+2j)
```

140715630137784 2478189025712 2478189027024

Identity operator is used to compare identity of objects
Identity operator is used to find two variables are pointing to same memory location or address or object.

1. is
2. is not

"is" is a keyword which represents identity operator.

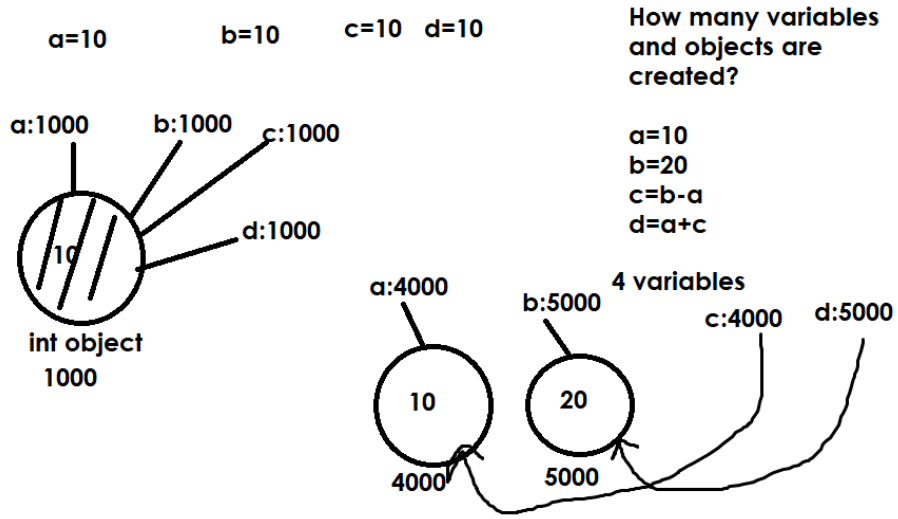


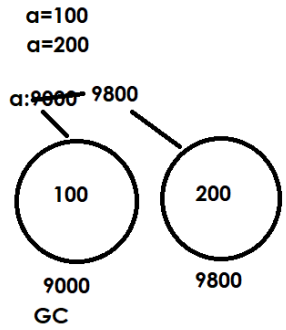
What is difference between == and is operators in python?
The == and is operators in Python are both used for comparisons, but they check for different things:

== (Equality Operator)	**is (Identity Operator)**
Checks if the values of two objects are equal. It compares the content or data held by the objects. Returns True if the values are equal, and False otherwise.	Checks if two variables refer to the same object in memory. It compares the memory addresses of the objects.

	Returns True if both variables point to the same object, and False otherwise.

All immutable objects are sharable and mutable objects are not sharable.





Example:

a=100

b=100

c=100

print(id(a),id(b),id(c))

```
a=300
print(id(a))
a=500
print(id(a))
t1=(10,20,30)
t2=(10,20,30)
print(id(t1),id(t2))
s1="nit"
s2="nit"
print(id(s1),id(s2))
x=[10,20,30]
y=[10,20,30]
print(x,y)
print(id(x),id(y))
x.append(90)
print(x,y)
print(id(x),id(y))
```

Output

```
140715630138904 140715630138904 140715630138904
2335225781968
2335225787664
2335231485888 2335231485888
2335231703632 2335231703632
[10, 20, 30] [10, 20, 30]
2335187931968 2335231653440
[10, 20, 30, 90] [10, 20, 30]
2335187931968 2335231653440
```

Example:

```
a=[10,20,30]
b=[10,20,30]
```

```
print(a==b)
print(a is b)
c=a
print(a is c)
```

Output

```
True
False
True
```

What is immutable object?

In Python, an immutable object is an object whose state/value cannot be modified after it is created. This means that once an immutable object is assigned a value, that value remains constant throughout the object's lifetime. If you attempt to modify an immutable object, a new object is created with the modified value

What is mutable object?

In Python, a mutable object is an object whose state can be modified after it is created. This means that you can change the value or content of a mutable object without creating a new object in memory.

Looping Control Statements

Looping Control statements are used to repeat one or more than one statement number of times or until given condition.

Python support 2 looping control statements

1. while loop
2. for loop

Note: python does not support do..while