

# # Logical Operators

①

AND

a	b	c
1	1	1
0	1	0
0	0	0
1	0	0

②

OR

a	b	c
1	1	1
0	1	1
1	0	1
0	0	0

$$a \text{ AND } b = c$$

0 → False  
1 → True

$$a \text{ OR } b = c$$

0 → False  
1 → True

③ NOT logical Operator // Reverse the logic

a	not a
0	1
1	0

not a

not False

=) True

not True

=) False

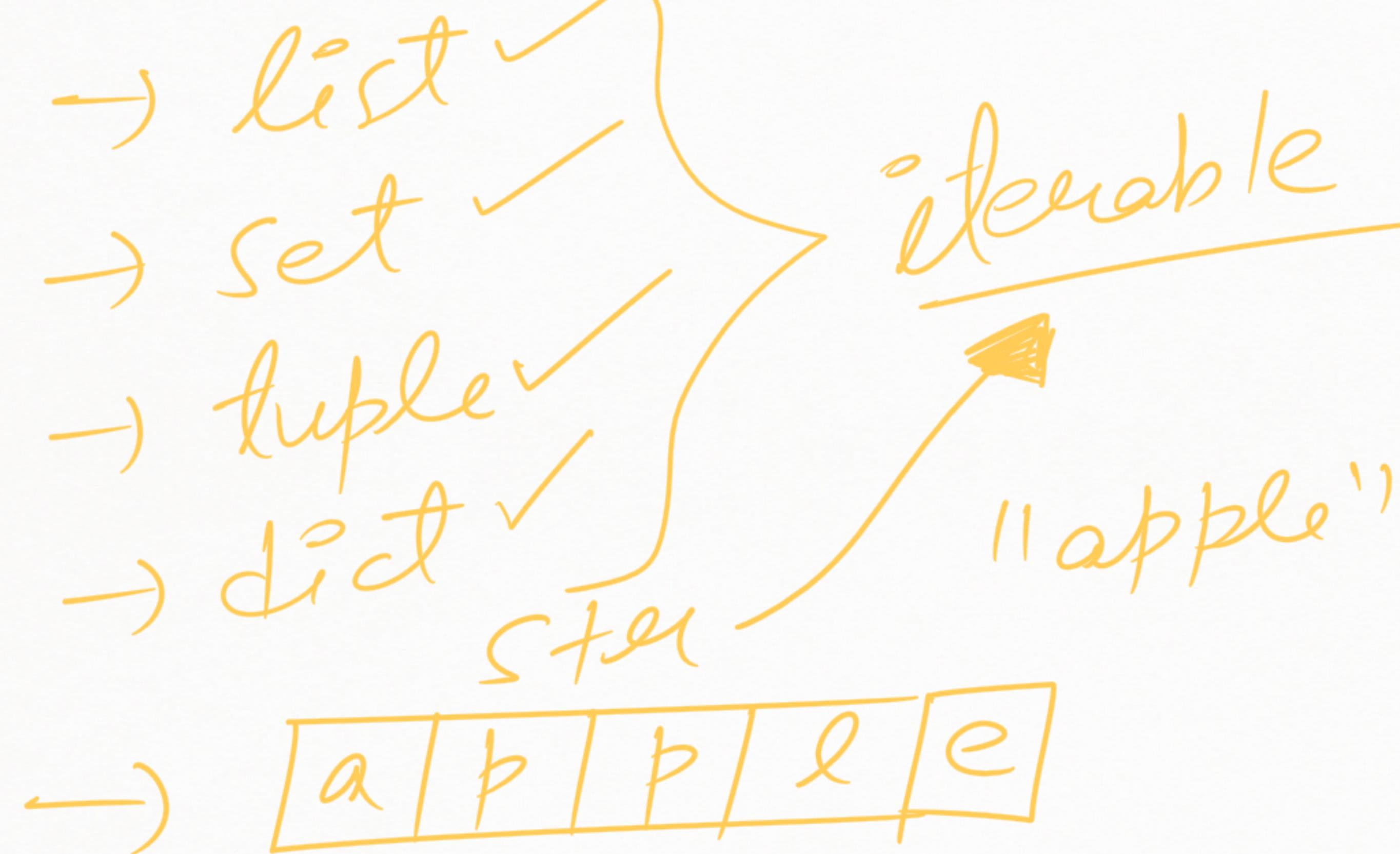
# iterable

[1, 2, 3, 5, 20]

list

looping over OR going to  
individual elements one  
by one.

## # Collection datatypes



$$\begin{aligned}a &= 5 \\b &= 5.65 \\c &= \text{true}\end{aligned}$$

Not  
iterables

None, char

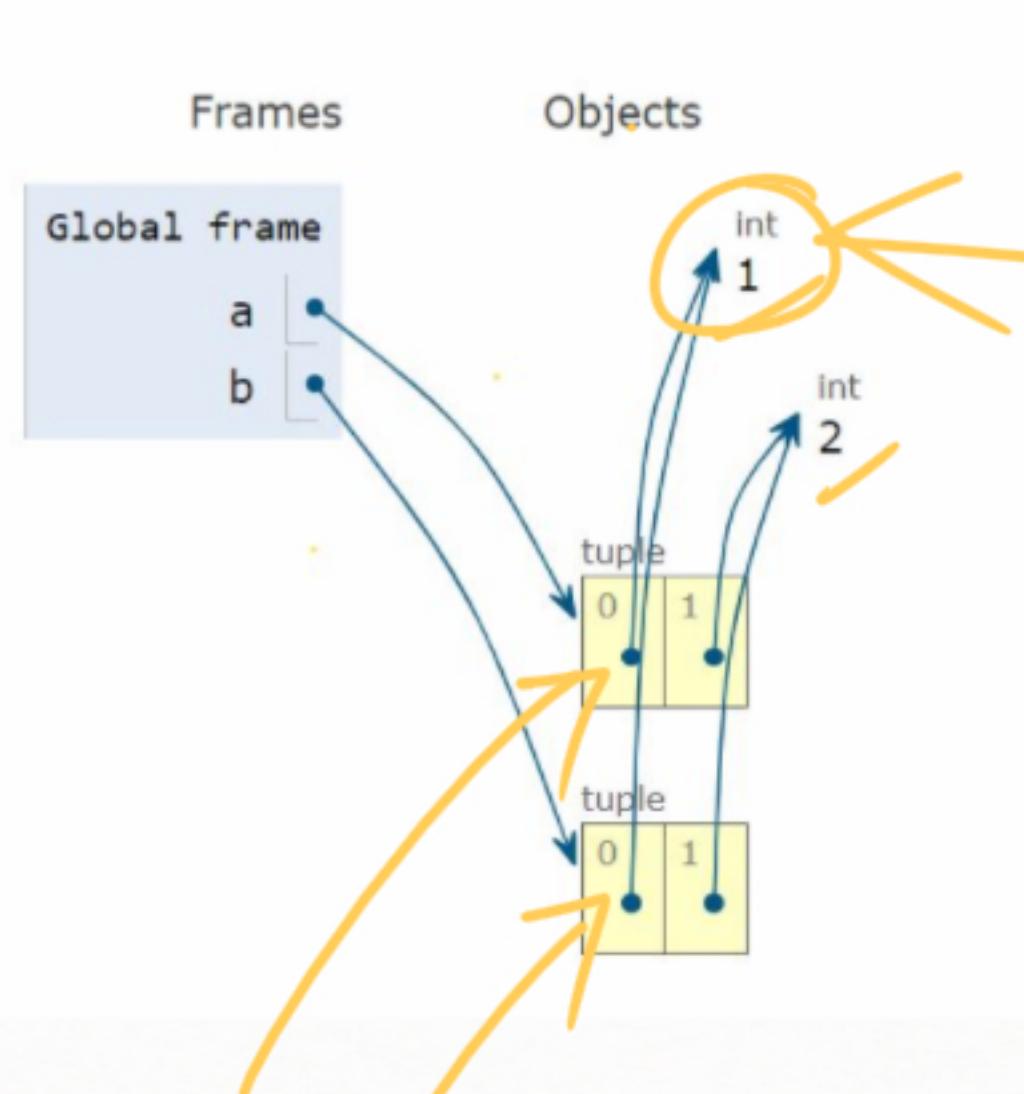
```
Write code in Python 3.6 (drag lower right corner to resize code editor)
1 a = (1,2) ✓✓
2 b = (1,2) ✓✓
3
4 print(id(a))
5 print(id(b))
6
7 print(id(a[0]))
8 print(id(b[0]))
9
→ 10 print(a is b)|
```

a[0]

Collections  
will have 2  
different objects  
in memory.

(drag lower right corner to resize code editor)

```
Print output (drag lower right corner to resize)
140022665562568
140022665561288
140022664500960
140022664500960
False
```



They have  
the same  
object  
in memory

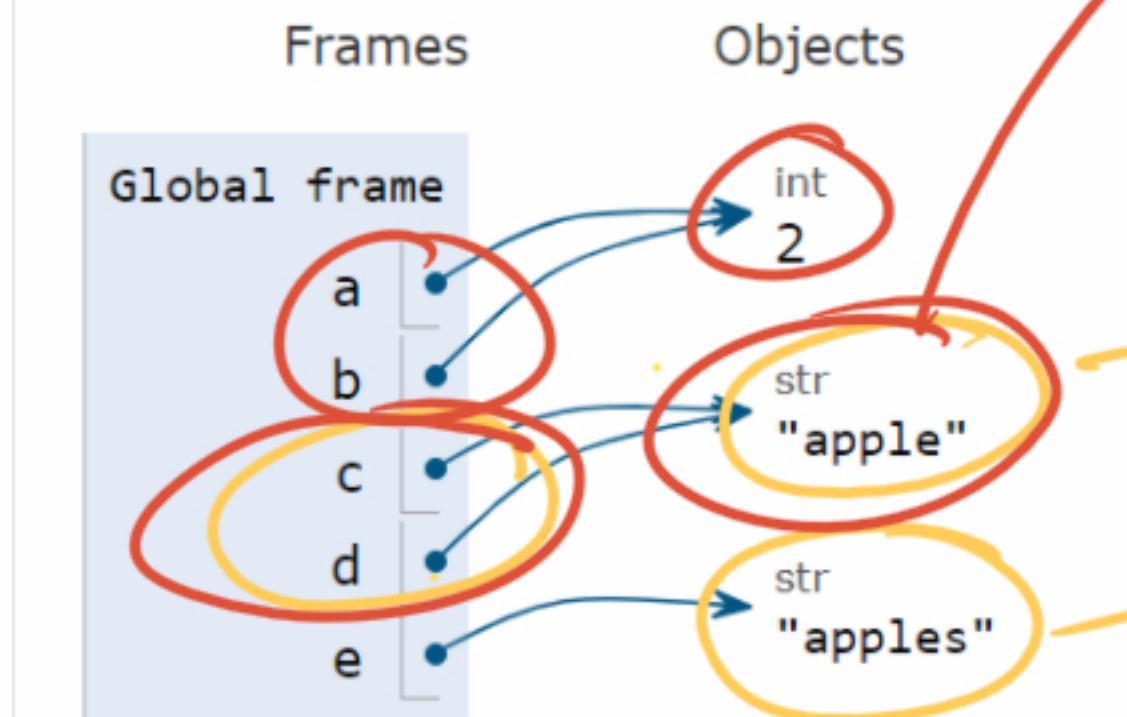
Write code in Python 3.6

(drag lower right corner to resize code editor)

```
1 a = 2  
2 b = 2  
3  
4 print(a is b)  
5  
6 c = 'apple'  
7 d = 'apple'  
8  
9 print(c is d)  
10  
11 e = 'apples'  
12 print(c is e)|
```

PRINT OUTPUT (drag lower right corner to resize)

```
True  
True  
False
```



c and d  
are pointing  
to same  
object in  
memory.

They  
are  
in  
diff  
memory  
locations

$$\begin{aligned} \text{id}(a) &= \text{id}(b) \\ \text{id}(c) &= \text{id}(d) \\ \text{id}(c) &= \text{id}(e) \end{aligned}$$

$$a = ([1, 2], [3, 4])$$

Note: Collections, like list, tuple, etc / will have separate memory even if they contain the exact same data.

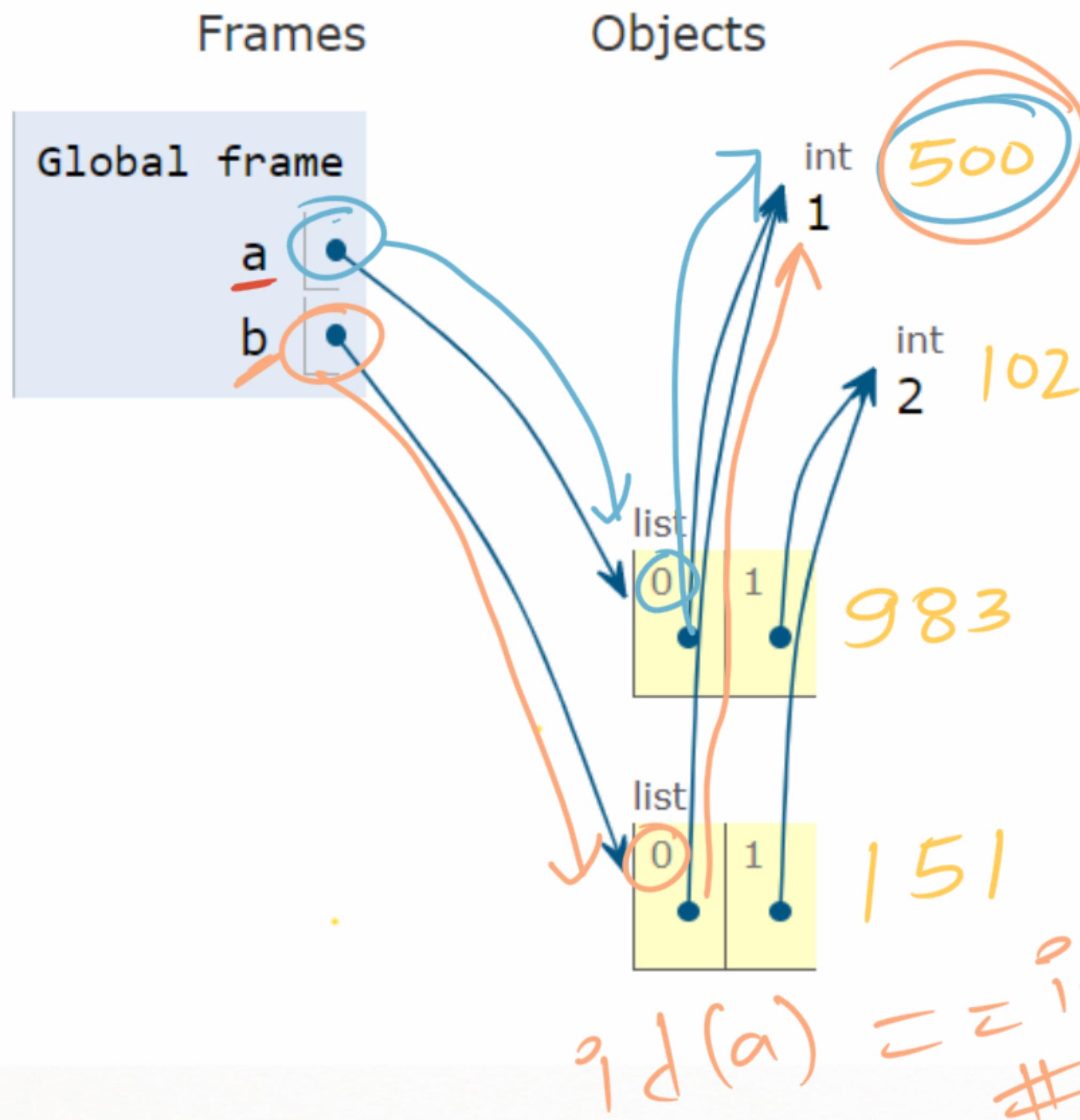
$$a = [1, 2]$$

$$b = [1, 2]$$



These lists will be in different memory location  
point  $\text{id}(a), \text{id}(b)$

r)



Q1. How many objects?  
 $\Rightarrow 4$

Memory location color

$\text{print}(\text{id}(a)) \Rightarrow 151$

$\text{print}(\text{id}(b)) \Rightarrow 983$

$\text{print}(\text{id}(a[0])) \Rightarrow 500$

$\text{print}(\text{id}(b[0])) \Rightarrow 500$

$\text{id}(a[0]) == \text{id}(b[0])$

# True

$a = 3 \checkmark$

In [ ]: # Assignment Operators

- 1) $=$
- 2) $+=$
- 3) $-=$
- 4) $*=$
- 5) $/=$
- 6) $//=$
- 7) $%=$

$a += 3$   
short form for  $a = a + 3$

$\boxed{\begin{array}{l} a = 3 \\ a += 3 \\ \text{print}(a) \end{array}}$  → 6

$a = \overset{3}{\textcircled{a}} + 3 = \textcircled{6}$

$\boxed{\begin{array}{l} b = 9 \\ b += 1 \\ \text{print}(b) \end{array}}$  → 10

$b = 9$   
 $b += 1$   
 $\text{print}(b)$  → 10

# Usage of brackets

$$3 * (4 + 5) \Rightarrow 27$$

  
this will be  
solved first.