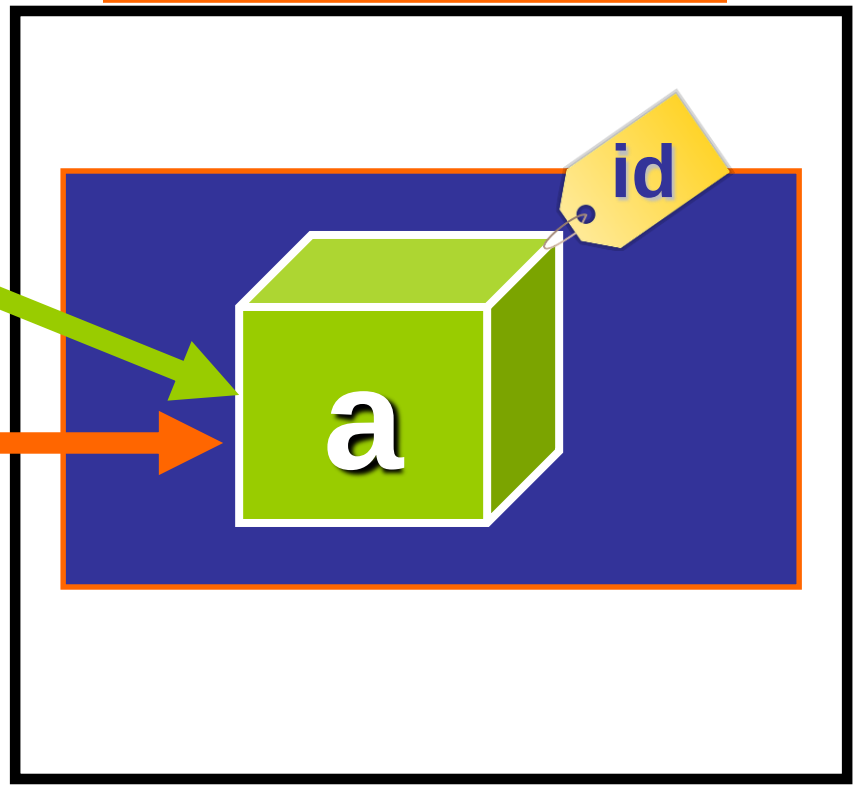
Lecture

Cloning

Cloning

```
>>> a = [6, 2, 6, 2]
```

```
>>> b = a
```



Cloning

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>>> a = [6, 2, 6, 2]
```

```
>>> b = a[:]
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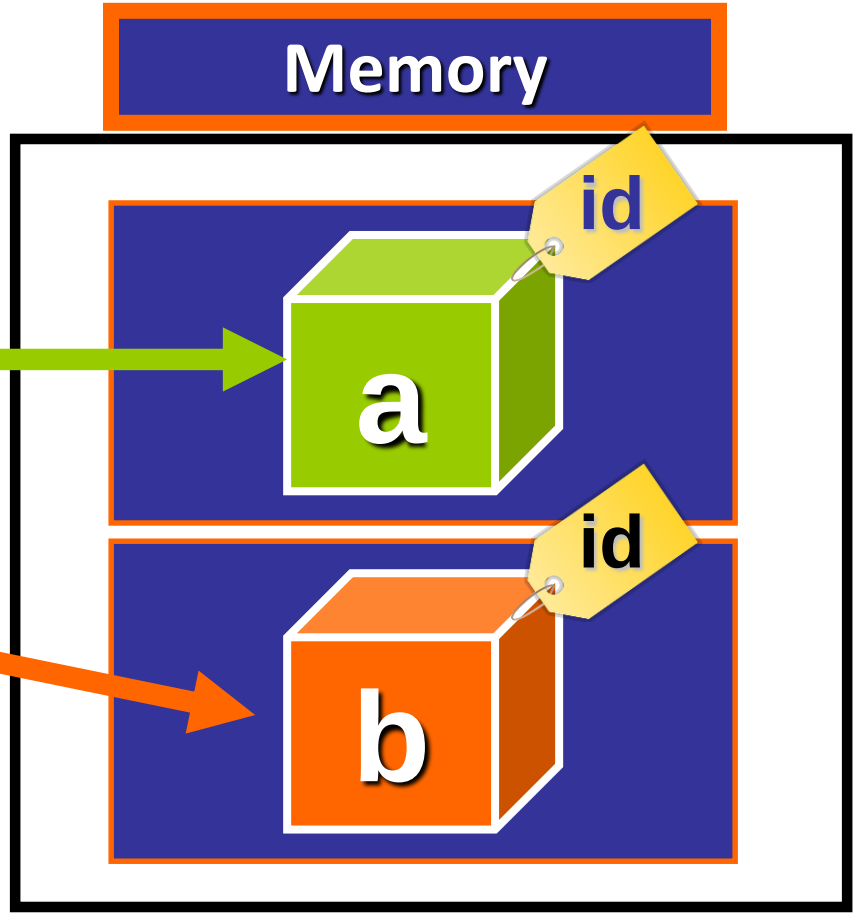

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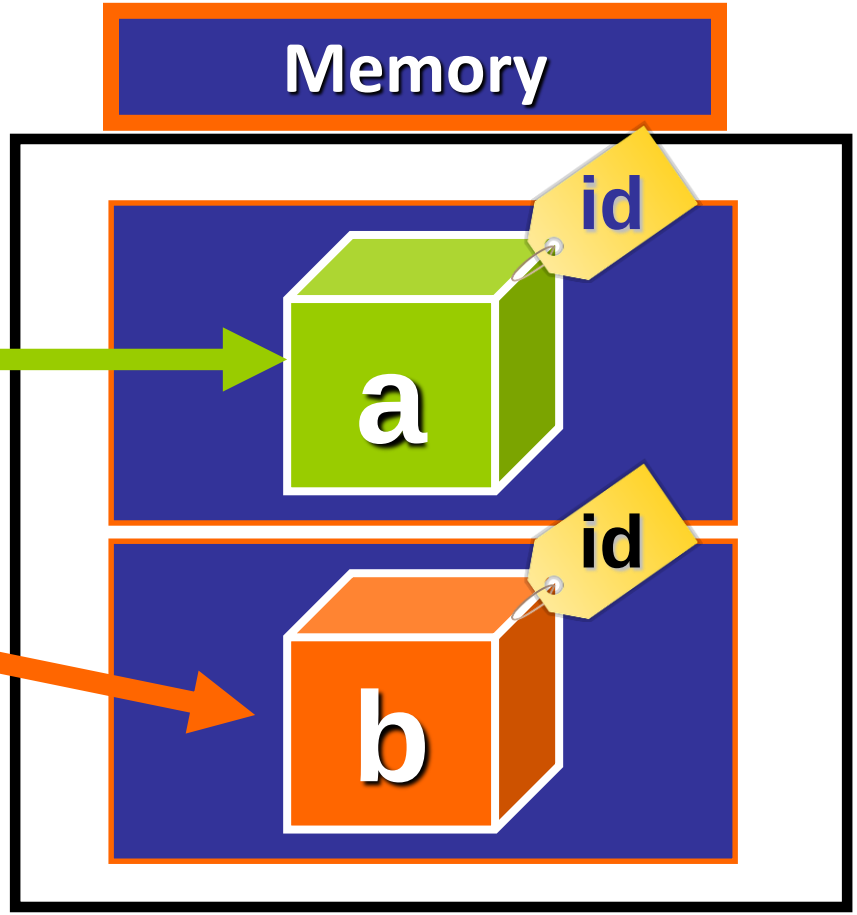

Cloning

≠ objects , = value

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Can change after cloning since they are independent

Cloning

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```

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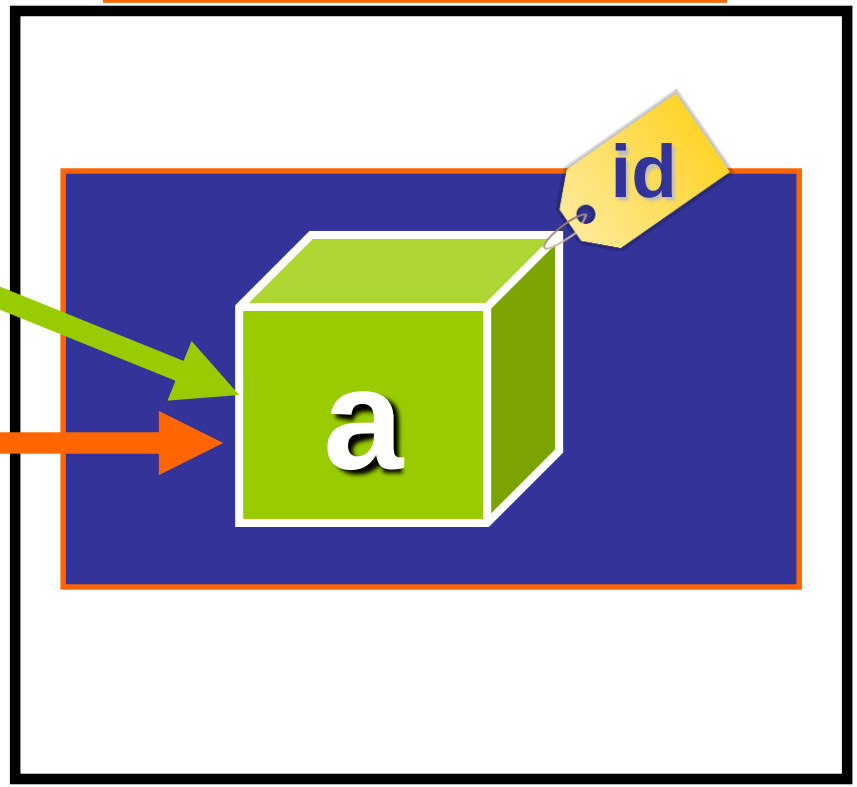

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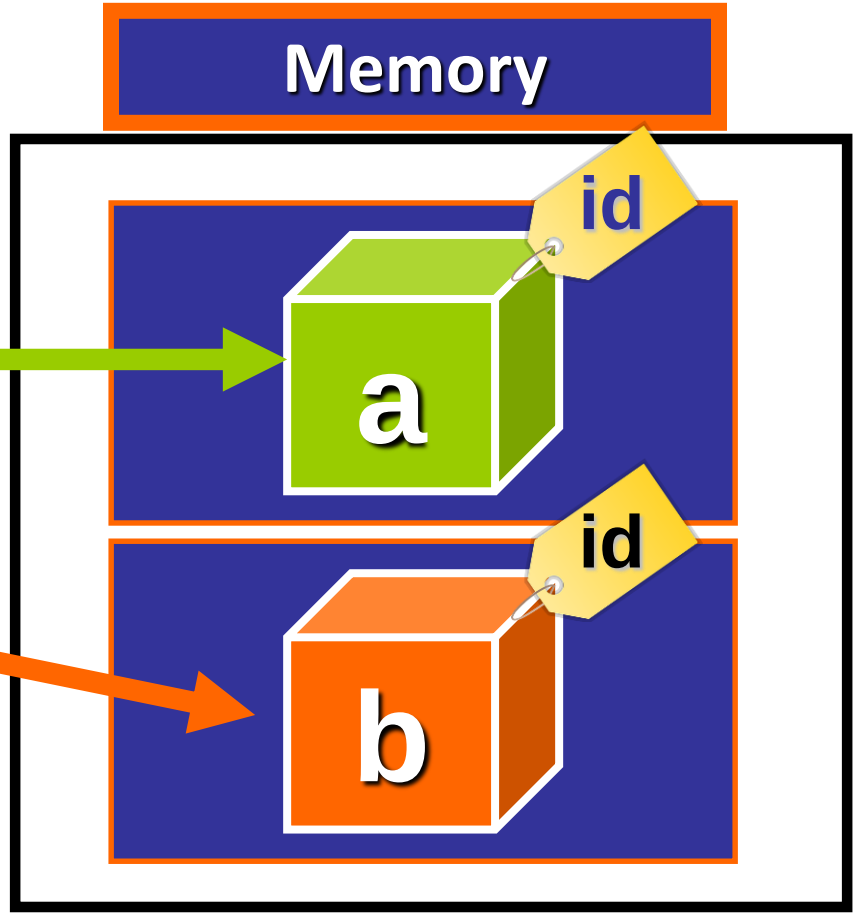

Cloning

```
<clone_var> = <list>[:]
```

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```

Cloning

```
>>> a = [8, 2, 4, 1]
>>> b = a[:]
>>> a
[8, 2, 4, 1]
>>> b
[8, 2, 4, 1]
```

Cloning

```
>>> a = [8, 2, 4, 1]
>>> b = a[:]
>>> a
[8, 2, 4, 1]
>>> b
[8, 2, 4, 1]
>>> b[0] = -5
>>> a
[8, 2, 4, 1]
>>> b
[-5, 2, 4, 1]
```

Cloning

```
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>>> b
[-5, 2, 4, 1]
```

Cloning

```
def sum_of_abs_value(lst):

    for i in range(len(lst)):
        lst[i] = abs(lst[i])

    return sum(lst)


numbers = [-3, -2, -6, 2, 5, 1]

print("Before:", numbers)

print("Sum of the absolute values:", sum_of_abs_value(numbers))

print("After:", numbers)
print("The list was mutated!")
```

Cloning

```
def sum_of_abs_value(lst):

    new_lst = lst[:]

    for i in range(len(lst)):
        new_lst[i] = abs(lst[i])

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numbers = [-3, -2, -6, 2, 5, 1]

print("Before:", numbers)

print("Sum of the absolute values:", sum_of_abs_value(numbers))

print("After:", numbers)
print("The list did not change! A clone was used")
```

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```
Before: [-3, -2, -6, 2, 5, 1]
Sum of the absolute values: 19
After: [-3, -2, -6, 2, 5, 1]
The list did not change! A clone was used
```

Cloning

```
def sum_of_abs_value(lst):

    new_lst = lst[:]

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numbers = [-3, -2, -6, 2, 5, 1]

print("Before:", numbers)

print("Sum of the absolute values:", sum_of_abs_value(numbers))

print("After:", numbers)
print("The list did not change! A clone was used")
```
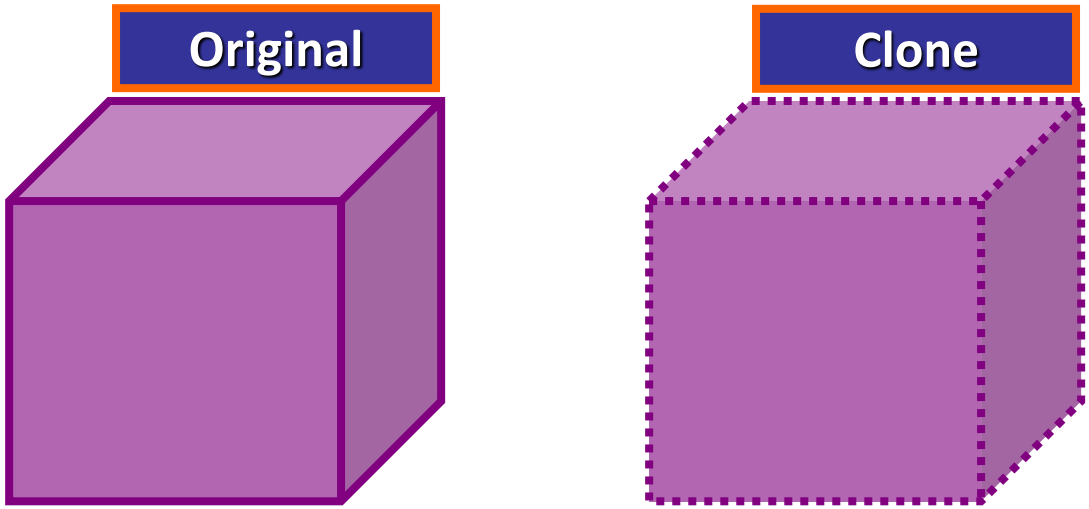

```
Before: [-3, -2, -6, 2, 5, 1]
Sum of the absolute values: 19
After: [-3, -2, -6, 2, 5, 1]
The list did not change! A clone was used
```

Cloning



Types of Cloning