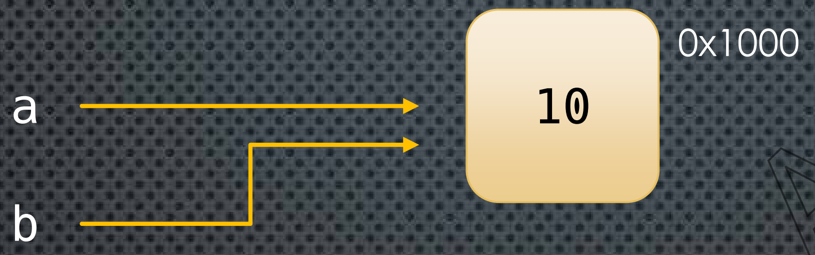
SHARED REFERENCES AND MUTABILITY

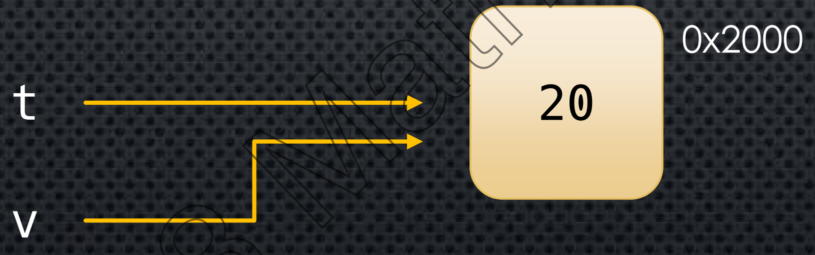
The term shared reference is the concept of two variables referencing the same object in memory (i.e. having the same memory address)

```
a = 10
b = a
```



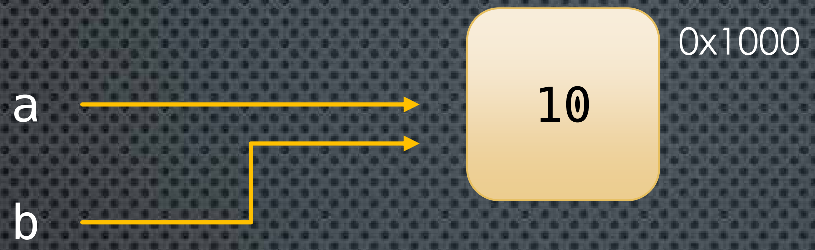
```
def my_func(v):
    …

t = 20
my_func(t)
```

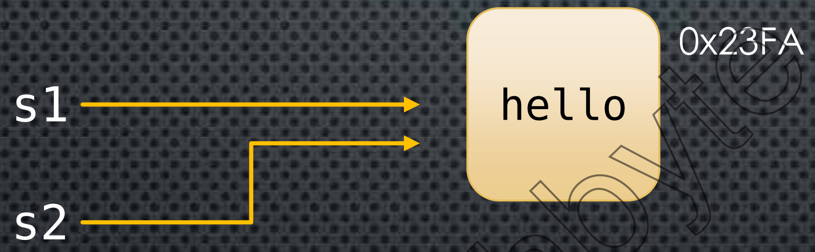


In fact, the following may surprise you:

```
a = 10
b = 10
```



```
s1 = 'hello'
s2 = 'hello'
```



In both these cases, Python's memory manager decides to automatically re-use the memory references!!

We'll revisit this again soon

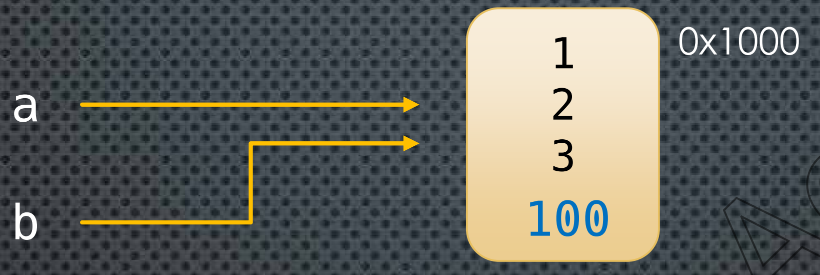
Is this even safe? Yes

The integer object 10, and the string object 'hello' are immutable – so it is safe to set up a shared reference

When working with mutable objects we have to be more careful

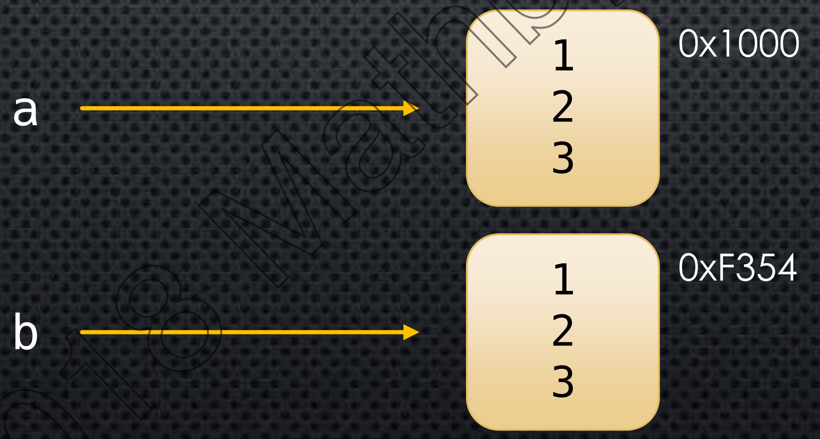
```
a = [1, 2, 3]
b = a

b.append(100)
```



With mutable objects, the Python memory manager will never create shared references

```
a = [1, 2, 3]
b = [1, 2, 3]
```


a
b
1
2
3
0x1000
1
2
3
0xF354