

Thanks for sharing the screenshot! You're demonstrating a very important concept in Python: **reference vs copy** for mutable objects like **lists**.

👉 Let me explain what's happening in your code, step by step:

✅ Case 1: `11 = [1, 2, 3]` , `12 = 11`

python

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```
11 = [1, 2, 3] 12 = 11
```

- You did **not** create a new list for `12` .
- Both `11` and `12` point to the **same list** in memory.

Then you did:

python

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```
11[0] = 77
```

This **modifies the original list**, so now:

python

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```
11 → [77, 2, 3] 12 → [77, 2, 3] ✅ (because they are the same object)
```

✅ Case 2: `p1 = [1, 2, 3]` , `p2 = [1, 2, 3]`

python

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```
p1 = [1, 2, 3] p2 = [1, 2, 3]
```

Here, you created **two different lists** with the same values. So `p1` and `p2` point to **different objects**.

Then you changed:

python



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`p1[0] = 77`

Now:

python



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`p1 → [77, 2, 3] p2 → [1, 2, 3] ✓ (unchanged because it's a separate object)`

Summary:

Statement	Points to Same Object?	Changes Affect Both?
<code>12 = 11</code>	✓ Yes	✓ Yes
<code>p2 = [1, 2, 3]</code>	✗ No	✗ No

Key Concept:

- `12 = 11` is a **reference assignment**.
- `p2 = [1, 2, 3]` is a **new list with same content**.
- To make a **copy** of a list (not just a reference), use:

python



Copy



Edit

```
new_list = old_list.copy() # or import copy new_list = copy.deepcopy(old_list) # for
nested lists
```

NOTE:

- number above is an immutable so cannot be change so reference change hudaina.
- as list is mutable so reference can be change so simply can be understand from above figure.