What is reference counting?

Python keeps track of how many variables or parts of the program are using (or referencing) an object.

This count is called the reference count.

How it works:

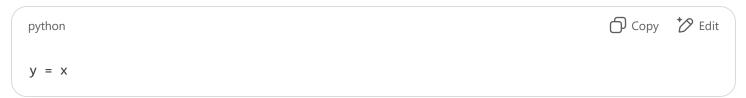
Let's go step by step.

1. You create a variable:



- Python creates the list [1, 2, 3].
- x points to that list.
- So the reference count is now 1.

2. You assign another variable:



- Now both x and y point to the same list.
- The reference count becomes 2.

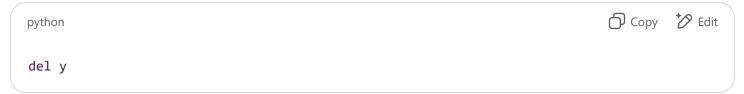
3. You delete one reference:



del x

- Now only y points to the list.
- Reference count goes down to 1.

4. No references left:



- Now nothing points to the list.
- Reference count is 0 → Python automatically deletes (frees) the memory.

You can check reference count like this:

```
python

import sys a = [1, 2, 3] print(sys.getrefcount(a)) # Output will be 2 (a + temporary reference)
```

Important Notes:

- getrefcount() always shows 1 extra because it adds a temporary reference when you pass the object to the function.
- Python's memory management also includes garbage collection to clean up cycles (like a -> b > a).

Summary:

Action	Ref Count
x = obj	1
y = x	2
del x	1
del y	0 → deleted