

Explain the difference between the is and in operators in Python.

1. is Operator (Identity Operator)

- The “is” operator checks **whether two variables refer to the same object in memory**.
- It does **not** compare the actual values of the objects, but rather their memory addresses.
- Used mainly for comparing objects like None, True, False, or singleton instances.

2. in Operator (Membership Operator)

- The in operator checks **if a value exists within an iterable** (e.g., list, tuple, set, dictionary, or string).
- It returns True if the value is found; otherwise, it returns False.

Final Difference Recap

Operator	is	in
Checks	Identity (same object in memory)	Membership (value exists in iterable)
Works On	Objects	Lists, Tuples, Sets, Dicts, Strings
Example	a is b	x in [1, 2, 3]
Returns	True / False	True / False