**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 |