Identity Operators

is

is not

1. The operators **is** and **is not** test for object identity: x is y is true if and only if x and y are the same object. x is not y yields the inverse truth value. **is** is an identity test, not an equality test!

2. **is** checks that the **id** of two objects is same or not. In CPython, the **id** is the memory address.

3. Comparisons to singletons like **None** should always be done with **is** or **is not**, never the equality operators (**==** and **!=**) because **==** and **!=** are not guaranteed to return bool

```python
a = []
b = None
a is not None    # True because a and b are different objects at different memory locations
b is None        # True because they are both pointing to the same "None" object
b == None        # Comparisons to singletons like None should always be done with 'is' not with '=='
id(a)
id(b)
```

True

True

True

2566467619456

140709788261592

```python
x = 2022
y = 2022
x is y          # False because x and y point to two different objects at two different memory locations
id(x)           # x is y True if id(x) == id(y)
id(y)           # id(x) != id(y) so x is y evaluates to False
x == y          # True because they are both have the same value: 2022
```

False

1971978139216

1971978137744

True

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