**Boolean in Python**

A **Boolean** in Python is a data type that represents one of two values:

* True
* False

**1. Boolean Type**

In Python, the Boolean type is called bool, and it is a subclass of int. This means that:

* True is equivalent to 1
* False is equivalent to 0

Example:

print(True + 1) # Output: 2

print(False + 1) # Output: 1

**2. Boolean Values in Expressions**

Booleans are often used in conditional statements and comparisons.

Example:

x = 10

y = 5

print(x > y) # True

print(x == y) # False

print(x < y) # False

**3. Boolean Operators**

Python provides three Boolean operators:

* and → Returns True if both conditions are True
* or → Returns True if at least one condition is True
* not → Reverses the Boolean value

Example:

a = True

b = False

print(a and b) # False

print(a or b) # True

print(not a) # False

**4. Truthy and Falsy Values**

In Python, some values evaluate to True or False when used in a Boolean context.

**Falsy Values** (Evaluates to False):

* 0
* None
* "" (Empty string)
* [] (Empty list)
* {} (Empty dictionary)
* set() (Empty set)
* False

**Truthy Values** (Evaluates to True):

* Non-zero numbers
* Non-empty strings ("Hello")
* Non-empty lists, tuples, sets, dictionaries

Example:

if "Python":

print("This is True!") # Output: This is True!

if []:

print("This is False!")

else:

print("Falsy value!") # Output: Falsy value!

**5. Using Boolean in Conditional Statements**

Booleans are commonly used in if statements to control the flow of a program.

Example:

is\_raining = True

if is\_raining:

print("Take an umbrella!")

else:

print("Enjoy the sunshine!")

**6. Boolean Conversion**

You can convert values to Boolean using bool().

Example:

print(bool(0)) # False

print(bool(1)) # True

print(bool("Hello")) # True

print(bool("")) # False

**Summary**

* Boolean values are True and False (subclasses of int).
* Boolean operators: and, or, not.
* Some values are **truthy**, and some are **falsy**.
* Used in conditional statements (if, while loops).
* You can convert any value to a Boolean using bool().