**Categorizing Data in Python: Five Major Data Types**

**1. String (str)**

* A **string** is an ordered sequence of characters: letters, symbols, numbers, or spaces.
* Always enclosed in **quotation marks** (" or ').
* **Example:** "Hello Python!"
* Cannot be used for mathematical calculations.
* Missing a quotation mark causes a **syntax error**.

**2. Float (float)**

* A **float** is a number with a **decimal point**.
* Used for more precise mathematical calculations.
* **Examples:** 2.1, 10.0, 0.5
* No quotation marks are used for numeric data.
* Can be used in operations: print(3.5 + 1.2) → 4.7

**3. Integer (int)**

* An **integer** is a **whole number** with no decimal.
* **Examples:** 0, -9, 5000
* Like floats, integers can be used in **math operations**: addition, subtraction, etc.
* **Example:** print(1 + 1) → 2

**4. Boolean (bool)**

* A **Boolean** has only **two possible values**: True or False.
* Commonly used in comparisons or conditions.
* **Examples:**
  + print(10 < 5) → False
  + print(9 < 12) → True
* Booleans help add **logic and control flow** to your programs.

**5. List (list)**

* A **list** stores a collection of data items in **order**, separated by commas and enclosed in **square brackets** [].
* Items can be of any data type, but are often strings or numbers.
* **Example:** ["user1", "user2", "user3"]
* Lists can be printed and manipulated (e.g., items added, removed, modified).

**Summary:**

| **Data Type** | **Example** | **Use Case** |
| --- | --- | --- |
| str | "Hello" | Text and character data |
| float | 2.5 | Decimal numbers and calculations |
| int | 100 | Whole numbers and math |
| bool | True, False | Logical comparisons |
| list | ["a", "b", "c"] | Collections of ordered items |

These five data types are foundational for writing and understanding Python code, especially in security automation and analysis.