**1️ Exploring Python Data Types**

**Python’s Built-in Data Types**

| **Category** | **Data Types** | **Example** |
| --- | --- | --- |
| **Numeric** | int, float, complex | x = 10, y = 3.14, z = 2 + 3j |
| **Sequence** | list, tuple, range | [1, 2, 3], (1, 2, 3), range(5) |
| **Text** | str | "Hello, Databricks!" |
| **Set** | set, frozenset | {1, 2, 3}, frozenset({1, 2, 3}) |
| **Mapping** | dict | {"name": "Alice", "age": 25} |
| **Boolean** | bool | True, False |
| **Binary** | bytes, bytearray, memoryview | b"hello", bytearray(5), memoryview(bytes(5)) |
| **None Type** | None | x = None |

**2️ Python Keywords and Identifiers**

**Python Keywords (Reserved Words)**

Python has **35+ reserved keywords** like if, else, def, class, return, etc.

**Rules for Identifiers (Variable & Function Names)**

✅ **Can contain letters, digits, and underscores (\_)**  
✅ **Must start with a letter or underscore (\_var is valid, but 1var isn’t)**  
✅ **Case-sensitive (var and Var are different)**  
✅ **Cannot be a Python keyword (class = 10 ❌ Invalid)**

Example:

python

Copy code

my\_var = 10 # ✅ Valid

\_myVar = "Hello" # ✅ Valid

2myVar = 20 # ❌ Invalid

**3️ Differences Between List, Tuple, Set, and Dictionary**

| **Feature** | **List** | **Tuple** | **Set** | **Dictionary** |
| --- | --- | --- | --- | --- |
| **Ordered?** | ✅ Yes | ✅ Yes | ❌ No | ✅ Yes |
| **Mutable?** | ✅ Yes | ❌ No | ✅ Yes | ✅ Yes (keys immutable) |
| **Duplicates?** | ✅ Yes | ✅ Yes | ❌ No | ✅ No (keys unique) |
| **Syntax** | [1, 2, 3] | (1, 2, 3) | {1, 2, 3} | {"name": "Alice"} |
| **Use Case** | Store dynamic collections | Fixed collections | Unique items | Key-value pairs |

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