Exercise 42:

### Basic Data Types in Python and Their Uses

| **Data Type** | **Description** | **Example** |
| --- | --- | --- |
| **int** | Represents **integer** values, i.e., whole numbers (positive or negative). | 5, -20, 1000 |
| **float** | Represents **floating-point** numbers, i.e., numbers with decimal points. | 3.14, -0.001, 2.71828 |
| **complex** | Represents **complex numbers**, with a real and an imaginary part. | 3 + 4j, complex(3, 4) |
| **str** | Represents **strings**, i.e., sequences of characters (text). | "Hello", 'Python' |
| **bool** | Represents **boolean** values: either True or False. | True, False |
| **list** | Represents an **ordered collection** of items (mutable). | [1, 2, 3], ['a', 'b', 'c'] |
| **tuple** | Represents an **ordered collection** of items (immutable). | (1, 2, 3), ('x', 'y', 'z') |
| **dict** | Represents a **collection of key-value pairs** (mapping). | {"name": "Alice", "age": 25} |
| **set** | Represents an **unordered collection** of unique items. | {1, 2, 3}, {'a', 'b', 'c'} |
| **NoneType** | Represents the absence of a value or a null value. | None |

### Classification of Data Types in Python:

| **Classification** | **Data Types** | **Examples** |
| --- | --- | --- |
| **Numeric Types** | int, float, complex | 5, 3.14, 4 + 5j |
| **Text Type** | str | "Hello, World!" |
| **Sequence Types** | list, tuple, range | [1, 2, 3], (a, b, c), range(10) |
| **Mapping Type** | dict | {"name": "Alice", "age": 25} |
| **Set Types** | set, frozenset | {1, 2, 3}, frozenset([1, 2, 3]) |
| **Boolean Type** | bool | True, False |
| **None Type** | NoneType | None |