**List of Datatypes:-**

* List
* Tuple
* Set
* Dictionary
* Frozen set
* Complex number
* Bytes & Bytearray
* Range
* Deque
* Named tuple

**Difference**

**Data Types Summary**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Category | Data Type | Description | Mutable | Allows Duplicates | Insertion Preserved | Syntax |
| Mutable Data Types | List | Elements can be added, removed, or changed. | Yes | Yes | Yes | my\_list = [1, 2, 3, 4] |
|  | Dictionary | Keys and values can be added, removed, or updated. | Yes | Yes (values) | Yes | my\_dict = {'key': 'value'} |
|  | Set | Elements can be added or removed. | Yes | No | No | my\_set = {1, 2, 3, 4} |
|  | Bytearray | Allows modification of individual bytes. | Yes | Yes | Yes | bytearray(b'example') |
| Immutable Data Types | Tuple | Elements cannot be modified once created. | No | Yes | Yes | my\_tuple = (1, 2, 3, 4) |
|  | String | Cannot be altered; new strings are created for changes. | No | Yes | Yes | my\_string = 'example' |
|  | Frozen set | Like a set but cannot be modified. | No | No | No | frozenset({1, 2, 3, 4}) |
|  | Bytes | Immutable version of bytearray. | No | Yes | Yes | bytes(b'example') |
|  | Range | Represents an immutable sequence of numbers. | No | Yes | Yes | range(1, 10) |
|  | Complex number | Complex numbers cannot be altered. | No | Yes | Yes | complex(1, 2) |
| Heterogeneous Data Types | List | Can contain elements of different types. | Yes | Yes | Yes | my\_list = [1, 'text', 3.5] |
|  | Tuple | Can contain elements of different types. | No | Yes | Yes | my\_tuple = (1, 'text', 3.5) |
|  | Dictionary | Keys and values can be of different types. | Yes | Yes (values) | Yes | my\_dict = {'key': 123} |
|  | Set | Can contain elements of different types in some cases. | Yes | No | No | my\_set = {1, 'text'} |
|  | Named tuple | Named fields of different types. | No | Yes | Yes | from collections import namedtuple |
| Data Types with Insertion Preservation | List | Insertion order is preserved. | Yes | Yes | Yes | my\_list = [1, 2, 3, 4] |
|  | Tuple | Insertion order is preserved. | No | Yes | Yes | my\_tuple = (1, 2, 3, 4) |
|  | Dictionary (Python 3.7+) | Insertion order is preserved. | Yes | Yes (values) | Yes | my\_dict = {'key': 'value'} |
|  | OrderedDict | Specifically designed to preserve insertion order. | Yes | Yes (values) | Yes | from collections import OrderedDict |
|  | Deque | Preserves insertion order. | Yes | Yes | Yes | from collections import deque |
| Data Types Without Insertion Preservation | Set | Insertion order is not preserved. | Yes | No | No | my\_set = {1, 2, 3, 4} |
|  | Frozen set | Insertion order is not preserved. | No | No | No | frozenset({1, 2, 3, 4}) |
|  | Dictionary (pre-3.7) | Insertion order was not guaranteed before Python 3.7. | Yes | Yes (values) | No | my\_dict = {'key': 'value'} |
| Data Types That Allow Duplicates | List | Allows duplicate values. | Yes | Yes | Yes | my\_list = [1, 1, 2, 3] |
|  | Tuple | Allows duplicate values. | No | Yes | Yes | my\_tuple = (1, 1, 2, 3) |
|  | Dictionary (values) | Allows duplicate values in values, but not in keys. | Yes | Yes (values) | Yes | my\_dict = {'key1': 1, 'key2': 1} |
|  | Deque | Allows duplicate values. | Yes | Yes | Yes | from collections import deque([1, 1]) |
| Data Types That Do Not Allow Duplicates | Set | Does not allow duplicate values. | Yes | No | No | my\_set = {1, 2, 3} |
|  | Frozen set | Does not allow duplicate values. | No | No | No | frozenset({1, 2, 3}) |
|  | Dictionary (keys) | Keys must be unique (values can be duplicates). | Yes | No (keys) | Yes | my\_dict = {'key': 'value'} |
| Using [] (Square Brackets) | List | Mutable, allows duplicates, preserves insertion order. | Yes | Yes | Yes | my\_list = [1, 2, 3, 4] |
| Using () (Parentheses) | Tuple | Immutable, allows duplicates, preserves insertion order. | No | Yes | Yes | my\_tuple = (1, 2, 3, 4) |
|  | Empty Tuple | An empty tuple can be created with (). | No | Yes | Yes | empty\_tuple = () |
| Using {} (Curly Braces) | Set | Mutable, does not allow duplicates, does not preserve insertion order. | Yes | No | No | my\_set = {1, 2, 3, 4} |
|  | Dictionary | Mutable, no duplicate keys, allows duplicate values, preserves insertion order (Python 3.7+). | Yes | Yes (values) | Yes | my\_dict = {'key': 'value'} |
|  | Empty Dictionary | {} creates an empty dictionary by default; for an empty set, use set(). | Yes | Yes (values) | Yes | empty\_dict = {} |