



All different Data Structures in Python



Feature	String	List	Tuple	Set	Dictionary
Definition	Immutable sequence of characters	Ordered, mutable collection of elements	Ordered, immutable collection of elements	Unordered, mutable collection of unique elements	Key-value pairs, unordered, mutable
Mutability	✗	✓	✗	Mutable (but only for adding/removing elements)	✓
Order	✓	✓	✓	✗	Unordered (Python 3.7+ maintains insertion order)
Duplicates Allowed	✓	✓	✓	✗	Keys: No, Values: Yes
Indexing & Slicing	✓	✓	✓	No (Only supports iteration)	Keys used for access (not indexing)
Operations	Concatenation, slicing, searching	Append, insert, remove, slicing	Indexing, slicing	Add, remove, union, intersection	Add, update, delete keys
Performance (Time Complexity)	O(1) for indexing	O(1) for append, O(n) for insert/remove	O(1) for indexing	O(1) for add/remove, O(n) for iteration	O(1) for key lookup, O(n) for iteration
Use Case	Text manipulation	General-purpose collection	Read-only sequences	Unique element storage, set operations	Mapping relationships between keys and values
Comprehension Support	✗	✓	✓	✗	✓
Memory Usage	Low	Medium	Medium	Low	High
Iteration	Character-wise	Element-wise	Element-wise	Element-wise	Key or value-wise
Use in Function Arguments	Passed by value	Passed by reference	Passed by reference	Passed by value	Passed by reference
Hashable	✗	✗	Yes (Immutable)	✓	Keys: Yes, Values: No
Modification	No (immutable)	Yes (mutable)	Yes (mutable)	No (immutable)	Yes (mutable)
Adding/ Removing	✗	✓	✓	✗	✓
Sorting Support	✓	✓	✗	✓	✗

