| **Feature** | **Lists** | **Tuples** | **Sets** | **Dictionaries** |
| --- | --- | --- | --- | --- |
| **Definition** | Ordered collection of mutable elements | Ordered collection of immutable elements | Unordered collection of unique elements | Unordered collection of key-value pairs |
| **Syntax** | **[ ]** | **( )** | **{ }** | **{ }** |
| **Mutable** | Yes | No | Yes | Yes |
| **Duplicate elements** | Allowed | Allowed | Not allowed | Allowed (in values) |
| **Element Access** | Indexed | Indexed | Not indexed | Key-based |
| **Usage** | General-purpose data storage | Used for fixed data collections | Fast membership tests | Key-value mappings |
| **Creation** | **[1, 2, 3]** | **(1, 2, 3)** | **{1, 2, 3}** | **{'name': 'John', 'age': 30}** |
| **Examples** | **my\_list = [1, 2, 3]** | **my\_tuple = (1, 2, 3)** | **my\_set = {1, 2, 3}** | **my\_dict = {'name': 'John', 'age': 30}** |
| **Accessing Elements** | **my\_list[0]** | **my\_tuple[0]** | N/A | **my\_dict['name']** |
| **Adding Elements** | **my\_list.append(4)** | N/A | **my\_set.add(4)** | **my\_dict['email'] = 'john@example.com'** |
| **Removing Elements** | **my\_list.remove(3)** | N/A | **my\_set.remove(3)** | **del my\_dict['age']** |
| **Length** | **len(my\_list)** | **len(my\_tuple)** | **len(my\_set)** | **len(my\_dict)** |
| **Iteration** | **for item in my\_list:** | **for item in my\_tuple:** | **for item in my\_set:** | **for key, value in my\_dict.items():** |
| **Methods** | **append(), extend(), insert(), remove(), pop(), index(), count(), sort(), reverse(), copy()** | **count(), index(), +, \*** | **add(), remove(), pop(), clear(), copy(), union(), intersection(), difference(), symmetric\_difference(), issubset(), issuperset(), isdisjoint()** | **get(), items(), keys(), values(), pop(), popitem(), update(), clear(), copy()** |
| **Use Cases** | Storing data with a specific order | Representing fixed collections | Filtering duplicates, fast lookup | Storing key-value pairs |