1. What is the difference between Single quoted string and double quoted string in python?
2. What is the difference between immutable and mutable objects?
3. What is the difference between list and tuple in python?
4. What are the difference between a set and list in terms of Functionality and use cases?
5. How does a dictionary differ from a list in term of data storage and retrieval?

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| --- | --- |
| SINGLE QUOTES | DOUBLE QUOTES |
| Preferred for short strings or simple words | Preferred when the string contains an apostrophe |
| Multiline is not possible, unless used three time | Its not possible until used trice |
| Issues with It's a nice day | Works: "It's a nice day" |
| 'Hello' | “Hello” |

|  |  |
| --- | --- |
| MUTABLE OBJECTS | IMMUTABLE OBJECTS |
| Can be modified after creation | Cannot be modified after creation |
| Lists, Sets, Dictionaries | Strings, Tuples, Integers, Floats |
| More dynamic, allows in-place modification | New objects are created when changed |
| Yes, elements can be changed | No, elements cannot be changed |

|  |  |
| --- | --- |
| LIST | TUPLE |
| Mutable | IMMUTABLE |
| Slower due to mutability | Faster due to immutability |
| Takes more memory | Takes less memory |
| Used when data needs to change | Used when data should remain constant |

|  |  |
| --- | --- |
| SET | LIST |
| No duplicates allowed | Duplicates allowed |
| Unordered | Ordered |
| Fast operations like union, intersection | Fast element retrieval |
| When uniqueness is required | When maintaining order is important |

**HOW DICT DIFF FROM LIST:**

Use Lists when order matters and sequential access is needed.

Use Dictionaries when you need fast lookups using unique keys.

|  |  |
| --- | --- |
| List | Dictionary |
| Stores elements sequentially | Stores key-value pairs |
| Access by index | Access by key |
| Allows duplicate values | No duplicate values allowed |
| Slower | Faster |