

Memo: Choosing a python data structure for product information.

Purpose: to compare the core python data structures, such as tuples, lists, dictionaries and sets and recommend a suitable structure for storing product information.

1. Tuples:

- Immutable: the data stored cannot be modified after creation.
- ordered : maintains insertion order
- Indexed: fast access

Tuples are mainly used for recording fixed data types where integrity is important. However, it's inflexible for evolving data.

2. List:

- Mutable: data can be added, removed or modified.
- Ordered: maintains insertion order
- Indexed: fast access

Lists are used for data where order matters, and the data might change over time. However, there is no in-built key-based access, therefore searching attributes requires iteration.

3. Sets:

- Mutable: keys and values can be changed.
- Unordered: there is guaranteed order
- Unique elements: there are no duplicates

Sets can be used to get rid of duplicates. However, it might not be suitable for structured product data.

4. Dictionaries:

- Mutable: values and keys can be updated
- Ordered: there is insertion order
- Key-value access: can lookup using keys

Good for structured data with named fields(id, name, product type), clear and easy to understand. However, it represents a single record, it's not a collection by itself.

Recommendation: using a list of dictionaries to store product data. As this makes it mutable and ordered, which could be good for the product information as the data might constantly change, for example the price.

Furthermore, each dictionary represents a single product that makes it clear and readable as the fields are named. As a result, it's efficient, and this combination allows flexibility as the product information evolves over time.