Python Dictionaries

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```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
```

Dictionary

Dictionaries are used to store data values in key:value pairs.

A dictionary is a collection which is ordered*, changeable and does not allow duplicates.

As of Python version 3.7, dictionaries are *ordered*. In Python 3.6 and earlier, dictionaries are *unordered*.

Dictionaries are written with curly brackets, and have keys and values:

Example

Create and print a dictionary:

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
print(thisdict)
```

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Dictionary Items

Dictionary items are ordered, changeable, and does not allow duplicates.

Dictionary items are presented in key:value pairs, and can be referred to by using the key name.

Example

Print the "brand" value of the dictionary:

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
```

```
}
print(thisdict["brand"])
```

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Ordered or Unordered?

As of Python version 3.7, dictionaries are *ordered*. In Python 3.6 and earlier, dictionaries are *unordered*.

When we say that dictionaries are ordered, it means that the items have a defined order, and that order will not change.

Unordered means that the items does not have a defined order, you cannot refer to an item by using an index.

Changeable

Dictionaries are changeable, meaning that we can change, add or remove items after the dictionary has been created.

Duplicates Not Allowed

Dictionaries cannot have two items with the same key:

Example

Duplicate values will overwrite existing values:

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
  "year": 2020
}
print(thisdict)
```

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Dictionary Length

To determine how many items a dictionary has, use the `len()` function:

Example

Print the number of items in the dictionary:

```
print(len(thisdict))
```

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Dictionary Items - Data Types

The values in dictionary items can be of any data type:

Example

String, int, boolean, and list data types:

```
thisdict = {
  "brand": "Ford",
  "electric": False,
  "year": 1964,
  "colors": ["red", "white", "blue"]
}
```

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type()

From Python's perspective, dictionaries are defined as objects with the data type 'dict':

```
<class 'dict'>
```

Example

Print the data type of a dictionary:

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
print(type(thisdict))
```

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Python Collections (Arrays)

There are four collection data types in the Python programming language:

- **List** is a collection which is ordered and changeable. Allows duplicate members.
- **Tuple** is a collection which is ordered and unchangeable. Allows duplicate members.
- **Set** is a collection which is unordered and unindexed. No duplicate members.
- **Dictionary** is a collection which is ordered and changeable. No duplicate members.

When choosing a collection type, it is useful to understand the properties of that type. Choosing the right type for a particular data set could mean retention of meaning, and, it could mean an increase in efficiency or security.

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