Dictionaries

dictionary: container that stores **key-value** pairs

```
oxford_english_dictionary = {
    'computer': 'a machine that processes information',
    'mango': 'a juicy tropical fruit',
    'python': 'a large snake',
}
```

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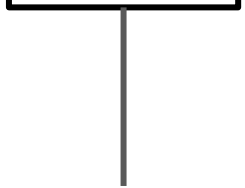

a **word** is the **key**

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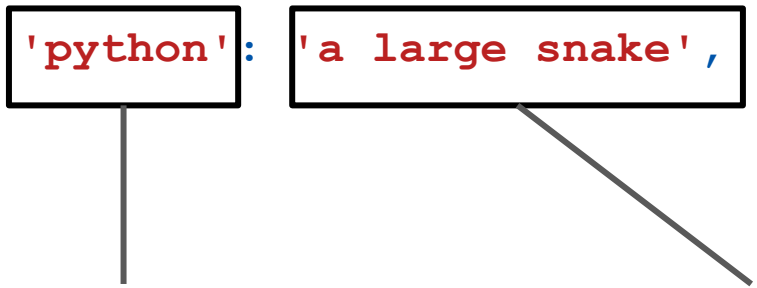

a **word** is the **key**

the **definition** is the **value**

values can be any type / **keys** must be immutable (str, int, float, etc)

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
 }
```

values can be any type / **keys** must be immutable (str, int, float, etc)

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}
```

values can have ***different*** key types

Printing dictionaries

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}

# what would this print?
print(ta_to_favNum)
```

Printing dictionaries

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}

# what would this print?
print(ta_to_favNum)
```

```
{'Hanna': 47, 'Joy': '16', 'Manolis': 7, 'Bruno': 4}
```

Dictionary type

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}

# what would this print?
print(type(ta_to_favNum))
```

Dictionary type

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}

# what would this print?
print(type(ta_to_favNum))
<class 'dict'>
```

Accessing a value using the key

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}

# what would this print?
print(ta_to_favNum['Joy'])
```

Accessing a value using the key

```
ta_to_favNum = {
     'Hanna': 47,
     'Joy': '16',
     'Manolis': 7,
     'Bruno': 4
}

# what would this print?
print(ta_to_favNum['Joy'])
16
```

*You access **values** using their **keys**, because dictionaries are NOT ordered. There are no indices

Other things you can do

```
ta_to_favNum = {
    'Hanna': 47,
    'Joy': '16',
    'Manolis': 7,
    'Bruno': 4 }
```

Print all the keys

```
ta_to_favNum = {
    'Hanna': 47,
    'Joy': '16',
    'Manolis': 7,
    'Bruno': 4 }
```

```
# print(ta_to_favNum.keys())
dict_keys(['Hanna', 'Joy', 'Manolis', 'Bruno'])
```

Print all the values

```
ta_to_favNum = {
    'Hanna': 47,
    'Joy': '16',
    'Manolis': 7,
    'Bruno': 4 }
```

```
# print(ta_to_favNum.keys())
dict_keys(['Hanna', 'Joy', 'Manolis', 'Bruno'])

# print(ta_to_favNum.values())
dict_values([47, '16', 7, 4])
```

Print the number of key/value pairs

```
ta_to_favNum = {
    'Hanna': 47,
    'Joy': '16',
    'Manolis': 7,
    'Bruno': 4 }
```

```
# print(ta_to_favNum.keys())
dict_keys(['Hanna', 'Joy', 'Manolis', 'Bruno'])

# print(ta_to_favNum.values())
dict_values([47, '16', 7, 4])

# print(len(ta_to_favNum))
4
```

Changing the value for a key

```
ta_to_favNum = {
    'Hanna': 47,
    'Joy': '16',
    'Manolis': 7,
    'Bruno': 4 }
```

```
# print(ta_to_favNum.keys())
dict_keys(['Hanna', 'Joy', 'Manolis', 'Bruno'])

# print(ta_to_favNum.values())
dict_values([47, '16', 7, 4])

# print(len(ta_to_favNum))
4

# ta_to_favNum['Joy'] = 16
# print(ta_to_favNum)
{'Hanna': 47, 'Joy': 16, 'Manolis': 7, 'Bruno': 4}
```