

# Section Overview

# What You Will Learn

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- Dictionaries
- Creating
- Adding and removing items
- Searching
- Nesting
- Looping

# Dictionaries

## Part I

# Dictionaries

## Part II

# Dictionaries

- Hold key-value pairs called items.
- AKA associative arrays, hash tables and hashes.

```
dictionary_name = {key_1: value_1, key_N: value_N}
```

```
dictionary_name = {}
```

```
dictionary_name[key]
```



```
contacts = {'Jason': '555-0123', 'Carl': '555-0987'}  
jasons_phone = contacts['Jason']  
carls_phone = contacts['Carl']  
  
print('Dial {} to call Jason.'.format(jasons_phone))  
print('Dial {} to call Carl.'.format(carls_phone))
```

```
Dial 555-0123 to call Jason.  
Dial 555-0987 to call Carl.
```



```
contacts = {'Jason': '555-0123', 'Carl': '555-0987'}  
contacts['Jason'] = '555-0000'  
jasons_phone = contacts['Jason']  
print('Dial {} to call Jason.'.format(jasons_phone))
```

Dial 555-0000 to call Jason.



```
contacts = {'Jason': '555-0123', 'Carl': '555-0987'}  
contacts['Tony'] = '555-0570'  
print(contacts)  
print(len(contacts))
```

```
{'Jason': '555-0123', 'Carl': '555-0987', 'Tony':  
'555-0570'}
```

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```
contacts = {'Jason': '555-0123', 'Carl': '555-0987'}  
del contacts['Jason']  
print(contacts)
```

```
{'Carl': '555-0987'}
```

```
contacts = {  
    'Jason': ['555-0123', '555-0000'],  
    'Carl': '555-0987'  
}  
print('Jason:')  
print(contacts['Jason'])  
print('Carl:')  
print(contacts['Carl'])
```

```
Jason:  
['555-0123', '555-0000']  
Carl:  
555-0987
```

```
contacts = {  
    'Jason': ['555-0123', '555-0000'],  
    'Carl': '555-0987'  
}  
  
for number in contacts['Jason']:  
    print('Phone: {}'.format(number))
```

Phone: 555-0123

Phone: 555-0000



```
contacts = {  
    'Jason': ['555-0123', '555-0000'],  
    'Carl': '555-0987'  
}  
  
if 'Jason' in contacts.keys():  
    print("Jason's phone number is:")  
    print(contacts['Jason'][0])  
  
if 'Tony' in contacts.keys():  
    print("Tony's phone number is:")  
    print(contacts['Tony'][0])
```

Jason's phone number is:

555-0123

```
contacts = {  
    'Jason': ['555-0123', '555-0000'],  
    'Carl': '555-0987'  
}  
  
print('555-0987' in contacts.values())
```

True



# Loops

```
for key_variable in dictionary_name:  
    # Code block  
    # dictionary_name[key_variable]
```

```
for contact in contacts:  
    # Code block  
for person in people:  
    # Code block
```

```
contacts = {  
    'Jason': '555-0123',  
    'Carl': '555-0987'  
}  
for contact in contacts:  
    print('The number for {0} is {1}.'.format(contact, contacts[contact]))
```

The number for Carl is 555-0987.  
The number for Jason is 555-0123.

# Looping with two variables

```
for key_variable, value_variable in dictionary_name.items():  
    # Code block
```

```
contacts = {  
    'Jason': '555-0123',  
    'Carl': '555-0987'  
}  
for person, phone_number in contacts.items():  
    print('The number for {0} is {1}.'.format(person, phone_number))
```

The number for Carl is 555-0987.  
The number for Jason is 555-0123.



```
contacts = {  
    'Jason': {  
        'phone': '555-0123',  
        'email': 'jason@example.com'  
    },  
    'Carl': {  
        'phone': '555-0987',  
        'email': 'carl@example.com'  
    }  
}
```

```
for contact in contacts:  
    print("{}'s contact info:".format(contact))  
    print(contacts[contact]['phone'])  
    print(contacts[contact]['email'])
```

Jason's contact info:

555-0123

jason@example.com

Carl's contact info:

555-0987

carl@example.com

# Section Summary



# Summary

- Dictionaries hold key-value pairs, called items.

```
dictionary_name = {key_1: value_1, key_N: value_N}
```

- Access the values stored in a dictionary by key.

```
dictionary_name[key]
```

# Summary

- You can add or change values in a dictionary through assignment.

```
dictionary_name[key] = value
```

- Remove items from a dictionary using the del statement.

```
del dictionary_name[key]
```

# Summary

- To determine if a key exists use the `value in dictionary_name.values()` syntax, which returns a boolean.
- The `values()` dictionary method returns a list of the values stored in that dictionary.

# Summary

- Loop through a dictionary using:

```
for key_variable in dictionary_name:
```

- Dictionary values can be of any data type, including other dictionaries.