DICTIONARIES IN PYTHON

Python's dictionaries allow you to connect pieces of related information. Each piece of information in a dictionary is stored as a key-value pair. When you provide a key, Python returns the value associated with that key.

**Defining a dictionary**

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| Making a dictionary | alien\_0 = {'color': 'green', 'points': 5} |

**Accessing values**

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| Getting the value associated with a key | alien\_0 = {'color': 'green', 'points': 5}  print(alien\_0['color'])  print(alien\_0['points'] |
| Getting the value with get() | alien\_0 = {'color': 'green'}  alien\_color = alien\_0.get('color') alien\_points = alien\_0.get('points', 0) |

**Adding new key-value pairs**

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| Adding a key-value pair | alien\_0 = {'color': 'green', 'points': 5}  alien\_0['x'] = 0 alien\_0['y'] = 25  alien\_0['speed'] = 1.5 |
| Adding to an empty dictionary | alien\_0 = {}  alien\_0['color'] = 'green'  alien\_0['points'] = 5 |

**Modifying values**

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| Modifying values in a dictionary | alien\_0 = {'color': 'green', 'points': 5} print(alien\_0)  alien\_0['color'] = 'yellow' alien\_0['points'] = 10 print(alien\_0) |

**Removing key-value pairs**

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| Deleting a key-value pair | alien\_0 = {'color': 'green', 'points': 5} print(alien\_0)  del alien\_0['points']  print(alien\_0) |

**Looping through a dictionary**

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| Looping through all key-value pairs | f\_lang = { 'jen': 'python', 'sarah': 'c', 'edward': 'ruby', 'phil': 'python', }  for name, language in f\_lang.items():  print(f"{name}: {language}") |
| Looping through all the keys | # Show everyone who's taken the survey.  for name in f\_lang.keys():  print(name) |
| Looping through all the keys in reverse order | for name in sorted(f\_lang.keys(), reverse=True):  print(f"{name}: language") |
| Looping through all the values | for language in f\_lang.values():  print(language) |

**Dictionary length**

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| Finding a dictionary's length | num\_responses = len(f\_lang) |

**Nesting ‒ A list of dictionaries**

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| Storing dictionaries in a list  users = []  new\_user = { 'last': 'fermi', 'first': 'enrico', 'username': 'efermi', }  users.append(new\_user)  # Make another new user, and add them as well.  new\_user = { 'last': 'curie', 'first': 'marie', 'username': 'mcurie', }  users.append(new\_user)  # Show all information about each user.  for user\_dict in users:  for k, v in user\_dict.items():  print(f"{k}: {v}")  print("\n") |

**Nesting ‒ Lists in a dictionary**

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| # Store multiple languages for each person.  f\_lang = { 'jen': ['python', 'ruby'], 'sarah': ['c'], 'edward': ['ruby', 'go'], 'phil': ['python', 'haskell'], }  # Show all responses for each person.  for name, langs in f\_lang.items():  print(f"{name}: ")  for lang in langs:  print(f"- {lang}") |

**Nesting ‒ A dictionary of dictionaries**

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| users = { 'aeinstein': { 'first': 'albert', 'last': 'einstein', 'location': 'princeton', }, 'mcurie': { 'first': 'marie', 'last': 'curie', 'location': 'paris', }, }  for username, user\_dict in users.items():  print("\nUsername: " + username)  full\_name = user\_dict['first'] + " "  full\_name += user\_dict['last']  location = user\_dict['location']  print(f"\tFull name: {full\_name.title()}")  print(f"\tLocation: {location.title()}") |