Sets and Dictionaries

## Exercises

### Week 7

­Specify two ways in which a Set varies from a List.

*Answer:*

Unordered

No duplication

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Write a Python statement that uses the set() *constructor* to produce the same Set as the following -

languages = { "C++", "Java", "C#", "PHP", "JavaScript" }

*Answer:*

new\_set = set(languages)

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Is a Set **mutable** or **immutable**?

*Answer:*

A set is mutable.

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Why does a Set not support *indexing* and *slicing* type operations?

*Answer:*

A set does not support indexing and slicing operations because it is an unordered collection.

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Why is a frozenset() different from a regular set?

*Answer:*

A frozenset() only allows reading of the data in it.

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How many elements would exist in the following set?

names = set("John", "Eric", "Terry", "Michael", "Graham", "Terry")

*Answer:*

The code would produce an error.

And how many elements would exist in this set?

vowels = set("aeiou")

*Answer:*

There would be 5 elements in this set.

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What is the name given to the following type of expression which can be used to programmatically populate a set?

chars = {chr(n) for n in range(32, 128)}

*Answer:*

The following type of expression is called set comprehension.

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What **operator** can be used to calculate the intersection (common elements) between two sets?

*Answer:*

The ‘&’ operator can be used to calculate the intersection between two sets.

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What **operator** can be used to calculate the difference between two sets?

*Answer:*

The ‘-‘ operator can be used to calculate the difference between two sets.

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What would be the result of each of the following expressions?

{ "x", "y", "z" } < { "z" , "u", "t", "y", "w", "x" }

*Answer:*

True

{ "x", "y", "z" } < { "z", "y", "x" }

*Answer:*

False

{ "x", "y", "z" } <= { "y", "z", "x" }

*Answer:*

True

{ "x" } > { "x" }

*Answer:*

False

{ "x", "y" } > { "x" }

*Answer:*

True

{ "x", "y" } == { "y", "x" }

*Answer:*

True

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Write a Python statement that uses a **method** to perform the equivalent of the following operation -

languages = languages | { "Python" }

*Answer:*

languages.add("Python")

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Do the elements which are placed into a set always remain in the same position?

*Answer:*

The elements placed in a set are not always in the same position.

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Is the following operation a **mutator** or an **accessor**?

languages &= oo\_languages

*Answer:*

The following operation is a mutator.

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What term is often used to refer to each *pair* of elements stored within a **dictionary**?

*Answer:*

Key value pair is often used to refer to each pair of elements stored within a dictionary.

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Is it possible for a dictionary to have more than one **key** with the same value?

*Answer:*

It is not possible to have more than one key with the same value.

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Is it possible for a dictionary to have the same **value** appear more than once?

*Answer:*

Yes, it is possible for the same value to appear more than once.

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Is a Dictionary **mutable** or **immutable**?

*Answer:*

A dictionary is mutable.

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Are the **key** values within a dictionary **mutable** or **immutable**?

*Answer:*

The key values within a dictionary are

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How many *elements* exist in the following dictionary?

stock = {"apple":10, "banana":15, "orange":11}

*Answer:*

The following dictionary contains 3 elements.

And, what is the data-type of the **keys**?

*Answer:*

The data-type of the keys is ‘string’.

And, what output would be displayed by executing the following statement -

print(stock["banana"])

*Answer:*

15

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Write a Python statement that uses the dictionary() *constructor* to produce the same dictionary as the following -

lang\_gen = { "Java":3, "Assembly":2, "Machine Code":1 }

*Answer:*

dict({“Java”: 3, “Assembly”:2, “Machine Code”: 1})

Now write a simple expression that tests whether the word "Assembly" is a member of the dictionary.

*Answer:*

If ‘Assembly’ in lang:

print(“Yoohoo”)

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Write some Python code that uses a for statement to iterate over a dictionary called module\_stats and print only its **values** (i.e. do not output any keys) -

*Answer:*

for i in module\_stats.values():

print i

Now write another loop which prints the only the **keys** -

*Answer:*

for i in module\_stats.keys():

print i

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Is it possible to construct a dictionary using a **comprehension** style expression, as supported by lists and sets?

*Answer:*

Yes, it is possible to construct a dictionary using a comprehension style expression.

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When a Dictionary type value is being passed as an argument to a function, what characters can be used as a prefix to force the dictionary to be **unpacked** prior to the call being made?

*Answer:*

The ‘\*\*’ prefix causes the dictionary to be unpacked prior to the function call.

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