# Sets and Dictionaries

## Exercises

### Week 7

Prior to attempting these exercises ensure you have read the lecture notes and/or viewed the video, and followed the practical. You may wish to use the Python interpreter in interactive mode to help work out the solutions to some of the questions.

Download and store this document within your own filespace, so the contents can be edited. You will be able to refer to it during the test in Week 6.

Enter your answers directly into the highlighted boxes.

For more information about the module delivery, assessment and feedback please refer to the module within the MyBeckett portal.

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

*Answer:*

Lists maintain order and allow duplicates, while sets do not maintain order and only contain unique elements.

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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:*

same\_set = set(["C++", "Java", "C#", "PHP", "JavaScript"])

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

*Answer:*

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 type operations because it lacks inherent order and positions for elements.

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

*Answer:*

A frozenset() is different from a regular set because it is immutable.

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How many elements would exist in the following set?

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

*Answer:*

The above set will throw a TypeError.It should be enclosed with curly{ } or big bracket [ ] to create a set.

And how many elements would exist in this set?

vowels = set("aeiou")

*Answer:*

The above set contains five elements.

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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 name given to the following type of expression is 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 ‘-‘ (minus) 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 (The set in left hand side is a proper subset of set in left hand side)

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

*Answer:*

False (Both sets contains same elements so neither of the set is subset of other)

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

*Answer:*

True ( Both sets contains the same elements as a result one is subset of other)

{ "x" } > { "x" }

*Answer:*

False (Both set contains the same element so neither set is proper subset of other.)

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

*Answer:*

True (The left side is proper superset of the right set)

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

*Answer:*

True (Both set contains same element as they are considered equal)

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

languages = languages | { "Python" }

*Ans*

languages = languages.union({"Python"})

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

*Answer:*

No

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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:*

The term entry 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:*

Yes, it’s possible .

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

*Answer:*

Yes, it’s possible for a dictionary to have the same value appear more than once.

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

*Answer:*

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 immutable.

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How many *elements* exist in the following dictionary?

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

*Answer:*

Three elements exist.

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

*Answer:*

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:*

lang\_gen = 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:*

"Assembly" in lang\_gen.keys()

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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:*

module\_stats = {"Math": 90, "Science": 92, "Social": 88}

for value in module\_stats.values():

print(value)

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

*Answer:*

module\_stats = {"Math": 90, "Science": 92, "Social": 88}

for key in module\_stats:

print(key)

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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’s possible.

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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:*

Double asterisk (\*\*) can be used as a prefix to force the dictionary to be unpacked prior to the call being made.

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## **Exercises are complete**

Save this logbook with your answers. Then ask your tutor to check your responses to each question.