Sets and Dictionaries

Exercises

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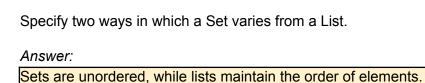
Prior to attempting these exercises ensure you have read the lecture notes and/or viewed the video, and followed the practical. You may wish to use the Python interpreter in interactive mode to help work out the solutions to some of the questions.

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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Sets do not allow duplicate elements, whereas lists can contain duplicates.

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

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

Answer.

```
set(["C++", "Java", "C#", "PHP", "JavaScript"])
```

Is a Set mutable or immutable?

Answer:

A set is mutable.

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

Answer:

Because sets are unordered, they do not maintain element positions, making indexing and slicing operations are meaningless.

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

Answer:

A frozen set is immutable, meaning its elements cannot be changed after creation, unlike a regular set.

How many elements would exist in the following set?
<pre>names = set("John", "Eric", "Terry", "Michael", "Graham", "Terry")</pre>
Answer:
Error in the code. If corrected, the answer would be 5 unique names.
And how many elements would exist in this set?
<pre>vowels = set("aeiou")</pre>
Answer:
5 elements
What is the name given to the following type of expression which can be used to programmatically populate a set?
chars = $\{chr(n) \text{ for } n \text{ in range}(32, 128)\}$
Answer:
Set comprehension
What operator can be used to calculate the intersection (common elements) between two sets? Answer:
& (ampersand)
What operator can be used to calculate the difference between two sets? Answer:
- (minus)

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

$$\{ x'', y'', z'' \} \le \{ y'', z'', x'' \}$$

Answer:

False

```
\{ "x" \} > \{ "x" \}
```

Answer:

False

$$\{ "x", "y" \} > \{ "x" \}$$

Answer:

True

$$\{ \text{"x", "y"} \} == \{ \text{"y", "x"} \}$$

Answer:

True

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

```
languages = languages | { "Python" }
```

Answer:

update(["Python"])

Do the elements which are placed into a set always remain in the same position?
Answer:
No, sets are unordered
Is the following operation a mutator or an accessor ?
languages &= oo_languages
Answer:
Mutator
What term is often used to refer to each <i>pair</i> of elements stored within a dictionary ? Answer:
Key-value pair
Is it possible for a dictionary to have more than one key with the same value?
Answer:
Yes
Is it possible for a dictionary to have the same value appear more than once?
Answer:
Yes

Is a Dictionary mutable or immutable?
Answer:
Mutable
Are the key values within a dictionary mutable or immutable ?
Answer:
Keys must be immutable
How many <i>elements</i> exist in the following dictionary?
stock = {"apple":10, "banana":15, "orange":11}
Answer:
3 elements
And, what is the data-type of the keys ?
Answer:
Strings (str)
And substantially adjusted by according the following statement

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

```
print(stock["banana"])
```

Answer:

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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:
"Assembly" in lang_gen
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 value in module_stats.values(): print(value)
Now write another loop which prints the only the keys -
Answer:
For key in module_stats.keys(): print(key)
Is it possible to construct a dictionary using a comprehension style expression, as supported by lists and sets? Answer:
Yes
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)

Exercises are complete

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