# Lists and Tuples

## Exercises

### Week 6

Would you describe the following Python statement as a **function call**? Or a **method call**?

names.reverse()

*Answer:*

The following Python statement is a method call.

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Write a Python statement that appends a single element to the end of the specified *List* using a **method** call.

prices = [2.65, 7.65, 8.25, 9.56]

*Answer:*

prices.append(5.5)

Write another statement that appends three elements to the end of the specified *List* using a single **method** call.

*Answer:*

prices.extend([6.6,6.7,6.8])

Now write a for loop that *iterates* over each value in the list and prints it to the screen.

*Answer:*

For i in price:

print(i)

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Is a method that changes the contents of the associated value referred to as a **mutator**? Or an **accessor**?

*Answer:*

The method that changes the contents of the associated value is referred to as a mutator.

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What would the contents of the primes list look like after execution of the following statements?

primes = [ 2, 3, 5, 7, 11, 13, 17, 19 ]

primes.pop()

*Answer:*

19

primes.reverse()

*Answer:*

[17, 13, 11, 7, 5, 3, 2]

primes.remove(7)

*Answer:*

[17, 13, 11, 5, 3, 2]

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Provide an example of how the insert() method could be used to add a value of 10 to the beginning of the list shown below.

temps = [ 32, 46, 95, 10, 50 ]

*Answer:*

temps.insert(0, 10)

Now write a statement that uses an *accessor* method to find the index of the value 95 within the list.

*Answer:*

temps.index(95)

Finally write a statement that uses another *accessor* method to count how many times the number 10 appears within the list.

*Answer:*

temps.count(10)

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What would be stored in the list samples after the following statements were executed?

samples = [ 100.2, 100.6, 99.2, 765.2, 900.2, 400 ]

samples = samples.reverse()

*Answer:*

None.

Explain why this is the case.

*Answer:*

The reverse method modifies the samples variable but does not return a new list. Instead, it returns ‘None’. The second line, we are hence assigning ‘None’ to the samples variable.

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Write a Python program that uses a **List-Comprehension** to produce the same list as the following code -

values = []

for n in range(100,200):

values.append(x\*x)

*Answer:*

values = [x\*x for n in range(100,200)]

Now, amend your code so that it only includes even numbers.

*Answer:*

values = [x\*x for n in range(100,200) if (n % 2) == 0]

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What is the *data-type* of the following value?

info = ("Ken", "bae-192", 62)

*Answer:*

The following value is a ‘tuple’ data-type.

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Is a Tuple **mutable** or **immutable**?

*Answer:*

A tuple is immutable.

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Write a statement that creates a Tuple that contains a single element.

*Answer:*

element = 4,

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Write a single Python statement that **unpacks** the following Tuple into three variables, called x, y and z.

coord = (100, 200, 150)

*Answer:*

x, y, z = coord

Write another statement that uses indexing to access the second element of the Tuple and store it in a variable called ‘height’

*Answer:*

height = coord[1]

Finally write a ‘for’ loop that prints each value within the Tuple.

*Answer:*

for x in coord:

print(x)

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When a Tuple (or any sequence) type value is being passed as an argument to a function, what single character can be used as a prefix to force the sequence to be **unpacked** prior to the call being made?

*Answer:*

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

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When discussing Tuples the phrase **heterogeneous** is sometimes used to describe the type of stored values. What does this mean in practice?

*Answer:*

This typically means that the tuple can contain data of many data-types in a single place.

What sister phrase is often used to refer to the type of values stored within a List? And what does this mean?

*Answer:*

The sister phrase used to refer to the type of values stored within a List is ‘data-type’. This means that a List can store data of multiple data-types.

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