Lists and Tuples

Exercises

Week 6

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 7.

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.

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

```
names.reverse()
```

Answer:

Its method call, as reverse() is a list.

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:

Its prices.append(10.75).

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

Answer:

Its prices.extend([11.75, 12.85, 13.95]).

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

Answer:

```
for price in prices:
    print(price)
```

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

Answer:

Its called a mutator.

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:

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

```
primes.reverse()
```

Answer:

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

```
primes.remove(7)
```

Answer:

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

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:

Its 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:

Its index_of_95 = 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:

Its count_of_10 = temps.count(10)

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 also changes the list and returns None. A similar situation can be observed when the result of samples.reverse() is given back to this variable; the value of the variable becomes None.

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(n*n)
```

Answer:

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

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

Answer:

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

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

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

Answer:

The data type is Tuple.

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

Answer:

A tuple is a Immutable.

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

Answer:

```
single_element_tuple = (42,)
```

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 value in coord:
    print(value)
```

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 single char is *.

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

Answer:

It means that a Tuple can hold more than one value and can have various types; integers, string, float and etc.

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

Answer:

The term is homogeneous, meaning that Lists are expected to hold the same type of data, although, Python permits a diverse type.

Exercises are complete

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