

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:

method call

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(10.45)`

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

Answer:

`prices.extend([11.45, 12.45, 13.45])`

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

Answer:

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

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

Answer:

mutator method

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" the last element will be removed.
Output: [2, 3, 5, 7, 11, 13, 17]

```
primes.reverse()
```

Answer:

```
Elements will be reversed.  
Output: [17, 13, 11, 7, 5, 3, 2]
```

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

Answer:

```
The first occurrence of "7" will be removed.  
Output: [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:

```
temps.insert(0, 10)  
Output: [10, 32, 46, 95, 10, 50]
```

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

Answer:

```
index_of_95 = temps.index(95)  
Output: 3
```

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

Answer:

```
count_of_10 = temps.count(10)  
Output: 2
```

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:

```
samples.reverse() is a mutator function and only changes the list content and doesn't return a new list.
```

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

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]
print(values)
```

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

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

Answer:

```
The value assigned to the variable "info" is a tuple.
```

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

Answer:

```
immutable
```

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

Answer:

```
lonely_tuple = (999,)
```

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 = (100, 200, 150)
```

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:

```
* (asterisk) operator is used as a prefix. e.g: *cord
```

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

Answer:

```
In practice, it means that the elements within the tuple can be of different data types. Tuples allows for the storage of diverse data types within a single, ordered, and immutable collection. This flexibility is useful when organizing related but different pieces of information. eg: person_info = ("rajendra", 25, "raj1234@yahoo.com", True)
```

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 refers to "homogenous". In lists, a homogeneous structure implies that all elements within the list are of the same data type. In other words, all elements share a common type, providing a more uniform and consistent data structure.  
eg: student_names = ["Ram", "Sam", "Dan", "Lan"]
```

Exercises are complete

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