Lists

Python for Ecologists

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Lists, Tuples, and Dictionaries

Type	Create Empty	Mutable?	Order
List	my_list = []	Mutable	Yes
Tuple	my_tuple = ()	Immutable	No
Dictionary	my_dictionary = {}	Mutable	No

- Mutable here means you can append, change, subtract, etc.

Lists

```
species_names = []
species_names.append("Geospiza_fuliginosa") # small
species_names.append("Geospiza_fortis") # medium
species_names.append("Geospiza_magnirostris") # large
species_names
species_names.sort() #lists are mutable
#sorted(species_names) would not change the list
```

Some list functions

- Lists can mix types

```
some_list = [23, 23., 'Frog', None, True]
#None and Boolean types
```

- Lists have similar methods as strings

```
some_list[0]
len(some_list)
[1,2] + [3,4]
```

- We can easily loop over the list elements

```
for thing in some_list:
  print thing
```

- And check to see if elements are in the list

```
'Frog' in some_list
'Bird' in some_list
```

Deleting list elements

- Getting rid of list elements

```
some_list
some_list.pop(0)
some_list
del some_list[2]
del some_list
```

Tuples

- Tuples are immutable objects that cannot be altered
- Use parentheses () instead of square brackets []

```
some_tuple = (23,23.,'Frog',None,True)
```

- Tuples and lists can both be sliced

```
some_tuple[0:2]
some_list[0:2]
```

Exercise 3- Run the script exer03_lists.py

```
class TestLists(unittest.TestCase):
    def test_lists(self):
        """
        A basic introduction to lists
        """
        # Create the variable ''bird_list'' and assign to an empty list
        # ************************************************

        self.assertEquals(bird_list, [])

        # Append 'American redstart' and 'Arctic tern' to ''bird_list''
        # ************************************************

        self.assertEquals(bird_list, ['American redstart','Arctic tern' ])

        # Sort ''bird_list''
        # ************************************************

        self.assertEquals(bird_list,  ['Arctic tern', 'American redstart'])

        # ''extend'' the list ''bird_list'' with ['Northern parula', 'george']
        # ************************************************

        self.assertEquals(bird_list, ['Arctic tern', 'American redstart', ...])

        # create a variable ''warbler_id'' with the index of 'Hooded warbler' in
        # ''bird_list'' using list methods.
        # ************************************************

        self.assertEquals(warbler_id, 3)
```