Step0 - Lists

May 8, 2018

1 Lists

The list is a most versatile data type available in Python which can be written as a list of comma-separated values (items) between square brackets. Important thing about a list is that items in a list need not be of the same type

1.1 Accessing lists

```
In [1]: list_1 = ['Statistics', 'Programming', 2016, 2017, 2018];
        list_2 = ['a', 'b', 1, 2, 3, 4, 5, 6, 7 ];

        # Accessing values in lists
        print "list_1[0]: ", list_1[0]
        print "list2_[1:5]: ", list_2[1:5]
```

```
list_1[0]:  Statistics
list2_[1:5]:  ['b', 1, 2, 3]
```

1.2 Adding new value to list

```
In [7]: # Adding new value to list
        print "list_1 values: ", list_1
        list_1.append(2019)
        print "list_1 values post append: ", list_1
```

```
list_1 values:  ['c', 'b', 'a', 3, 2, 1]
list_1 values post append:  ['c', 'b', 'a', 3, 2, 1, 2019]
```

1.3 Updating existing values of list

```
In [8]: # Updating existing values of list
        print "Values of list_1: ", list_1
        print "Value available at index 2 : ", list_1[2]
        list_1[2] = 2015;
        print "New value available at index 2 : ", list_1[2]
```

```
Values of list_1:  ['c', 'b', 'a', 3, 2, 1, 2019]
Value available at index 2 :  a
New value available at index 2 :  2015
```

1.4 Deleting list elements

```
In [9]: # Deleting list elements
        print "list_1 values: ", list_1
        del list_1[5];
        print "After deleting value at index 2 : ", list_1

list_1 values:  ['c', 'b', 2015, 3, 2, 1, 2019]
After deleting value at index 2 :  ['c', 'b', 2015, 3, 2, 2019]
```

1.5 Basic operations on lists

```
In [5]: # Basic Operations
        print "Length: ", len(list_1)
        print "Concatenation: ", [1,2,3] + [4, 5, 6]
        print "Repetition :", ['Hello'] * 4
        print "Membership :", 3 in [1,2,3]
        print "Iteration :"
        for x in [1,2,3]: print x

        # Negative sign will count from the right
        print "slicing :", list_1[-2]
        # If you dont specify the end explicitly, all elements from the specified start index
        print "slicing range: ", list_1[1:]

        # Comparing elements of lists
        print "Compare two lists: ", cmp([1,2,3, 4], [1,2,3])
        print "Max of list: ", max([1,2,3,4,5])
        print "Min of list: ", min([1,2,3,4,5])
        print "Count number of 1 in list: ", [1,1,2,3,4,5,].count(1)
        list_1.extend(list_2)
        print "Extended :", list_1
        print "Index for Programming : ", list_1.index( 'Programming')
        print list_1
        print "pop last item in list: ", list_1.pop()
        print "pop the item with index 2: ", list_1.pop(2)
        list_1.remove('b')
        print "removed b from list: ", list_1
        list_1.reverse()
        print "Reverse: ", list_1
        list_1 = ['a', 'b','c',1,2,3]
        list_1.sort()
```

```
        print "Sort ascending: ", list_1
        list_1.sort(reverse = True)
        print "Sort descending: ", list_1
```

```
Length:  5
Concatenation:  [1, 2, 3, 4, 5, 6]
Repetition : ['Hello', 'Hello', 'Hello', 'Hello']
Membership : True
Iteration :
1
2
3
slicing : 2017
slicing range:  ['Programming', 2015, 2017, 2018]
Compare two lists:  1
Max of list:  5
Min of list:  1
Count number of 1 in list:  2
Extended : ['Statistics', 'Programming', 2015, 2017, 2018, 'a', 'b', 1, 2, 3, 4, 5, 6, 7]
Index for Programming :  1
['Statistics', 'Programming', 2015, 2017, 2018, 'a', 'b', 1, 2, 3, 4, 5, 6, 7]
pop last item in list:  7
pop the item with index 2:  2015
removed b from list:  ['Statistics', 'Programming', 2017, 2018, 'a', 1, 2, 3, 4, 5, 6]
Reverse:  [6, 5, 4, 3, 2, 1, 'a', 2018, 2017, 'Programming', 'Statistics']
Sort ascending:  [1, 2, 3, 'a', 'b', 'c']
Sort descending:  ['c', 'b', 'a', 3, 2, 1]
```

Reference: mastering machine learning with python in six-steps