

# Step0 - Tuples

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## 0.0.1 Tuples

A tuple is a sequence of immutable Python objects. Tuples are sequences, just like lists. The differences between tuples and lists are, the tuples cannot be changed unlike lists and tuples use parentheses, whereas lists use square brackets

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In [15]: # Creating a tuple
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```

Tuple = ()
print "Empty Tuple: ", Tuple

Tuple = (1,)
print "Tuple with single item: ", Tuple

Tuple = ('a','b','c','d',1,2,3)
print "Sample Tuple :", Tuple
```

```
Empty Tuple:  ()
Tuple with single item:  (1,)
Sample Tuple : ('a', 'b', 'c', 'd', 1, 2, 3)
```

```
In [34]: # Accessing items in tuple
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print "3rd item of Tuple:", Tuple[2]
print "First 3 items of Tuple", Tuple[0:2]
```

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3rd item of Tuple: c
First 3 items of Tuple ('a', 'b')
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```
In [40]: # Deleting tuple
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Tuple = ('a','b','c','d',1,2,3)
print "Sample Tuple: ",
del Tuple
print Tuple # Will throw an error message as the tuple does not exist
```

```
Sample Tuple:
```

```

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NameError                                Traceback (most recent call last)

<ipython-input-40-ba3679c4d8d2> in <module>()
      4 print "Sample Tuple: ",
      5 del Tuple
----> 6 print Tuple # Will throw an error message as the tuple does not exist

```

NameError: name 'Tuple' is not defined

```

In [41]: # Basic Tuple operations
Tuple = ('a','b','c','d',1,2,3)

print "Length of Tuple: ", len(Tuple)

Tuple_Concat = Tuple + (7,8,9)
print "Concatinated Tuple: ", Tuple_Concat

print "Repetition: ", (1, 'a',2, 'b') * 3
print "Membership check: ", 3 in (1,2,3)

# Iteration
for x in (1, 2, 3): print x

print "Negative sign will retrieve item from right: ", Tuple_Concat[-2]
print "Sliced Tuple [2:] ", Tuple_Concat[2:]

# Comparing two tuples
print "Comparing tuples (1,2,3) and (1,2,3,4): ", cmp((1,2,3), (1,2,3,4))
print "Comparing tuples (1,2,3,4) and (1,2,3): ", cmp((1,2,3,4), (1,2,3))

# Find max
print "Max of the Tuple (1,2,3,4,5,6,7,8,9,10): ", max((1,2,3,4,5,6,7,8,9,10))
print "Min of the Tuple (1,2,3,4,5,6,7,8,9,10): ", min((1,2,3,4,5,6,7,8,9,10))
print "List [1,2,3,4] converted to tuple: ", type(tuple([1,2,3,4]))

```

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Length of Tuple:  7
Concatinated Tuple:  ('a', 'b', 'c', 'd', 1, 2, 3, 7, 8, 9)
Repetition:  (1, 'a', 2, 'b', 1, 'a', 2, 'b', 1, 'a', 2, 'b')
Membership check:  True
1
2
3
Negative sign will retrieve item from right:  8

```

```
Sliced Tuple [2:] ('c', 'd', 1, 2, 3, 7, 8, 9)
Comparing tuples (1,2,3) and (1,2,3,4): -1
Comparing tuples (1,2,3,4) and (1,2,3): 1
Max of the Tuple (1,2,3,4,5,6,7,8,9,10): 10
Min of the Tuple (1,2,3,4,5,6,7,8,9,10): 1
List [1,2,3,4] converted to tuple: <type 'tuple'>
```

Reference: Mastering machine learning with python six-steps