**LISTS AND TUPLES**

**in PYTHON**

**Lists and Tuples Syntax**

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| --- | --- |
| L = [1, 2, 3, 4, 5] | Lists are created with [ ] |
| T = (10, 20, 30, 40, 50) | Tuples are created with ( ) |
| L[0] | Returns 1st element of the list L |
| T[0] | Returns 1st element of the tuple T |
| L[1:4] | Returns 2nd to 4th element of the list L ([2, 3, 4]) |
| T[1:4] | Returns 2nd to 4th element of the tuple T ((20, 30, 40)) |
| L[0:-1:2] | Returns 1st to 2nd last element of L skipping one at a time ([1, 3]) |
| T[0:-1:2] | Returns 1st to 2nd last element of L skipping one at a time ((10, 30)) |
| L[1] = 22 | Assigns 22 to 2nd element of L (L == [1, 22, 3, 4, 5]) |
| T[1] = 22 | ERROR: You can't assign anything to tuples |
| L[0:2] = [11, 22] | Assigns 11 and 22 to 1st and 2nd element of L respectively (L == [11, 22, 3, 4, 5]) |
| Lists are mutable and Tuples are NOT mutable | |

**Lists - Methods**

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| --- | --- |
| a = ['a', 'b', 'c'] b = [1, 3, 2] | |
| a + b | Returns a concatenated with b (['a', 'b', 'c', 1, 3, 2]) |
| 'c' in a | Returns True if 'c' is in the list a and False otherwise (True) |
| len(a) | Returns the number of elements in a (3) |
| a.append('d') | Appends 'd' to the end of the list a (a == ['a', 'b', 'c', 'd']) |
| a.extend(['d', 'e', 'f']) | Appends every element of the iterable to the end of a (a == ['a', 'b', 'c', 'd', 'e', 'f']) |
| a.insert(1, 'd') | Inserts 'd' to index 1 of a (a == ['a', 'd', 'b', 'c']) |
| a.pop() | Returns the last element of the list and deletes it from the list. ('c') |
| a.pop(1) | Returns 2nd element of a and removes it from the list ('b') |
| a.remove('b' ) | Removes first occurrence of 'b' in a (a == ['a', 'c']) |
| a.clear() | Clears the list entirely (a == []) |
| a.index('b') | Returns the index of the first occurrence of 'b' (1) |
| a.count('b') | Returns the number of occurrences of 'b' in a (1) |
| b.sort() | Returns a sorted version of b ([1, 2, 3]) |
| a.reverse() | Reverses the list a (['c', 'b', 'a']) |
| a.copy() | Returns a copy of a |
| The copy() method returns a list identical to the original, but with a different ID. It means that they are allocated in different places of memory. | |

**Tuple - Methods**

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| --- | --- |
| t1 = ('a', 'b', 'c') t2 = (1, 2, 3) | |
| t1 + t2 | Returns a concatenated version of t1 and t2 |
| 2 in t2 | Returns True if 2 is in t2 and False otherwise (True) |
| len(t1) | Returns the number of elements int1 (3) |
| t2.count(2) | Returns the number of occurrences of 2 in t2 (1) |
| t2.index(1) | Returns the index of the 1st occurrence of 1 (0) |

**Lists - Loops**

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| --- | --- |
| a = ['one' , 'two', 'three']  for i in a:  print(i) | one  two  three |
| a = ['one' , 'two', 'three']  for i in range(len(a)):  print(f"a[{i}] == {a[i]}") | a[0] == one  a[1] == two  a[2] == three |