Content 4

**List And Tuples**

**Python Lists are containers to store a set of values of any data type.**

friends = [‘Apple’, ‘Akash’, ‘Rohan’, 7, False]

The list can contain different types of elements such as int, float, string, Boolean, etc. Above list is a collection of different types of elements.

##### **List Indexing**

A list can be index just like a string.

L1 = [7, 9, ‘harry’]

L1[0] – 7

L1[1] – 9

L1[70] – Error

L1[0:2] – [7,9]         (This is known as List Slicing)

##### **List Methods**

Consider the following list:

L1 = [1, 8, 7, 2, 21, 15]

1. sort() – updates the list to [1,2,7,8,15,21]
2. reverse() – updates the list to [15,21,2,7,8,1]
3. append(8) – adds 8 at the end of the list
4. insert(3,8) – This will add 8 at 3 index
5. pop(2) – It will delete element at index 2 and return its value
6. remove(21) – It will remove 21 from the last

**Code for Explaination of Lists in details:**

# Creating a list

a = [2, 4, 6, 8, 10]

print("The build list is: \n", a)

print("\nThe value at index zero: ", a[0])  # showing the value at the 0 index

# changing the value at 0 index

a[0] = 97

print("\nThe Changed Value is: ", a)

print("The value is: ", a[0])

# We can Create a list with differrent Types of Items

b = [4, "Tommy", "Apple", 77, 67.5]

print(b)

# This will give upto 4 index and this is slicing tha list

print("Now printing half or wanted Ones: ", b[0:4])

# sorting of List

print("\n\n")

a1 = [2, 7, 9, 3, 4]

a1.sort()  # for Arranging

print("Arranging in acending order: ", a1)

a1.reverse()

print("Reversing the Arranged list: ", a1)

a1.append(45)  # Append means adding the value at last

print("On adding an element at last by append function: ", a1)

a1.insert(3, 0.5)  # adding Value 00 at index 3

print("The addition of value at index 3: ", a1)

a1.pop(3)  # This will delet the value at index 3

print("The value at index 3 is removed: ", a1)

a1.remove(45)  # this will find the value 45 and remove it.

print("The value 45 is removed from the list: ", a1)

##### **Output:**

**The build list is:**

**[2, 4, 6, 8, 10]**

**The value at index zero: 2**

**The Changed Value is: [97, 4, 6, 8, 10]**

**The value is: 97**

**[4, 'Tommy', 'Apple', 77, 67.5]**

**Now printing half or wanted Ones: [4, 'Tommy', 'Apple', 77]**

**Arranging in acending order: [2, 3, 4, 7, 9]**

**Reversing the Arranged list: [9, 7, 4, 3, 2]**

**On adding an element at last by append function: [9, 7, 4, 3, 2, 45]**

**The addition of value at index 3: [9, 7, 4, 0.5, 3, 2, 45]**

**The value at index 3 is removed: [9, 7, 4, 3, 2, 45]**

**The value 45 is removed from the list: [9, 7, 4, 3, 2]**

##### **Tuples in Python:**

A tuple is an immutable (can’t change or modified) data type in Python.

a = ()              #It is an example of empty tuple

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a = (1,)           #Tuple with only one element needs a comma

a = (1, 7, 2)   #Tuple with more than one element

Once defined, tuple elements can’t be manipulated or altered.

**Tuple methods:**

Consider the following tuple,

a = (1, 7, 2)

1. **count(1) –**It will return number of times 1 occurs in a.
2. **index(1) –**It will return the index of first occurrence of 1 in a.

**Code for understanding Touple:**

# This is an Tuple but it is simlar like list but the major differece is you can't change the tuple at any cost.

t = [3, 45, 7, 4, 1, 0]

print("\n\nPrinting the tuple t: ", t)

t1 = ()  # This is an Empty Tuple

print("\n\nPrinting the tuple t1: ", t1)

t2 = (2,)  # The way of declaring tuple with single elements

print("\n\nThe tuple with single element t2: ", t2)

t = (1, 2, 4, 6, 8, 2, 10)  # REWRITTED the above tuple

print("\n\nThe tule t is: ", t)

# for counting the repeatatin of value in the tuple

print("The value repeating how much times: ", t.count(2))

print("The index is: ", t.index(2))  # for finding the value at which index

t4 = [4, 0, 5, 9, 0, 7, 0]

print("\n\nThe tuple is: ", t4)

# difference beween count and index function at tuple so here index will give starting index only

print("Number of zeroes by count function: ", t4.count(0))

print("Number of Zeroes by Index function: ", t4.index(0))

**Output:**

Printing the tuple t: [3, 45, 7, 4, 1, 0]

Printing the tuple t1: ()

The tuple with single element t2: (2,)

The tule t is: (1, 2, 4, 6, 8, 2, 10)

The value repeating how much times: 2

The index is: 1

The tuple is: [4, 0, 5, 9, 0, 7, 0]

Number of zeroes by count function: 3

Number of Zeroes by Index function: 1