Tuple in python

- It is a collection of data of different data types.
- We can not change the value of tuples.
- It is used to store tuple of values.
- A tuple is created using parentheses.

Create tuple

```
str_tuple=("Apple","Orange","Mango")
int_tuple=(15,25,36,84,59)
float_tuple=(2.3,5.6,1.4,9.6)
mixed_tuple=("Easy",205,25.3)
```

Access values of tuple using index

- Value of tuple can be accessed using index number.
- Index number is always an integer value and starts with 0.

```
fruit_tuple=("Apple","Orange","Mango")
print("I like ",fruit_tuple[0])
print("I like ",fruit_tuple[2])
"""
***Output***
I like  Apple
I like  Mango
"""
```

```
int_tuple=(5,10,15,20,25,30,35,40,45,50)
#Print will start at index 1 (included) and end at index 4 (not included).
print(int_tuple[1:4])
"""
***Output***
(10, 15, 20)
"""
```

Access value of tuple using negative index

- Negative indexes start from the end of the tuple.
- Negative index always starts with -1.
- For example **fruit_tuple=("Apple","Orange","Mango")** here index of Mango ,Orange and Apple are -1,-2 and -3.

```
fruit_tuple=("Apple","Orange","Mango")
print(fruit_tuple[-3])#Apple
print(fruit_tuple[-2])#Orange
print(fruit_tuple[-1])#Mango
"""
***Output***
Apple
Orange
Mango
"""
```

Access values of tuple using loop

```
fruit_tuple=("Apple","Orange","Mango")
for name in fruit_tuple:
    print("I like ",name)
"""
***Output***
I like  Apple
I like  Orange
I like  Mango
"""
```

Update item of tuple

- We can not change the value of tuple.

```
fruit_tuple=("Apple","Orange","Mango")
#this line will generate error
#because we can't change the value of tuple
fruit_tuple[1]="Banana"
We can update the value of tuple using list.

fruit_tuple=("Apple","Orange","Mango")
print("Tuple Before Updation:",fruit_tuple)
#Convert tuple into list
fruit_list=list(fruit_tuple)
#Update Orange with Banana
fruit_list[1]="Banana"
#Convert list into tuple
fruit_tuple=tuple(fruit_list)
print("Tuple after Updation:",fruit_tuple)

"""
***Output***
Tuple Before Updation: ('Apple', 'Orange', 'Mango')
Tuple after Updation: ('Apple', 'Banana', 'Mango')
"""
```

Length of tuple

- len() function is used to get length of tuple.

```
fruit_tuple=("Apple","Orange","Mango")
print("Length of tuple is ",len(fruit_tuple))
"""
***Output***
Length of tuple is  3
"""
```

Add items into tuple

- We can't add new item to tuple once a tuple is created.
- Tuples are unchangeable.

```
fruit_tuple=("Apple","Orange","Mango")
#this line will generate an error
fruit_tuple.append("Banana")
```

Delete item from tuple

- We can't delete item from tuple because it is unchangeable.
- But we can delete a tuple completely using del keyword.

```
fruit_tuple=("Apple","Orange","Mango")
print("Fruit tuple:",fruit_tuple)
del fruit_tuple;
print("Deleted successfully")
#this line will generate error
print(fruit_tuple)
"""
***Output***
Fruit tuple: ('Apple', 'Orange', 'Mango')
Deleted successfully
NameError: name 'fruit_tuple' is not defined
"""
```

Join two tuples using + symbol

- We can join two tuple using plus(+) operator.

```
tuple1=("Apple","Orange","Mango")
tuple2=("Cherry","Grapes","Melon")
#this line will join tuple1 and tuple2
tuple3=tuple1+tuple2
print("tuple3 items")
print(tuple3)
"""
***Output***
tuple3 items
('Apple', 'Orange', 'Mango', 'Cherry', 'Grapes', 'Melon')
"""
```

Program to search particular element in tuple

```
fruit_tuple = ("Apple", "Orange", "Mango")
str=input("Enter any string to search:")
if str in fruit_tuple:
  print(str," is found")
else:
  print("Not found")
"""
***Output***
Enter any string to search:Orange
Orange  is found
"""
```

Tuple Function

Python contains the following tuple functions.

1.len()

- It is used to get the numbers of elements in tuple.

```
fruit_tuple=("Apple","Orange","Mango")
print ("tuple elements : ", fruit_tuple)
#this line will print length of tuple
print("Length of tuple is ",len(fruit_tuple))
"""
***Output***
tuple elements :  ('Apple', 'Orange', 'Mango')
Length of tuple is  3
"""
```

2.max()

- It is used to get maximum value from the tuple.
- In case of string focus on ASCII value of first letter of tuple items.

```
fruit_tuple=("Apple","Orange","Mango")
print("Fruits tuple :",fruit_tuple)
print ("Max elements : ", max(fruit_tuple))

animal_tuple=("Zebra","Dog","Elephant")
print("Animal tuple :",animal_tuple)
print ("Max elements : ", max(animal_tuple))

int_tuple=(45,85,36)
print("int tuple :",int_tuple)
print ("Max elements : ", max(int_tuple))

"""
***Output***
Fruits tuple : ('Apple', 'Orange', 'Mango')
Max elements :  Orange
Animal tuple : ('Zebra', 'Dog', 'Elephant')
Max elements :  Zebra
int tuple : (45, 85, 36)
Max elements :  85
"""
```

3.min()

- It is used to get minimum value from the tuple.
- In case of string focus on ASCII value of first letter of tuple items.

```
fruit_tuple=("Apple","Orange","Mango")
print("Fruits tuple :",fruit_tuple)
print ("Min elements : ", min(fruit_tuple))

animal_tuple=("Zebra","Dog","Elephant")
print("Animal tuple :",animal_tuple)
print ("Min elements : ", min(animal_tuple))

int_tuple=(45,85,36)
print("int tuple :",int_tuple)
print ("Min elements : ", min(int_tuple))

"""
***Output***
Fruits tuple : ('Apple', 'Orange', 'Mango')
Min elements :  Apple
Animal tuple : ('Zebra', 'Dog', 'Elephant')
Min elements :  Dog
int tuple : (45, 85, 36)
Min elements :  36
"""
```

4.tuple()

It is used to convert list into tuple.

```
#tuple is created using parentheses
fruit_list=["Apple","Orange","Mango"]
print("List Items:",fruit_list)
#this line convert list into tuple
fruit_tuple=tuple(fruit_list)
print("Tuple Items :",fruit_tuple)
"""
***Output***
List Items: ['Apple', 'Orange', 'Mango']
Tuple Items : ('Apple', 'Orange', 'Mango')
"""
```