Introduction to tuple

Dr. Priyakshi Mahanta
Assistant Professor
CCSA, Dibrugarh University

Sequences

- Series of items that are often related
- 3 types of sequences
    - Strings
    - Lists
    - Tuples

- Tuples contain data that are related but not necessarily of the same type

- Tuple items are ordered, unchangeable, and allow duplicate values

- For example, a person's name, age and birth date

Tuples

- Tuples function much like lists
- Tuples are "immutable"
- Each value in the tuple is an *element* or *item*
- Elements can be <u>any</u> Python data type
  - Tuples can have mix data types
  - Elements can be nested tuples

Tuples vs list

Tuples	List
Tuples are used for heterogeneous datatypes	List are used for homogeneous data types
while tuples are enclosed in parentheses (( ))	Lists are enclosed in brackets ([ ])
Once created cannot be updated, They are immutable	elements and size can be changed, list are mutable
they are simpler and more efficient in terms of memory use and performance over list	
when we are making "temporary variables" we prefer tuples over lists.	

Basics of tuples

- Creating a tuple
  - Empty tuple
  - Singleton tuple
  - Nested tuple
- Accessing a tuple
- Slicing in tuple
- Changing a tuple
- Deleting a tuple

Operations on tuples

Operator	Meaning
+	Concatenation operator
*	**repeat** the elements in a tuple for a given number of times
<,>	Comparison operator(element wise)
==	Tuple wise comparison operator

Built in functions with tuples

Operator	Example
len()	Length of a tuple
Min()	Minimum value in a tuple
max()	Maximum value in a tuple
sum()	Sum of elements in a tuple
tuple()	Convert a string or a list to tuple
Sorted()	Sorting a tuple

Tuple methods

Operator	Meaning
Count ()	returns the number of occurrences of a value in the tuple.
Index()	returns the index of a value in the tuple.

Membership operators

Operators	Meaning
in	We can test if an item exists in a tuple or not,

Iteration through a tuple

For loop
While loop

Working with tuples (python programs)

Write a Python program to

- Example 1: Print all items, using a for and a while loop to go through all the index numbers in a tuple.

- Example 2: Find the average value of a elements in a tuple.

- Example3: calculate the product, multiplying all the numbers of a given tuple

References

- https://www.programiz.com/python-programming/tuple
- https://en.wikipedia.org/wiki/Tuple