

DATA TYPES IN PYTHON

Data types is the important part in any programming language, without data type we don't write program in python. Data types represents the kind of value and determines how the value can be used. Every value in python has a data type. Since everything is an object in python programming, data types are actually classes and variables are instance of these classes.

Python has various standard data types that are used to define the operation possible on them and the storage method for each of them. Python has following standard data types:

1] Numbers: Number data types store numeric values. Number objects are created when programmer assign a value to them.

Python supports three different numerical types:

A] int (signed integers): It is used for integer values for ex:-12

B] float(floating point or Real value): It is used for floating point values such as 6.3.

C] complex (complex numbers): It is used for complex numbers such as 5+3k.

2] Boolean: A value of bool type represents a Boolean value. There are only two values, i.e. "TRUE" and "FALSE".

Internally, True is represented as 1 and False as 0, and they can be used in numeric expressions as those values.

For ex: if a<b

Compares two values a and b, and returns "TRUE" if a is less than b, "FALSE" if a is greater than b.

3] String: String is sequence of Unicode character and is immutable. In python strings are identified as a contiguous set of characters represented in quotation mark. Programmers can use single quotes or double quotes to represent strings. Multi-line strings can be denoted using triple quotes.

For ex: >>>s="This is a string".

4] List: List is an ordered sequence of items. It is one of the most used data type in Python and is very flexible. All the items in a list do not need to be of the same type. Declaring a list is pretty straight forward. Items separated by commas are enclosed within brackets [].

We can use the slicing operator [] to extract an item or a range of items from a list.

The index starts from 0 in Python. A=[5,10,15,20,25,30]

Syntax: List_var=[Val1, Val2,Val3,Val4.....]

A[0]=5

A[1]=10 like this.

For ex List 1=[" This is a string",15]

5] Tuple: Tuple is an ordered sequence of items same as a list. The only difference is that tuples are immutable. Tuples once created cannot be modified.

Tuples are used to write-protect data and are usually faster than lists as they cannot change dynamically.

It is defined within parentheses () where items are separated by commas.

Syntax: tuple=(val1,val2)

In python the fixed size is considered immutable as compared to a list that is dynamic and mutable.

The main difference between list and tuples is that list are enclosed in brackets ([]) and their elements and size can be change, while tuples are enclosed in parenthesis (()) and cannot be updated. Tuples can be read only list.

For ex: tuple ('abcd', 123, 2.32, 'priya', 50.5)

6| Dictionary: Dictionary is a python data that is used to store **key:value** pairs. It enables you to quickly retrieve ,add ,remove ,modify ,value using key. Dictionary is very similar to what we call associative array or hash on other languages. A dictionary key can be almost any Python type, but are usually numbers or strings. Values, on the other hand, can be any arbitrary Python object.

Dictionaries can be created using pair of curly braces ({}). Each item in the dictionary consist of key, followed by a colon, which is followed by the value and each item is separated using commas(,).

Syntax:

Dict_var={key1:val1,key2:val2,....}

For ex.

```
Friends={
    'tom':'111-222-333',
    'jerry':'666-33-111'
}
```

7| Set: Set is an unordered collection of unique items. Set is defined by values separated by comma inside braces { }. Items in a set are not ordered.

We can perform set operations like union, intersection on two sets. Sets have unique values. They eliminate duplicates.

Since, set are unordered collection, indexing has no meaning. Hence, the slicing operator [] does not work.

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for ex:>>> a = {1,2,3}
>>> a[1]
```