Data types in Python

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 (object) of these classes.

There are various data types in Python. Some of the important types are listed below

Data Types in Python

- ❖ Python Numbers
- ❖ Python List
- ❖ Python Tuple
- ❖ Python Strings
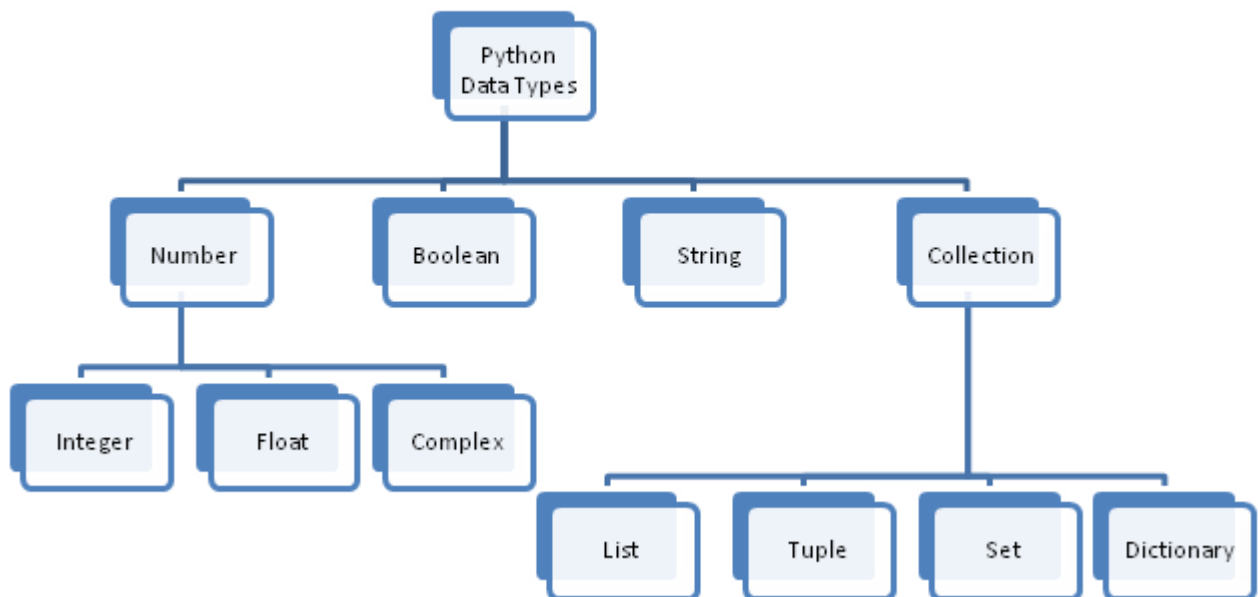- ❖ Python Set
- ❖ Python Dictionary

Chart : Python Data Types

Python numeric data type is used to hold numeric values like;

Data Type	Use
Int	holds signed integers of non-limited length.
Long	holds long integers(exists in Python 2.x,
Float	holds floating precision numbers and it's
complex	holds complex numbers.

2. **Python Data Type – String**

String is a **sequence of characters**. Python supports Unicode characters. Generally strings are represented by either single or double quotes.

>>> s1 = "This is a string"
>>> s2= '''a multiline String'''

Single Line String	"hello world"
Multi Line String	"""Gwalior Madhya Pradesh"""
Raw String	r"raw \n string" [Used when we want to have a string that contains backslash and don't want it to be treated as an escape character.]
Character	"C" [Single letter]
Unicode string	u"\u0938\u0902\u0917\u0940\u0924\u093E" will print 'संगीता'

3. Python Data Type – List

List is a versatile data type exclusive in Python. In a sense it is same as array in C/C++. But interesting thing about list in Python is it can simultaneously hold different type of data.

Formally list is a ordered sequence of some data written using square brackets ([]) and commas(,)

```
my_list = []
# empty list

my_list = [1, 2, 3]
# list of integers

my_list = [1, "Hello", 3.4]
# list with mixed data types

Also, a list can even have another list as an item. This is called
nested list.
# nested list
my_list = ["mouse", [8, 4, 6], ['a']]
```

4. Python Tuple

Tuple is an ordered sequences of items same as 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 list as it cannot change dynamically. It is defined within parentheses () where items are separated by commas

>>> t = (50,'Learning is fun', 1+3j, 45.67) # Can store mixed data types

Advantages of Tuple over List

➢ **Since tuple are immutable, iterating through tuple is faster than with list. So there is a slight performance boost.**
➢ **We generally use tuple for heterogeneous (different) datatypes and list for homogeneous (similar) datatypes.**
➢ **Tuples that contain immutable elements can be used as key for a dictionary. With list, this is not possible.**
➢ **If you have data that doesn't change, implementing it as tuple will guarantee that it remains write-protected.**

5. Python 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.

a = {5,2,3,1,4}

printing set variable

    print("a = ", a)

data type of variable a

    print(type(a))   # **<class 'set'>**

6. Python Dictionary

Dictionary is an unordered collection of key-value pairs.

It is generally used when we have a huge amount of data. Dictionaries are optimized for retrieving data. We must know the key to retrieve the value.

In Python, dictionaries are defined within Curly braces {} with each item being a pair in the form **key: value**.
        Key and value can be of any type.

```
Python 3.6.5 Shell                                          —  □  ✕
File  Edit  Shell  Debug  Options  Window  Help
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Inte
l)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> d1={'Name':'Manasvi','Class':9}
>>> d1
{'Name': 'Manasvi', 'Class': 9}
>>> d1['Name']
'Manasvi'
>>> d1['Class']
9
>>> |
```

👆 **Dictionary Values can be printed using key eg d1['Name']**