Python Data Types

## **Built-in Data Types**

In programming, data type is an important concept.

Variables can store data of different types, and different types can do different things.

Python has the following data types built-in by default, in these categories:

|  |  |
| --- | --- |
| Text Type: | str |
| Numeric Types: | int, float, complex |
| Sequence Types: | list, tuple, range |
| Mapping Type: | dict |
| Set Types: | set, frozenset |
| Boolean Type: | bool |
| Binary Types: | bytes, bytearray, memoryview |
| None Type: | NoneType |

## **Getting the Data Type**

You can get the data type of any object by using the type() function

**Numeric Data types**

There are three numeric types in Python:

* int
* float
* complex

Variables of numeric types are created when we assign a value to them:

### **Example**

x = 1    # int  
y = 2.8  # float  
z = 1j   # complex

## **Int**

Int, or integer, is a whole number, positive or negative, without decimals, of unlimited length.

### **Example**

Integers:

x = 1  
y = 35656222554887711  
z = -3255522  
  
print(type(x))  
print(type(y))  
print(type(z))

## **Float**

Float, or "floating point number" is a number, positive or negative, containing one decimals.

### **Example**

Floats:

x = 1.10  
y = 1.0  
z = -35.59

Float can also be scientific numbers with an "e" to indicate the power of 10.

### **Example**

Floats:

x = 35e3  
y = 12E4  
z = -87.7e100

## **Complex**

Complex numbers are written with a "j" as the imaginary part:

### **Example**

Complex:

x = 3+5j  
y = 5j  
z = -5j

## **Type Conversion**

You can convert from one type to another with the int(), float(), and complex() methods:

### **Example**

Convert from one type to another:

x = 1    # int  
y = 2.8  # float  
z = 1j   # complex  
  
#convert from int to float:  
a = float(x)  
  
#convert from float to int:  
b = int(y)  
  
#convert from int to complex:  
c = complex(x)  
  
print(a)  
print(b)  
print(c)  
  
print(type(a))  
print(type(b))  
print(type(c))

**Note:** You cannot convert complex numbers into another number type.

## **Random Number**

Python does not have a random() function to make a random number, but Python has a built-in module called random that can be used to make random numbers:

### **Example**

Import the random module, and display a random number between 1 and 9:

import random  
  
print(random.randrange(1, 10))