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 |
| Boolean Type: | bool |
|  |  |

Getting the Data Type

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

Example

Print the data type of the variable x:

x = 5  
print(type(x))Try it Yourself »

Python Numbers

There are three numeric types in Python:

* int
* float
* complex

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

Example

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

To verify the type of any object in Python, use the type() function:

Example

print(type(x))  
print(type(y))  
print(type(z))  
Try it Yourself »

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))Try it Yourself »

Float

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

Example

Floats:

x = 1.10  
y = 1.0  
z = -35.59  
  
print(type(x))  
print(type(y))  
print(type(z))Try it Yourself »

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

Example

Floats:

x = 35e3  
y = 12E4  
z = -87.7e100  
  
print(type(x))  
print(type(y))  
print(type(z))

Complex

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

Example

Complex:

x = 3+5j  
y = 5j  
z = -5j  
  
print(type(x))  
print(type(y))  
print(type(z))

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))

Try it Yourself