

Python Numbers

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Dr. Labeed Al-Saad

0.1 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:

```
[1]: x = 1
     y = 2.8
     z = 1j

     print(type(x))
     print(type(y))
     print(type(z))
```

```
<class 'int'>
<class 'float'>
<class 'complex'>
```

0.2 Int

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

Example:

Integers:

```
[2]: x = 1
     y = 35656222554887711
     z = -3255522
```

```
print(type(x))
print(type(y))
print(type(z))
```

```
<class 'int'>
<class 'int'>
<class 'int'>
```

0.3 Float

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

Example:

Floats:

```
[3]: x = 1.10
      y = 1.0
      z = -35.59

      print(type(x))
      print(type(y))
      print(type(z))
```

```
<class 'float'>
<class 'float'>
<class 'float'>
```

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

Example:

Floats:

```
[4]: x = 35e3
      y = 12E4
      z = -87.7e100

      print(type(x))
      print(type(y))
      print(type(z))
```

```
<class 'float'>
<class 'float'>
<class 'float'>
```

0.4 Complex

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

Example:

Complex:

```
[7]: x = 3+5j
     y = 5j
     z = -5j

     print(type(x))
     print(type(y))
     print(type(z))
     print(x)
```

```
<class 'complex'>
<class 'complex'>
<class 'complex'>
(3+5j)
```

0.5 Type Conversion

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

Example:

Convert from one type to another:

```
[9]: 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))
```

```
1.0
2
(1+0j)
```

```
<class 'float'>
<class 'int'>
<class 'complex'>
```

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

0.6 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:

```
[10]: import random

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

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