Python - Data Types and Type casting

Data types

There are many different types of objects in Python. The most common object types: strings, integers and floats. Anytime you are using words (text) in Python, you're using character strings (str for short). The most common numbers, on the other hand, are integers (e.g. -2, 0, 99) and floats, which represent real numbers (e.g. 1.99, -23.340).

Way to define literals

In [1]:

```
1 # integer
```

Out[1]:

```
1
```

In [2]:

```
1.5 # float
```

Out[2]:

```
1.5
```

In [3]:

```
'my string'
```

Out[3]:

```
'my string'
```

In [48]:

```
True
```

Out[48]:

```
True
```

Way to check type of literal

Python provides a 'type' function of any literal or object. Just pass in the object as argument to the type() function, it will return the data type of that object as follows:

In [5]:

```
type(1)  #returns int for integer
```

Out[5]:

```
int
```

In [6]:

```
type(1.5) #returns float for real number
```

Out[6]:

```
float
```

In [7]:

```
type('my string') #returns str for set of characters
```

Out[7]:

```
str
```

In [49]:

```
type(True)
```

Out[49]:

```
bool
```

Integers

It can be positive or negative but without decimal values.

In [8]:

```
type(1)
```

Out[8]:

```
int
```

In [9]:

```
type(0)
```

Out[9]:

```
int
```

In [10]:

```
type(-1)
```

Out[10]:

```
int
```

Floats

Floats are numbers with decimal points in it. The representation can vary from system to system.

In [11]:

```
type(1.0)
```

Out[11]:

```
float
```

In [12]:

```
type(0.0)
```

Out[12]:

```
float
```

In [13]:

```
type(-1.0)
```

Out[13]:

```
float
```

In [14]:

```
import sys
sys.float_info
```

Out[14]:

```
sys.float_info(max=1.7976931348623157e+308, max_exp=1024, max_10_exp=308, mi
n=2.2250738585072014e-308, min_exp=-1021, min_10_exp=-307, dig=15, mant_dig=
53, epsilon=2.220446049250313e-16, radix=2, rounds=1)
```

Boolean

Boolean has only two possible values : True or False

In [3]:

```
True  #note T is capital
```

Out[3]:

```
True
```

In [39]:

```
False  #note F is capital
```

Out[39]:

```
False
```

In [40]:

```
type(True)
```

Out[40]:

```
bool
```

In [41]:

```
type(False)
```

Out[41]:

```
bool
```

Type casting

Converting from one object type to a different object type

In [16]:

```
int(1.5) #covert float to integer, loss of info
```

Out[16]:

```
1
```

In [19]:

```
type(int(1.5))
```

Out[19]:

```
int
```

In [18]:

```
int('1') #convert string to integer
```

Out[18]:

```
1
```

In [20]:

```
type(int('1'))
```

Out[20]:

```
int
```

Converting integers to floats

In [22]:

```
type(2)
```

Out[22]:

```
int
```

In [23]:

```
type(float(2))
```

Out[23]:

```
float
```

Converting from strings to integers or floats

In [24]:

```
int('1')  #Converting from string to int
```

Out[24]:

```
1
```

In [25]:

```
type(int('1'))
```

Out[25]:

```
int
```

In [1]:

```
type(float('1'))
```

Out[1]:

```
float
```

In [30]:

```
float('1.5')  #Converting from string to float
```

Out[30]:

```
1.5
```

In [29]:

```
type(float('1.5'))
```

Out[29]:

```
float
```

Converting numbers to strings

In [32]:

```
str(1)  #Converting  string to int
```

Out[32]:

```
'1'
```

In [33]:

```
type(str(1))
```

Out[33]:

```
str
```

In [35]:

```
str('1.5')#Converting  string to float
```

Out[35]:

```
'1.5'
```

In [36]:

```
type(str('1.5'))
```

Out[36]:

```
str
```

Converting boolens to integers

In [42]:

```
int(True)
```

Out[42]:

```
1
```

In [43]:

```
float(True)
```

Out[43]:

```
1.0
```

Converting numbers to booleans

In [44]:

```
bool(1)
```

Out[44]:

```
True
```

In [45]:

```
bool(1.5)
```

Out[45]:

```
True
```

In [46]:

```
bool(0)
```

Out[46]:

```
False
```

Exercise

Q1. What will be type of expression (5 + 4.5 - 3)

In [ ]:

```
#Try it here
```

Q2. Use type() function to check type of 'one', '1 or 2', '1.4' and '1/2'

In [51]:

```
#Try it here
```

In [ ]:

```

```