

Type Conversion

Type Conversion

So far we have looked at three variable types: integers, floats and strings; and how to check what type a variable is.

Sometimes we want to convert between different variable types. To do this we can use the `int`, `float` and `str` functions:

```
[3]: int_var = 1
      print(int_var, type(int_var))

      float_var = float(int_var)
      print(float_var, type(float_var))
```

```
1 <class 'int'>
1.0 <class 'float'>
```

```
[4]: float_var = 5.7
      print(float_var, type(float_var))

      int_var = int(float_var)
      print(int_var, type(int_var))
```

```
5.7 <class 'float'>
5 <class 'int'>
```

Note that when you convert a float to an integer Python does simply discards the decimal part (if you wish to round-off a float you can use the `round` function).

```
[6]: str_var = '1.43'
      print(str_var, type(str_var))

      float_var = float(str_var)
      print(float_var, type(float_var))
```

```
1.43 <class 'str'>
1.43 <class 'float'>
```

```
[8]: str_var = '12'
      print(str_var, type(str_var))

      int_var = int(str_var)
      print(int_var, type(int_var))
```

```
12 <class 'str'>
```

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

Note that anything other than a number cannot be converted from a string to a float or int:

```
[9]: str_var = 'not a number'
      print(str_var, type(str_var))

      float_var = float(str_var)
      print(float_var, type(float_var))
```

```
not a number <class 'str'>
```

```

      □
↳ -----

      ValueError                                Traceback (most recent call↳
↳ last)

      <ipython-input-9-4224f055b9d6> in <module>
          2 print(str_var, type(str_var))
          3
----> 4 float_var = float(str_var)
          5 print(float_var, type(float_var))

      ValueError: could not convert string to float: 'not a number'
```

Even strings that contain a number with a decimal part cannot be converted to an integer:

```
[10]: str_var = '4.563'
       print(str_var, type(str_var))

       int_var = int(str_var)
       print(int_var, type(int_var))
```

```
4.563 <class 'str'>
```

```

      □
↳ -----
```

```
ValueError                                Traceback (most recent call_
↳last)
```

```
<ipython-input-10-a3094efdeb44> in <module>
    2 print(str_var, type(str_var))
    3
----> 4 int_var = int(str_var)
    5 print(int_var, type(int_var))
```

```
ValueError: invalid literal for int() with base 10: '4.563'
```