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Learn typecasting in Python in five minutes



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A crash course on Typecasting and Type conversion in Python in a very non-verbose manner

The process of converting one data type to another data type is called **Typecasting** or **Type Coercion** or **Type Conversion**.

The topics that I'll be focusing on in this article are:

1. Implicit Type Conversion
2. Explicit Type Conversion
3. Advantages
4. Disadvantages

Implicit Type Conversion

When the type conversion is performed automatically by the interpreter without the programmer's intervention, that type of conversion is referred to as **implicit type conversion**.

Example Program:

```
myInt = 143          # Integer value.myFloat = 1.43  # Float value.
```

```
myResult = myInt + myFloat    # Sum result
```

```
print("datatype of myInt:", type(myInt))print("datatype of myFloat:", type(myFloat))
```

Output:

The output for the above program will be:

```
datatype of myInt: <class 'int'>datatype of myFloat: <class 'float'>
```

In the above program,

- We add two variables myInt and myFloat, storing the value in myResult.
- We will look at the data type of all three objects respectively.
- In the output, we can see the datatype of myInt is an integer , the datatype of myFloat is a float .
- Also, we can see the myFloat has float data type because Python converts smaller data type to larger data type to avoid the loss of data.

This type of conversion is called **Implicit Type conversion** (or) **UpCasting**.

Explicit Type Conversion

In Explicit Type Conversion, users convert the data type of an object to the required data type. We use predefined in-built functions like:

1. int()
2. float()

4. `bool()`

5. `str()`

The syntax for explicit type conversion is:

```
(required_datatype)(expression)
```

This type of conversion is called **Explicit Type conversion** (or) **DownCasting**.

Int Conversion

We can use this function to convert values from other types to int.

For example:

```
>>> int(123.654)123
```

```
>>>int(False)0
```

```
>>> int("10")10
```

```
>>> int("10.5")ValueError: invalid literal for int() with base 10
```

```
>>> int("ten")ValueError: invalid literal for int() with base 10
```

```
>>> int("0B1111")ValueError: invalid literal for int() with base
```

```
>>> int(10+3j)TypeError: can't convert complex to int
```

Note:

1. You can't convert complex datatype to int
2. If you want to convert string type to int type, the string literal must contain the value in Base-10

Float Conversion

This function is used to convert any data type to a floating point number.

For example:

```
>>> float(10) 10.0
```

```
>>> float(False)0.0
```

```
>>> float("10")10.0
```

```
>>> float("10.5")10.5
```

```
>>> float("ten")ValueError: could not convert string to float: 'ten'
```

```
>>> float(10+5j)TypeError: can't convert complex to float
```

```
>>> float("0B1111")ValueError: could not convert string to float: '0B1111'
```

Note:

1. You can convert complex type to float type value.
2. If you want to convert string type to float type, the string literal must contain the value in base-10.

Complex Conversion

This function is used to convert real numbers to a complex (real, imaginary) number.

Form 1: complex (x)

You can use this function to convert a single value to a complex number with real part x and imaginary part 0.

For example:

```
>>> complex(10)10+0j
```

```
>>> complex(10.5)10.5+0j
```

```
>>> complex(True)1+0j
```

```
>>> complex(False)0+0j
```

```
>>> complex("10")10+0j
```

```
>>> complex("10.5")10.5+0j
```

```
>>> complex("ten")ValueError: complex() arg is a malformed string
```

Form 2: complex (x, y)

If you want to convert X and Y into complex number such that X will be real part and Y will be imaginary part.

For example:

```
>>> complex(10, -2)10-2j
```

```
>>> complex(True, False)1+0j
```

Boolean Conversion

This function is used to convert any data type to boolean data type easily. It is the most flexible data type in Python.

For example:

```
>>> bool(0)False
```

```
>>> bool(1)True
```



```
>>> bool(10)True
```

```
>>> bool(0.13332)True
```

```
>>> bool(0.0)False
```

```
>>> bool(10+6j)True
```

```
>>> bool(0+15j)True
```

```
>>> bool(0+0j)False
```

```
>>> bool("Apple")True
```

```
>>> bool("")False
```

type of datatype into boolean and the output will be - For all values it will produce True except 0, 0+0j and for an Empty String.

String Conversion

This function is used to convert any type into a string type.

For example:

```
>>> str(10)'10'
```

```
>>> str(10.5)'10.5'
```

```
>>> str(True)'True'
```

```
>>> str(False)'False'
```

```
>>> str(10+5j)'10+5j'
```

```
>>> str(False)'False'
```

Example Program:

```
integer_number = 123 # Intstring_number = "456" # String

print("Data type of integer_number:",type(integer_number))print(

string_number = int(string_number)print("Data type of string_numl

number_sum = integer_number + string_number

print("Sum of integer_number and num_str:",number_sum)print("Data
```

Output:

When we run the above program the output will be:

```
Data type of integer_number: <class 'int'>Data type of num_str b
```

In the above program,

- We add `string_number` and `integer_number` variable.
- We converted `string_number` from `string`(higher) to `integer`(lower) type using `int()` function to perform addition.
- After converting `string_number` to an integer value Python adds these two variables.
- We got the `number_sum` value and data type to be an integer.

Advantages Of Typecasting

1. More convenient to use

Disadvantages Of Typecasting

1. More complex type system
2. Source of bugs due to unexpected casts

I covered pretty much everything that is required to perform any type of typecasting operation in Python3.

Hope this helped you learn about Python Typecasting in a quick and easy way.

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