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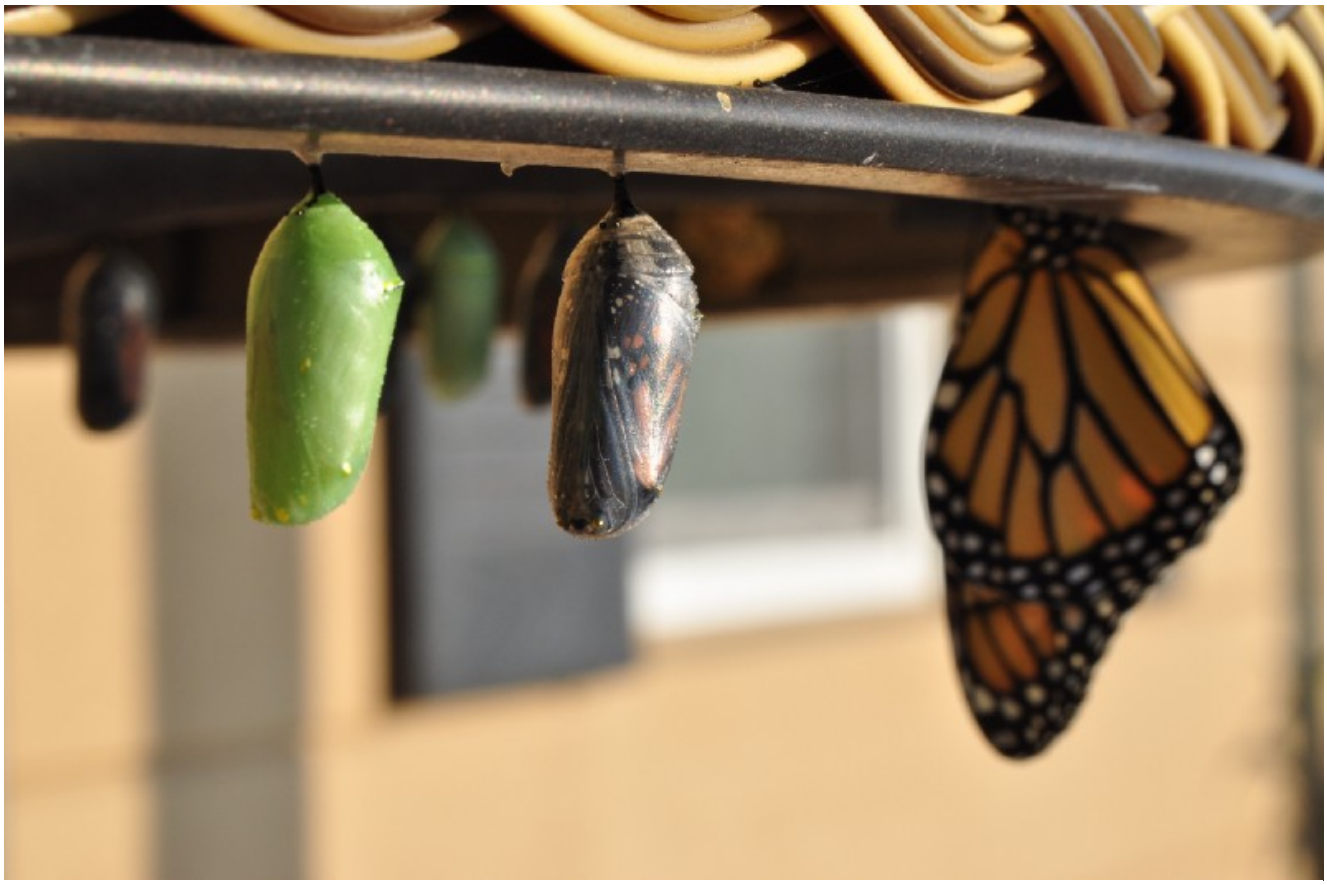
# Learn typecasting in Python in five minutes



by PALAKOLLU SRI MANIKANTA

## 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 myFloa
```

## Output:

The output for the above program will be:

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

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 1(
```

```
>>> 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: '
```

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

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

## 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 strin
```

## 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("Dat
```

## 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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