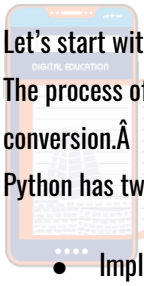
Type Conversion in Python

TYPE CONVERSION

Good day everyone. I am excited to see you back to learn new concepts of Python language

In this module we will discuss type conversion and its various types.
The process of converting the value of one data type (integer, string, float, etc.) to another data type is called type conversion. Python has two types of type conversion.



Let's start with type conversion.
The process of converting the value of one data type (integer, string, float, etc.) to another data type is called type conversion.Â
Python has two types of type conversion.

- Implicit Conversion and Explicit Conversion
- The example of implicit type conversion is
- 2.5 + 15 = 17.5
- Float + int = float - Mixed Mode Data Type Internal conversion
- The example of explicit conversion
- 2.5 + float(15) = 17.5
- Float + float = float ==> Mixed Mode Data Type
- External conversion

Implicit conversion is used to do arithmetic operations and explicit conversion is used to do casting operations.
So let us first understand what Explicit type conversion is.
In Explicit Conversion, users convert the data type of an object to required data type. We use the predefined functions like int(), float(), str() etc.
This type of conversion is also called typecasting because the user casts (change) the data type of the objects.
So the data type is manually changed by the user as per their requirement.

Various forms of explicit type conversion are explained here.

Basic Data Type Conversion

int(a,base) : This function converts any data type to integer. Base specifies the base in which string data type is string.

float() : This function is used to convert any data type to a floating point number

ord() : This function is used to convert a character to integer.

str() : Used to convert integer into a string.

complex(real,imag) : This functionÂ converts real numbers to complex(real,imag) numbers.

Advance Level of Conversion

hex() : This function is to convert integers to hexadecimal strings.

oct() : This function is to convert integer to octal string.

tuple() : This function is used to convert to a tuple.

set() : This function returns the type after converting to set.

list() : This function is used to convert any data type to a list type.

dict() : This function is used to convert a tuple of order (key, value) into a dictionary.

Let us look at some of the basic type conversions for better understanding.

Note: this is the allowed type conversion.

```
#String to int base conversion
print(int("10001"  ,2))
```

Output: 17

```
#int to float conversion
year = 2021
print(float(year))
```

Output: 2021.0

```
#int to complex data type conversion
print(complex(1, 2))
```

Output: (1+2j)

```
#float to complex data type conversion
print(complex(1.1, 2.2))
```

Output: (1.1+2.2j)

```
print(str(11))
```

print(str(11.22))
Output: '11'
'11.22'

Well that was easy and simple to understand.

IMPLICIT TYPE CONVERSION OR ARITHMETIC OPERATIONS

Hello everyone, welcome back to the module on type conversion.
In this module you will learn the second type of type conversion called Implicit type conversion.
In Implicit type conversion, Python automatically converts one data type to another data type. In this process the user has no need to do any coding.
Let's see an example where Python promotes conversion of lower data type (integer) to higher data type (float) to avoid data loss.

Since the Python interpreter automatically converts one data type to another without any user involvement lets get a more clear view of the topic see the examples.

#Consider the below mixed data type addition program
x = 10
print("x is of type:",type(x))
y = 10.6
print("y is of type:",type(y))
x = x + y
print(x)
print("x is of type:",type(x))

Output
x is of type: <class 'int'>

y is of type: <class 'float'> 20.6
x is of type: <class 'float'>

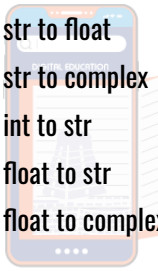
The result of the addition is float. Automatically num_addition is converted into float

Let us now understand what permitted type conversions are allowed.
First is Type Conversions with Numeric Data.

- int to float conversion
- int to complex conversion
- float to int conversion
- float to complex conversion

Please note float to integer conversion is always lossy.

Second is type conversion between String and Numeric Data.
str to int
str to float
str to complex
int to str
float to str
float to complex



This is type conversion between Boolean and Other Data Types

- int to bool
- float to bool
- complex to boo
- string to bool
- bool to in
- bool to float
- bool to complex

Last is type conversion with sequence.
range to list
range to tuple
range to set

list to tuple
list to set
tuple to list
tuple to set
set to list
set to tuple
set to str
tuple to str
range to str
list to str

I hope the type conversion topic is clear and you can do applications related to it in the modules to come.