Type Casting in Python

Type Casting is the process of converting a value of one data type to another. Used to convert user input from string to integer, rounding a float to an integer, changing an integer to a string, and so on.

If we create a variable for the four main data types, we can print what each of the data types is:

```
name = ("Bob")    # <-- STRING
age = 16          # <-- INTEGER
distance = 4.5    # <-- FLOAT
student = True    # <-- BOOLEAN

print(type(name))
print(type(age))
print(type(distance))
print(type(student))
```

Outputs:

```

<class 'str'>
<class 'int'>
<class 'float'>
<class 'bool'>
```

To convert ‘age’ to a ‘float’:

```
name = ("Bob")    # <-- STRING
age = 16          # <-- INTEGER
distance = 4.5    # <-- FLOAT
student = True    # <-- BOOLEAN

age = float(age)
print(age)
```

Outputs ‘age’ with a decimal having converted it to a float:

```
16.0
```

To convert a ‘float’ to an ‘integer’, the decimal portion will be cut off (truncated).

```
name = ("Bob")    # <-- STRING
age = 16          # <-- INTEGER
distance = 4.5    # <-- FLOAT
student = True    # <-- BOOLEAN

distance = int(distance)
print(distance)
print(type(distance))
```

Output:

```
4
<class 'int'>
```

Converting a ‘float’ or an ‘integer’ to a ‘boolean’ will set it to **True** for ALL values other than **zero**. Converting a ‘string’ to a ‘boolean’ will be always be **True** unless the value is blank. This can be usefull to validate all fields in a form have been filled and none left blank.

```
name = ("Bob")    # <-- STRING

name_valid = bool(name)
print(name_valid)
```

Output:

```
True
```

If the name is left blank:

```
name = ("")    # <-- STRING

name_valid = bool(name)
print(name_valid)
```

Output:

```
False
```

Above are examples of **Explicit** typecasting. We manually change the data type of each variable.

Implicit typecasting is automatic – if we divide two variables, a ‘float’ and an ‘integer’, the integer will automatically be converted to a float.

```
x = 4
y = 2.0

z = x / y
print (z)
```

Output:

```
2.0
```

Exercise:

Write some code asking for the users age and then output a sentence detail how many years it will be before they can legally vote or consume alcohol in Australia.