

Type Conversion - Data Types

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Type Conversion

- Type conversion in Python refers to changing the data type of a value or variable.
- It is useful when you're working with inputs or data that come in one form (like a string) but need to be processed in another (like an integer).

Type Conversion - Types

- Implicit Type Conversion (Automatic)
- Explicit Type Conversion (Type Casting)

Implicit Type Conversion (Automatic)

- Python automatically converts one data type to another when appropriate.

Python Code

```
a = 10
b = 3.5

result = a + b
print(result)
print(type(result))
```

Type Conversion Functions in Python

Function	Converts to
<code>int()</code>	Integer
<code>float()</code>	Float
<code>str()</code>	String
<code>bool()</code>	Boolean
<code>list()</code>	List
<code>tuple()</code>	Tuple
<code>set()</code>	Set

String to Integer Conversion

- Example: Converting a numeric string to an integer.

Python Code

```
s = "123"  
num = int(s)  
print(num + 1)
```

Float to Integer Conversion

- Example: Converting a float to an integer using `int()` function.

Python Code

```
x = 12.99  
print(int(x))
```

Integer to String Conversion

- Example: Converting an integer to a string using `str()` for concatenation.

Python Code

```
n = 25  
print("Age is " + str(n))
```


List to Set Conversion

- Example: Converting a list to a set to remove duplicates.

Python Code

```
marks = [90, 80, 90]
unique_marks = set(marks)
print(unique_marks)
```

Things to Note: Type Conversion

- `int("abc")` raises a **ValueError** because the string is not numeric.
- `int()` with float input **truncates** the decimal part, it does **not** round.

Python Examples

```
int("abc")
```

```
int(5.9)
```

- `bool()` returns False for:
 - 0, 0.0
 - Empty string: ''
 - Empty containers: [], {}, set()
 - None

Type Conversion with `input()`

- `input()` always returns a string.
- Adding an integer to it without conversion causes a `TypeError`.

Incorrect Example

```
age = input("Enter your age: ")  
print(age + 5)
```

Corrected Example

```
age = int(age)  
print(age + 5)
```

Q: Convert Float to Int and Observe Result

Python Code

```
price = 99.99  
print(int(price)) # decimal part is truncated
```

Q: Convert Boolean to Integer

Python Code

```
print(int(True))  
print(int(False))
```

Real-World Scenario

```
# Total cost calculator  
item1 = "100"  
item2 = "250"  
  
total = int(item1) + int(item2)  
print("Total bill: " + str(total))
```

Q: Survey Form Age Check

Real-World Scenario

```
# Age input from form (always comes as string)
form_age = "21"
age = int(form_age)

if age >= 18:
    print("Eligible to vote")
else:
    print("Not eligible")
```

Q. Multiply String Inputs After Conversion

Application-Based Question

```
a = "8"
b = "5"
# Convert and multiply
a_num = int(a)
b_num = int(b)
print(a_num * b_num)
```