

### Boolean data type in Python

Boolean type is one of the built-in data types provided by Python, which represents one of the two values i.e. True or False. Generally, it is used to represent the truth values of the expressions. For example,  $1==1$  is True whereas  $2<1$  is False.

### Python Boolean Type

The output `<class 'bool'>` indicates the variable is a boolean data type.

### Example: Boolean type

```
a = True
type(a)
b = False
type(b)
```

Output:

```
<class 'bool'>
<class 'bool'>
```

### Evaluate Variables and Expressions

We can evaluate values and variables using the Python `bool()` function. This method is used to return or convert a value to a Boolean value i.e., True or False, using the standard truth testing procedure.

Syntax:

```
bool([x])
```

### Example: Python bool() method

```
# Returns False as x is not
equal to y
x = 5
y = 10
print( bool(x ==y))

# Returns False as x is None
x = None
print( bool(x))

# Returns False as x is an empty
sequence
x = ()
print( bool(x))

# Returns False as x is an empty
mapping
x = {}
print( bool(x))

# Returns False as x is 0
x = 0.0
print( bool(x))

# Returns True as x is a non
empty string
x = 'Geeks for Geeks'
print( bool(x))
```

Output

```
False
False
False
False
False
False
True
```

### Integers and Floats as Booleans

Numbers have zero as a value is considered as False, while if they are having value as any positive or negative number then it is considered as True.

```
var1 = 0
print( bool(v ar1))
var2 = 1
print( bool(v ar2))
var3 = -9.7
print( bool(v ar3))
```

Output:

```
False
True
True
```

### Int type

int (Integers) are the whole number, including negative numbers but not fractions. In Python, there is no limit to how long an integer value can be.

### How Python represents integers

Python, however, doesn't use a fixed number of bit to store integers. Instead, Python uses a variable number of bits to store integers. The maximum integer number that Python can represent depends on the memory available.



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Page 1 of 2.

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### Example 1: Creating int and checking type

```
num = -8
# print the data type
print( type (num))
```

Output:

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

### Getting the size of an integer

```
from sys import getsizeof
counter = 100
size = getsiz eof (co unter)
print( size)
```

Output:

```
28
```

### Converting a String to a Float in Python

```
# python code to convert string
# to float
string = " 90"
result = float( string)
print( result)
```

Output:

```
90.0
```

### Python integer operations

Python integers support all standard operations including:

Addition +  
Subtra ction -  
Multip lic ation \*  
Division /

```
a = 10
b = 20
c = a + b
print(c)
print( typ e(c))
c = a - b
print(c)
print( typ e(c))
c = a * b
print(c)
print( typ e(c))
c = b/a
print(c)
print( typ e(c))
```

```
30
<class 'int'>
-10
<class 'int'>
200
<class 'int'>
2.0
<class 'float'>
```

### Python float

Python uses the float class to represent the real numbers.

Python float uses 8 bytes (or 64 bits) to represent real numbers.

Unlike the integer type, the float type uses a fixed number of bytes.

### Creating float and checking type

```
num = 3/4

# print the data type
print( typ e(num))
num = 6 * 7.0

print( typ e(num))
```

```
<class 'float'>
```

```
<class 'float'>
```

### Converting an Integer to a Float in Python

```
# python code to convert int
# float
number = 90
result = float( number)
print( result)
```

Output:

```
90.0
```



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Page 2 of 2.

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