untitled6

September 10, 2024

1 PYTHON DATA TYPES

Python data types are the classification or categorization of data items. it represent the kind of value that tells what operations can be performed on a particular data. since everything is an object in python programming, python data types are classes and variables are instances of these classes.

WHAT IS PYTHON DATA TYPES?

To define the values of various data types of python and check their data types we use the type.() function. This code assigns variable 'X' different values of various python data types. it covers string, integer, float, complex, list, tuple, range, dictionary, set, frozent, boolean, bytes, bytearray, memoryview, ansd the special value 'None' succesively. Each assignment replaces the previous value, making 'x' take on the data types and value of the most recent assignment.

There are two types of data types

1.BASIC DATA TYPES :

*** int**

This value is represented by int class. it contains positive or negative whole numbers (without fractions or decimals). In python, there is no limit to how long an integer value can be.

*** float**

This value is represented by the float class. It is a real number with a floating - point representation. It is specified by a decimal point. Optionally, the character e or E followed by a positive or negative integer may be appended to specify scientific notation.

Complex numbers

A complex number is represented by a complex class. It is specified as (real part) + (imaginary part) j.

For example - 2+3j

Boolean

Pyhton data type with one of the two built-in values, True or Flse. Boolean objects that are equal to true are truthy, and those eqyual to false are falsy. However non-boolean objects can be evaluated in a boolean context as well and determined to be true or false. it is denoted by the class bool.

Note -

True and false with capital 'T' and 'F' are valid boolean otherwise python will throw an error.

Advanced data types

- list
- string
- tuple
- dictionary
- set

EXAMPLE :

This code demonstrates how to determine the data type of variables in python using the type() function. it prints the data types of three variables : a (INTEGER), b(FLOAT), c(COMPLEX). The output shows the respective data type python for each variable.

[17]:
```
a = 10
print("\nType of a : ", type(a))

b = 23.5
print("\nType of b: ", type(b))

c = 3 + 7j
print("\nType of c: ", type(c))

E = -4 + 5J
print("\nType of E: ", type(E))
```

```
Type of a :  <class 'int'>

Type of b:  <class 'float'>

Type of c:  <class 'complex'>

Type of E:  <class 'complex'>
```

[2]:
```
#Boolean type
print(type(True))
print(type(False))
```

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

[18]:
```
#Example various of different types
a = 7
b = "Hi mawa"
user_name = "faheem"
F = 2
E = 10
```

```
#using type() to get data types
print(type(a))
print(type(b))
print(type(user_name))
print(F > E)
print(type(F > E))
```

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

[22]:
```
E = 22
F = 56
print(E > F)
print(F < E)
print(E < F)
print(F == E)
print(E == F)
```

```
False
False
True
False
False
```

Conversion of one data type to another data type

[27]:
```
a = 4
b = 7.6
c = 10+6j
#convert int to float
x = float(a)

#convert float to int
y = int(b)

#convert int to complex
z = complex(a)

#convert float to complex
f = complex(b)

print(x)
print(y)
```

```
print(z)
print(f)
```

```
4.0
7
(4+0j)
(7.6+0j)
```

Complex data types cannot be converted into any other data types

[28]:
```
#conversion of complex to int
a=2+4j
x=int(a)
print(x)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-28-bbae16bc4367> in <cell line: 3>()
      1 #conversion of complex to int
      2 a=2+4j
----> 3 x=int(a)
      4 print(x)

TypeError: int() argument must be a string, a bytes-like object or a real␣
 ↪number, not 'complex'
```