Literals and Data Types

What is literal?
Literal is a value which never changed.

1. Numeric Literals
2. Non Numeric Literals

Numeric Literals/values

1. Integer Literal
2. Floating point Literal
3. Complex Literal

Non Numeric Literals/Values

1. String Literal
2. Boolean Literal
3. None Literal

Data types
Data types are used to reserve memory for literals or data.
Python data types are classified into two categories

1. Scalar Data Types
2. Collection Data types

Scalar data types are used to reserve memory for one value.

1. Int
2. Float
3. Complex
4. Bool
5. NoneType

Collection Data types are used to reserve memory for more than one value.
Collection data types are classified into 3 categories.

1. Sequences 2. Sets 3. mapping

Sequences

1. List
2. Tuple
3. Range
4. String
5. Bytes
6. Bytearray

Sets

1. Set
2. Frozenset

Mapping

1. Dictionary

What is variable?

Variable is an identifier, which is used to identify value or memory location. The value of variable changed.

How to create variable?

In python variables are created by assigning value/literal.
Python is dynamically typed programming language; there is no declaration of variables.
Variable is not bind with one data type.

int data type

int data type is used to reserve memory for integer value/literal.
The size of int data type is unlimited.
Integer data type is used to reverse memory for integer value, a numeric value which does not have decimal part/precisions.

```
>>> a=20
>>> type(a)
<class 'int'>
>>> a
20
>>> b=45
>>> type(b)
<class 'int'>
>>> b
45
>>> import sys
>>> sys.getsizeof(a)
28
>>> c=9999999999999999999999999999999
>>> sys.getsizeof(c)
```

```
40
>>> d=99999999999999999999999999999999999999999999999999
>>> sys.getsizeof(d)
48
>>> e=1
>>> sys.getsizeof(e)
28
>>> f=0
>>> sys.getsizeof(f)
28
```

type()
This function return type of variable (OR) type of value hold by variable.

Note: default library imported by any python program is __builtins__
In order to display content of any library use dir()

In python integer literals are represented in 4 formats.

1. Decimal integer literal
2. Octal integer literal
3. Hexadecimal integer literal
4. Binary integer literal

Decimal integer literal
An integer value with base 10 is called decimal integer.
This integer is created using digits from 0-9. This integer is prefix with + or - . This integer should not start with 0.

```
>>> a=012
SyntaxError: leading zeros in decimal integer literals are not permitted; use an 0o prefix for octal integers
a=56
>>> b=58934
>>> c=+12
>>> d=-50
>>> type(a)
<class 'int'>
>>> type(b)
<class 'int'>
>>> type(c)
```

```
<class 'int'>
>>> type(d)
<class 'int'>
```

It allows only one special character _, this underscore should not be suffix or prefix.

```
>>> n1=1_25_000
>>> type(n1)
<class 'int'>
>>> n1
125000
>>> n2=_125
Traceback (most recent call last):
  File "<pyshell#30>", line 1, in <module>
    n2=_125
NameError: name '_125' is not defined
>>> n3=123_
SyntaxError: invalid decimal literal
```

Default representation of integer literal is decimal.

Octal integer literal