String data type (collection type) and string literal

String is a collection of character, it is a non numeric data type and we cannot perform arithmetic operations on string.

String is a collection of characters and these characters can be alphabets, digits or special characters.

In python string is represented in 3 formats
1. Within single quotes
2. Within double quotes
3. Within triple single quotes or double quotes

"str" class or str data type represents string object/value.

Example:
```
>>> name='naresh'
>>> print(name)
naresh
>>> type(name)
<class 'str'>
>>> course='python'
>>> print(course)
python
>>> type(course)
<class 'str'>
>>> college=nit
Traceback (most recent call last):
  File "<pyshell#6>", line 1, in <module>
    college=nit
NameError: name 'nit' is not defined
>>> college='nit'
>>> print(college)
Nit
```

The string which contains alphabets is called alphabetic string
The string which contains alphabets, digits is called alphanumeric string.

```
>>> username='nit123'
>>> print(username)
nit123
>>> password='nit123#$%'
```

```
>>> print(password)
nit123#$%
>>> a='25'
>>> b='6'
>>> type(a)
<class 'str'>
>>> type(b)
<class 'str'>
>>> a*b
Traceback (most recent call last):
  File "<pyshell#17>", line 1, in <module>
    a*b
TypeError: can't multiply sequence by non-int of type 'str'
>>> a-b
Traceback (most recent call last):
  File "<pyshell#18>", line 1, in <module>
    a-b
TypeError: unsupported operand type(s) for -: 'str' and 'str'
```

Within single quotes we can represent single line string/one line string
Within single quotes we can embed or insert double quotes

```
>>> s1='python
SyntaxError: unterminated string literal (detected at line 1)
>>> s2='python is 'easy' language'
SyntaxError: invalid syntax
>>> s3='python is "easy" language'
>>> print(s3)
python is "easy" language
```

within double quotes we can represent single line string/one line string.
Within double quotes we can insert/embed single quotes.

```
>>> str1="python"
>>> str2="python
SyntaxError: unterminated string literal (detected at line 1)
>>> str3="python is "easy" langauge"
SyntaxError: invalid syntax
>>> str3="python is 'easy' language"
>>> print(str3)
```

python is 'easy' language

within triple single or double quotes we can represent multiline string.

```
>>> address='''Naresh i Technologies
Ameerpet
Hyderabad'''
>>> print(address)
Naresh i Technologies
Ameerpet
Hyderabad
>>> fsp="""Python
FrontEnd
BackEnd
Database
Tools
Projects"""
>>> print(fsp)
Python
FrontEnd
BackEnd
Database
Tools
Projects
>>> remarks='''python
... is high level
... interpreted
... programming language'''
>>> print(remarks)
python
is high level
interpreted
programming language
```

Note: There is no single character data type in python. Single character also represented as string.

Escape Sequences
Escape sequences are special characters having special meaning in python language. These characters are inserted within string.

\n	New line
\t	Tab space
\\	\
\'	'
\"	"
\b	backspace

```
print("\\")
print('\'')
print("\"")
print("a\tb\tc\td")
print("python is \"easy\" language")
print('python is \'easy\' language')
print("python\nprogramming\nlanguage")
print("python\bN")
```

Output
```
\
'
"
a       b       c       d
python is "easy" language
python is 'easy' language
python
programming
language
pythonN
```

Example of representing UNICODE characters

```
print("\u0905")
print("\u0906")
print("\u090A")
print("\u0c05")
```

Output

अ

आ

ऊ

NoneType
NoneType represents None value.
None is a keyword which represent null value/missing value/no value

```
>>> a=10
>>> type(a)
<class 'int'>
>>> b=1.5
>>> type(b)
<class 'float'>
>>> c=1+2j
>>> type(c)
<class 'complex'>
>>> d="python"
>>> type(d)
<class 'str'>
>>> e=True
>>> type(e)
<class 'bool'>
>>> f=None
>>> type(f)
<class 'NoneType'>
```

What is program?
Program is collection of instructions and data
Programming elements are two
1. Data
2. Instructions

Every python program is called module or file.
This program is saved with extension .py

Structure of writing python program

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Day-1 https://youtu.be/0RdZ-i5tjVwDay-2
https://youtu.be/XuD_tHMqDbIDay-3 https://youtu.be/lBwuPoPEswMDay-4

https://youtu.be/ZBCAe39TYQoDay-5 https://youtu.be/45hY-KNvnDADay-6
https://youtu.be/69m61L2K0akDay-7 https://youtu.be/imMWzFpF3Y8Day-8
https://youtu.be/gc-7on4nkrE