LET'S PY by shakti Jaiswal

A name in Python program is called identifier.
It can be class name or function name or module name or variable name.

a = 10

Rules to define identifiers in Python:

1. The only allowed characters in Python are

- **alphabet symbols(either lower case or upper case)**
- **digits(0 to 9)**
- **underscore symbol(_)**

By mistake if we are using any other symbol like $ then we will get syntax error.

- **cash = 10 ✓**
- **ca$h =20 ✗**

2. Identifier should not starts with digit

- **123total ✗**
- **total123 ✓**

3. Identifiers are case sensitive. Of course Python language is case sensitive language.

Identifier:

1. Alphabet Symbols (Either Upper case OR Lower case)

2. If Identifier is start with Underscore (_) then it indicates it is private.

3. Identifier should not start with Digits.

4. Identifiers are case sensitive.

5. We cannot use reserved words as identifiers
Eg: def=10 ✗

6. There is no length limit for Python identifiers. But not recommended to use too lengthy identifiers.

7. Dollor ($) Symbol is not allowed in Python.

In Python some words are reserved to represent some meaning or functionality. Such type of words are called Reserved words.

```
>>> import keyword
>>> keyword.kwlist
['False', 'None', 'True', 'and', 'as', 'assert', 'break', 'class', 'continue', 'def', 'del', 'elif', 'else',
'except', 'finally', 'for', 'from', 'global', 'if', 'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or',
'pass', 'raise', 'return', 'try', 'while', 'with', 'yield']
```

Data Types

Data Type represent the type of data present inside a variable.
In Python we are not required to specify the type explicitly. Based on value provided,the type will be assigned automatically.Hence Python is Dynamically Typed Language.

Python contains the following inbuilt data types

1. int
2. float
3.complex
4.bool
5.str
6.bytes
7.bytearray
8.range
9.list
10.tuple
11.set
12.frozenset
13.dict
14.None

1.type()
to check the type of variable

2. id()
to get address of object

3. print()
to print the value

int data type:

We can use int data type to represent whole numbers (integral values)

Eg:

```
a=10
type(a) #int
```

We can represent int values in the following ways

1. Decimal form
2. Binary form
3. Octal form
4. Hexa decimal form

1. Decimal form(base-10):

It is the default number system in Python
The allowed digits are: 0 to 9
Eg: a =10

2. Binary form(Base-2):

The allowed digits are : 0 & 1
Literal value should be prefixed with 0b or 0B

Eg: a = 0B1111

```
a =0B123
a=b111
```

3. Octal Form(Base-8):

The allowed digits are : 0 to 7
Literal value should be prefixed with 0o or 0O.

4. Hexa Decimal Form(Base-16):

The allowed digits are : 0 to 9, a-f (both lower and upper cases are allowed)
Literal value should be prefixed with 0x or 0X

float data type:

We can use float data type to represent floating point values (decimal values)

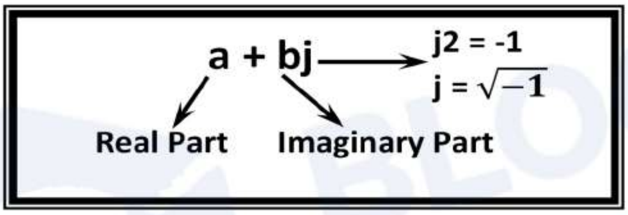
Eg: f=1.234
type(f) float

We can also represent floating point values by using exponential form (scientific notation)

Eg: f=1.2e3
print(f) 1200.0
instead of 'e' we can use 'E'

Complex Data Type:

A complex number is of the form



a + bj → j2 = -1
j = $\sqrt{-1}$

Real Part

Imaginary Part

a and b contain intergers or floating point values

Eg:
3+5j
10+5.5j
0.5+0.1j

In the real part if we use int value then we can specify that either by decimal,octal,binary or hexa decimal form.
But imaginary part should be specified only by using decimal form.

Note: Complex data type has some inbuilt attributes to retrieve the real part and imaginary part

c=10.5+3.6j

c.real==>10.5
c.imag==>3.6

We can use complex type generally in scientific Applications and electrical engineering Applications.