Python Programming

LECTURE-4

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Topics Covered

- ❑ Multiline Statements
- ❑ **Identifiers**
  - ❑ Variables
- ❑ Assignments

Multi-line Statements

Multi-line statements are written into the notepad like an editor and saved it with **.py** extension.

In the following example, we have defined the execution of the multiple code lines using the Python script.

```
name = "Andrew Venis"

branch = "Computer Science"

age = "25"

print("My name is: ", name, )

print("My age is: ", age)
```

Python Identifiers

Python identifiers refer to a name used to identify a variable, function, module, class, module or other objects. There are few rules to follow while naming the Python Variable.

- A variable name must start with either an English letter or underscore (_).
- A variable name cannot start with the number.
- Special characters are not allowed in the variable name.
- The variable's name is case sensitive.

Example:

```
number = 10
print(num)
_a = 100
print(_a)
x_y = 1000
print(x_y)
```

Python Variables

- Variable is a name that is used to refer to memory location. Python variable is also known as an identifier and used to hold value.
- In Python, we don't need to specify the type of variable because Python is a infer language and smart enough to get variable type.
- Variable names can be a group of both the letters and digits, but they have to begin with a letter or an underscore.
- It is recommended to use lowercase letters for the variable name. Rahul and rahul both are two different variables.

Identifier Naming

Variables are the example of identifiers. An Identifier is used to identify the literals used in the program. The rules to name an identifier are given below.

- The first character of the variable must be an alphabet or underscore (_).
- All the characters except the first character may be an alphabet of lower-case(a-z), upper-case (A-Z), underscore, or digit (0-9).
- Identifier name must not contain any white-space, or special character (!, @, #, %, ^, &, *).
- Identifier name must not be similar to any keyword defined in the language.
- Identifier names are case sensitive; for example, my name, and MyName is not the same.
- Examples of valid identifiers: a123, _n, n_9, etc.
- Examples of invalid identifiers: 1a, n%4, n 9, etc.

Declaring Variable and Assigning Values

Python does not bind us to declare a variable before using it in the application. It allows us to create a variable at the required time.

We don't need to declare explicitly variable in Python. When we assign any value to the variable, that variable is declared automatically.

The equal (=) operator is used to assign value to a variable.

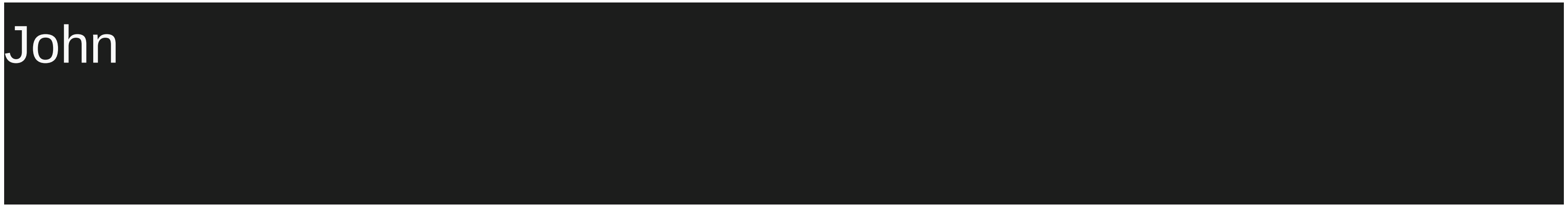
Object References

It is necessary to understand how the Python interpreter works when we declare a variable. The process of treating variables is somewhat different from many other programming languages.

Python is the highly object-oriented programming language; that's why every data item belongs to a specific type of class. Consider the following example.

```
print("John")
```

Output:



```
John
```

The Python object creates an integer object and displays it to the console. In the above print statement, we have created a string object. Let's check the type of it using the Python built-in **type()** function.

```
type("John")
```

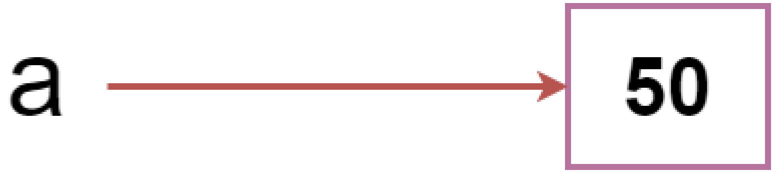
OUTPUT:

```
<class 'str'>
```

In Python, variables are a symbolic name that is a reference or pointer to an object. The variables are used to denote objects by that name.

Let's understand the following example

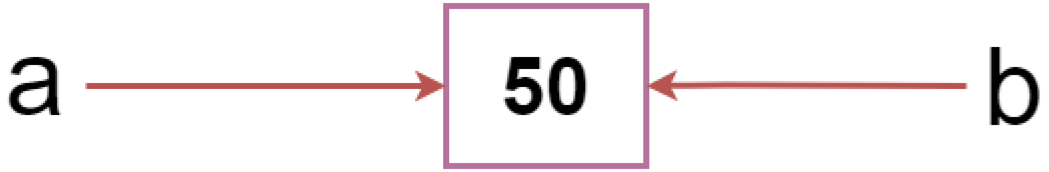
a = 50



In the above image, the variable **a** refers to an integer object.

Suppose we assign the integer value 50 to a new variable b.

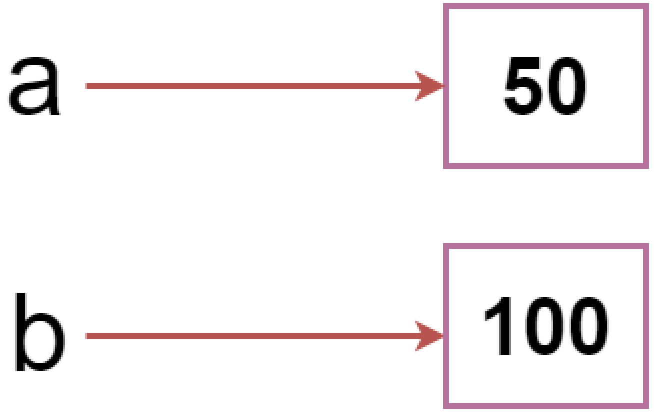
```
a = 50

b = a
```



The variable b refers to the same object that a points to because Python does not create another object.

Let's assign the new value to b. Now both variables will refer to the different objects.

```
a = 50
b =100
```



Python manages memory efficiently if we assign the same variable to two different values.

Object Identity

In Python, every created object identifies uniquely in Python. Python provides the guaranteed that no two objects will have the same identifier. The built-in id() function, is used to identify the object identifier. Consider the following example.

```
a = 50
b = a
print(id(a))
print(id(b))
# Reassigned variable a
a = 500
print(id(a))
```

Output:

```
140734982691168

140734982691168

2822056960944
```

We assigned the **b = a, a** and **b** both point to the same object. When we checked by the **id()** function it returned the same number. We reassign **a** to 500; then it referred to the new object identifier.

Variable Names

We have already discussed how to declare the valid variable. Variable names can be any length can have uppercase, lowercase (A to Z, a to z), the digit (0-9), and underscore character(_). Consider the following example of valid variables names.

```
name = "Devansh"
age = 20
marks = 80.50

print(name)
print(age)
print(marks)
```

Output:

```
Devansh
20
 80.5
```

Consider the following valid variables name.

```
name = "A"
Name = "B"
naMe = "C"
NAME = "D"
n_a_m_e = "E"
_name = "F"
name_ = "G"
_name_ = "H"
na56me = "I"

print(name,Name,naMe,NAME,n_a_m_e, NAME, n_a_m_e, _name, name_,_name, na56me)
```

Output:

```
A B C D E D E F G F I
```

In the above example, we have declared a few valid variable names such as name, _name_ , etc. But it is not recommended because when we try to read code, it may create confusion. The variable name should be descriptive to make code more readable.

The multi-word keywords can be created by the following method.

- **Camel Case -** In the camel case, each word or abbreviation in the middle of begins with a capital letter. There is no intervention of whitespace. For example - nameOfStudent, valueOfVaraible, etc.
- **Pascal Case -** It is the same as the Camel Case, but here the first word is also capital. For example - NameOfStudent, etc.
- **Snake Case -** In the snake case, Words are separated by the underscore. For example - name_of_student, etc.

Multiple Assignment

Python allows us to assign a value to multiple variables in a single statement, which is also known as multiple assignments.

We can apply multiple assignments in two ways, either by assigning a single value to multiple variables or assigning multiple values to multiple variables. Consider the following example.

1. Assigning single value to multiple variables

Eg:

```
x=y=z=50
print(x)
print(y)
print(z)
```

2. Assigning multiple values to multiple variables:
Eg:

```
a,b,c=5,10,15
print a
print b
print c
```

The values will be assigned in the order in which variables appear.

Will do continue in Next Lecture….