What is Variable in Python

In Python, a variable is a name that refers to a value stored in memory. It provides a way to label and manipulate data within a program. Variables allow programmers to store and access data dynamically during program execution.

What are the different ways to create variables in Python:

Syntax : variableName = variableValue;

Direct Assignment: The most common way to create a variable is by directly assigning a value to it using the assignment operator **=**.

```
x = 10
name = "JSRao"
```

Multiple Assignment: Python allows you to assign multiple variables in a single line by separating the variables and values with commas.

```
x, y, z = 10, 20, 30
```

Chained Assignment: You can assign the same value to multiple variables in a single line.

```
x = y = z = 0
```

Dynamic Typing: Python is dynamically typed, meaning you don't need to specify the data type of a variable when creating it. The data type of a variable is inferred from the value assigned to it.

```
age = 25  # integer
name = "Alice"  # string
x = 10       # x is an integer
x = "Hello"   # Now x is a string
```

Using Mutable Types: You can create variables that reference mutable types (like lists or dictionaries).

```
my_list = [1, 2, 3]
```

```
my_dict = {'a': 1, 'b': 2}
```

Assignment with Iterables: You can assign the elements of an iterable (such as a list or tuple) to multiple variables in a single line.

```
data = [1, 2, 3]
a, b, c = data
```

Using Assignment with Expressions: You can create variables by assigning the result of an expression to them.

```
total = 5 + 3
name = first_name + " " + last_name
```

Using Built-in Functions: You can create variables using the return values of built-in functions or external functions.

```
import random
rand_num = random.randint(1, 100)
age = int(input("Enter your age: "))    # Creating an integer variable from user input
message = str(12345)              # Creating a string variable from an integer
```

These are some of the common ways to create variables in Python. Variables can store various types of data, including integers, floats, strings, lists, dictionaries, and custom objects.

So Variables play a fundamental role in storing and manipulating data, making them an essential concept in programming.