

# PYTHON VARIABLE

## 1-Introduction to python →

## 2-Variable in python →

- a **variable** is a name that refers to a memory location where a value is stored.
- a variable is a container for data.

## 3-Characteristic of variable →

- **Dynamic Typing:** no need to declare any variable like (int, float, string)
- **No Explicit Declaration:** Just assign a value, and Python will automatically create the variable
- **Mutable:** You can change the value of a variable as many times as you need during the execution of your program

## 4- Rules to define variable in python →

- **Must start with a letter (a-z, A-Z) or an underscore (\_).**
- **Can contain letters, digits (0-9), and underscores,** but cannot start with a digit.
- **Case-sensitive:** age, Age, and AGE are different variables.
- **Cannot be a Python keyword** (e.g., True, False, if, for, class, etc.).

### Syntax:

```
python
```

```
variable_name = value
```

```
# Example 1: Integer Variable
```

```
age = 25 # Here, 'age' is a variable, and it stores an integer value 25  
print(age) # Output: 25
```

```
# Example 2: String Variable
```

```
name = "Alice" # 'name' is a variable, storing a string "Alice"  
print(name) # Output: Alice
```

```
# Example 3: Float Variable
```

```
price = 19.99 # 'price' is a variable, storing a floating-point number  
print(price) # Output: 19.99
```

```
# Example 4: Boolean Variable
```

```
is_active = True # 'is_active' is a variable, storing a Boolean value  
print(is_active) # Output: True
```

## 1. Storing and Printing a Value

python

```
# Storing the value 10 in a variable called 'x'
x = 10
# Printing the value of 'x'
print(x) # Output: 10
```

## 2. Using Variables in Expressions

python

```
# Assigning values to variables
a = 5
b = 3
# Adding two variables and storing the result in 'result'
result = a + b
# Printing the result
print(result) # Output: 8
```

## 3. Changing the Value of a Variable

python

```
# Initial value
score = 50
print(score) # Output: 50

# Changing the value of 'score'
score = 100
print(score) # Output: 100
```

## 4. Concatenating Strings

python

```
# Assigning values to variables
first_name = "John"
last_name = "Doe"

# Concatenating strings and storing in a new variable
full_name = first_name + " " + last_name
print(full_name) # Output: John Doe
```

## 5. Using Variables in a Calculation

python

```
# Assigning values to variables
length = 10
width = 5

# Calculating the area of a rectangle
area = length * width
print(area) # Output: 50
```

## Reassigning Values to Variables

Python allows you to reassign a variable to a new value at any time.

python

```
x = 10 # Initial value of x
print(x) # Output: 10

# Reassigning the value of x
x = 20
print(x) # Output: 20
```

Final Notes:

- **Variables can store any type of data**, including numbers, strings, lists, dictionaries, objects, etc.
- **Variables are dynamic**, meaning their type is automatically determined by the value assigned to them, and they can change type during execution.