What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

* web development (server-side),
* software development,
* mathematics,
* system scripting.

What can Python do?

* Python can be used on a server to create web applications.
* Python can be used alongside software to create workflows.
* Python can connect to database systems. It can also read and modify files.
* Python can be used to handle big data and perform complex mathematics.
* Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

* Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
* Python has a simple syntax similar to the English language.
* Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
* Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
* Python can be treated in a procedural way, an object-oriented way or a functional way.

# Python Variables

**Creating Variables**

Variables are containers for storing data values.

Unlike other programming languages, Python has no command for declaring a variable.

A variable is created the moment you first assign a value to it.

### Example

x = 5  
y = "John"  
print(x)  
print(y)

Variables do not need to be declared with any particular type, and can even change type after they have been set.

### Example

x = 4 # x is of type int  
x = "Sally" # x is now of type str  
print(x)

String variables can be declared either by using single or double quotes:

### Example

x = "John"  
# is the same as  
x = 'John'

You will more about data types, such as str (strings) and int (integers) in the next chapter.

## Variable Names

A variable can have a short name (like x and y) or a more descriptive name (age, carname, total\_volume). Rules for Python variables:

* A variable name must start with a letter or the underscore character
* A variable name cannot start with a number
* A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and \_ )
* Variable names are case-sensitive (age, Age and AGE are three different variables)

### Example

#Legal variable names:  
myvar = "John"  
my\_var = "John"  
\_my\_var = "John"  
myVar = "John"  
MYVAR = "John"  
myvar2 = "John"  
  
#Illegal variable names:  
2myvar = "John"  
my-var = "John"  
my var = "John"

Remember that variable names are case-sensitive

Assign Value to Multiple Variables

Python allows you to assign values to multiple variables in one line:

Example

x, y, z = "Orange", "Banana", "Cherry"  
print(x)  
print(y)  
print(z)

And you can assign the *same* value to multiple variables in one line:

Example

x = y = z = "Orange"  
print(x)  
print(y)  
print(z)

Output Variables

The Python print statement is often used to output variables.

To combine both text and a variable, Python uses the + character:

Example

x = "awesome"  
print("Python is " + x)

You can also use the + character to add a variable to another variable:

Example

x = "Python is "  
y = "awesome"  
z =  x + y  
print(z)

For numbers, the + character works as a mathematical operator:

Example

x = 5  
y = 10  
print(x + y)

If you try to combine a string and a number, Python will give you an error:

Example

x = 5  
y = "John"  
print(x + y)