

# PYTHON TUTORIAL FOR BEGINNERS

Source: [www.youtube.com/@RishabhMishraOfficial](https://www.youtube.com/@RishabhMishraOfficial)

## Chapter - 03

### First Python Program

- Print- Hello World!
- Python As a Calculator
- Running the Python code
- Python Execution Steps
- Interpreter v/s Compiler



### First Python Program - Hello World

Printing "Hello World" as the first program in Python.

`print` is a keyword word that has special meaning for Python.

It means, "Display what's inside the parentheses."

```
print("Hello World")
```

```
Instructor = "Rishabh Mishra"  
print("Python by", Instructor, sep="-")
```

### Python As a Calculator

Python can be used as a powerful calculator for performing a wide range of arithmetic operations.

```
2+5          # add two numbers  
print(10/5)  # divide two numbers  
  
# print sum of two numbers  
a = 2  
b = 5  
print(a+b)
```

**Comments:** Comments are used to annotate codes, and they are not interpreted by Python. It starts with the hash character #

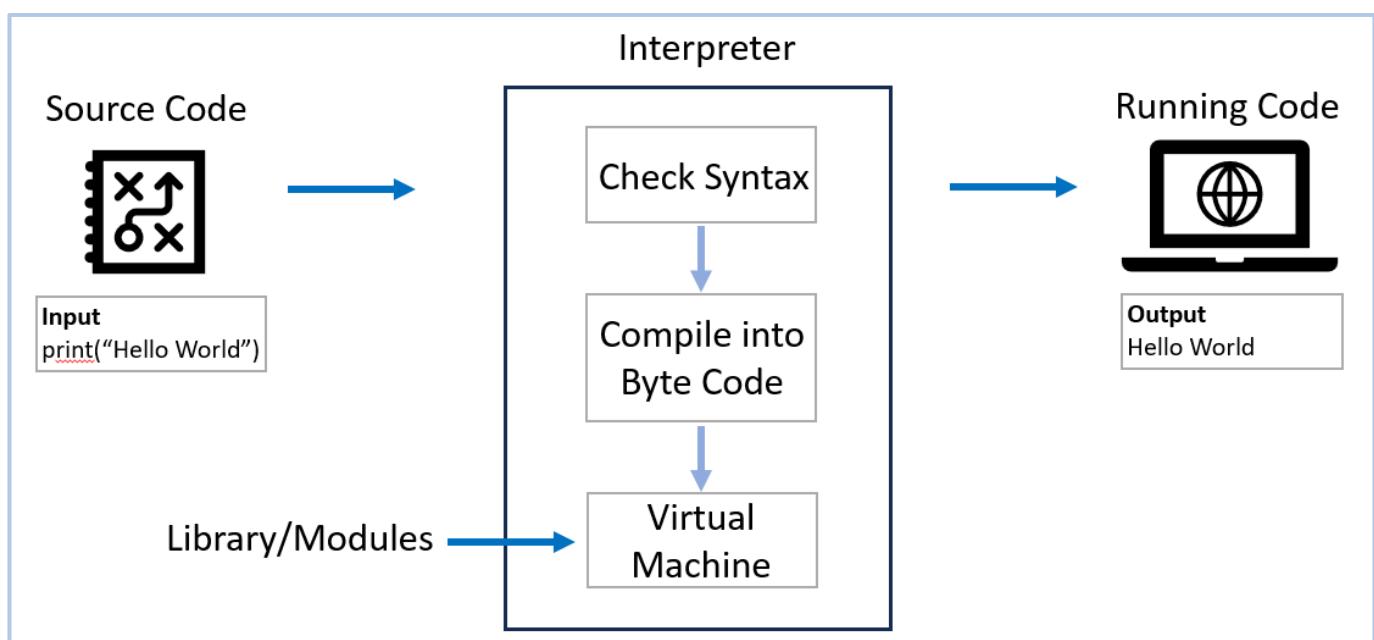
Comments are used as notes or short descriptions along with the code to increase its readability.

## Running the Python Code

- Create a new text file and inside it write – print("Welcome to the Python Course by Rishabh Mishra")
- Save file with extension .py – firstcode.py
- Open command prompt on windows (or Terminal on MacOS)
- Enter the location where firstcode.py file is saved – cd downloads
- Finally run the file as – python firstcode.py

```
C:\Users\hp>cd downloads  
C:\Users\hp\Downloads>python firstcode.py  
Welcome to the Python Course by Rishabh Mishra
```

## Python Execution Flow



## Python Code Execution Steps

1. Lexical Analysis: The interpreter breaks down the code into smaller parts called tokens, identifying words, numbers, symbols, and punctuation.
2. Syntax Parsing: It checks the structure of the code to ensure it follows the rules of Python syntax. If there are any errors, like missing parentheses or incorrect indentation, it stops and shows a `SyntaxError`.
3. Bytecode Generation: Once the code is validated, the interpreter translates it into a simpler set of instructions called bytecode. This bytecode is easier for the computer to understand and execute.
4. Execution by PVM: The Python Virtual Machine (PVM) takes the bytecode and runs it step by step. It follows the instructions and performs calculations, assigns values to variables, and executes functions.
5. Error Handling and Output: If there are any errors during execution, like trying to divide by zero or accessing a variable that doesn't exist, the interpreter raises an exception. If the code runs without errors, it displays any output, such as printed messages or returned values, to the user.

## Python Syntax

The syntax of the Python programming language, is the set of rules that defines how a Python program will be written and interpreted (by both the runtime system & by human readers).

```
my_name = "Madhav" ✓  
my_name = Madhav ✗  
# Use quotes "" for strings in Python
```

## Interpreter vs Compiler

Interpreter	Compiler
An interpreter translates and executes a source code line by line as the code runs.	A compiler translates the entire code into machine code before the program runs.
<b>Execution:</b> Line by line.	<b>Execution:</b> Entire program at once.
<b>Speed:</b> Slower execution because it translates each line on the fly.	<b>Speed:</b> Faster execution because it translates the entire program at once.
<b>Debugging:</b> Easier to debug as it stops at the first error encountered.	<b>Debugging:</b> Harder to debug because errors are reported after the entire code is compiled
<b>Examples:</b> Python, Ruby, JavaScript, and PHP.	<b>Examples:</b> C, C++, Java, and Go.

Python Tutorial Playlist: [Click Here](#)



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