

# Introduction to programming in Python

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Based on:

Ana Bell, Eric Grimson, and John Guttag.

6.0001 Introduction to Computer Science and Programming in Python.

Fall 2016. Massachusetts Institute of Technology: MIT OpenCourseWare

<https://ocw.mit.edu>.

License: Creative Commons BY-NC-SA.

Nick Parlante, John Cox, Steve Glassman, Piotr Kaminski, Antoine Picard.

Google's Python Class.

July 2015. Google LLC

License: Creative Commons BY 2.5.

## Part 1: Hello World

- Introduction
- Installation
- REPL

Break

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## Part 2: Basics

- Common operators
- Data objects / data types
- Strings, input, type-casting
- Lists, dicts
- Control flow: for, while, break

Break

## Part 3: Abstraction

- Functions, variable scope, lambda
- recursion
- Objects, Classes

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### Part 4: Development

- Arguments
- Modules / imports
- V-Envs - Tests

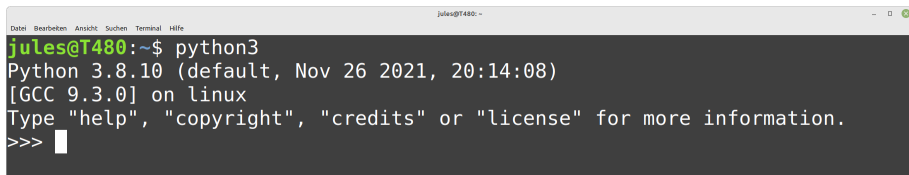
```
jules@T480:~$ python3
Python 3.8.10 (default, Nov 26 2021, 20:14:08)
[GCC 9.3.0] on linux
Type "help", "copyright", "credits" or "license"...

>>> a = 5
>>> a
5
>>> a = "Hello World"
>>> a
'Hello World'
>>> a + "!"
'Hello World!'
>>>
```

<https://www.python.org/downloads/>  
Debian / Ubuntu: *sudo apt install python3*

Type in your shell: *python3*



A screenshot of a terminal window titled 'jules@T480: ~'. The window has a menu bar with 'Datei', 'Bearbeiten', 'Ansicht', 'Suchen', 'Terminal', and 'Hilfe'. The terminal content shows the command 'python3' being executed, resulting in the Python 3.8.10 shell. The prompt is 'jules@T480:~\$' in green. The output is 'Python 3.8.10 (default, Nov 26 2021, 20:14:08)' followed by '[GCC 9.3.0] on linux'. Below this is the instruction 'Type "help", "copyright", "credits" or "license" for more information.' and the prompt '>>>' with a cursor. The terminal background is dark gray.

```
jules@T480:~$ python3
Python 3.8.10 (default, Nov 26 2021, 20:14:08)
[GCC 9.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> 
```

Figure: Python3 REPL

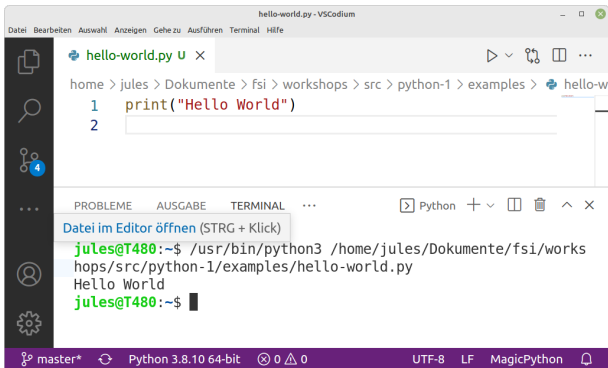
## Running code

- REPL
- python3 file args

## Example

```
python3 hello-world.py
```

# Combining Editor and Interpreter



The screenshot displays the VS Codium IDE interface. The top menu bar includes 'Datei', 'Bearbeiten', 'Auswahl', 'Anzeigen', 'Gehe zu', 'Ausführen', 'Terminal', and 'Hilfe'. The editor window shows a file named 'hello-world.py' with the following code:

```
1 print("Hello World")
2
```

Below the editor, the 'TERMINAL' panel is active, showing the command prompt output:

```
jules@T480:~$ /usr/bin/python3 /home/jules/Dokumente/fsi/workshops/src/python-1/examples/hello-world.py
Hello World
jules@T480:~$
```

The status bar at the bottom indicates the current state: 'master\*' (with a refresh icon), 'Python 3.8.10 64-bit' (with a warning icon), 'UTF-8', 'LF', 'MagicPython' (with a bell icon), and a search icon.

Figure: VS Codium

## Possible IDEs / Editors:

- VS Codium: <https://vscodium.com/>
- PyCharm: <https://www.jetbrains.com/pycharm/>
- Atom: <https://atom.io/>
- ...

- Content: `print("Hello World")`
- Run it!