



UNIVERSITÄT
LEIPZIG



Python Beginners-Course

Part 0: Installation & Introduction

Recommended Vido: <https://www.youtube.com/watch?v=Z1Yd7upQsXY>

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What is Python?



An

- open source
- cross platform
- general purpose
- multi-paradigm
- interpreted

programming language

free

used for (almost) everything
imperative, object-oriented, functional
not compiled as FORTRAN or C

but scientific
stack also with
external libraries

Anaconda Installation

<https://www.anaconda.com/products/individual>

Anaconda Installers



Python 3.8

64-Bit Graphical Installer (466 MB)

32-Bit Graphical Installer (397 MB)



Python 3.8

64-Bit Graphical Installer (462 MB)

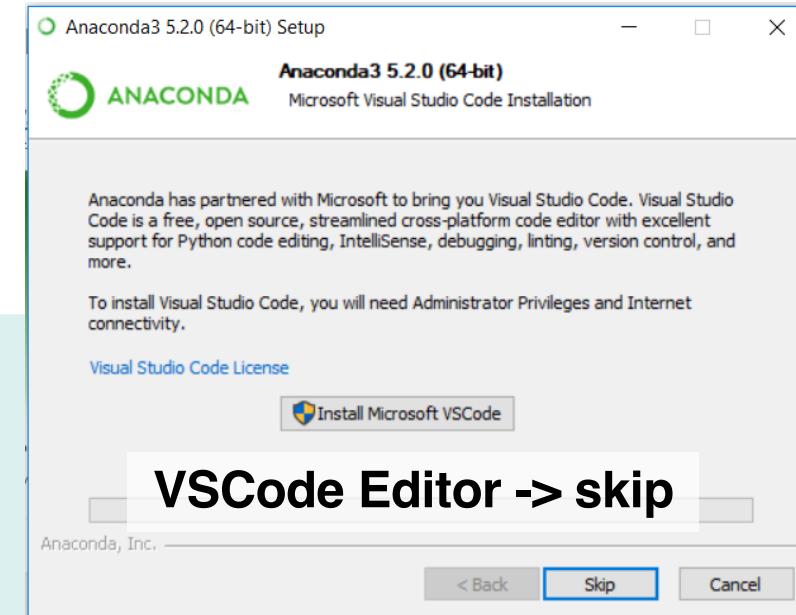
64-Bit Command Line Installer (454 MB)



Python 3.8

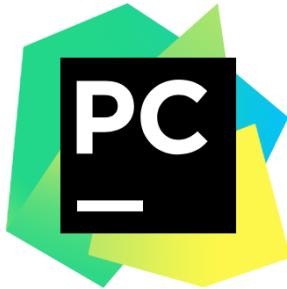
64-Bit (x86) Installer (550 MB)

64-Bit (Power8 and Power9) Installer (290 MB)



PyCharm IDE Installation

<https://www.jetbrains.com/pycharm/download/#section=windows>



Version: 2020.2.2

Build: 202.7319.64

17 September 2020

[System requirements](#)

[Installation Instructions](#)

[Other versions](#)

Download PyCharm

[Windows](#) [Mac](#) [Linux](#)

Professional

For both Scientific and Web Python development. With HTML, JS, and SQL support.

[Download](#)

Free trial

Professional Version free for University Students with JetBrains Account
<https://account.jetbrains.com/login>

Community

For pure Python development

[Download](#)

Free, open-source



Get the Toolbox App to download PyCharm and its future updates with ease

How to run the code?

- ipython console



```
apple-MacBook-Pro-3:larda3 willi$ ipython
Python 3.6.7 |Anaconda custom (64-bit)| (default, Oct 23 2018, 14:01:38)
Type 'copyright', 'credits' or 'license' for more information
IPython 7.2.0 -- An enhanced Interactive Python. Type '?' for help.

[In [1]: print('Hello World')
Hello World

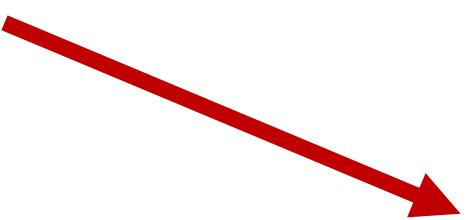
[In [2]: 3 + 8
Out[2]: 11

[In [3]: constant = 5

[In [4]: print(constant)
5

[In [5]:
```

- IDE (PyCharm)



- script

```
hello.py
1 #!/usr/bin/env python3
2
3 print('Hello World')

martin@Think-Radenz:/mnt/c/Users/radenz$ python3 hello.py
Hello World
martin@Think-Radenz:/mnt/c/Users/radenz$
```

```
Project 2dcomplex_visualization
local_stuff > 2dcomplex > 2dcomplex_visualization.py

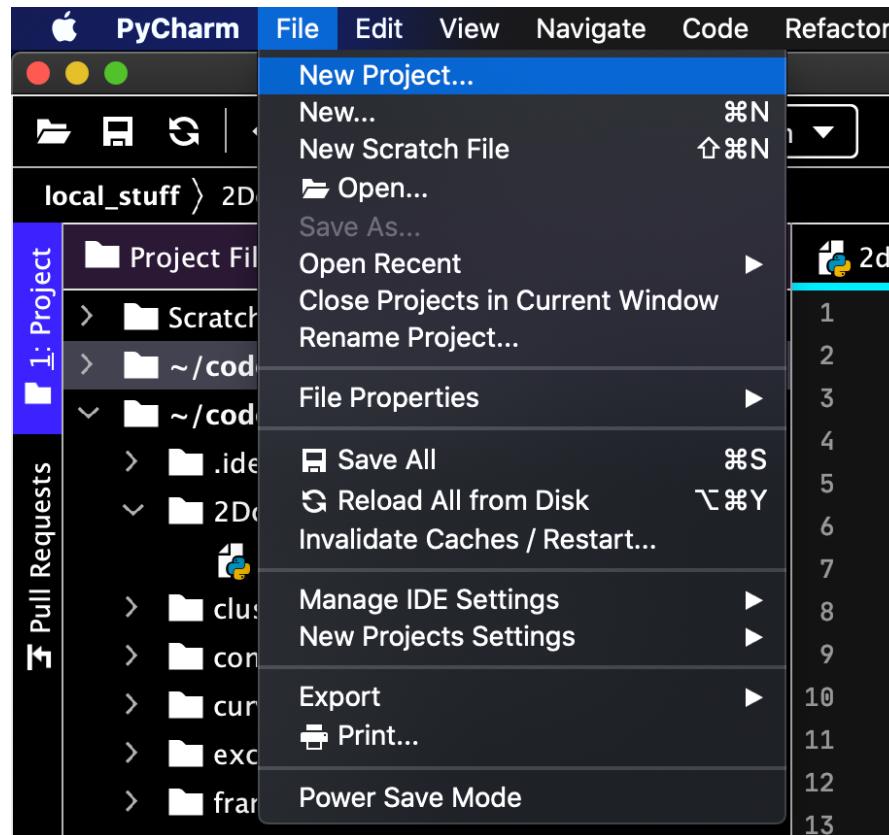
2dcomplex_visualization.py
1 import numpy as np
2 from numpy import pi
3 import pyLab as plt
4 from colorsys import hls_to_rgb
5
6
7 def colorize(z):
8     r = np.abs(z)
9     arg = np.angle(z)
10
11     h = (arg + pi) / (2 * pi) + 0.5
12     l = 1.0 - 1.0 / (1.0 + r ** 0.3)
13     s = 0.8
14
15     c = np.vectorize(hls_to_rgb)(h, l, s) # --> tuple
16     c = np.array(c) # --> array of (n,m) shape, but need (n,,3)
17     c = c.swapaxes(0, 2)
18
19     return c
20
21 N = 1000
22 x, y = np.ogrid[-5:5:N * 1j, -5:5:N * 1j]
23 z = x + 1j * y
24
25 w = 1 / (z + 1j) ** 2 + 1 / (z - 2) ** 2
26 img = colorize(w)
27 plt.imshow(img)
28 plt.show()

SciView Data Plots
```

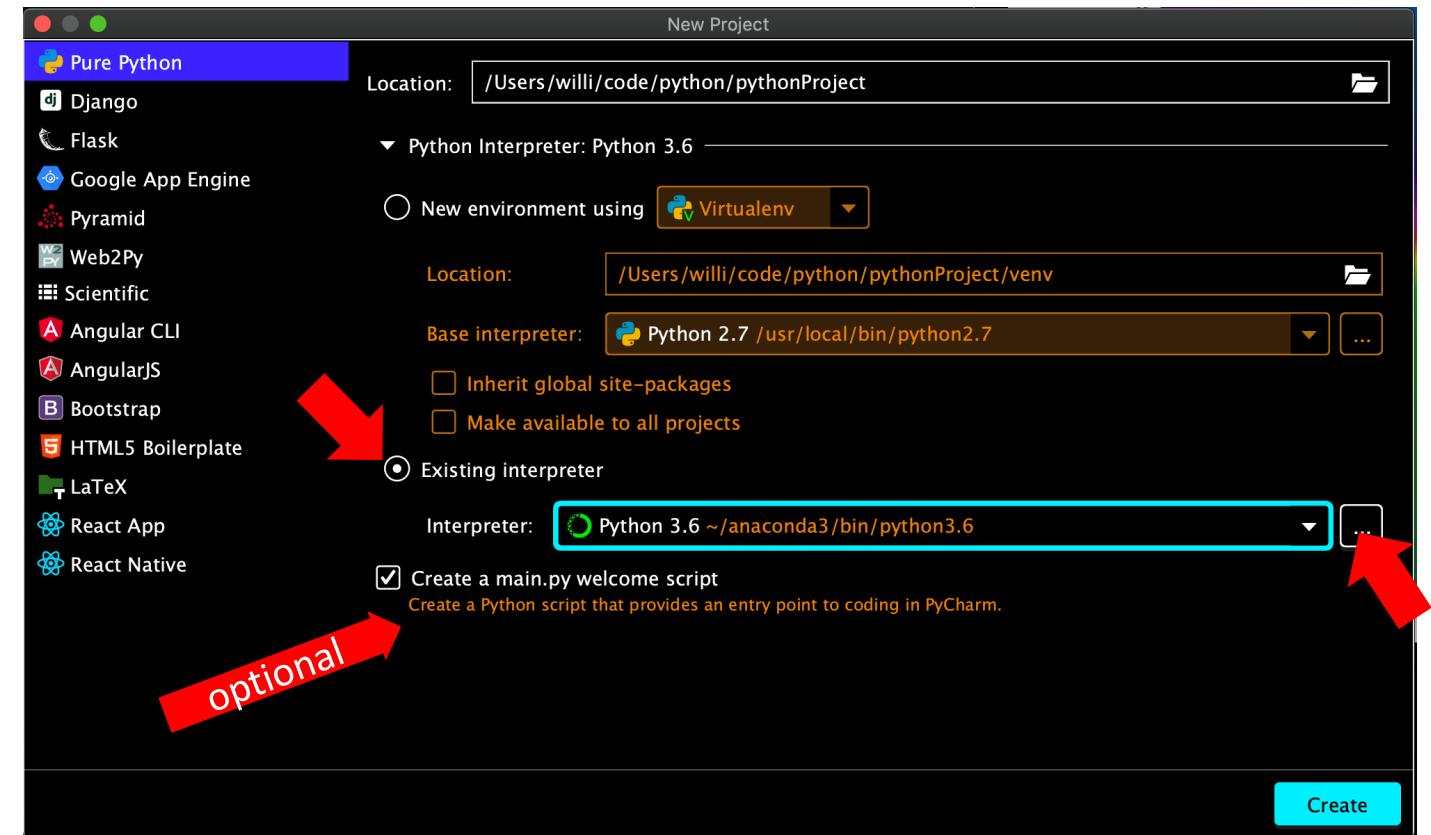
640x480 PNG (24-bit color) 298,03 kB

PyCharm Configuration

Adding a New Project:

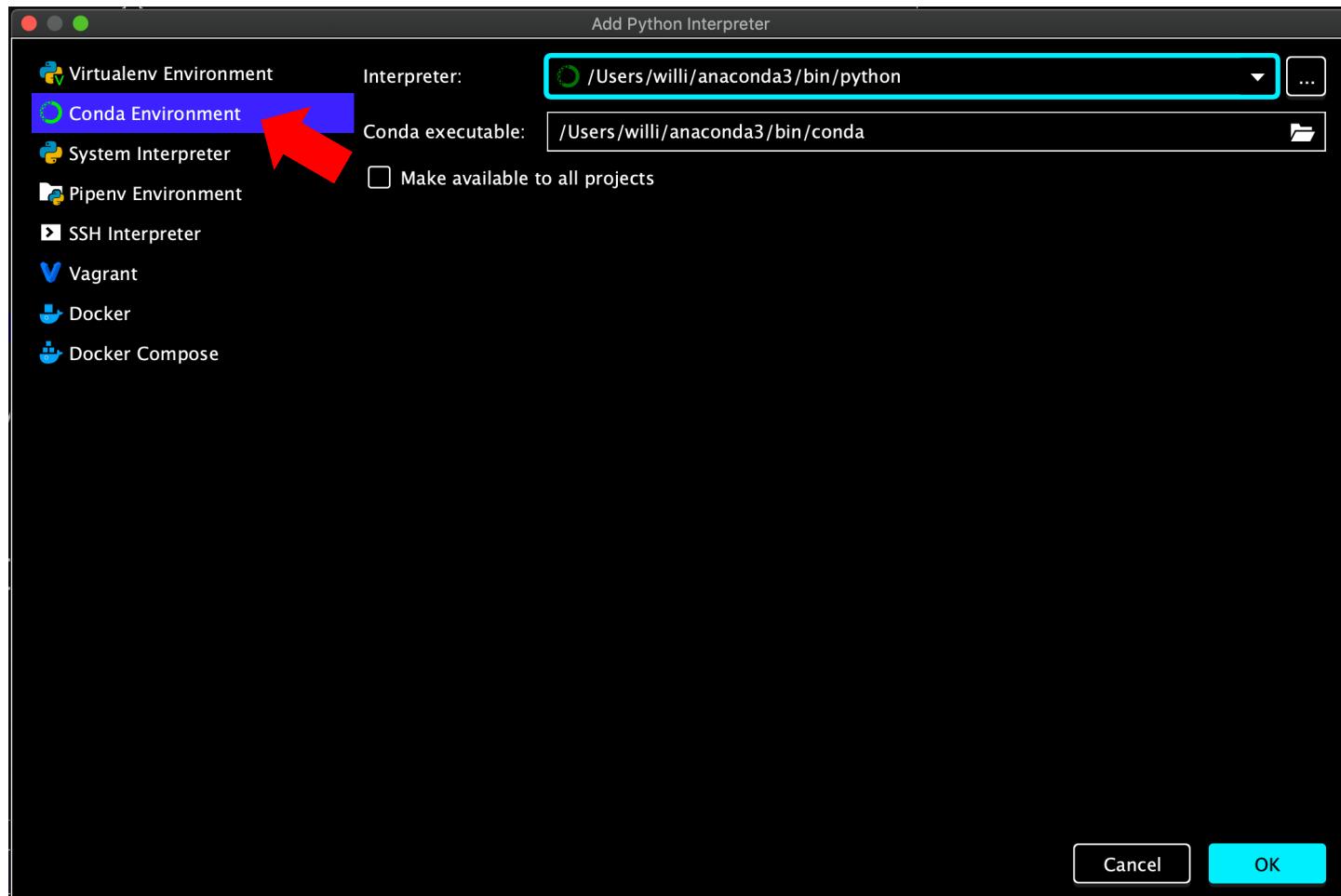


Specify location of your project & configure interpreter:



PyCharm Configuration

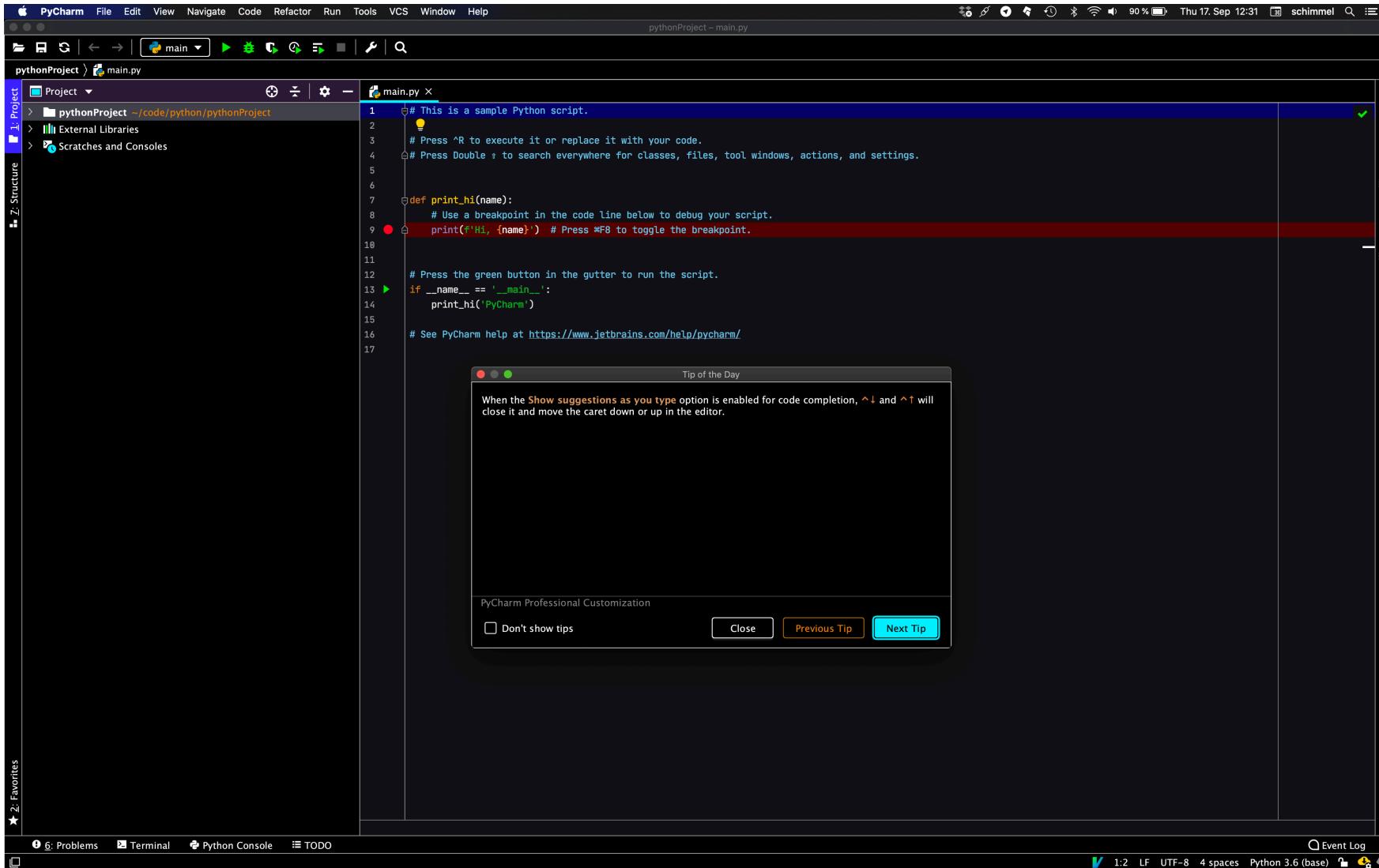
Specify path to Anaconda3 Python interpreter & conda executable usually:



/Users/[name]/anaconda3/bin/python
/Users/[name]/anaconda3/bin/conda

**Path specification
depends on
operating system**

PyCharm Configuration



...done