ITEN ENGINEERING
Software Development

Python Installation Notes

Edition 06.2022

Content

1 Overview

The following guide is just one option to get your Python setup ready for the course. If you have already a running Python environment with an appropriate IDE (Integrated Development Environment) you only need to download the Course Samples and check if the hello.py sample is running.

If not, please follow the installation steps of **Chapter 2 Course Setup** and ensure, that the **hello.py** sample is **up** and **running**.

Important

You need administrator rights for the installation.

We cannot support installation issues during the course.

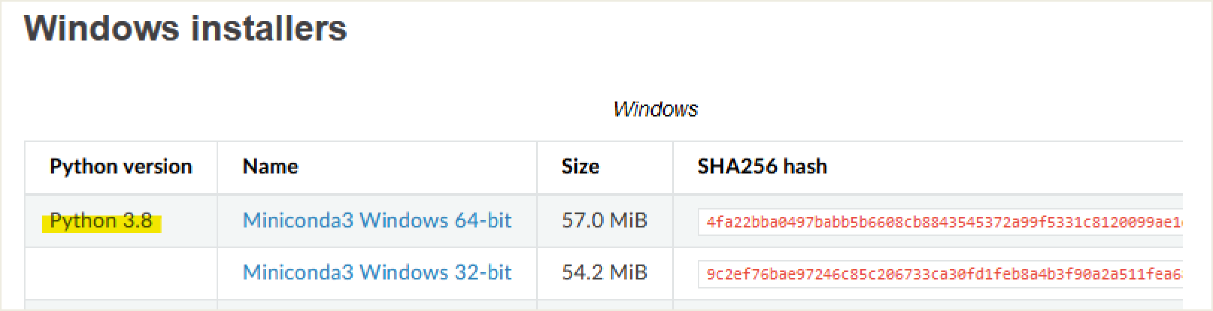
2 Course Setup

2.1 Miniconda

Miniconda is a free minimal installer for conda. It is a small, bootstrap version of Anaconda that includes only conda, Python, the packages they depend on, and a small number of other useful packages, including pip, zlib and a few others.

1 - Download and install Miniconda for Python 3.8 or above:

https://docs.conda.io/en/latest/miniconda.html



Windows installers

Windows

Python version	Name	Size	SHA256 hash
Python 3.8	Miniconda3 Windows 64-bit	57.0 MiB	4fa22bba0497babb5b6608cb8843545372a99f5331c8120099ae1
	Miniconda3 Windows 32-bit	54.2 MiB	9c2ef76bae97246c85c206733ca30fd1feb8a4b3f90a2a511fea6

2 - Settings during the installation:

1) Choose an installation location or use the default proposed by Miniconda
2) Enable Checkbox: Register Miniconda as my default Python
3) Finish Setup

2.2 Visual Studio Code

Install and configure Visual Studio Code.

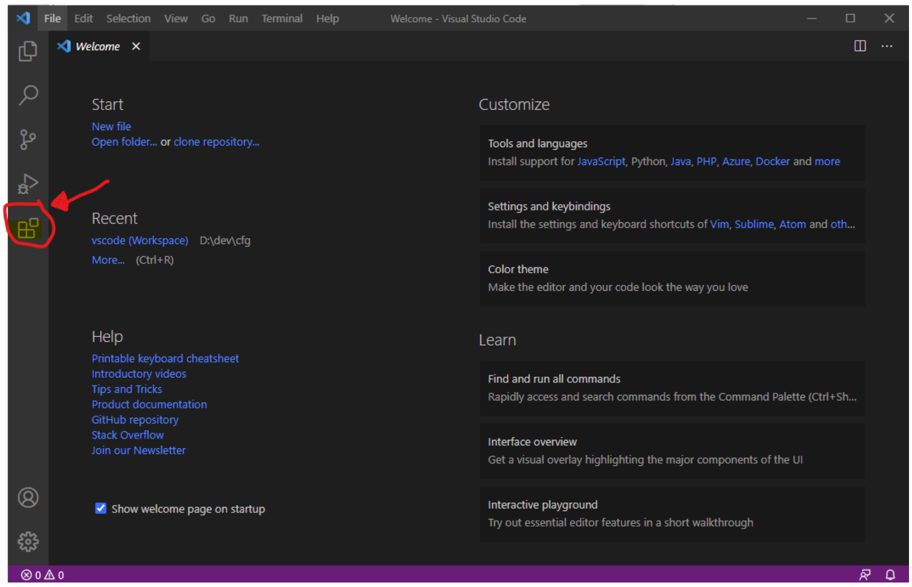
1 - Download and Install Visual Studio Code:

https://code.visualstudio.com

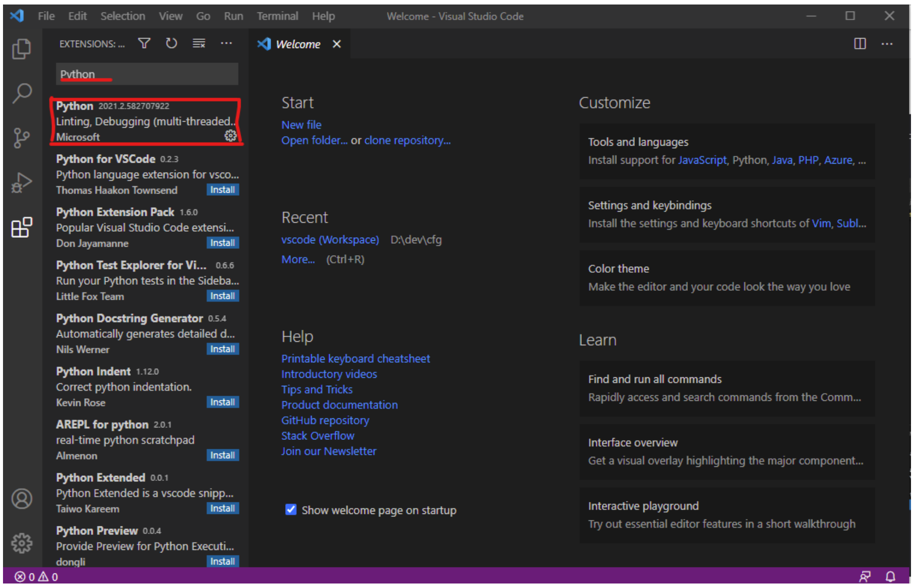
2 - Start VS Code and Install the Python Extension

3 – Install the Python Extension

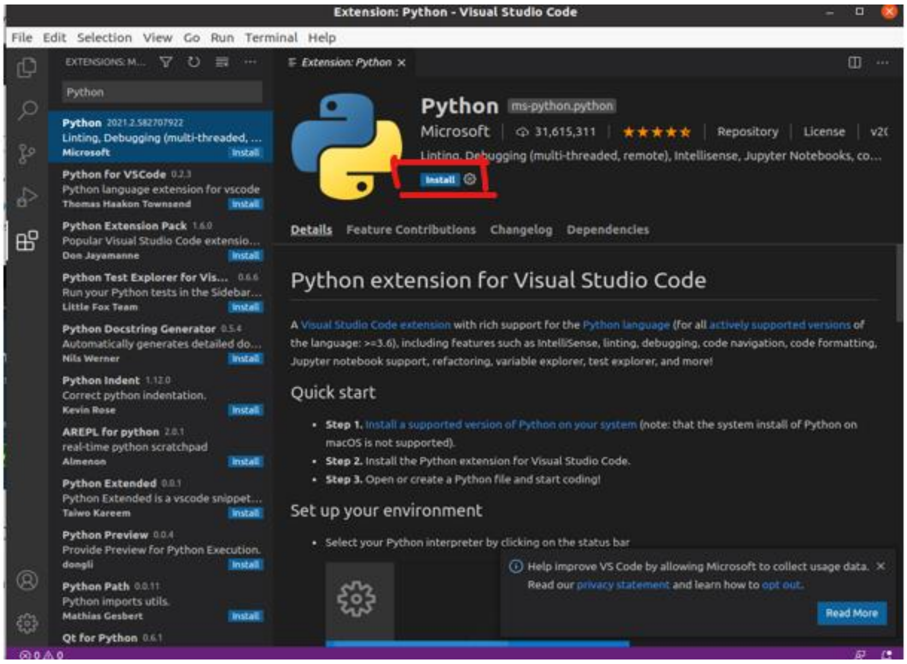
On the left Side, Click the Plugin Button:


File Edit Selection View Go Run Terminal Help
Welcome - Visual Studio Code
Welcome
Start
New file
Open folder... or clone repository...
Recent
vscode (Workspace) D:\dev\cfg
More... (Ctrl+R)
Help
Printable keyboard cheatsheet
Introductory videos
Tips and Tricks
Product documentation
GitHub repository
Stack Overflow
Join our Newsletter
☑ Show welcome page on startup
Customize
Tools and languages
Install support for JavaScript, Python, Java, PHP, Azure, Docker and more
Settings and keybindings
Install the settings and keyboard shortcuts of Vim, Sublime, Atom and oth...
Color theme
Make the editor and your code look the way you love
Learn
Find and run all commands
Rapidly access and search commands from the Command Palette (Ctrl+Sh...
Interface overview
Get a visual overlay highlighting the major components of the UI
Interactive playground
Try out essential editor features in a short walkthrough
⊗ 0 ⚠ 0

On the search field type: Python


File Edit Selection View Go Run Terminal Help
Welcome - Visual Studio Code
EXTENSIONS: ...
Python
Python 2021.2.582707922
Linting, Debugging (multi-threaded...
Microsoft
Python for VSCode 0.2.3
Python language extension for vsco...
Thomas Haakon Townsend
Install
Python Extension Pack 1.6.0
Popular Visual Studio Code extensi...
Don Jayamanne
Install
Python Test Explorer for Vi... 0.6.6
Run your Python tests in the Sideba...
Little Fox Team
Install
Python Docstring Generator 0.5.4
Automatically generates detailed d...
Nils Werner
Install
Python Indent 1.12.0
Correct python indentation.
Kevin Rose
Install
AREPL for python 2.0.1
real-time python scratchpad
Almenon
Install
Python Extended 0.0.1
Python Extended is a vscode snipp...
Taiwo Kareem
Install
Python Preview 0.0.4
Provide Preview for Python Executi...
dongli
Install
Welcome
Start
New file
Open folder... or clone repository...
Recent
vscode (Workspace) D:\dev\cfg
More... (Ctrl+R)
Help
Printable keyboard cheatsheet
Introductory videos
Tips and Tricks
Product documentation
GitHub repository
Stack Overflow
Join our Newsletter
☑ Show welcome page on startup
Customize
Tools and languages
Install support for JavaScript, Python, Java, PHP, Azure, ...
Settings and keybindings
Install the settings and keyboard shortcuts of Vim, Subl...
Color theme
Make the editor and your code look the way you love
Learn
Find and run all commands
Rapidly access and search commands from the Comm...
Interface overview
Get a visual overlay highlighting the major component...
Interactive playground
Try out essential editor features in a short walkthrough
⊗ 0 ⚠ 0

The Choose the **Python** Plugin and Click the **Install** Button


Extension: Python - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXTENSIONS: M...
Python
Python 2021.2.582707922
Linting, Debugging (multi-threaded, ...
Microsoft Install
Python for VSCode 0.2.3
Python language extension for vscode
Thomas Haakon Townsend Install
Python Extension Pack 1.6.0
Popular Visual Studio Code extensio...
Don Jayamanne Install
Python Test Explorer for Vis... 0.6.6
Run your Python tests in the Sidebar...
Little Fox Team Install
Python Docstring Generator 0.5.4
Automatically generates detailed do...
Nils Werner Install
Python Indent 1.12.0
Correct python indentation.
Kevin Rose Install
AREPL for python 2.0.1
real-time python scratchpad
Almenon Install
Python Extended 0.0.1
Python Extended is a vscode snippet...
Taiwo Kareem Install
Python Preview 0.0.4
Provide Preview for Python Execution.
dongli Install
Python Path 0.0.11
Python imports utils.
Mathias Gesbert Install
Qt for Python 0.6.1
Extension: Python
Python ms-python.python
Microsoft 31,615,311 ★★★★★ Repository License v20
Linting, Debugging (multi-threaded, remote), Intellisense, Jupyter Notebooks, co...
Install
Details Feature Contributions Changelog Dependencies
Read More

Python extension for Visual Studio Code

A Visual Studio Code extension with rich support for the Python language (for all actively supported versions of the language: >=3.6), including features such as IntelliSense, linting, debugging, code navigation, code formatting, Jupyter notebook support, refactoring, variable explorer, test explorer, and more!

Quick start

- **Step 1.** Install a supported version of Python on your system (note: that the system install of Python on macOS is not supported).
- **Step 2.** Install the Python extension for Visual Studio Code.
- **Step 3.** Open or create a Python file and start coding!

Set up your environment

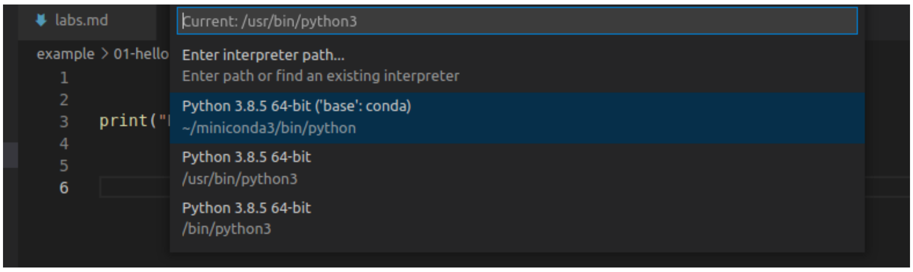
- Select your Python interpreter by clicking on the status bar

Help improve VS Code by allowing Microsoft to collect usage data. Read our privacy statement and learn how to opt out.

Note: This will also install the Jupiter Plugin for you.

4 - Select a Python interpreter:

1. Press: Ctrl+Shift+P
2. Enter: Python: Select Interpreter
3. Select: ~/miniconda… Installation



Current: /usr/bin/python3

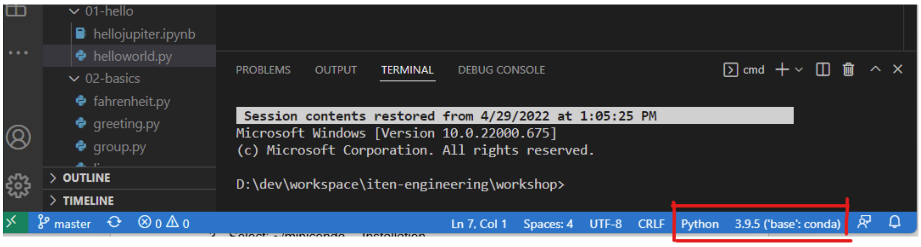
Enter interpreter path...
Enter path or find an existing interpreter

Python 3.8.5 64-bit ('base': conda)
~/miniconda3/bin/python

Python 3.8.5 64-bit
/usr/bin/python3

Python 3.8.5 64-bit
/bin/python3

See Python interpreter Settings on the right side of the Bottom Bar:



```
Session contents restored from 4/29/2022 at 1:05:25 PM
Microsoft Windows [Version 10.0.22000.675]
(c) Microsoft Corporation. All rights reserved.

D:\dev\workspace\iten-engineering\workshop>
```

Further Information

For more details see: https://code.visualstudio.com/docs/python/python-tutorial

2.3 Course Samples

For the course we need the following two GitHub projects:

1) https://github.com/iten-engineering/python
2) https://github.com/iten-engineering/workshop

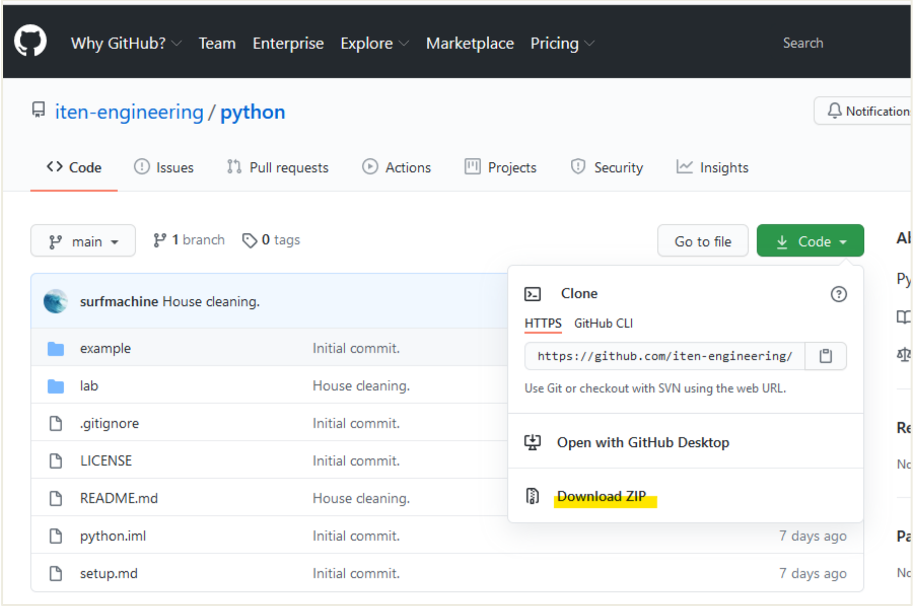
The first project contains the examples of the slides, as well as the labs, we are doing during the course. **This is what we have to install now**.

The second project is empty, but will be used to deliver the solutions and further samples during the course.

You can either download a ZIP File or if you have GIT installed pull down the projects.

Option A – Download Course Samples as ZIP

https://github.com/iten-engineering/python



https://github.com/iten-engineering/

Use Git or checkout with SVN using the web URL.

surfmachine House cleaning.

example	Initial commit.	
lab	House cleaning.	
.gitignore	Initial commit.	
LICENSE	Initial commit.	
README.md	House cleaning.	
python.iml	Initial commit.	7 days ago
setup.md	Initial commit.	7 days ago

Download the ZIP File and extract the content to your working directory.

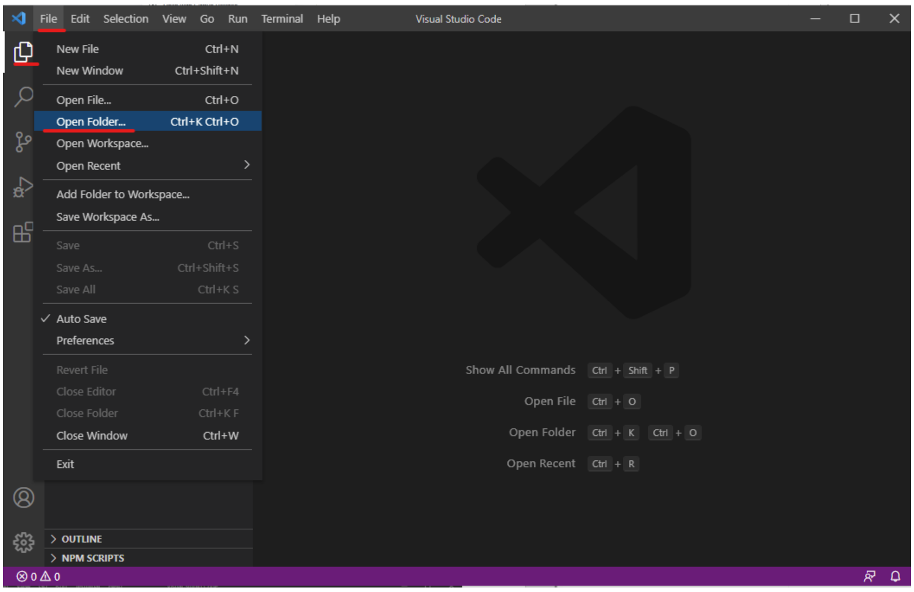
For example: **c:\course\workspace\python**

Option B – Install Projects with GIT

- Create a **workspace** directory for the course projects.
- Open the **Git Bash** and change to the workspace directory
- git clone https://github.com/iten-engineering/python
- git clone https://github.com/iten-engineering/workshop

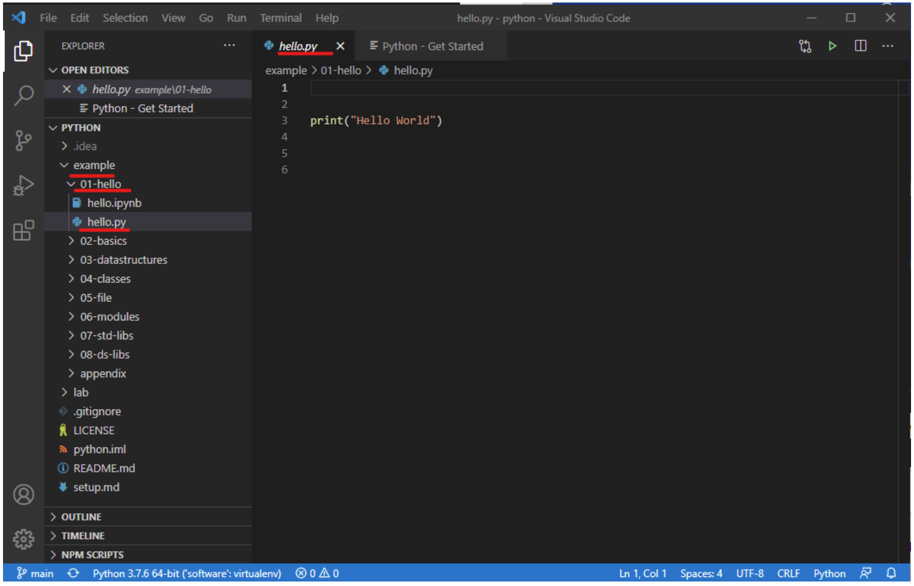
2.4 Project Setup

Start VS Code, Click the Explorer Button on the top left corner,
then choose File / Open Folder:



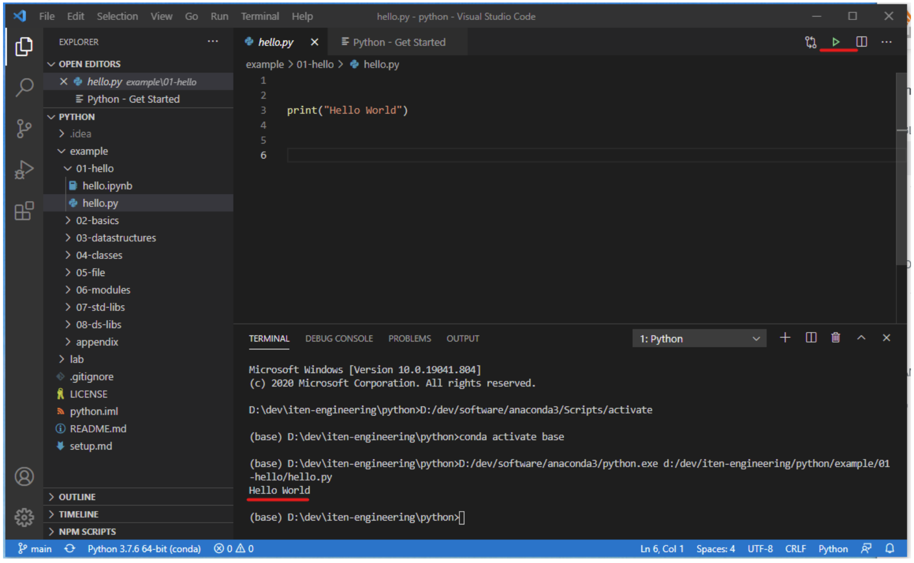
Navigate to your folder with the Course samples and select the folder.
For example: **c:\course\workspace\python**

On the left side, navigate to the hello.py sample and click it:



```


print("Hello World")



```

Now you can execute the script,
by pressing the green Arrow button on the right corner:

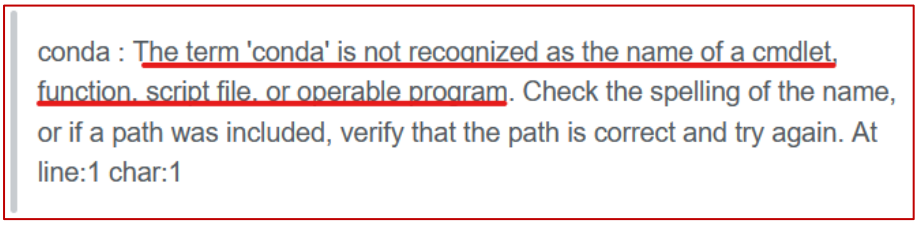

File Edit Selection View Go Run Terminal Help
hello.py - python - Visual Studio Code
EXPLORER
OPEN EDITORS
hello.py example\01-hello
Python - Get Started
PYTHON
.idea
example
01-hello
hello.ipynb
hello.py
02-basics
03-datastructures
04-classes
05-file
06-modules
07-std-libs
08-ds-libs
appendix
lab
.gitignore
LICENSE
python.iml
README.md
setup.md
OUTLINE
TIMELINE
NPM SCRIPTS
example > 01-hello > hello.py
TERMINAL DEBUG CONSOLE PROBLEMS OUTPUT
1: Python
main Python 3.7.6 64-bit (conda) 0 0
Ln 6, Col 1 Spaces: 4 UTF-8 CRLF Python

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

```
Microsoft Windows [Version 10.0.19041.804]
(c) 2020 Microsoft Corporation. All rights reserved.

D:\dev\iten-engineering\python>D:/dev/software/anaconda3/Scripts/activate

(base) D:\dev\iten-engineering\python>conda activate base

(base) D:\dev\iten-engineering\python>D:/dev/software/anaconda3/python.exe d:/dev/iten-engineering/python/example/01
-hello/hello.py
Hello World

(base) D:\dev\iten-engineering\python>
```

If your output looks similar to the Screenshot above, your fine.
Congratulation to your first Hello World sample with Python!

If your output shows the following Error Message,
please follow the steps described on the next page.

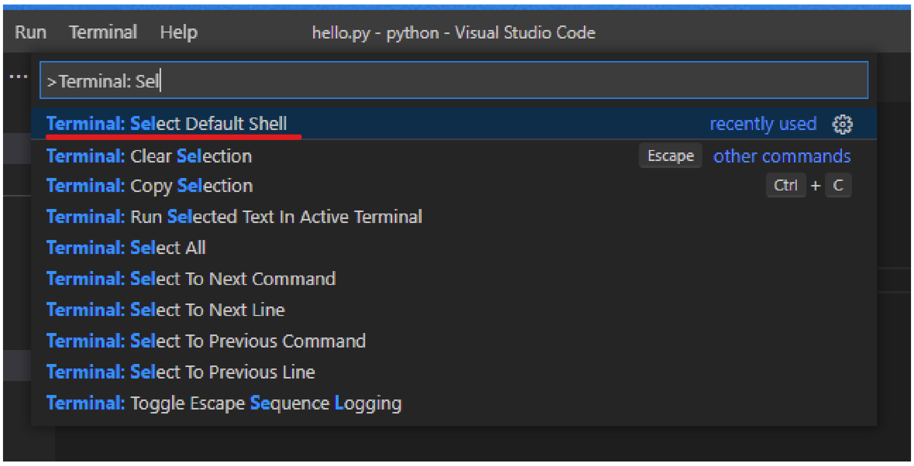


conda : The term 'conda' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again. At line:1 char:1

Switch Default Terminal

1) Open the command palette with: **CTRL-SHIFT-P**

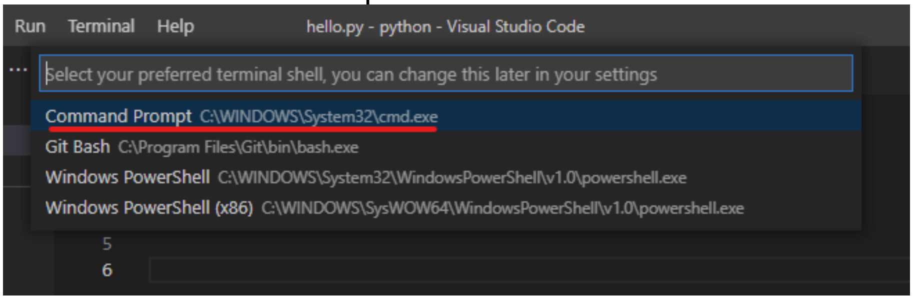
2) Search for **Terminal: Select Default Shell**



>Terminal: Sel

Terminal: Select Default Shell — recently used
Terminal: Clear Selection — Escape — other commands
Terminal: Copy Selection — Ctrl + C
Terminal: Run Selected Text In Active Terminal
Terminal: Select All
Terminal: Select To Next Command
Terminal: Select To Next Line
Terminal: Select To Previous Command
Terminal: Select To Previous Line
Terminal: Toggle Escape Sequence Logging

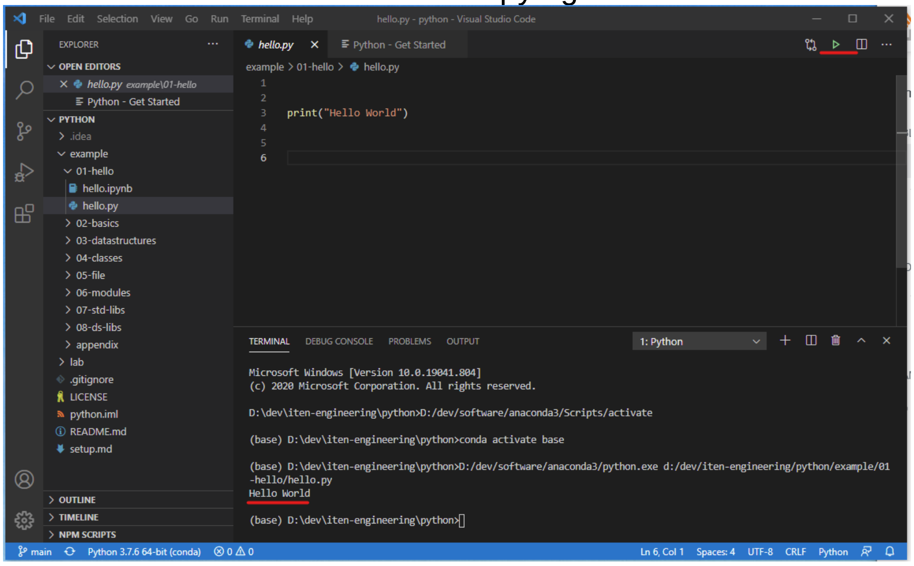
3) Choose: Command Prompt



Select your preferred terminal shell, you can change this later in your settings

Command Prompt C:\WINDOWS\System32\cmd.exe
Git Bash C:\Program Files\Git\bin\bash.exe
Windows PowerShell C:\WINDOWS\System32\WindowsPowerShell\v1.0\powershell.exe
Windows PowerShell (x86) C:\WINDOWS\SysWOW64\WindowsPowerShell\v1.0\powershell.exe

4) Restart VS Code and run the hello.py again:



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

```
Microsoft Windows [Version 10.0.19041.804]
(c) 2020 Microsoft Corporation. All rights reserved.

D:\dev\iten-engineering\python>D:/dev/software/anaconda3/Scripts/activate

(base) D:\dev\iten-engineering\python>conda activate base

(base) D:\dev\iten-engineering\python>D:/dev/software/anaconda3/python.exe d:/dev/iten-engineering/python/example/01
-hello/hello.py
Hello World

(base) D:\dev\iten-engineering\python>
```

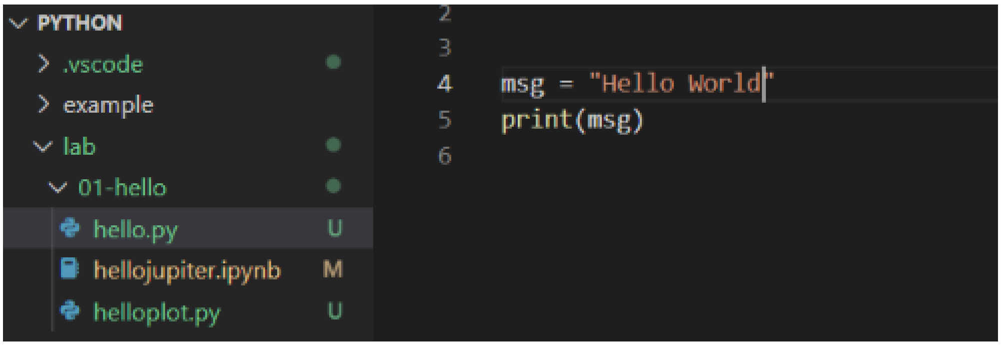
Details see: https://stackoverflow.com/questions/54828713/working-with-anaconda-in-visual-studio-code

3 Further Information

This chapter contains further information we will use during the course. You do not need to follow them as part of the course preparation. If you still have some energy and time, feel free to go ahead.

3.1 Run Python Code

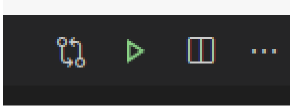
Create a new Script **hello.py** with the given content:



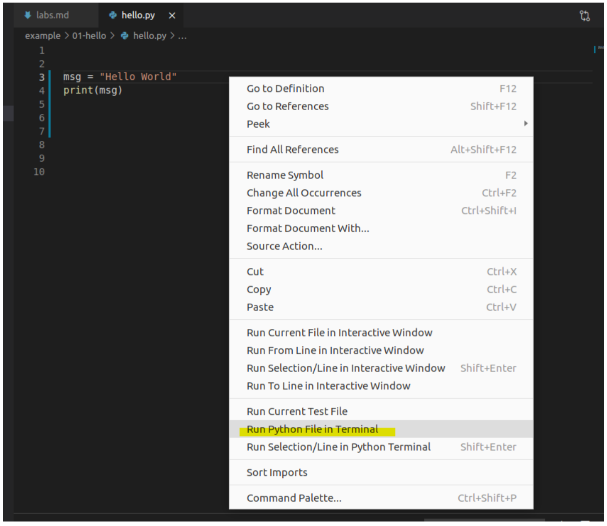
```
msg = "Hello World"
print(msg)
```

Run the python Script:

1. Press: Green Arrow on top/right



2. or Right Mouse Click in the File Area, then: “Run Python File in Terminal”


labs.md
hello.py
example > 01-hello > hello.py > ...
Go to Definition F12
Go to References Shift+F12
Peek
Find All References Alt+Shift+F12
Rename Symbol F2
Change All Occurrences Ctrl+F2
Format Document Ctrl+Shift+I
Format Document With...
Source Action...
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Run Current File in Interactive Window
Run From Line in Interactive Window
Run Selection/Line in Interactive Window Shift+Enter
Run To Line in Interactive Window
Run Current Test File
Run Python File in Terminal
Run Selection/Line in Python Terminal Shift+Enter
Sort Imports
Command Palette... Ctrl+Shift+P

```
msg = "Hello World"
print(msg)
```

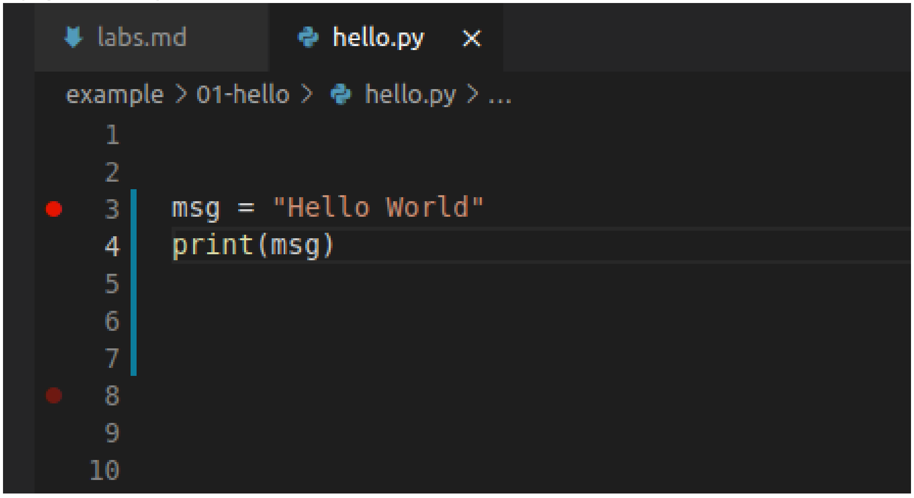
3.2 Run Python Code Snippet

Mark a portion of your Python Script.

Press: SHIFT + ENTER to run the marked code snippet

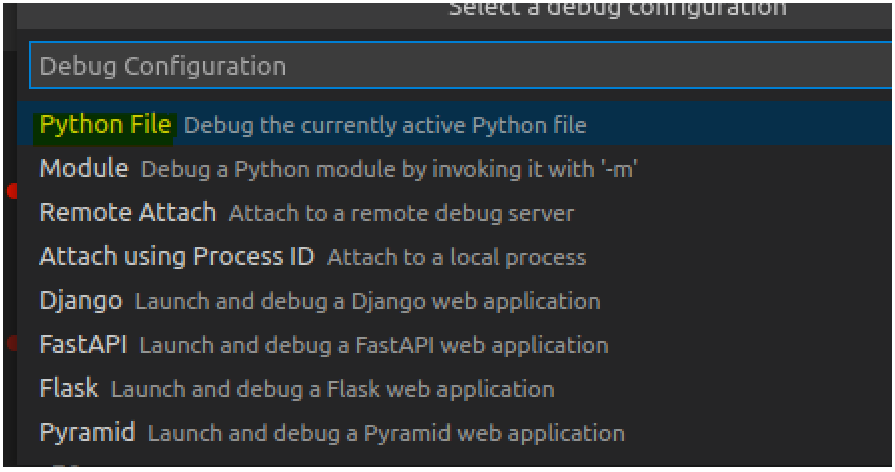
3.3 Debug Python Code

1. Set Breakpoint
   by pressing F9 on line 3 or click on the left side of the line number:



```
1
2
3  msg = "Hello World"
4  print(msg)
5
6
7
8
9
10
```

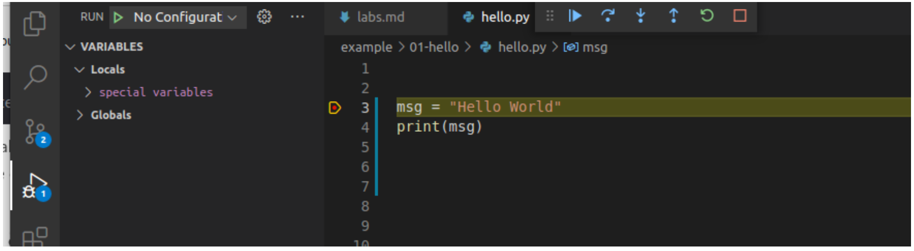
2. Press F5 and select Python File:



Debug Configuration

- Python File Debug the currently active Python file
- Module Debug a Python module by invoking it with '-m'
- Remote Attach Attach to a remote debug server
- Attach using Process ID Attach to a local process
- Django Launch and debug a Django web application
- FastAPI Launch and debug a FastAPI web application
- Flask Launch and debug a Flask web application
- Pyramid Launch and debug a Pyramid web application

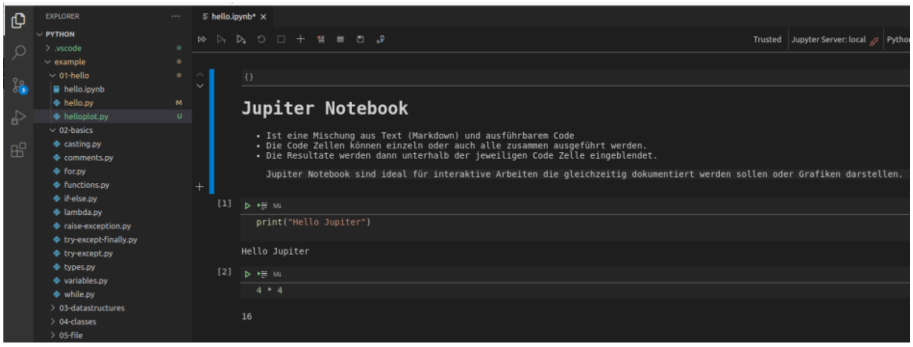
3. Step through the code:



```
1
2
3  msg = "Hello World"
4  print(msg)
5
6
7
8
9
10
```

3.4 Install and use Jupiter Notebook

1. Open the Script **hello.jpynb**:



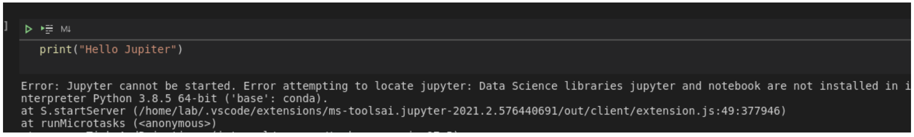
Jupiter Notebook

- Ist eine Mischung aus Text (Markdown) und ausführbarem Code
- Die Code Zellen können einzeln oder auch alle zusammen ausgeführt werden.
- Die Resultate werden dann unterhalb der jeweiligen Code Zelle eingeblendet.

Jupiter Notebook sind ideal für interaktive Arbeiten die gleichzeitig dokumentiert werden sollen oder Grafiken darstellen.

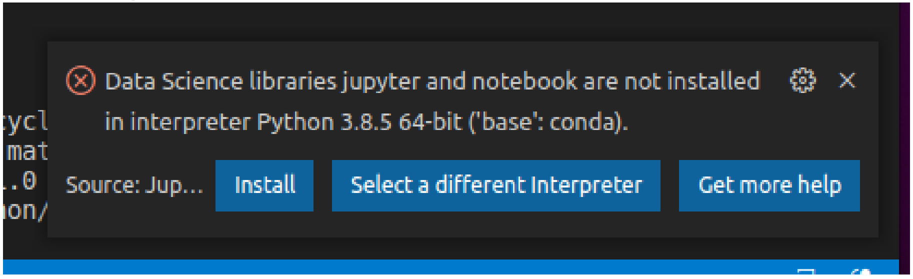
```
[1] print("Hello Jupiter")

Hello Jupiter

[2] 4 * 4

16
```

2. When running the first cell for the first time, you will see the following error message:



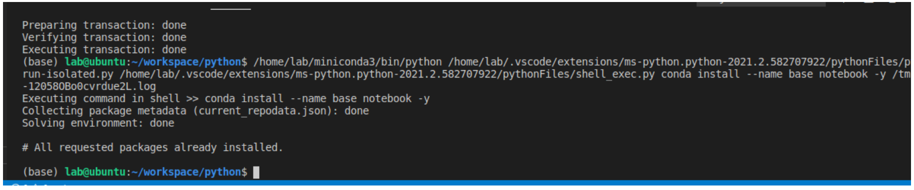
```
print("Hello Jupiter")

Error: Jupyter cannot be started. Error attempting to locate jupyter: Data Science libraries jupyter and notebook are not installed in i
nterpreter Python 3.8.5 64-bit ('base': conda).
at S.startServer (/home/lab/.vscode/extensions/ms-toolsai.jupyter-2021.2.576440691/out/client/extension.js:49:377946)
at runMicrotasks (<anonymous>)
```

3. Install Jupiter: Click the "Install" Button:



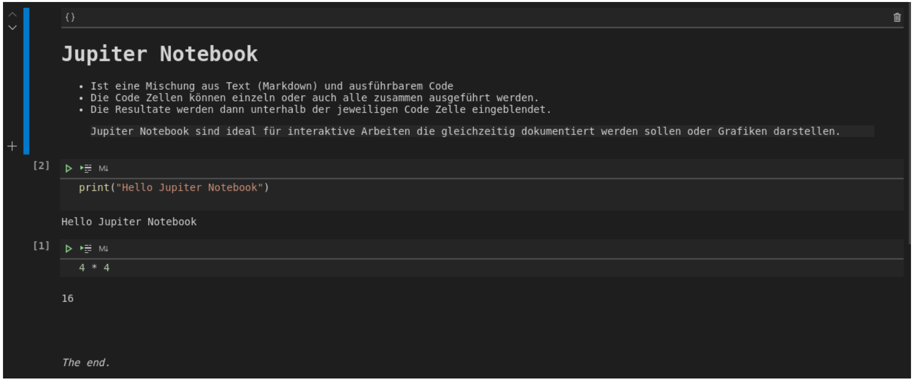
Data Science libraries jupyter and notebook are not installed in interpreter Python 3.8.5 64-bit ('base': conda).

Running installation:



```
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
(base) lab@ubuntu:~/workspace/python$ /home/lab/miniconda3/bin/python /home/lab/.vscode/extensions/ms-python.python-2021.2.582707922/pythonFiles/p
run-isolated.py /home/lab/.vscode/extensions/ms-python.python-2021.2.582707922/pythonFiles/shell_exec.py conda install --name base notebook -y /tm
-120580Bo0cvrdue2L.log
Executing command in shell >> conda install --name base notebook -y
Collecting package metadata (current_repodata.json): done
Solving environment: done

# All requested packages already installed.

(base) lab@ubuntu:~/workspace/python$ 
```

4. Now you can run the cell's of the Notebook:



Jupiter Notebook

- Ist eine Mischung aus Text (Markdown) und ausführbarem Code
- Die Code Zellen können einzeln oder auch alle zusammen ausgeführt werden.
- Die Resultate werden dann unterhalb der jeweiligen Code Zelle eingeblendet.

Jupiter Notebook sind ideal für interaktive Arbeiten die gleichzeitig dokumentiert werden sollen oder Grafiken darstellen.

```
[2] print("Hello Jupiter Notebook")

Hello Jupiter Notebook

[1] 4 * 4

16
```

The end.

3.5 Install and use Packages

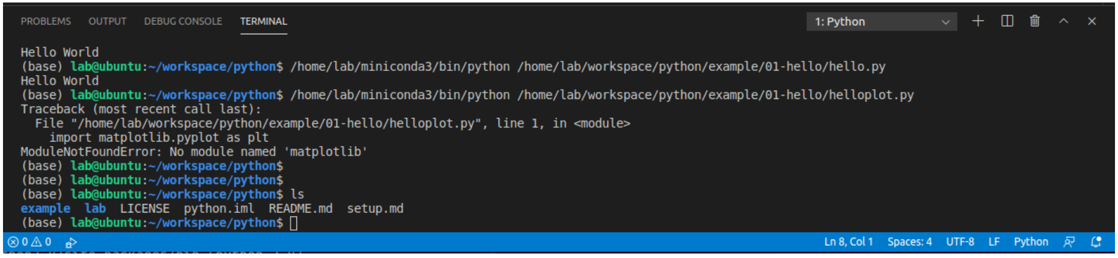
1. Add new File **helloplot.py** with the following content:

```
import matplotlib.pyplot as plt
import numpy as np

x = np.linspace(0, 20, 100)     # Create a list of evenly-spaced numbers over the range
plt.plot(x, np.sin(x))          # Plot the sine of each x point
plt.show()                      # Display the plot
```

2. When running the code the first time you will see the following error message:

```
raceback (most recent call last):
  File "/home/lab/workspace/python/example/01-hello/helloplot.py", line 1, in <module>
    import matplotlib.pyplot as plt
ModuleNotFoundError: No module named 'matplotlib'
```

3. In the terminal with the error message, we can now install the missing libraries:

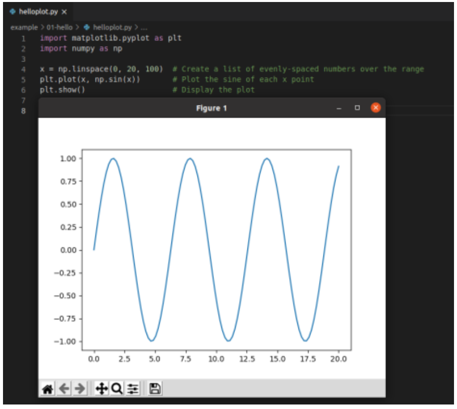


```
Hello World
(base) lab@ubuntu:~/workspace/python$ /home/lab/miniconda3/bin/python /home/lab/workspace/python/example/01-hello/hello.py
Hello World
(base) lab@ubuntu:~/workspace/python$ /home/lab/miniconda3/bin/python /home/lab/workspace/python/example/01-hello/helloplot.py
Traceback (most recent call last):
  File "/home/lab/workspace/python/example/01-hello/helloplot.py", line 1, in <module>
    import matplotlib.pyplot as plt
ModuleNotFoundError: No module named 'matplotlib'
(base) lab@ubuntu:~/workspace/python$
(base) lab@ubuntu:~/workspace/python$
(base) lab@ubuntu:~/workspace/python$ ls
example  lab  LICENSE  python.iml  README.md  setup.md
(base) lab@ubuntu:~/workspace/python$ 
```

Don't use with Anaconda distributions because they include matplotlib already.

```
# macOS
python3 -m pip install matplotlib

# Windows (may require elevation)
python -m pip install matplotlib

# Linux (Debian)
sudo apt install python3-tk
python3 -m pip install matplotlib
```

4. Run the helloplot.py Script again:



```python
import matplotlib.pyplot as plt
import numpy as np

x = np.linspace(0, 20, 100)  # Create a list of evenly-spaced numbers over the range
plt.plot(x, np.sin(x))       # Plot the sine of each x point
plt.show()                   # Display the plot
```

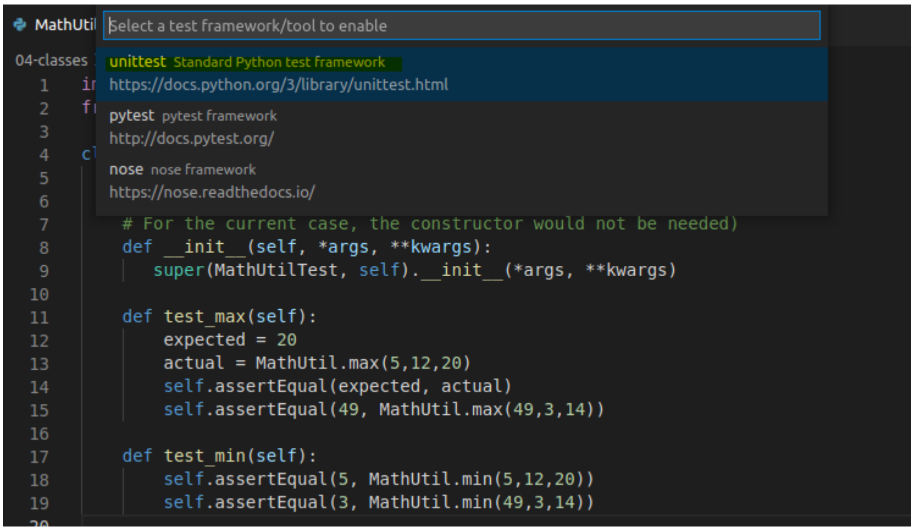
3.6 Enable Unit Testing in VS Code

Testing in Python is disabled by default. To enable testing, use the Python: Configure Tests command on the Command Palette. This command prompts you to select a test framework, the folder containing tests, and the pattern used to identify test files.

1. Shift+Ctrl+P

2. Enter: Python: Configure Tests

3. Choice **unittest**:

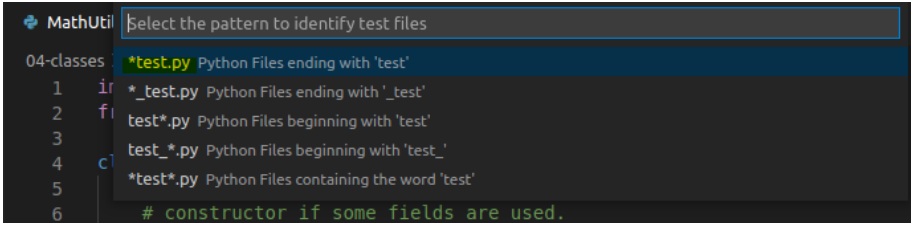


MathUtil
Select a test framework/tool to enable
04-classes
unittest Standard Python test framework
https://docs.python.org/3/library/unittest.html
pytest pytest framework
http://docs.pytest.org/
nose nose framework
https://nose.readthedocs.io/

```python
    # For the current case, the constructor would not be needed)
    def __init__(self, *args, **kwargs):
        super(MathUtilTest, self).__init__(*args, **kwargs)

    def test_max(self):
        expected = 20
        actual = MathUtil.max(5,12,20)
        self.assertEqual(expected, actual)
        self.assertEqual(49, MathUtil.max(49,3,14))

    def test_min(self):
        self.assertEqual(5, MathUtil.min(5,12,20))
        self.assertEqual(3, MathUtil.min(49,3,14))
```

4. Choose folder: 04

5. Choose pattern: *test.py



MathUtil
Select the pattern to identify test files
04-classes
*test.py Python Files ending with 'test'
*_test.py Python Files ending with '_test'
test*.py Python Files beginning with 'test'
test_*.py Python Files beginning with 'test_'
test.py Python Files containing the word 'test'

```python
  # constructor if some fields are used.
```

3.7 Install matplotlib

For the **Matplotlib** sample, we need the matplotlib Package.

Open a Terminal in VS Code and run the following command:

```
pip install matplotlib
```

3.8 Install Flask

For the **Bookservice** sample, we need the Flask Package.

Open a Terminal in VS Code and run the following command:

```
pip install Flask
```

3.9 Install scikit

For the **scikit** sample, we need the scikit Package.

Open a Terminal in VS Code and run the following command:

```
pip install –U scikit-learn
```

4 Appendix – Ubuntu Setup

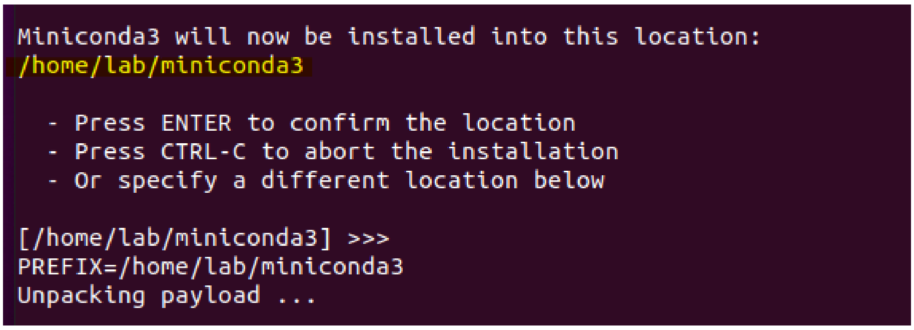
4.1 Miniconda

To install Miniconda on Ubuntu 20.04 from command line, it only takes 3 steps excluding creating and activating a conda environment.

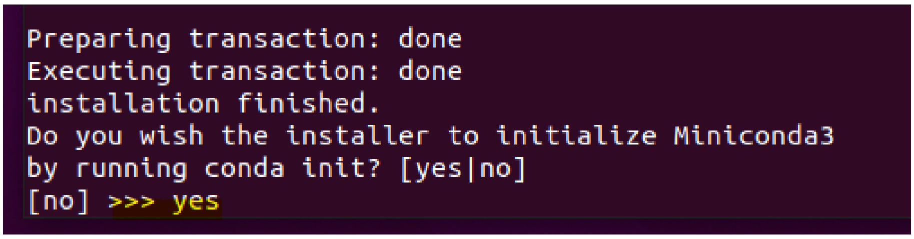
1. **Download the latest shell script**
   wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh

2. **Make the miniconda installation script executable**
   chmod +x Miniconda3-latest-Linux-x86_64.sh

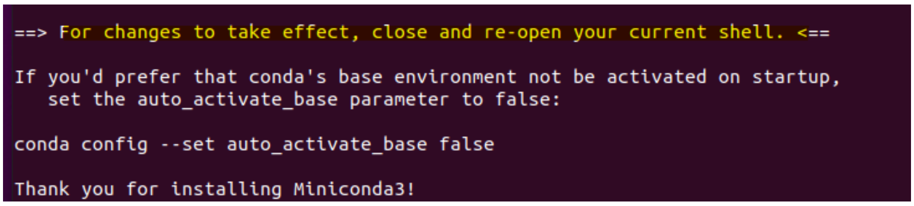
3. **Run miniconda installation script**
   ./Miniconda3-latest-Linux-x86_64.sh



```
Miniconda3 will now be installed into this location:
/home/lab/miniconda3

  - Press ENTER to confirm the location
  - Press CTRL-C to abort the installation
  - Or specify a different location below

[/home/lab/miniconda3] >>>
PREFIX=/home/lab/miniconda3
Unpacking payload ...
```



```
Preparing transaction: done
Executing transaction: done
installation finished.
Do you wish the installer to initialize Miniconda3
by running conda init? [yes|no]
[no] >>> yes
```

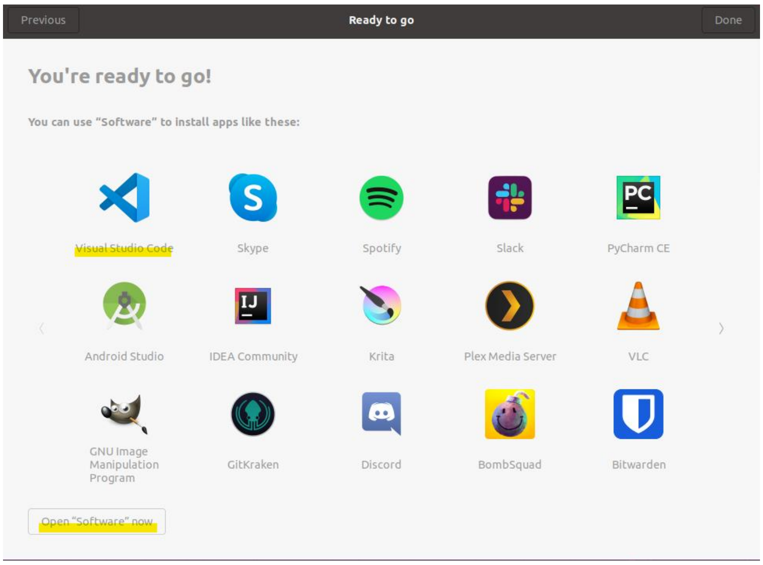


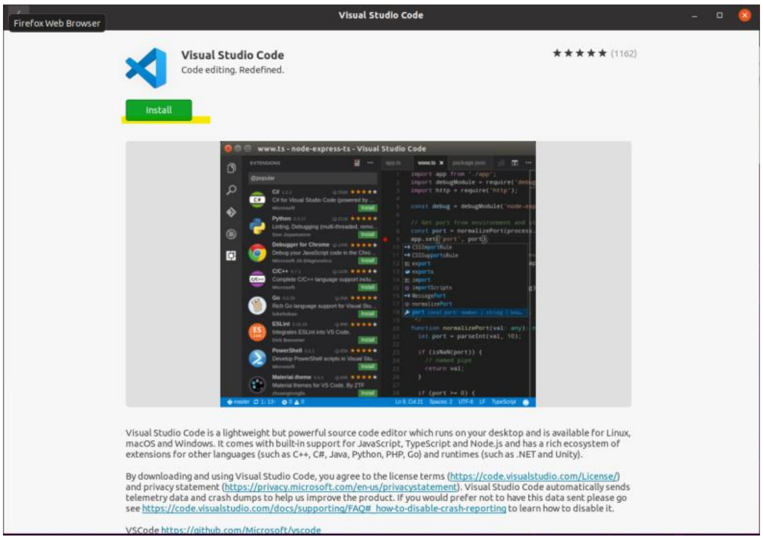
```
==> For changes to take effect, close and re-open your current shell. <==

If you'd prefer that conda's base environment not be activated on startup,
   set the auto_activate_base parameter to false:

conda config --set auto_activate_base false

Thank you for installing Miniconda3!
```

Miniconda commands

Command	Description
conda --version	Show version
conda info --envs	Show environments
conda create -n myenv phython=3.6.2	Create environment with given phyton version
conda env remove -n myenv	Remove environment
conda activate myenv	Activate the myenv environment
conda list	Show packages of active environment
conda install [pachagename]	Install Package
conda update [pachagename]	Update Package

4.2 Visual Studio Code





Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Linux, macOS and Windows. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity).

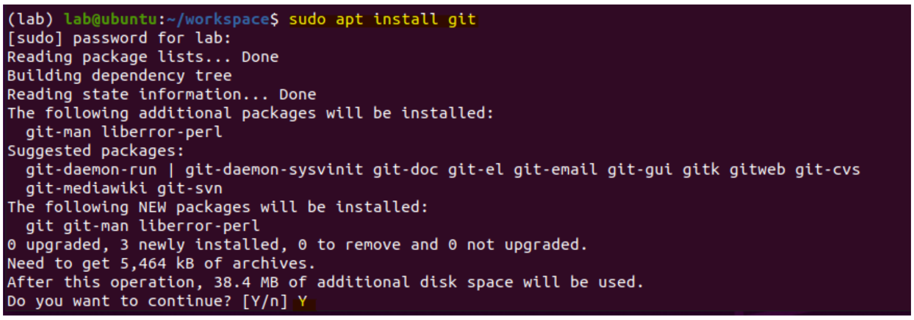
By downloading and using Visual Studio Code, you agree to the license terms (https://code.visualstudio.com/License/) and privacy statement (https://privacy.microsoft.com/en-us/privacystatement). Visual Studio Code automatically sends telemetry data and crash dumps to help us improve the product. If you would prefer not to have this data sent please go see https://code.visualstudio.com/docs/supporting/FAQ#_how-to-disable-crash-reporting to learn how to disable it.

VSCode https://github.com/Microsoft/vscode

For the configuration steps, follow the Course Setup chapter.

4.3 GIT

- **Install GIT**
  sudo apt install git



```
(lab) lab@ubuntu:~/workspace$ sudo apt install git
[sudo] password for lab:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  git-man liberror-perl
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk gitweb git-cvs
  git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 5,464 kB of archives.
After this operation, 38.4 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

- **Check Version**
  git –version

- **Global Settings**
  git config --global user.name "Pipi Langstrumpf"
  git config --global user.email pipi@villakunterbunt.org

4.4 Course Samples

1. **Create Workspace Directory**
   mkdir workspace

2. **Clone Python Project**
   cd workspace
   git clone https://github.com/iten-engineering/python

3. **Clone Workshop Project**
   cd workspace
   git clone https://github.com/iten-engineering/workshop

4.5 Project Setup

See chapter Course Setup.

5 Appendix – VS Code Hints

Zoom:

• Menu: View / Appearance / Zoom-In	CTRL + NUM_PAD_ADD
• Menu: View / Appearance / Zoom-Out	CTRL + -