

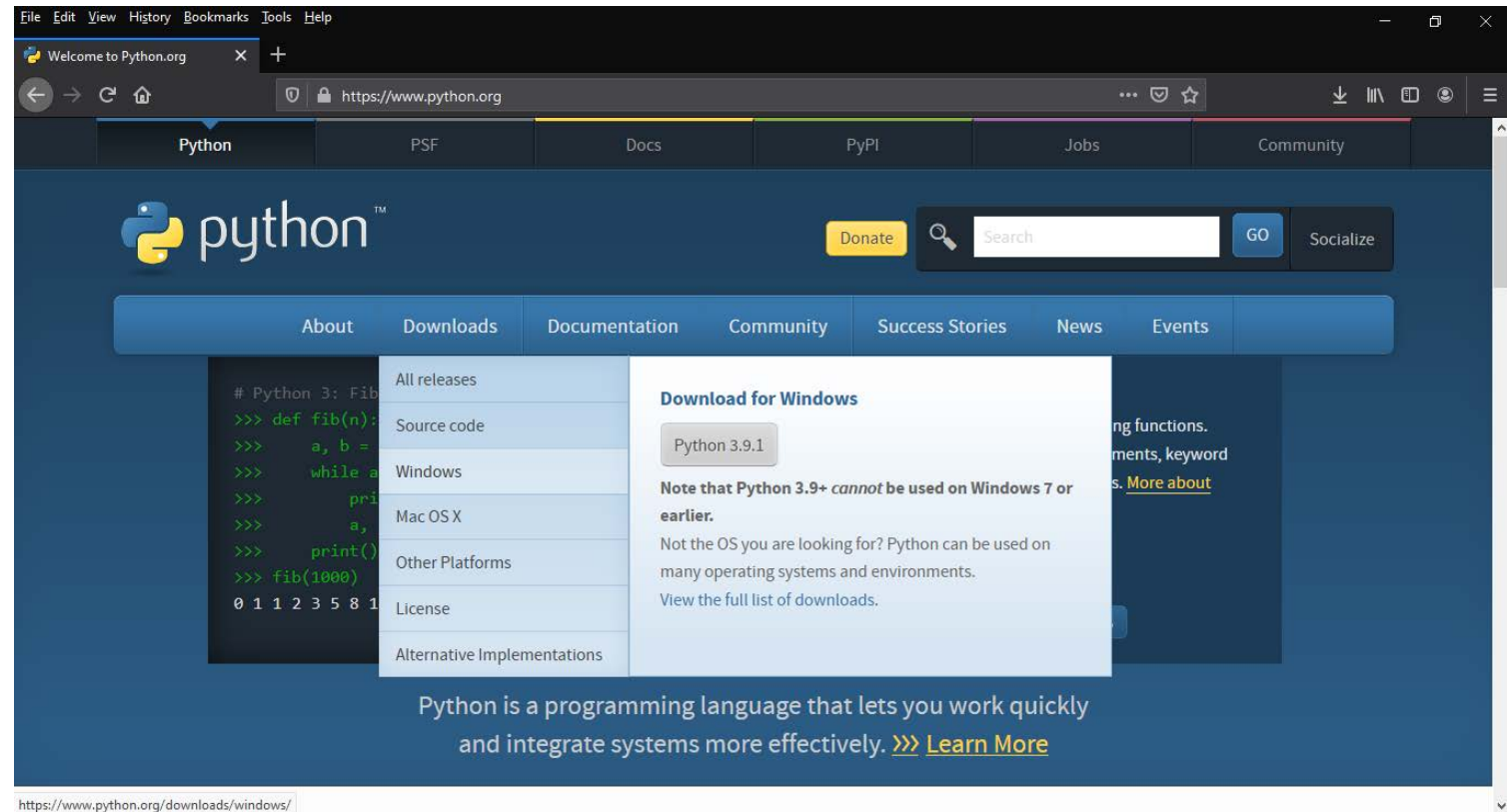
Session 1

Setting up

By: Fatemeh Saberi

Python Set up

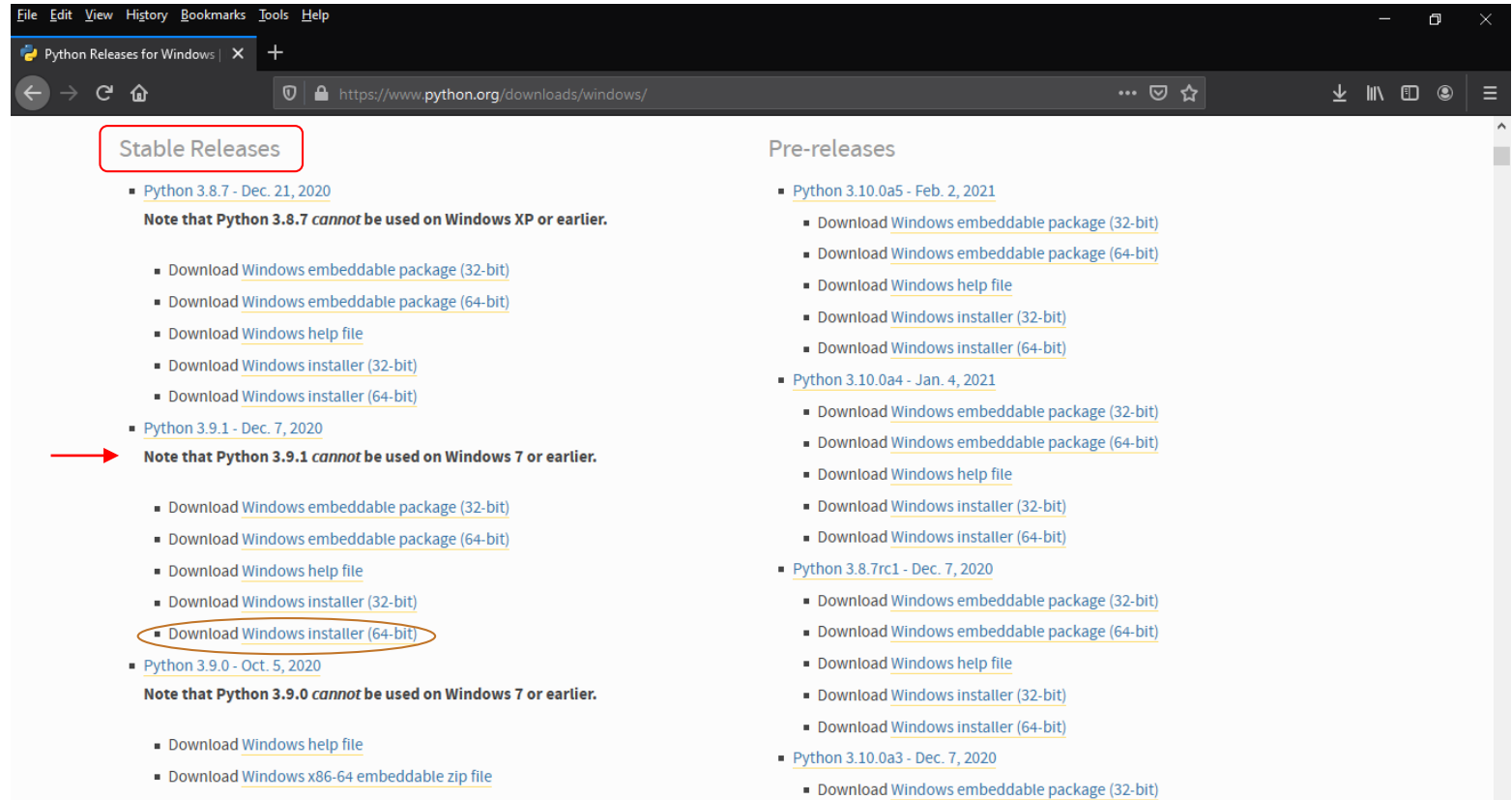
Go to <https://www.python.org> and click on *Downloads* tab,
then select your operating system.
Ours will be *Windows*.



Python Set up

From the *Stable Releases*, download the latest version that is compatible with your System type.

Our System type is *64-bit*.



The screenshot shows the Python.org website's Windows downloads page. The browser window has a dark theme. The address bar shows the URL <https://www.python.org/downloads/windows/>. The page is divided into two main sections: "Stable Releases" and "Pre-releases".

Stable Releases

- Python 3.8.7 - Dec. 21, 2020
 - Note that Python 3.8.7 cannot be used on Windows XP or earlier.
 - Download Windows embeddable package (32-bit)
 - Download Windows embeddable package (64-bit)
 - Download Windows help file
 - Download Windows installer (32-bit)
 - Download Windows installer (64-bit)
- Python 3.9.1 - Dec. 7, 2020
 - Note that Python 3.9.1 cannot be used on Windows 7 or earlier.
 - Download Windows embeddable package (32-bit)
 - Download Windows embeddable package (64-bit)
 - Download Windows help file
 - Download Windows installer (32-bit)
 - Download Windows installer (64-bit)
- Python 3.9.0 - Oct. 5, 2020
 - Note that Python 3.9.0 cannot be used on Windows 7 or earlier.
 - Download Windows help file
 - Download Windows x86-64 embeddable zip file

Pre-releases

- Python 3.10.0a5 - Feb. 2, 2021
 - Download Windows embeddable package (32-bit)
 - Download Windows embeddable package (64-bit)
 - Download Windows help file
 - Download Windows installer (32-bit)
 - Download Windows installer (64-bit)
- Python 3.10.0a4 - Jan. 4, 2021
 - Download Windows embeddable package (32-bit)
 - Download Windows embeddable package (64-bit)
 - Download Windows help file
 - Download Windows installer (32-bit)
 - Download Windows installer (64-bit)
- Python 3.8.7rc1 - Dec. 7, 2020
 - Download Windows embeddable package (32-bit)
 - Download Windows embeddable package (64-bit)
 - Download Windows help file
 - Download Windows installer (32-bit)
 - Download Windows installer (64-bit)
- Python 3.10.0a3 - Dec. 7, 2020
 - Download Windows embeddable package (32-bit)

In the "Stable Releases" section, a red arrow points to the "Python 3.9.1" entry. Within this entry, the "Download Windows installer (64-bit)" link is circled in red.

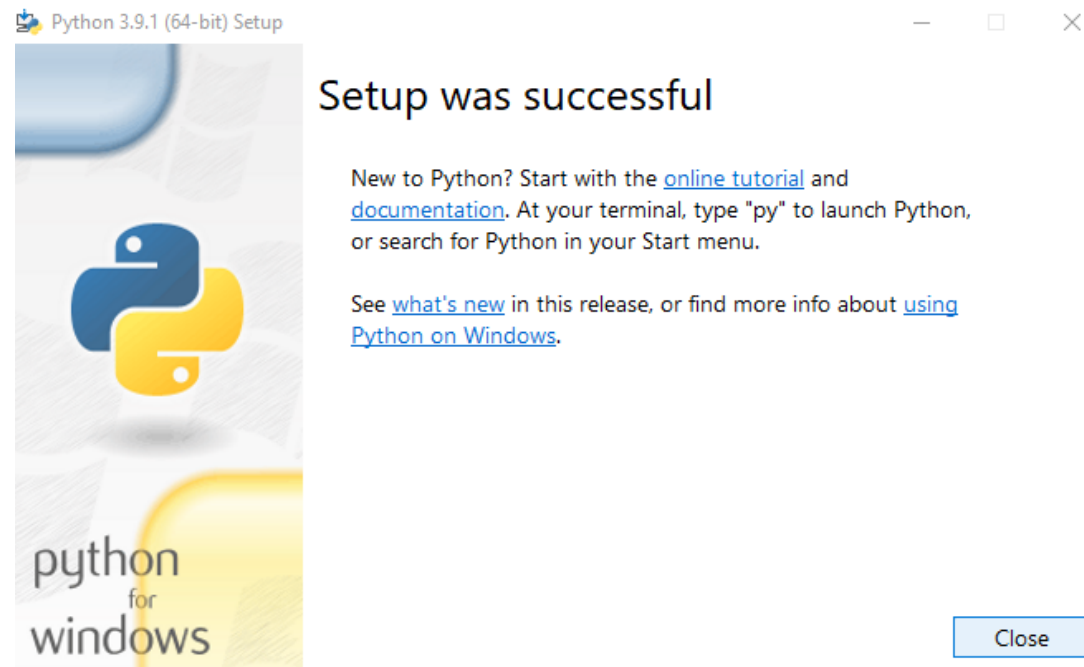
Python Set up

- Run the downloaded installer.
- Before hitting the *Install Now* option, make sure you **check the “Add python 3.9 to PATH” box** because if you don’t do it, you will not be able to run Python on the command line.



Python Set up

By now, you should be faced with something like the picture below.
Hit the close button.

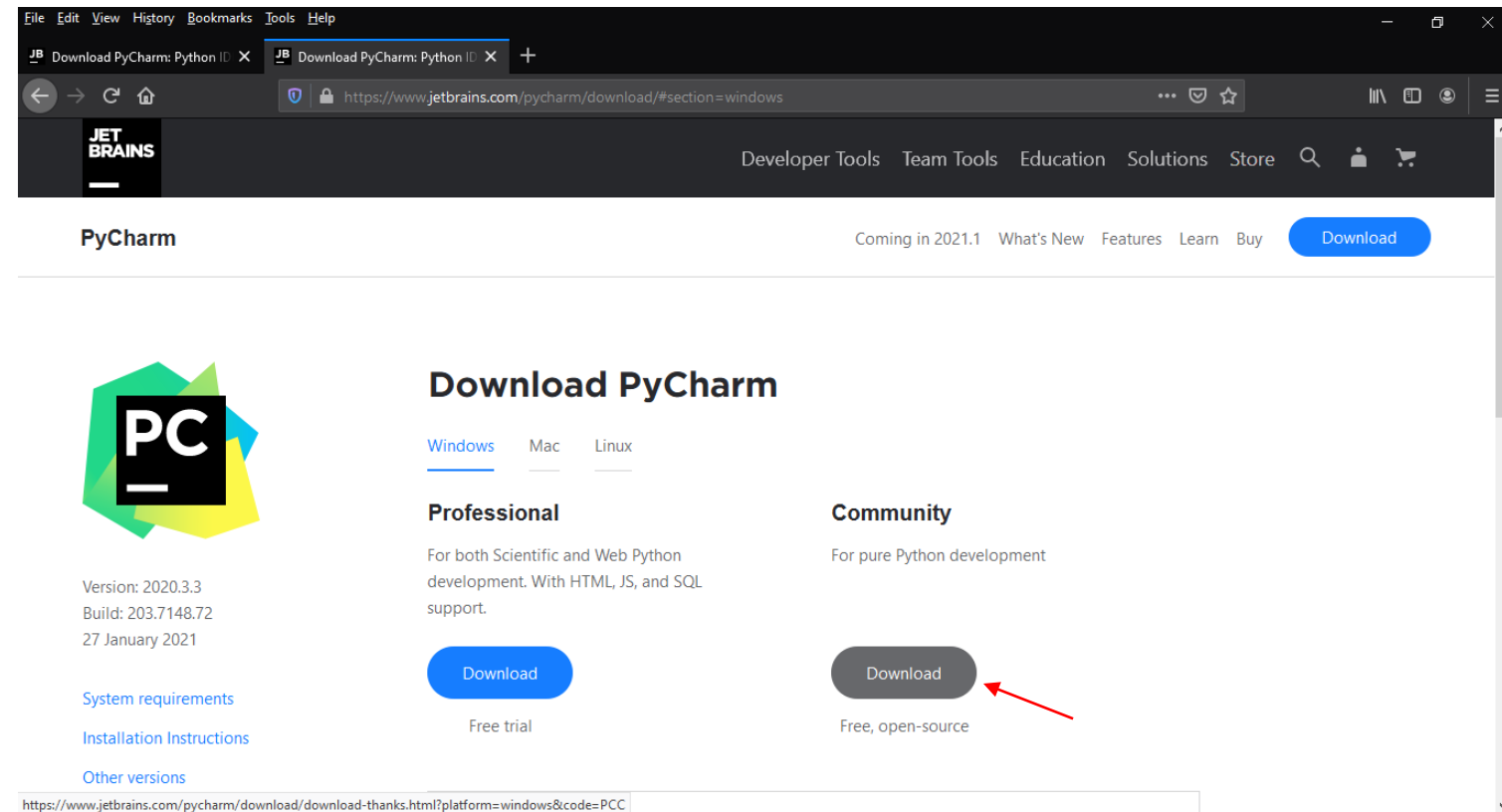


Various Integrated Development Environments (IDES)

Pycharm

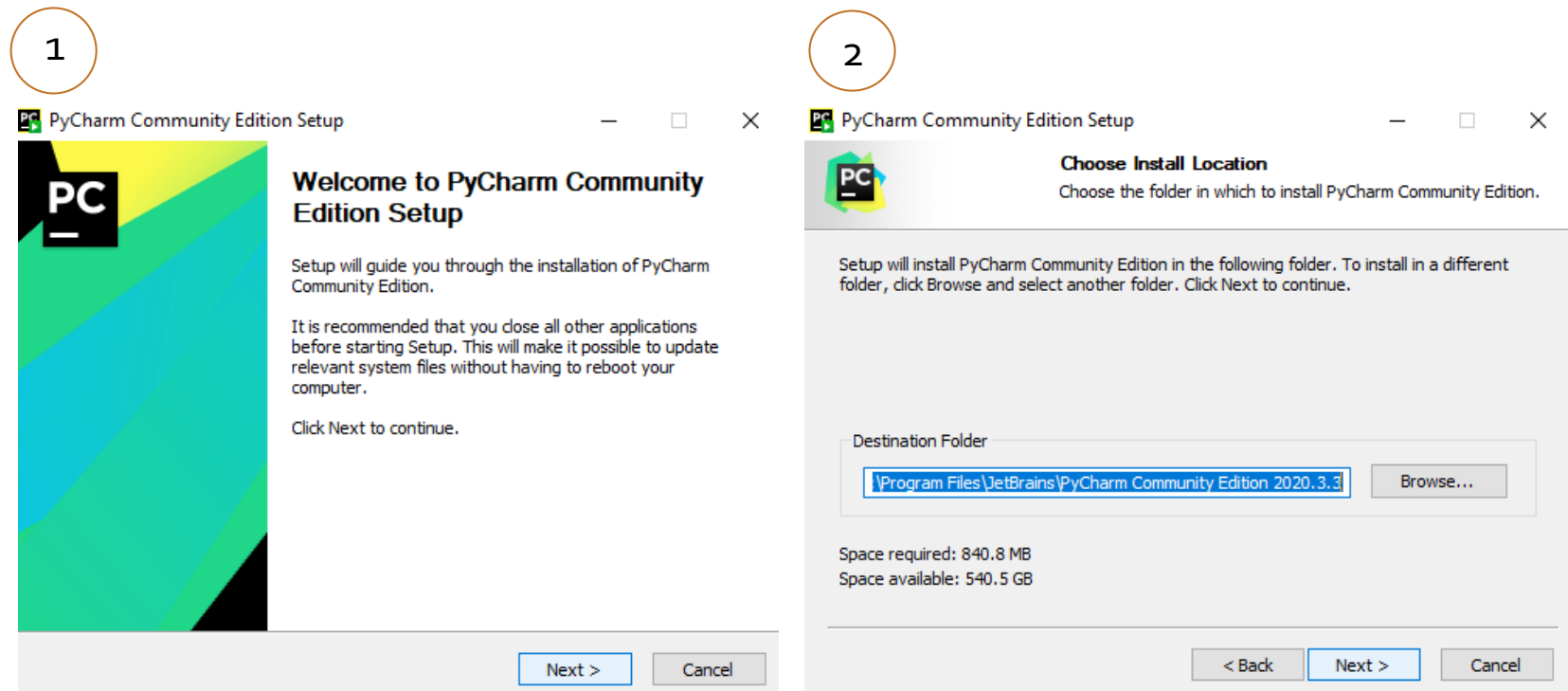
Installing Pycharm

Go to <https://www.jetbrains.com/pycharm/download/> and based on your operating system, download the *Community* version.



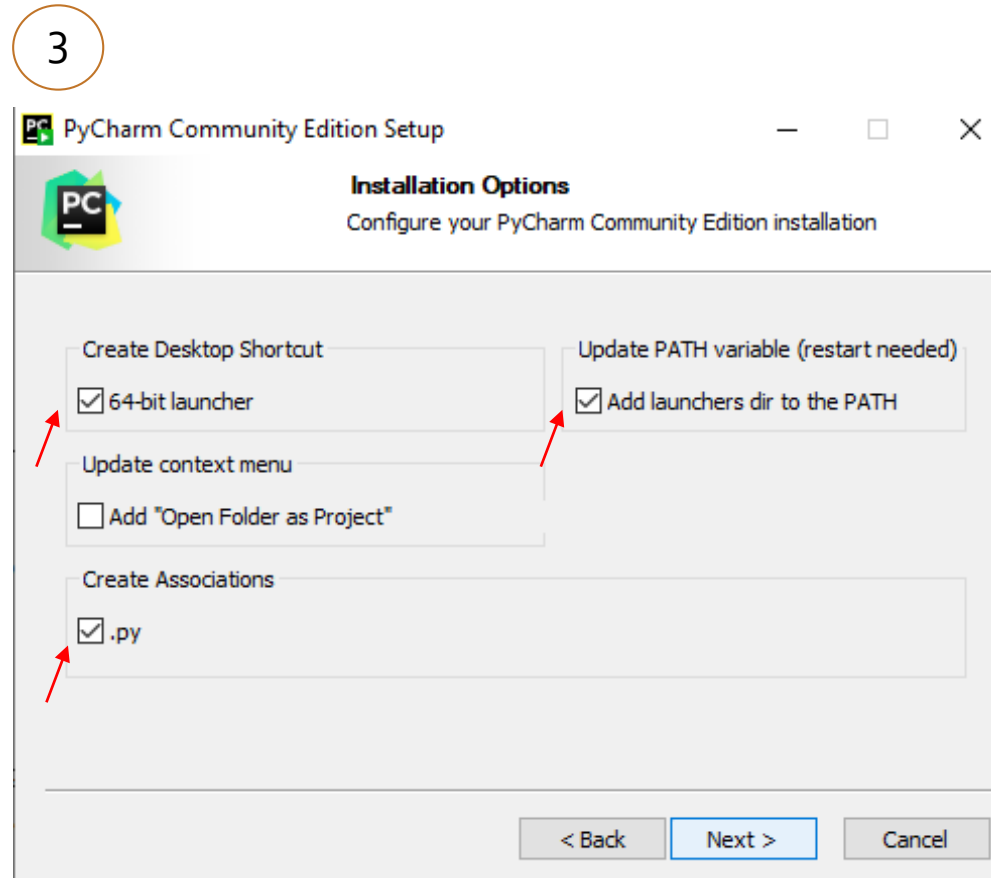
Installing Pycharm

After running the installer, click on *Next* for the following 2 steps.



Installing Pycharm

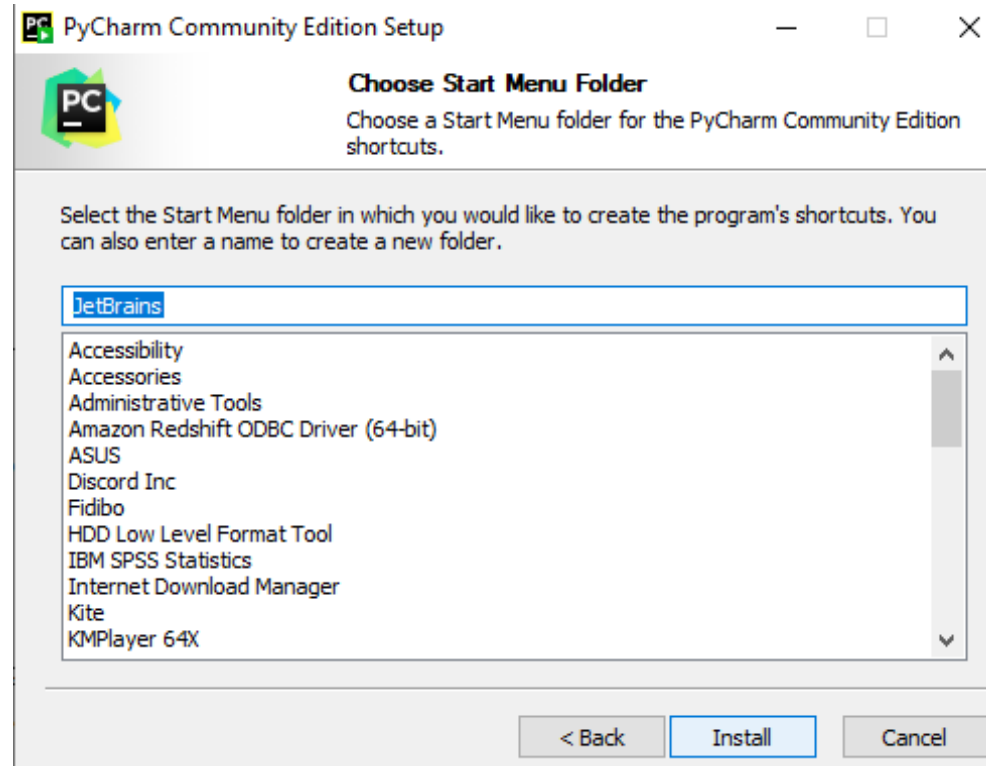
Please make sure to check all the selected boxes in the process,
Then hit the *Next* button.



Installing Pycharm

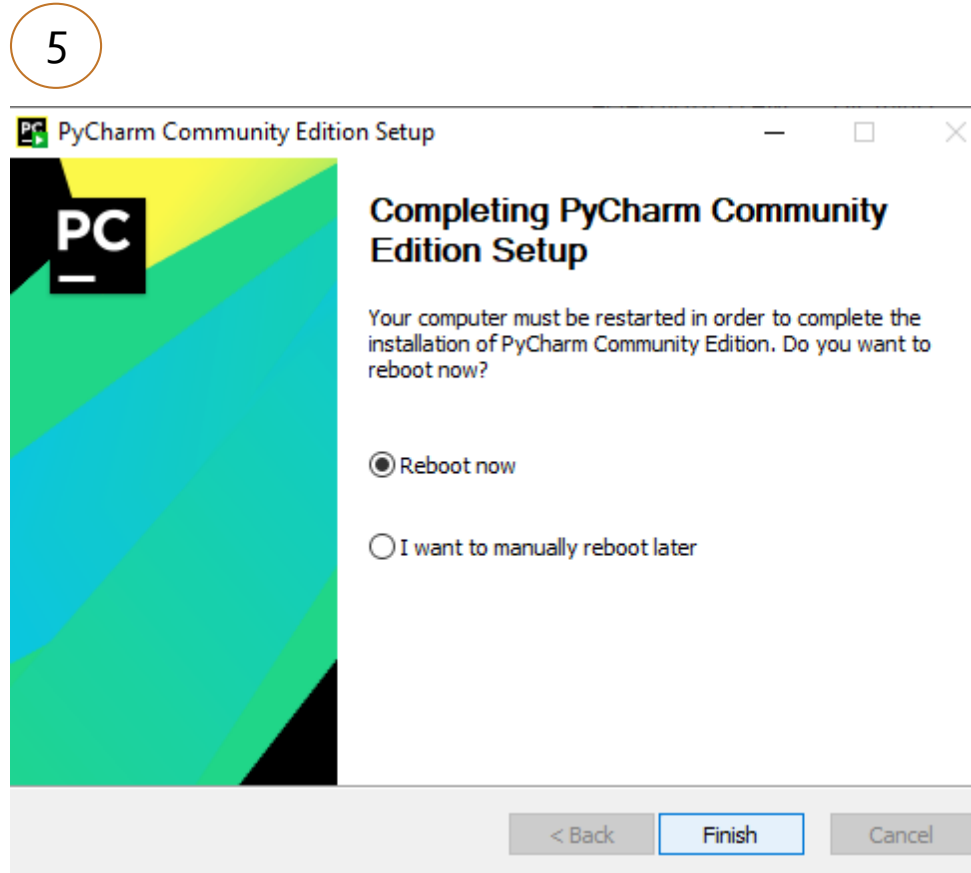
Click on the *Install* button.

4



Installing Pycharm

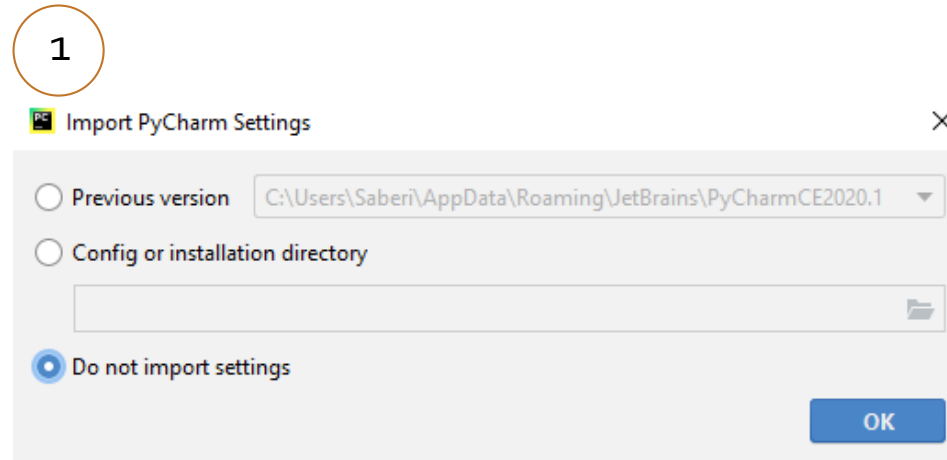
If you want to run Pycharm right away, select *Reboot now*. Before clicking on the *Finish* button, please make sure you do not have any unsaved process on your system.



Hands on Pycharm

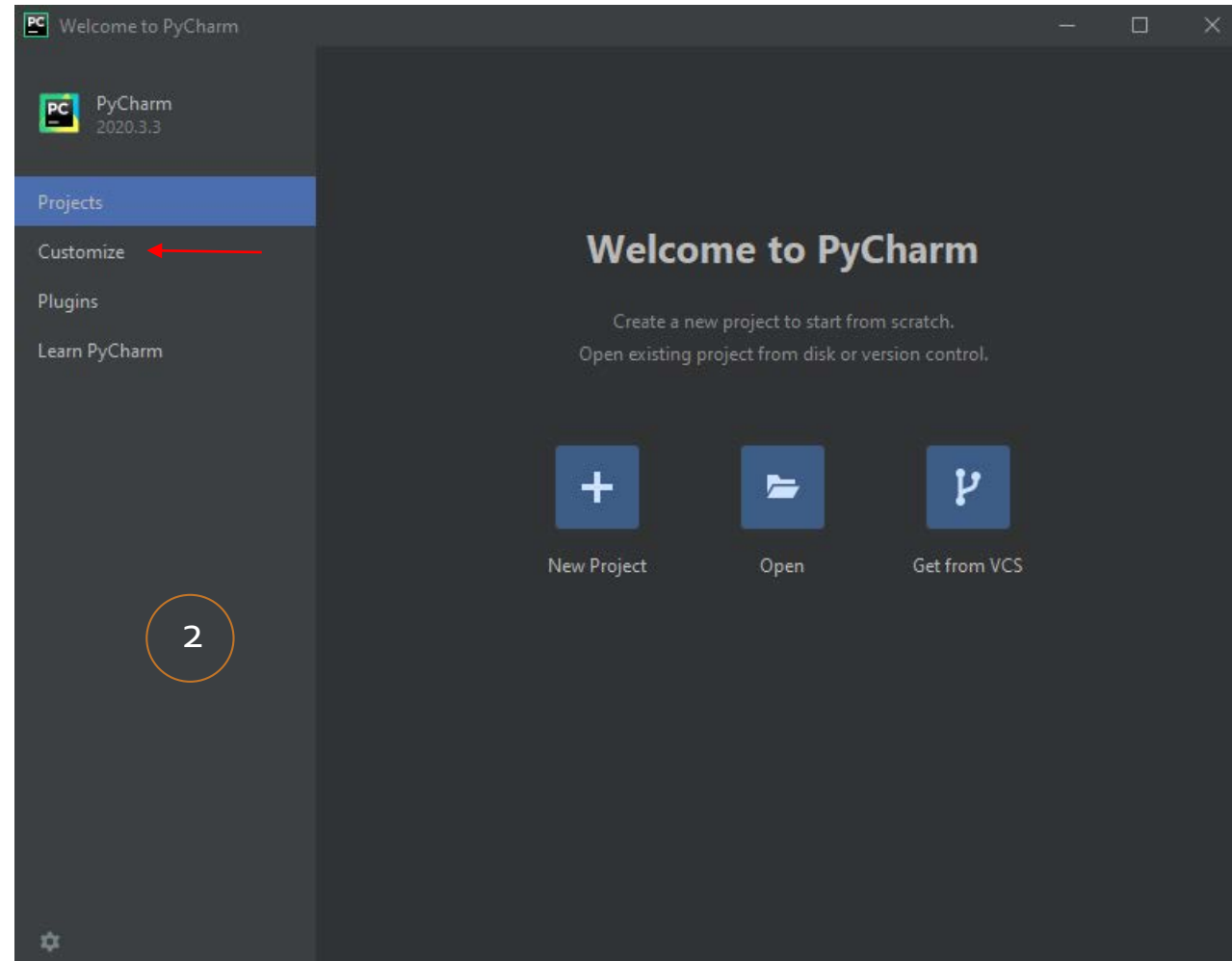
After running Pycharm for the first time, you will encounter the message below.

Select the "*Do not import settings*" option, then click on the *OK* button.



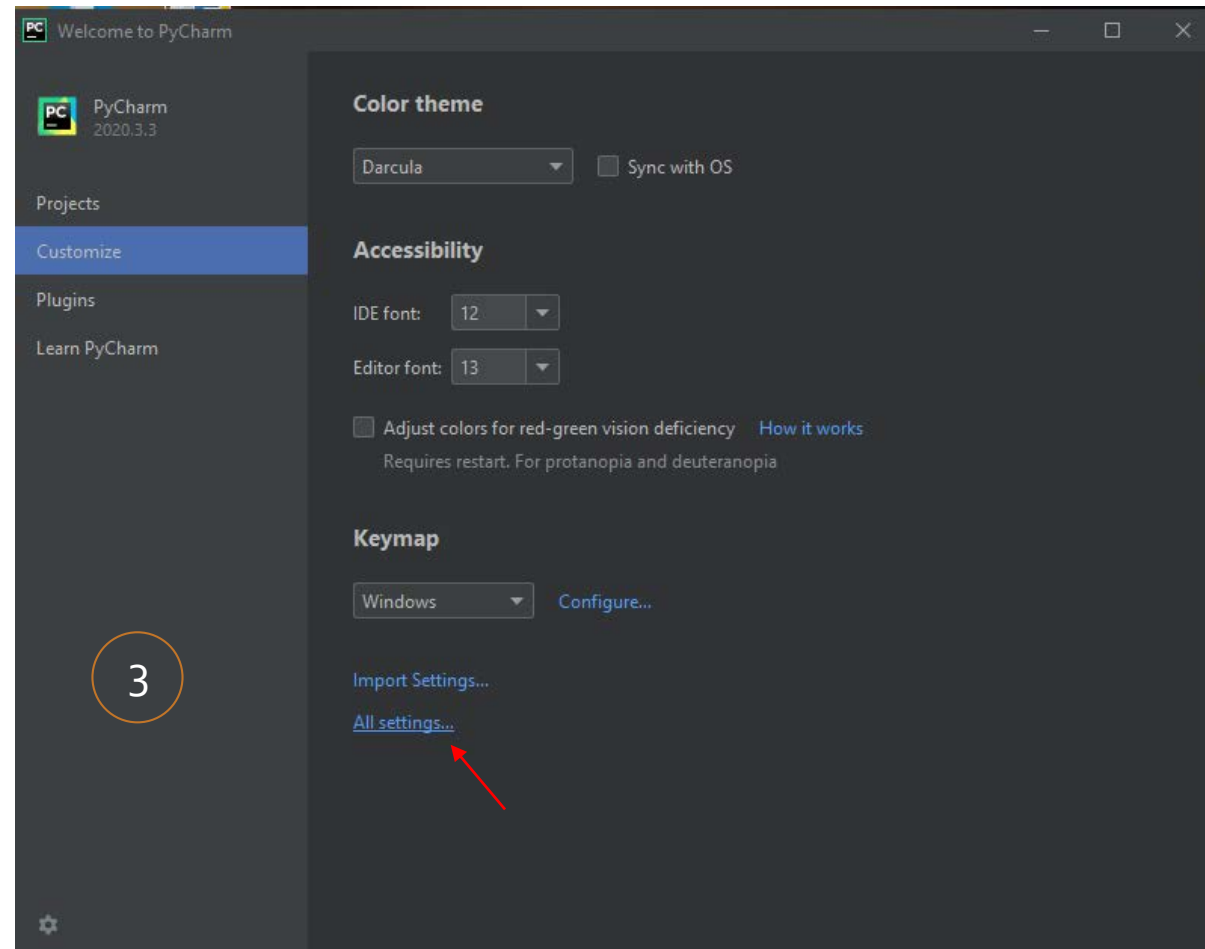
Hands on Pycharm

On the following page, click on the *Customize* tab.



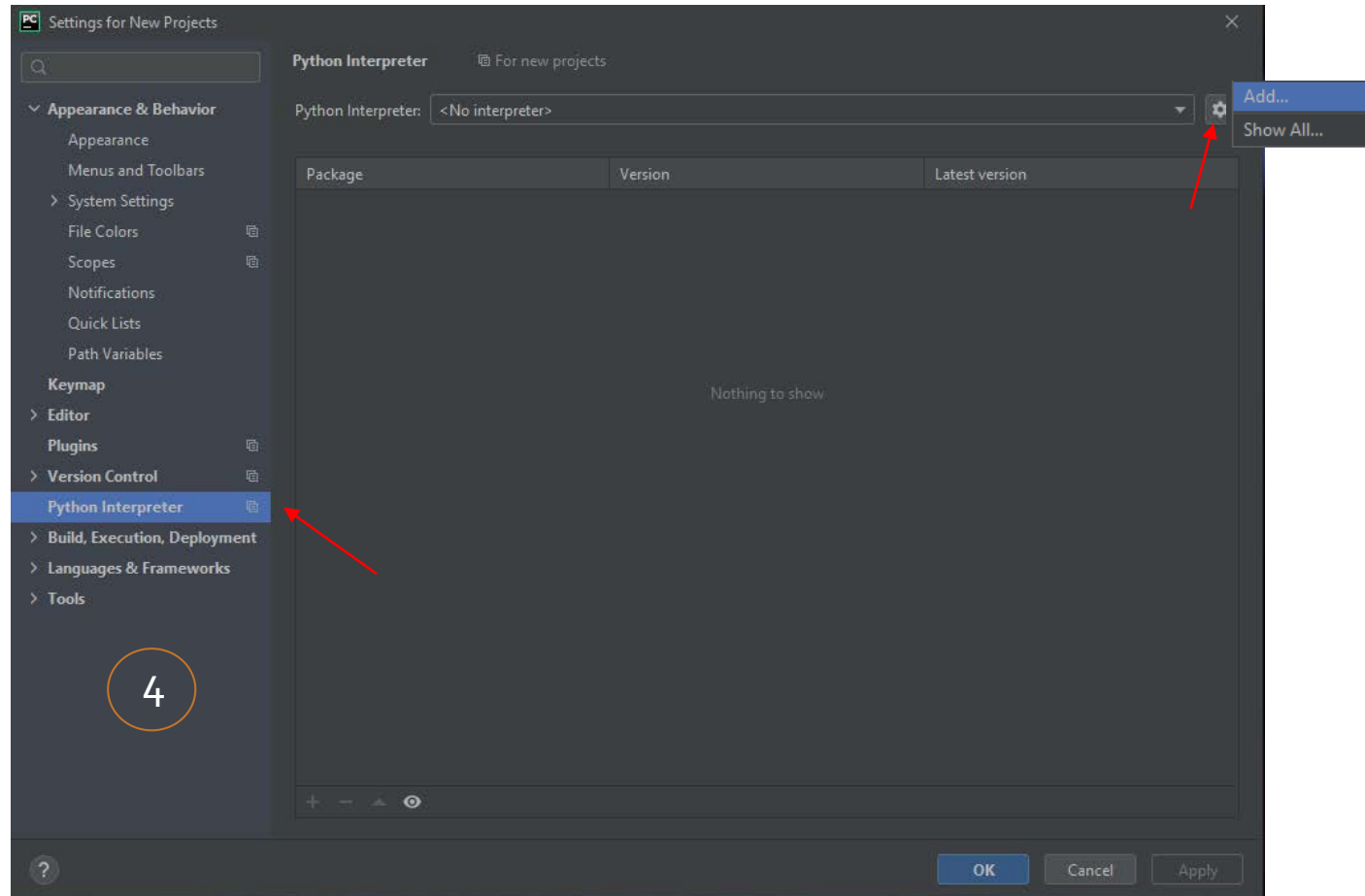
Hands on Pycharm

Click on the "All settings" option.



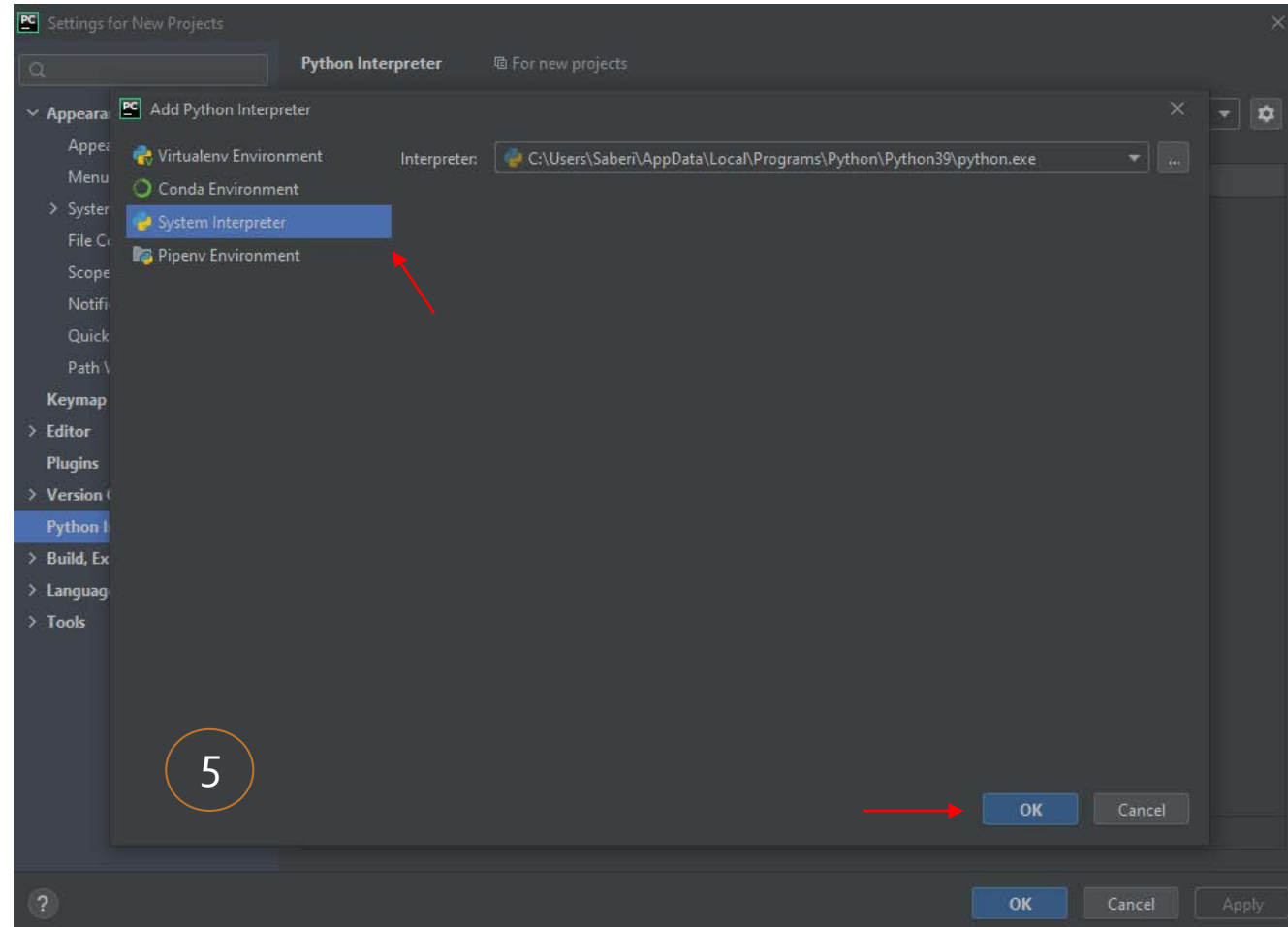
Hands on Pycharm

Select *Python Interpreter* from the left bar, then hit the settings icon.
After that, click on the *Add...* option.



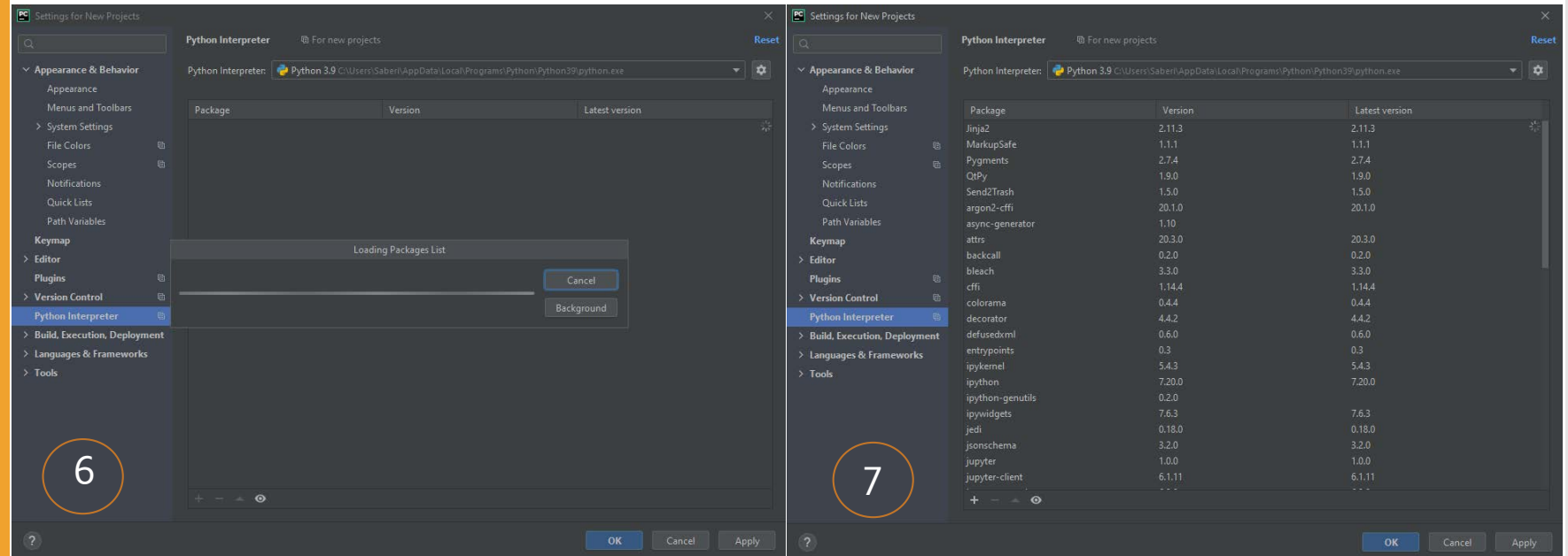
Hands on Pycharm

Select System Interpreter, then hit the *OK* button.



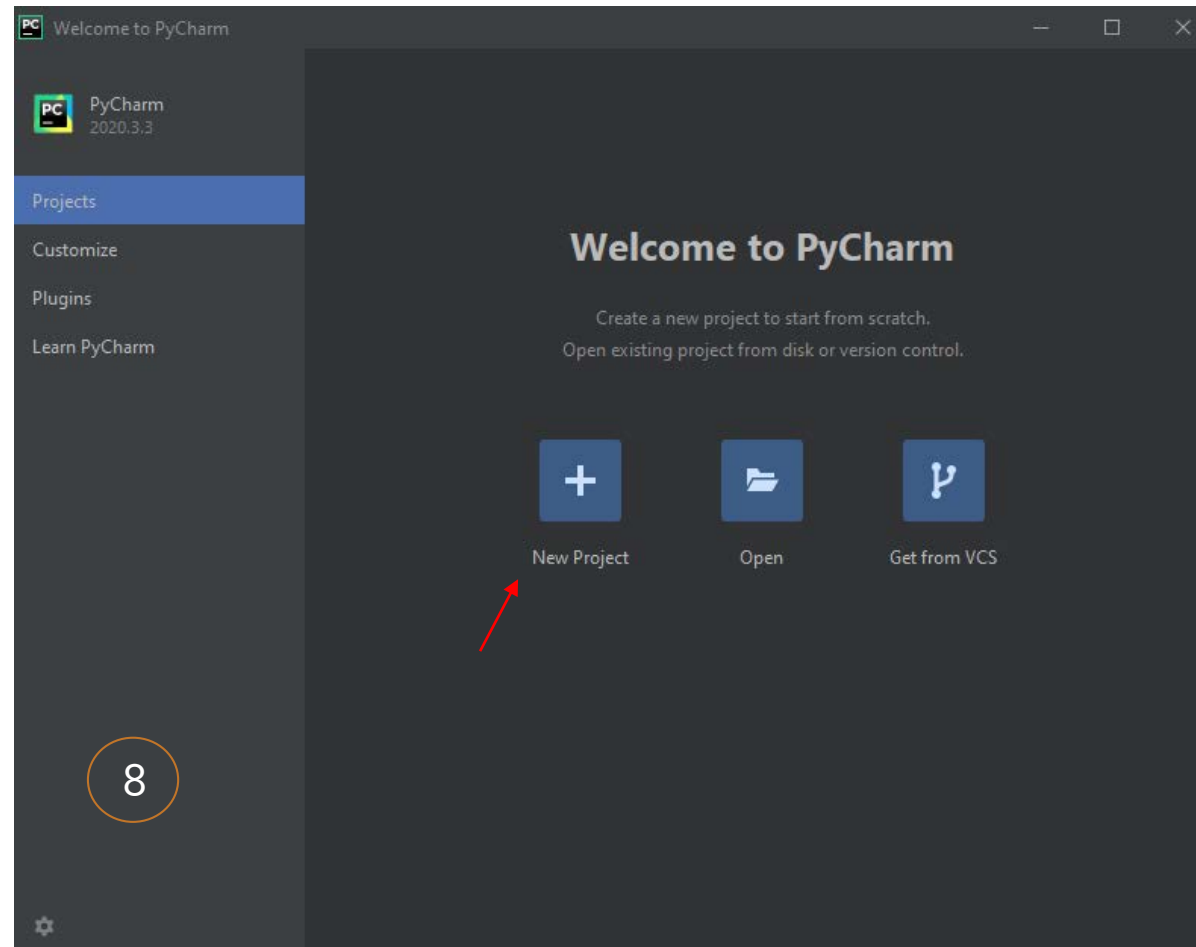
Hands on Pycharm

Let it be loaded, then click on *OK*.



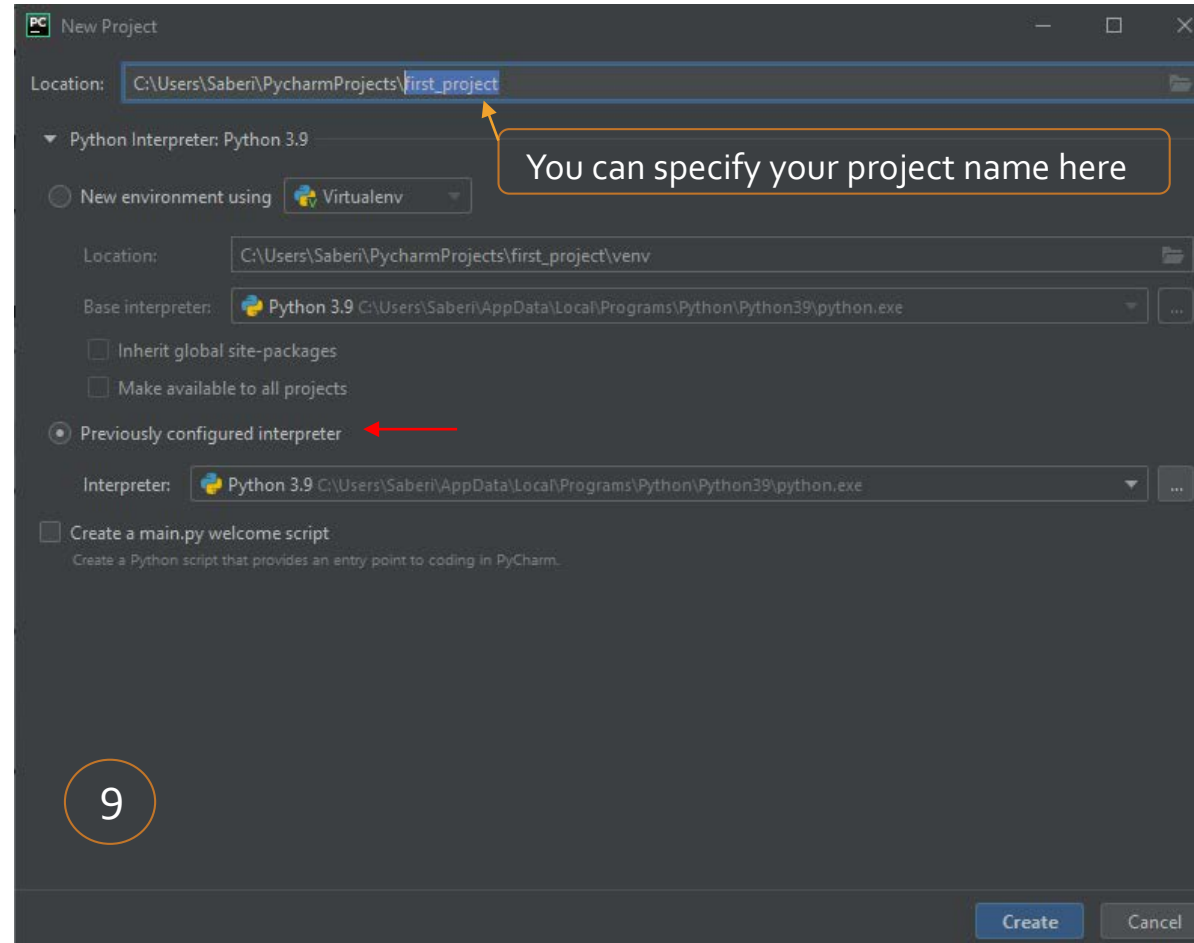
Hands on Pycharm

Go back to the Projects tab. To create your first Python file, click on the *New Project* icon.



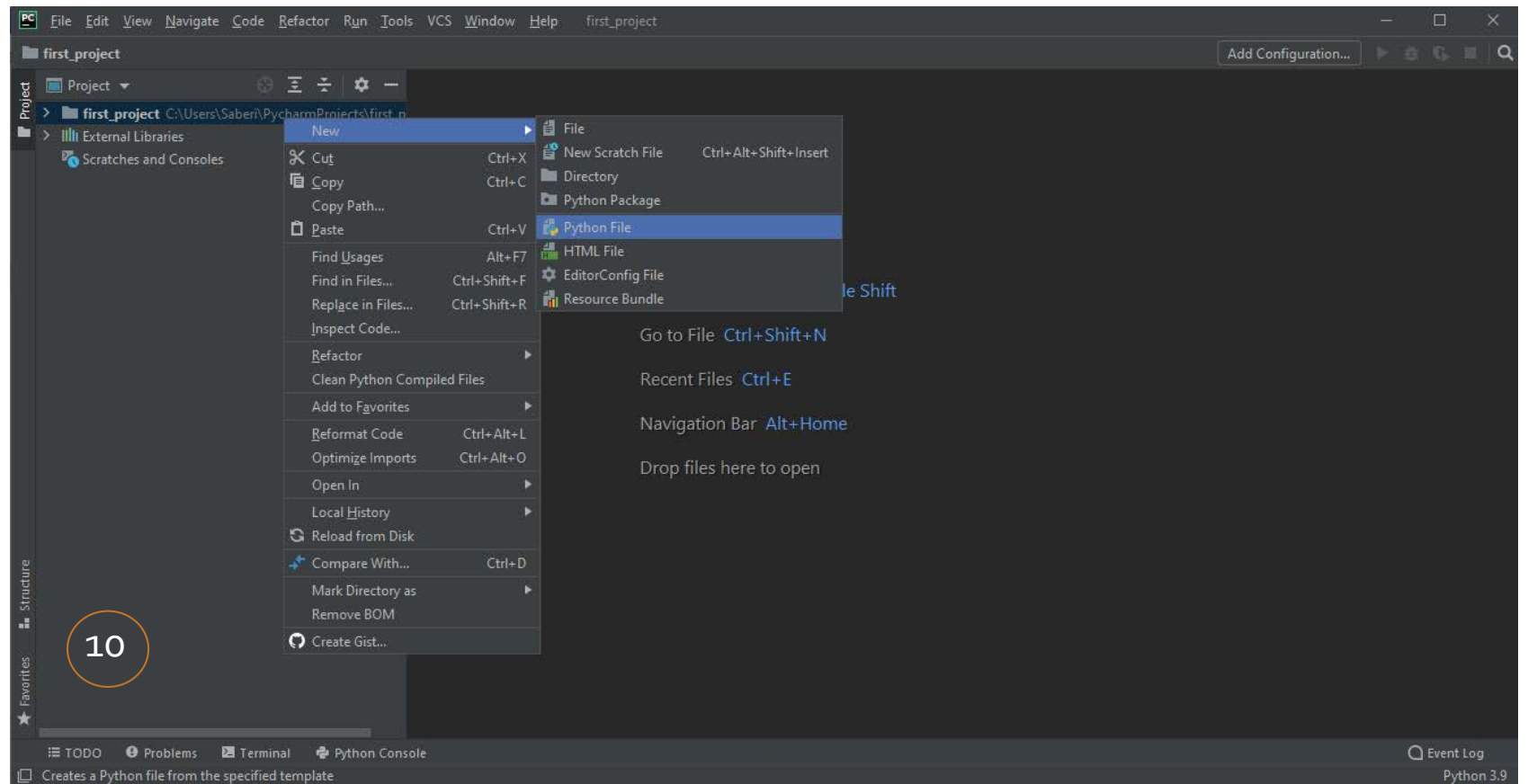
Hands on Pycharm

For the Python Interpreter section, select *Previously configured interpreter*, then click on the *Create* button.



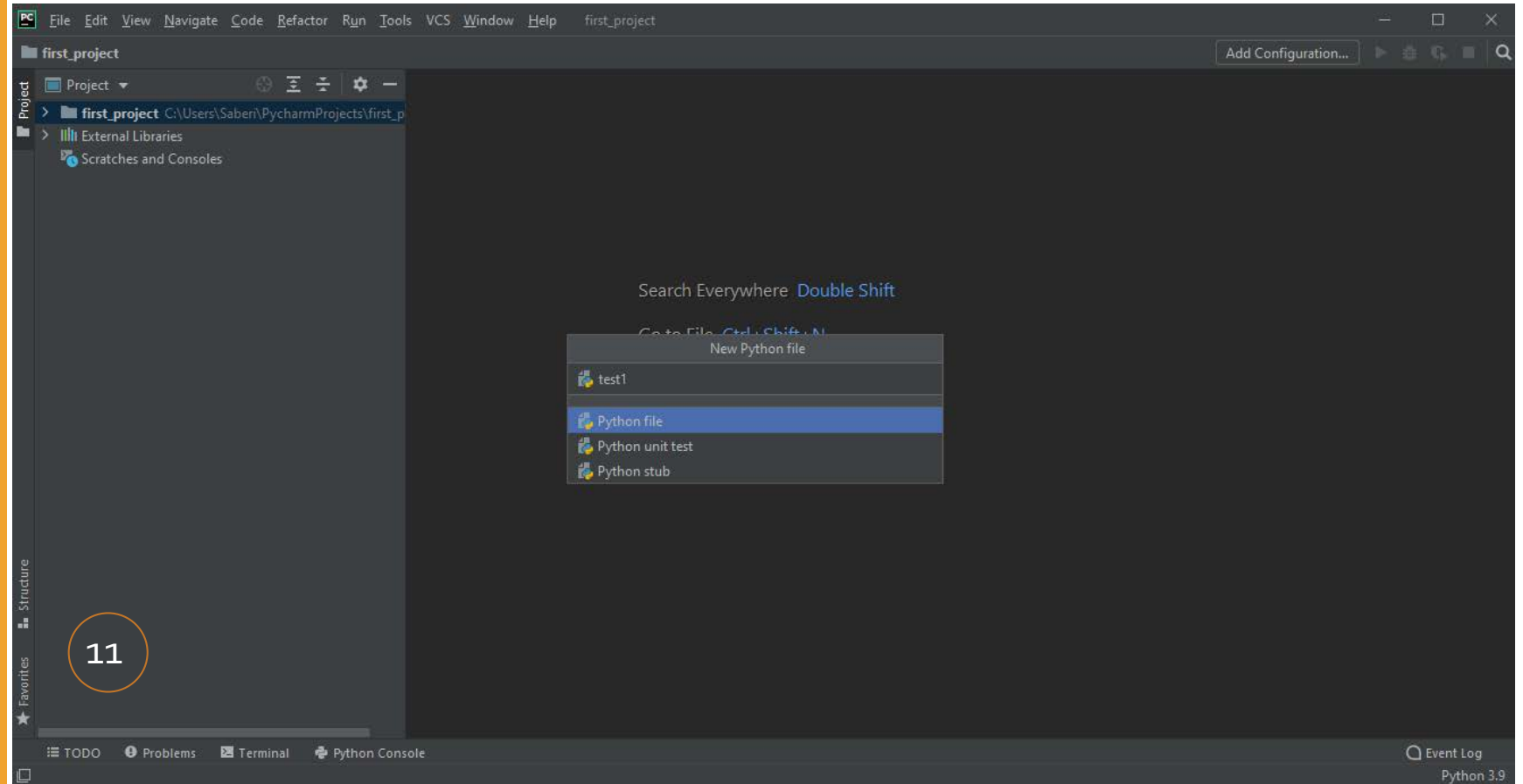
Hands on Pycharm

Right click on your project, then select New -> Python File



Hands on Pycharm

Specify a name for your file, ours will be test1

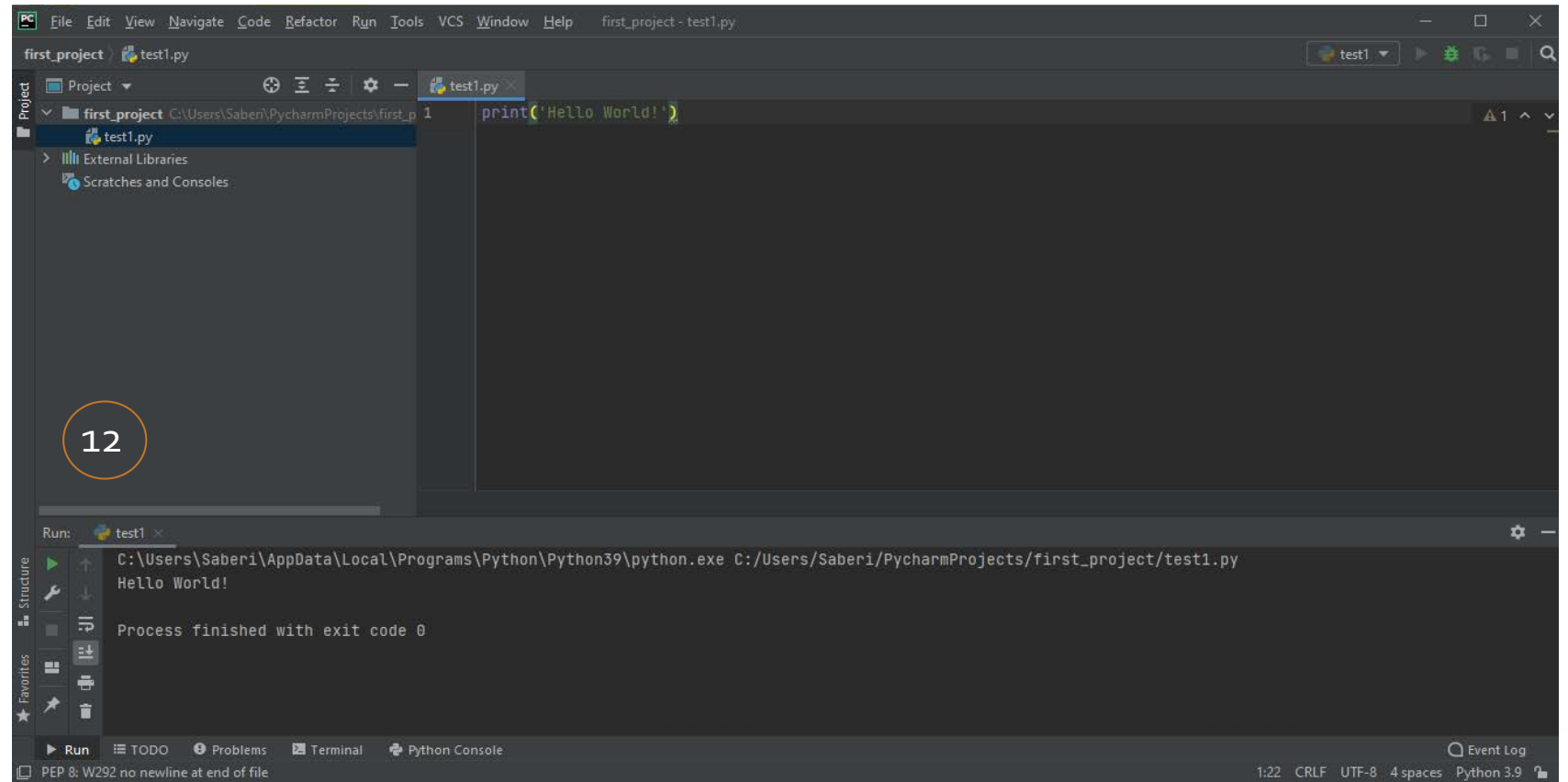


Hands on Pycharm

You are all Set!

Enjoy writing your first program.

To execute your code, press Ctrl+Shift+F10.

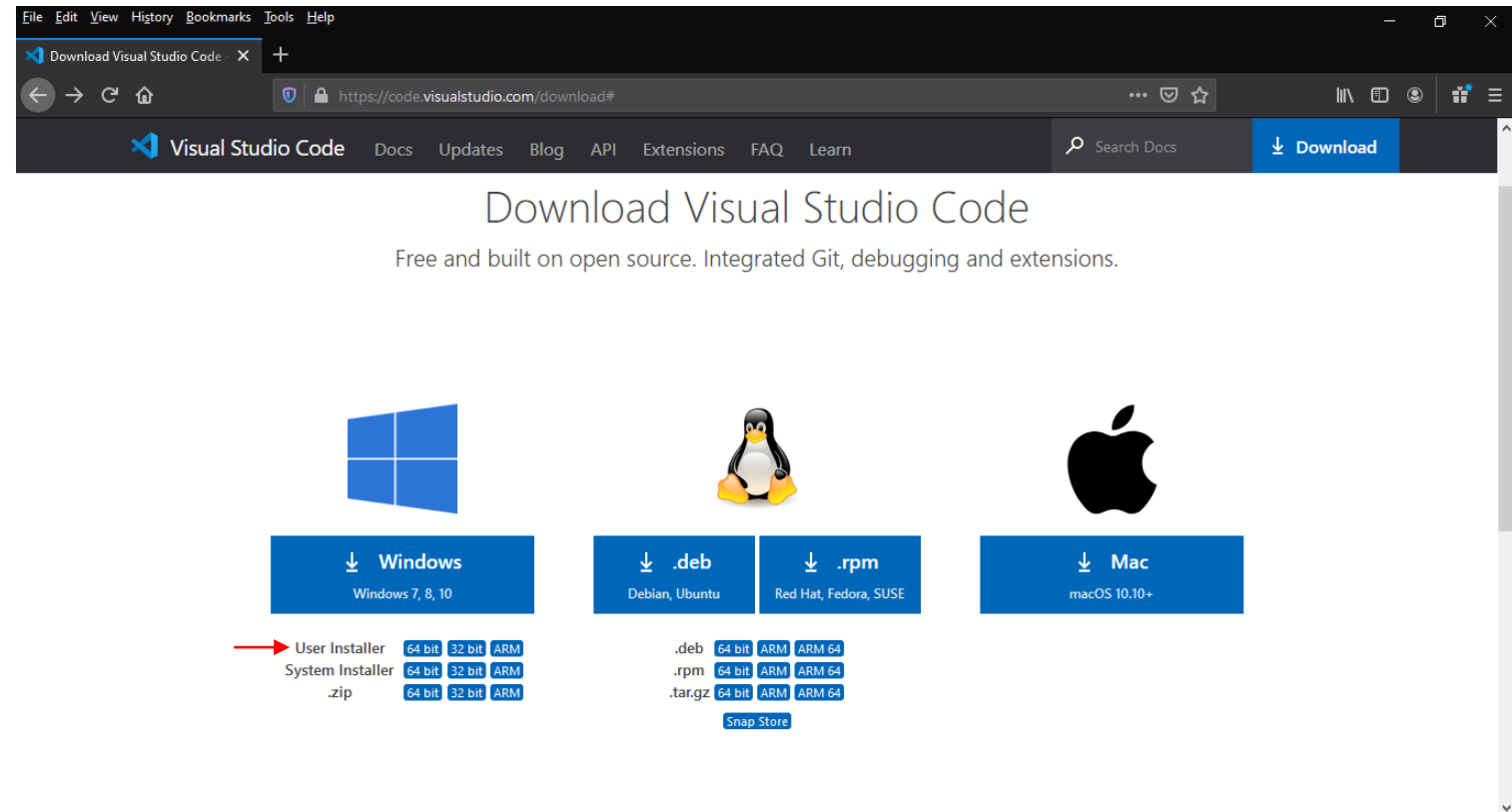


Visual Studio Code

Installing VS Code

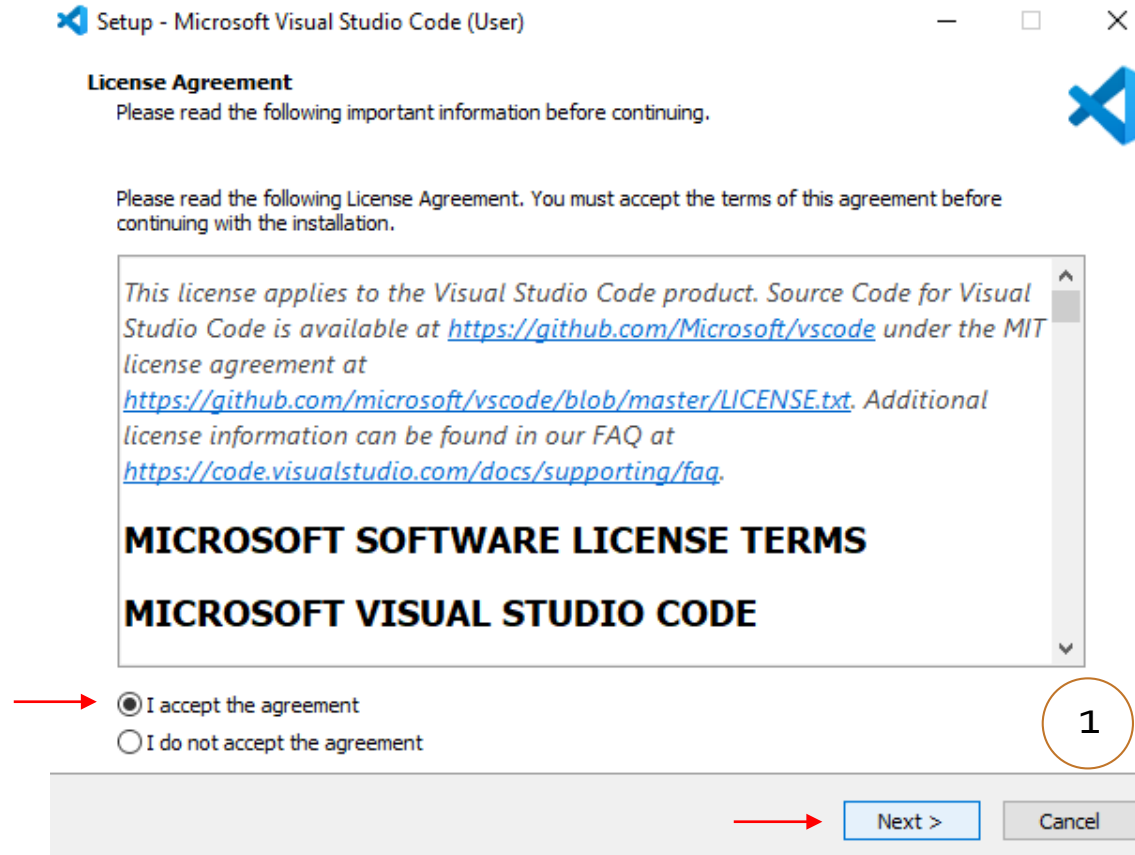
Go to <https://code.visualstudio.com/download> and based on your operating system and System type download VSC.

Ours is a 64-bit Windows, So we're gonna Download *64-bit User Installer*.



Installing VS Code

After running the installer, check the specified box, then click on the *Next* button.



The screenshot shows the 'Setup - Microsoft Visual Studio Code (User)' window. The title bar includes the Visual Studio Code icon and window controls. The main content area is titled 'License Agreement' and contains the text: 'Please read the following important information before continuing.' Below this, it says: 'Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.' A scrollable text box contains the following text: 'This license applies to the Visual Studio Code product. Source Code for Visual Studio Code is available at <https://github.com/Microsoft/vscode> under the MIT license agreement at <https://github.com/microsoft/vscode/blob/master/LICENSE.txt>. Additional license information can be found in our FAQ at <https://code.visualstudio.com/docs/supporting/faq>.' Below the scrollable text box, the text 'MICROSOFT SOFTWARE LICENSE TERMS' and 'MICROSOFT VISUAL STUDIO CODE' is displayed. At the bottom, there are two radio buttons: 'I accept the agreement' (which is selected and indicated by a red arrow) and 'I do not accept the agreement'. A circled '1' is next to the 'I accept the agreement' option. At the bottom right, there are 'Next >' and 'Cancel' buttons, with a red arrow pointing to the 'Next >' button.

Setup - Microsoft Visual Studio Code (User)

License Agreement
Please read the following important information before continuing.

Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

This license applies to the Visual Studio Code product. Source Code for Visual Studio Code is available at <https://github.com/Microsoft/vscode> under the MIT license agreement at <https://github.com/microsoft/vscode/blob/master/LICENSE.txt>. Additional license information can be found in our FAQ at <https://code.visualstudio.com/docs/supporting/faq>.

MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT VISUAL STUDIO CODE

☒ I accept the agreement
☐ I do not accept the agreement

Next > Cancel

Installing VS Code

Click on *Next* for the following 2 steps.

2

Setup - Microsoft Visual Studio Code (User)

Select Destination Location
Where should Visual Studio Code be installed?

Setup will install Visual Studio Code into the following folder.

To continue, click Next. If you would like to select a different folder, click Browse.

At least 259.3 MB of free disk space is required.

3

Setup - Microsoft Visual Studio Code (User)

Select Start Menu Folder
Where should Setup place the program's shortcuts?

Setup will create the program's shortcuts in the following Start Menu folder.

To continue, click Next. If you would like to select a different folder, click Browse.

☐ Don't create a Start Menu folder

Installing VS Code

Check all the boxes, then click on *Next* button.

4

Setup - Microsoft Visual Studio Code (User)

Select Additional Tasks
Which additional tasks should be performed?

Select the additional tasks you would like Setup to perform while installing Visual Studio Code, then click Next.

Additional icons:

☒ Create a desktop icon

Other:

☒ Add "Open with Code" action to Windows Explorer file context menu

☒ Add "Open with Code" action to Windows Explorer directory context menu

☒ Register Code as an editor for supported file types

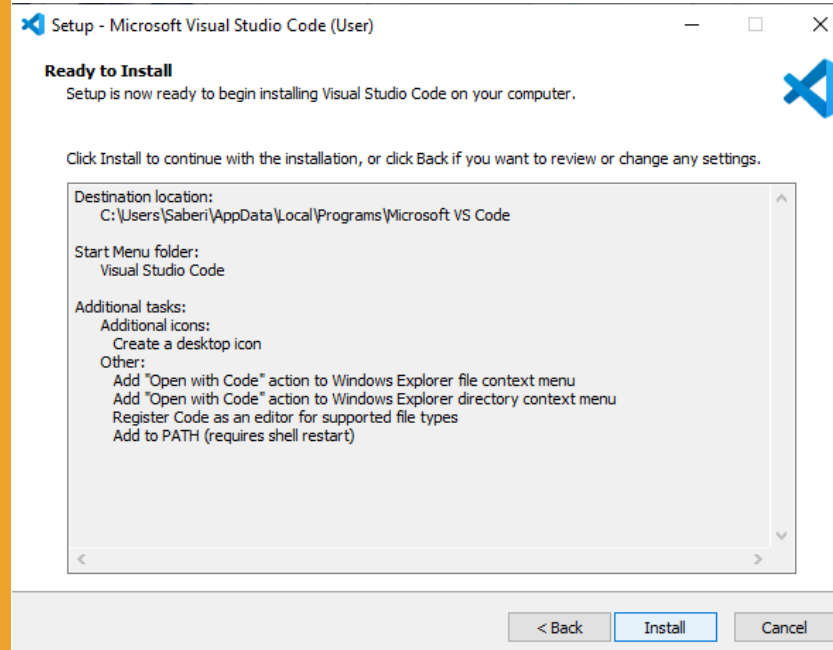
☒ Add to PATH (requires shell restart)

< Back Next > Cancel

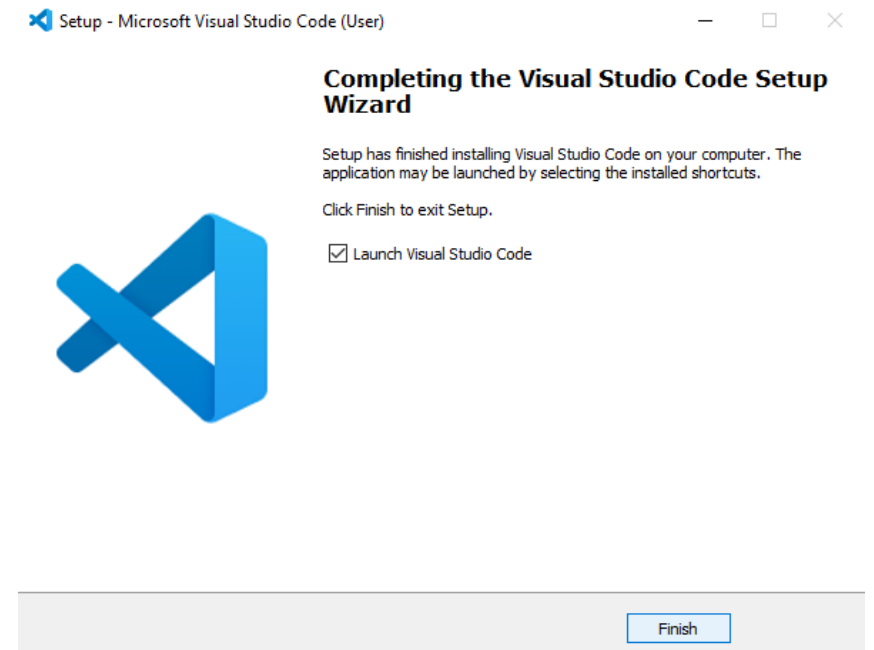
Installing VS Code

Click on *Install*.
At last hit the *Finish* button.

5

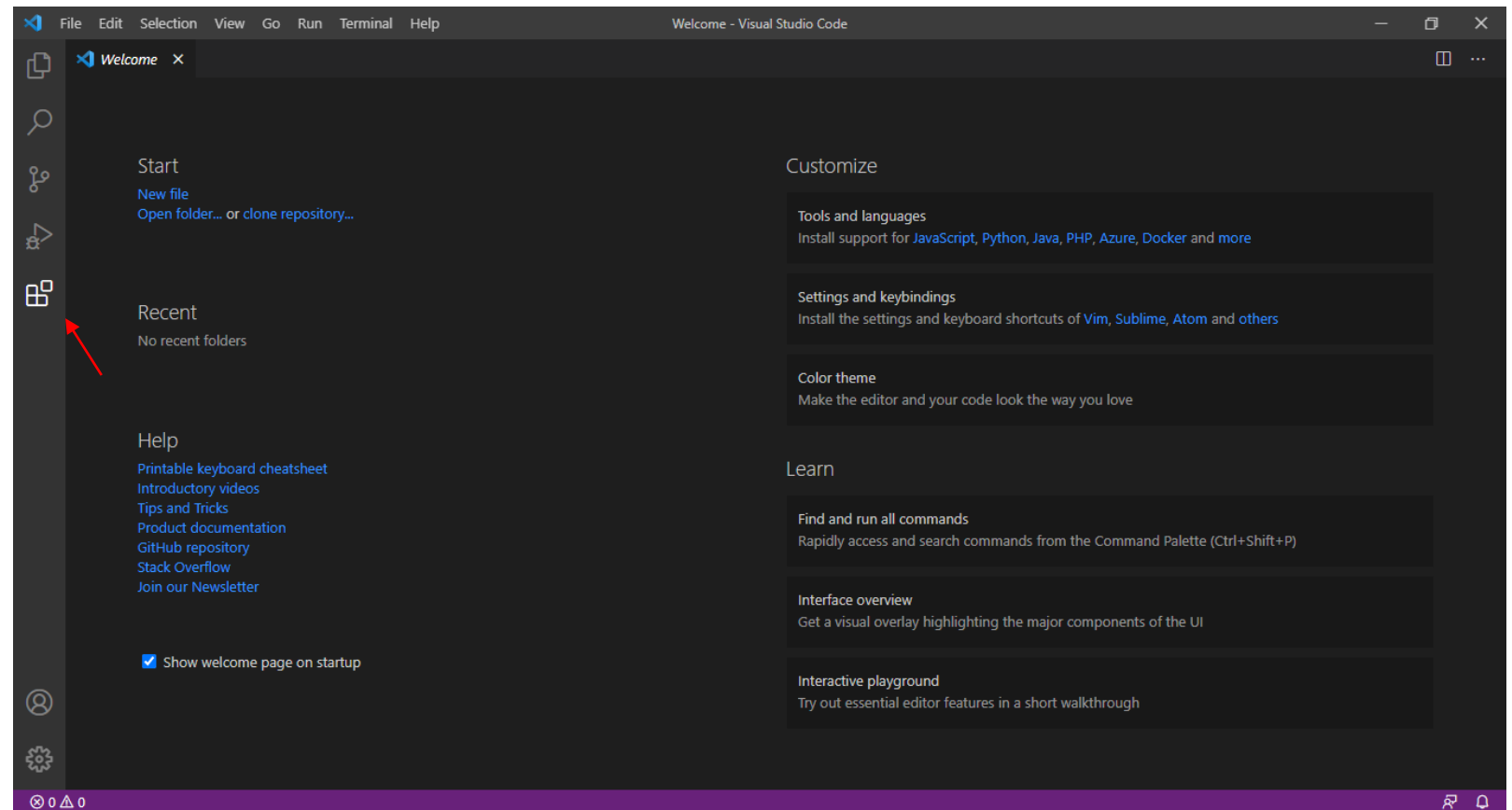


6



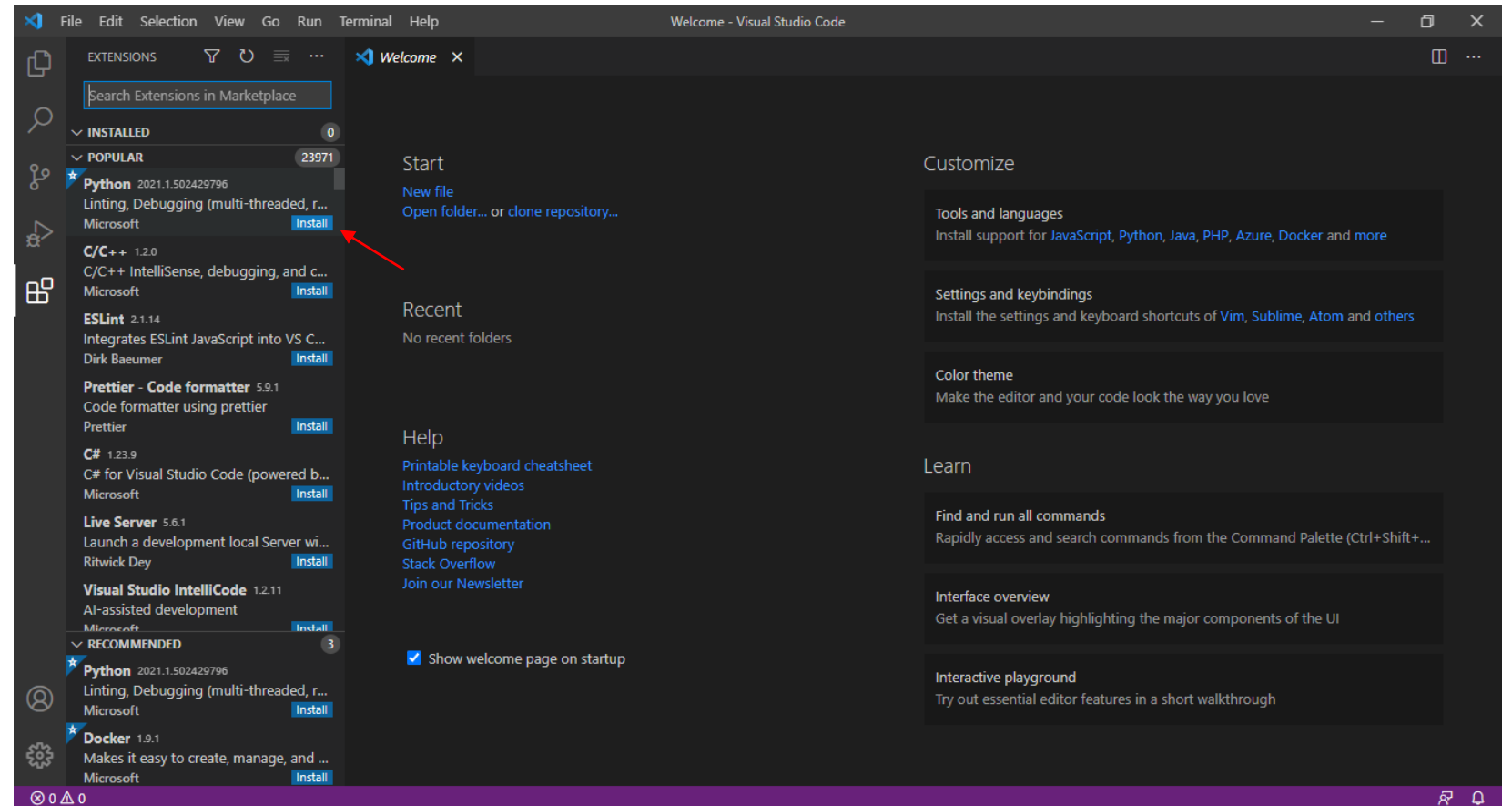
Hands on VS Code

After running VS Code, click on the Extensions icon.



Hands on VS Code

Hit the *Install* button for Python Extension.

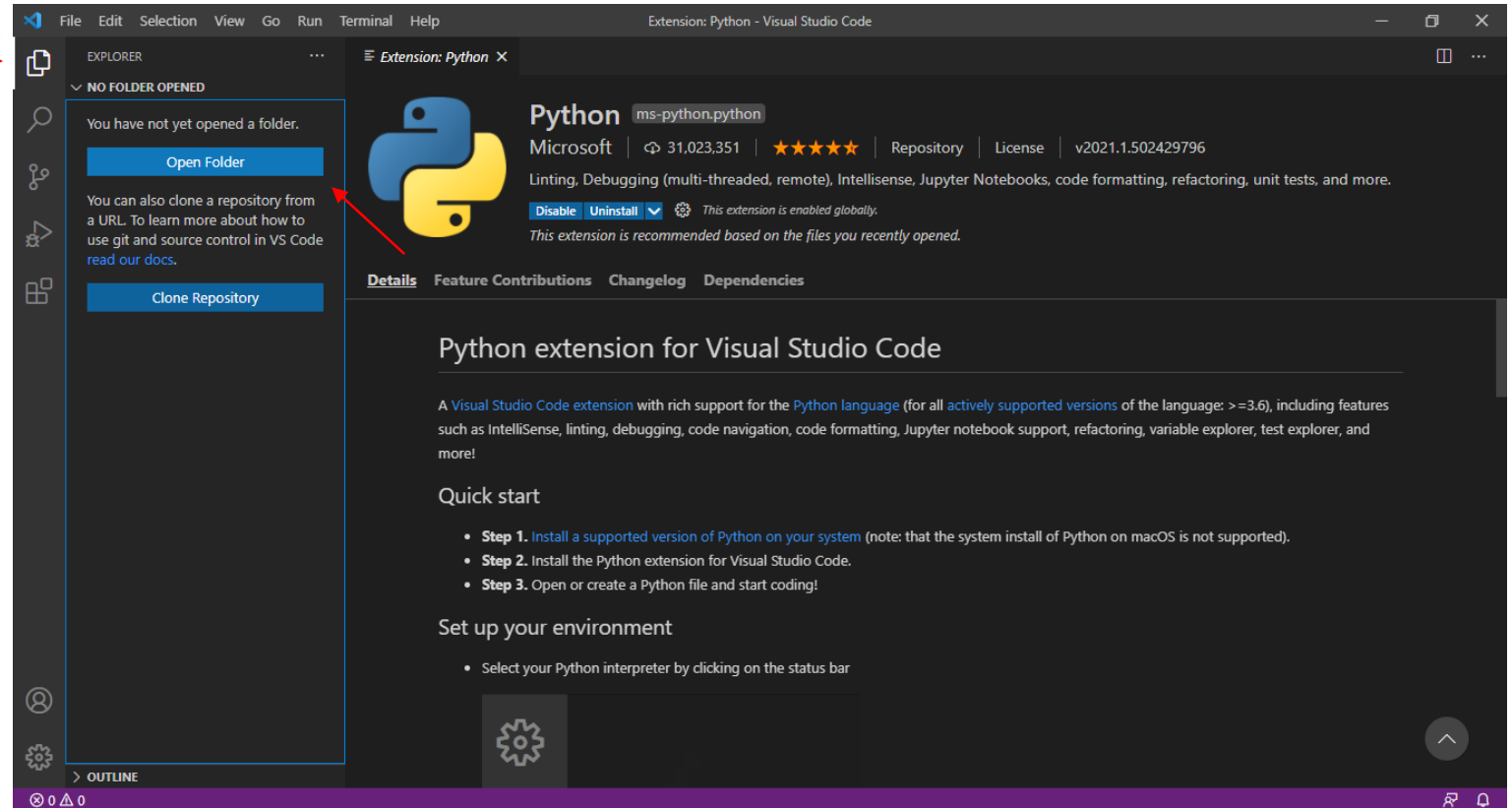


Hands on VS Code

Click on Explorer Icon, then you'll be faced with something like picture below.

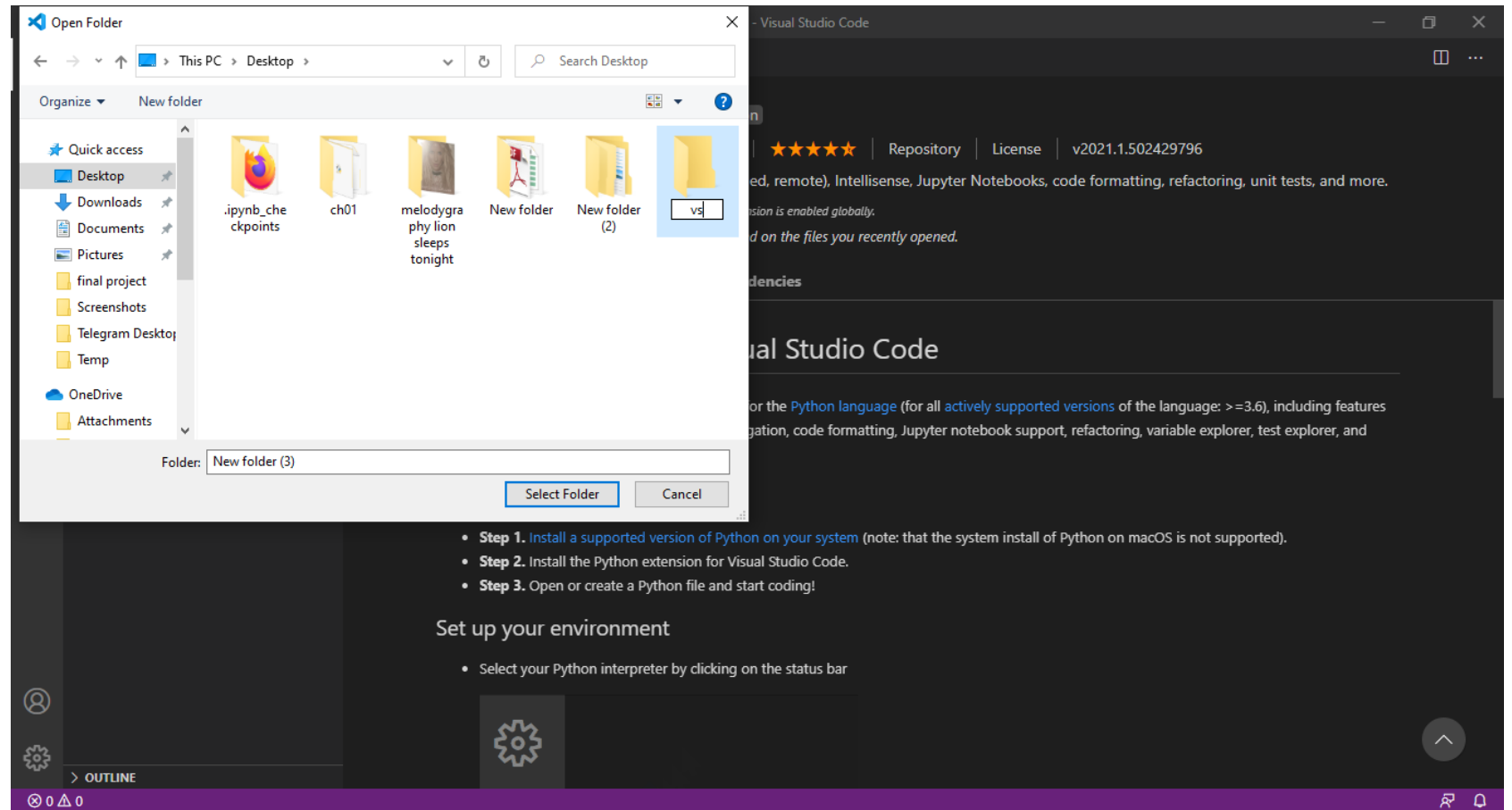
Hit the "Open Folder" tab.

Explorer icon



Hands on VS Code

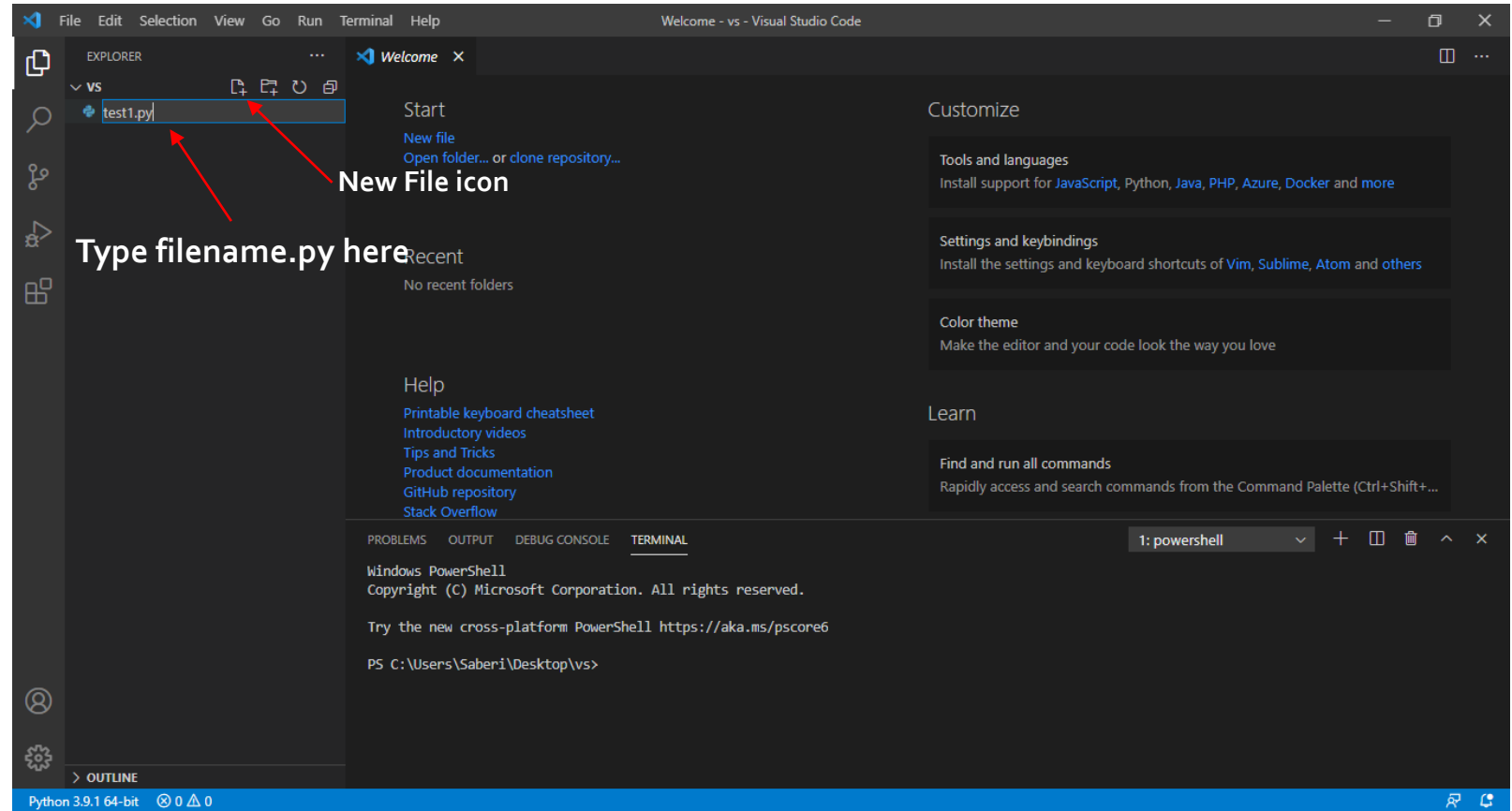
Create a directory for your python file in your desired path.
Ours will be a folder named “vs” on Desktop.



Hands on VS Code

Click on the *New File* icon, then specify your python file's name.

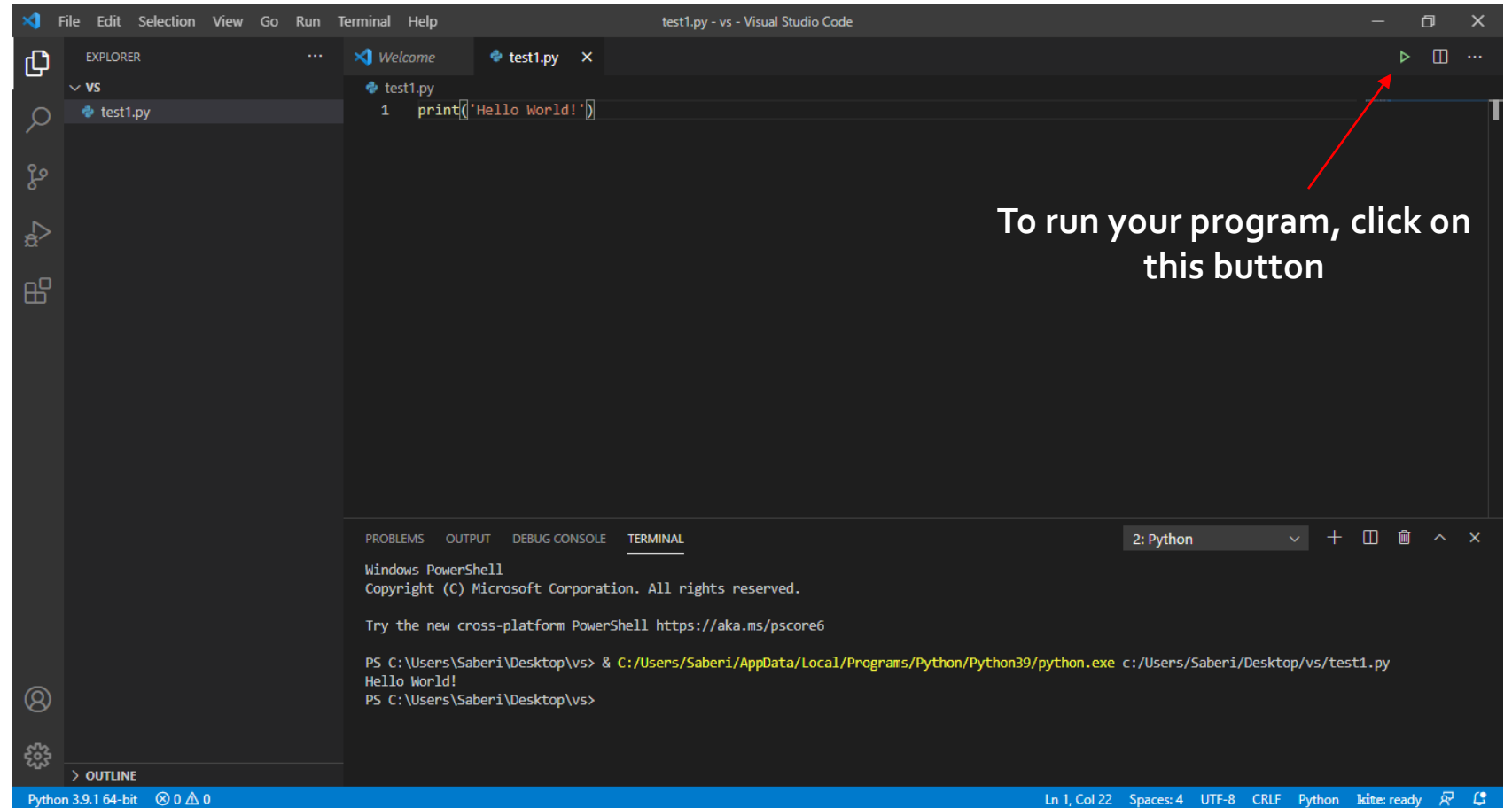
**Pay attention that you should type the file's .py extension.*



Hands on VS Code

You are all Set!

Enjoy writing your first program.



Pip commands

└→ Pip is a package manager for Python

Installing packages via pip

Open your OS's command-line interpreter.

Ours is Windows, so we'll open *Command Prompt*.

You can install your desired packages one at a time by the following command:

>pip install *package_name*

```
Microsoft Windows [Version 10.0.18363.1316]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Saberi>pip install pandas
Collecting pandas
  Downloading pandas-1.2.1-cp39-cp39-win_amd64.whl (9.3 MB)
    |-----| 9.3 MB 4.8 kB/s
Collecting pytz>=2017.3
  Downloading pytz-2021.1-py2.py3-none-any.whl (510 kB)
    |-----| 510 kB 384 kB/s
Requirement already satisfied: numpy>=1.16.5 in c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages
(from pandas) (1.20.0)
Requirement already satisfied: python-dateutil>=2.7.3 in c:\users\saberi\appdata\local\programs\python\python39\lib\site-
packages (from pandas) (2.8.1)
Requirement already satisfied: six>=1.5 in c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages (fro
m python-dateutil>=2.7.3->pandas) (1.15.0)
Installing collected packages: pytz, pandas
Successfully installed pandas-1.2.1 pytz-2021.1
WARNING: You are using pip version 20.2.3; however, version 21.0.1 is available.
You should consider upgrading via the 'c:\users\saberi\appdata\local\programs\python\python39\python.exe -m pip install
--upgrade pip' command.

C:\Users\Saberi>
```

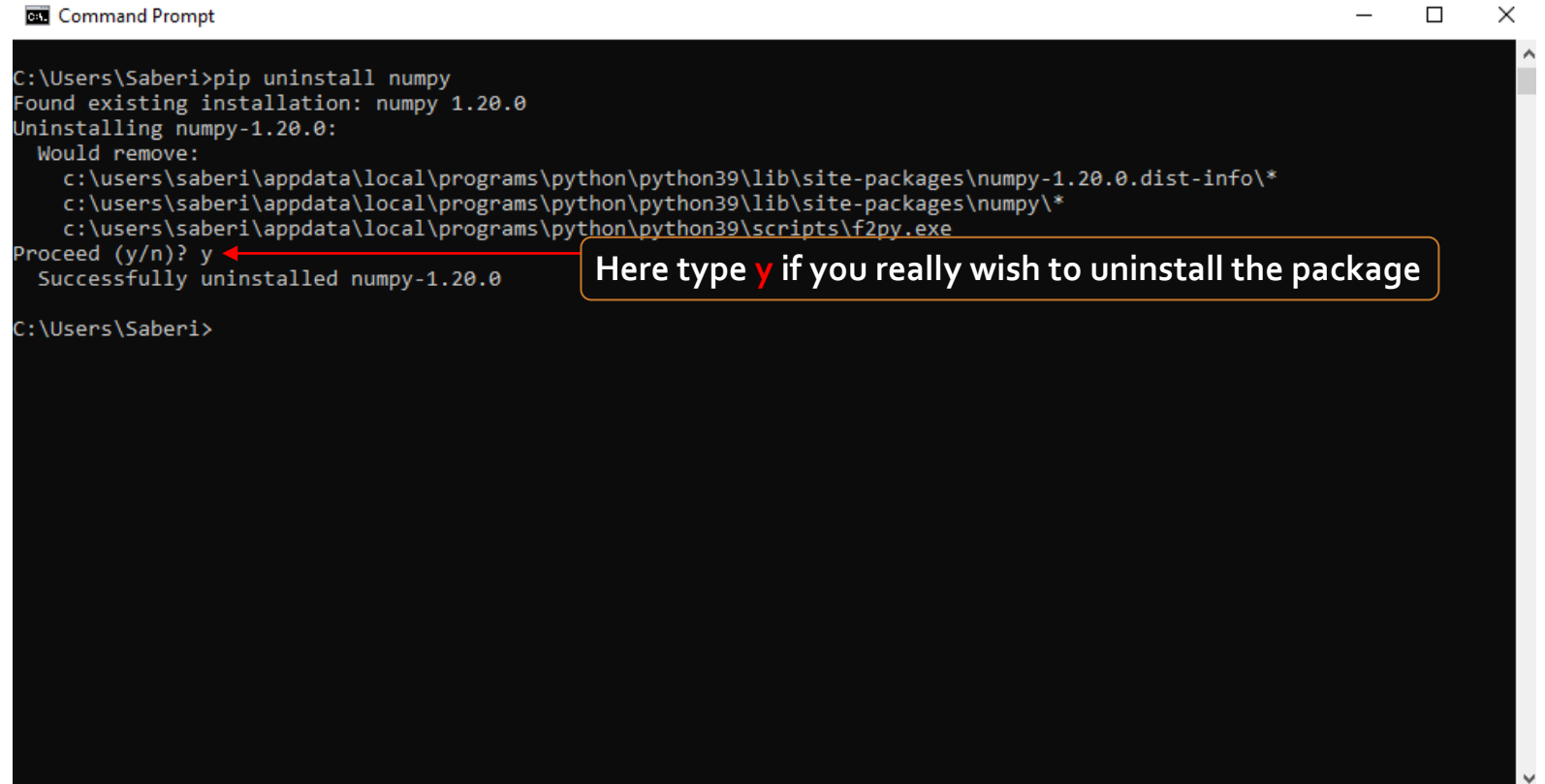
Here, we've installed pandas package

It means your package has been installed

Uninstalling packages via pip

You can uninstall packages by the following command:

>pip uninstall *package_name*



```
C:\Users\Saberi>pip uninstall numpy
Found existing installation: numpy 1.20.0
Uninstalling numpy-1.20.0:
  Would remove:
    c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages\numpy-1.20.0.dist-info\*
    c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages\numpy\*
    c:\users\saberi\appdata\local\programs\python\python39\scripts\f2py.exe
Proceed (y/n)? y
Successfully uninstalled numpy-1.20.0
C:\Users\Saberi>
```

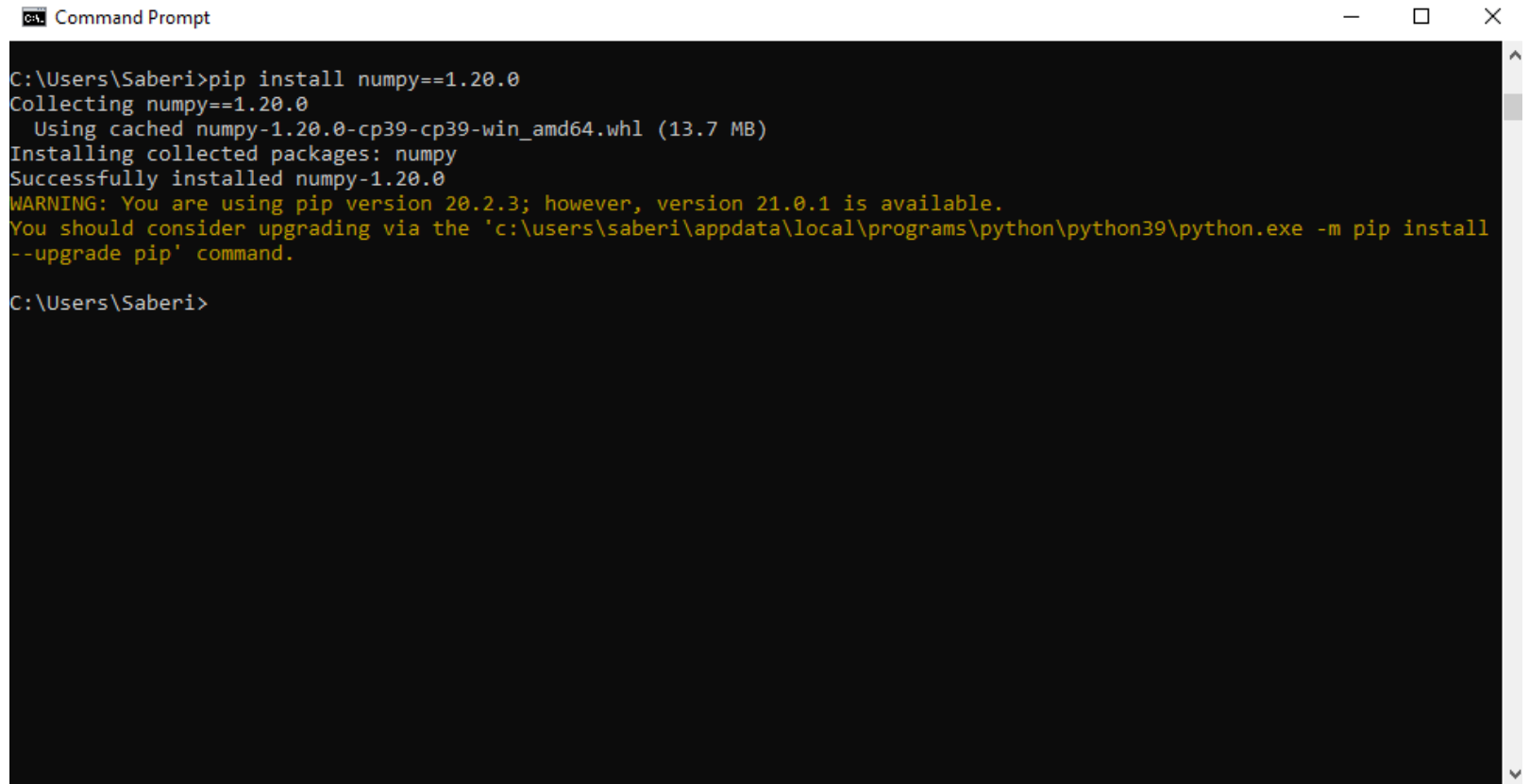
A screenshot of a Windows Command Prompt window titled "C:\Users\Saberi>". The window shows the execution of the command `pip uninstall numpy`. The output indicates that an existing installation of numpy 1.20.0 was found and is being uninstalled. It lists the files and directories that would be removed, including the package's dist-info, the package files themselves, and the f2py script. It then prompts the user with "Proceed (y/n)?". A red arrow points from a yellow callout box to the 'y' response. The final output is "Successfully uninstalled numpy-1.20.0".

Here type **y** if you really wish to uninstall the package

Installing a package with a specific version via pip

Sometimes you wish to install a specific version of your desired package. You can make it happen by the following command:

>pip install *package_name==version*



```
cmd. Command Prompt
C:\Users\Saberi>pip install numpy==1.20.0
Collecting numpy==1.20.0
  Using cached numpy-1.20.0-cp39-cp39-win_amd64.whl (13.7 MB)
Installing collected packages: numpy
Successfully installed numpy-1.20.0
WARNING: You are using pip version 20.2.3; however, version 21.0.1 is available.
You should consider upgrading via the 'c:\users\saberi\appdata\local\programs\python\python39\python.exe -m pip install --upgrade pip' command.
C:\Users\Saberi>
```

Access package details via pip

You can get details of a package like its version or description by the following command:

>pip show *package_name*



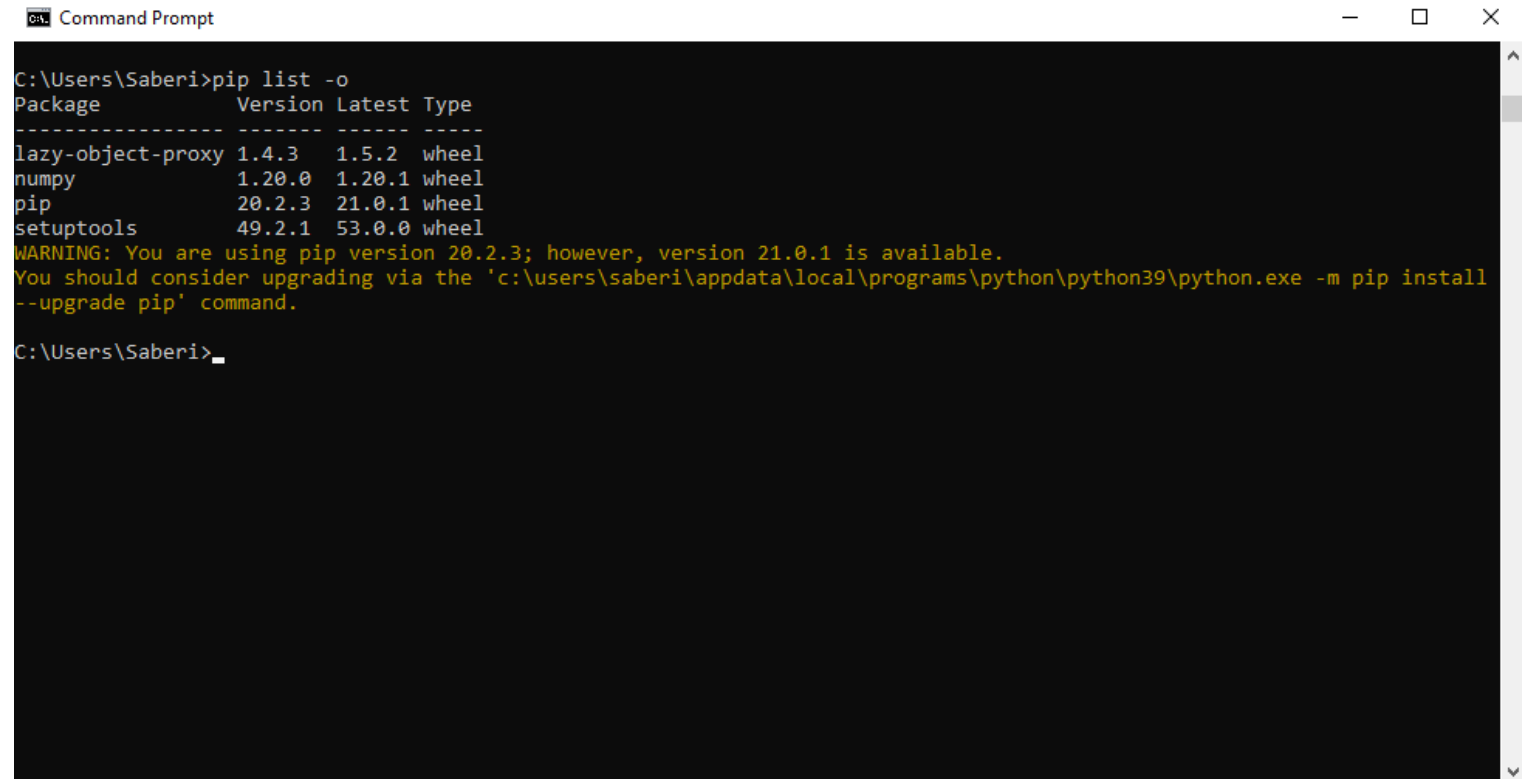
```
Command Prompt
C:\Users\Saberi>pip show pandas
Name: pandas
Version: 1.2.1
Summary: Powerful data structures for data analysis, time series, and statistics
Home-page: https://pandas.pydata.org
Author: None
Author-email: None
License: BSD
Location: c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages
Requires: pytz, numpy, python-dateutil
Required-by:
C:\Users\Saberi>
```

Description of pandas package

Getting a list of outdated packages via pip

You can get a list of outdated packages alongside their installed versions and their corresponding latest versions, by the following command:

```
>pip list -o
```



```
C:\Users\Saberi>pip list -o
Package            Version Latest Type
-----
lazy-object-proxy  1.4.3   1.5.2   wheel
numpy              1.20.0  1.20.1  wheel
pip                20.2.3  21.0.1  wheel
setuptools         49.2.1  53.0.0  wheel
WARNING: You are using pip version 20.2.3; however, version 21.0.1 is available.
You should consider upgrading via the 'c:\users\saberi\appdata\local\programs\python\python39\python.exe -m pip install
--upgrade pip' command.
C:\Users\Saberi>
```

Getting a list of updated packages via pip

You can get a list of updated packages to the latest versions by the following command:

```
>pip list -u
```



```
C:\Users\Saberi>pip list -u
Package            Version
-----
argon2-cffi        20.1.0
astroid             2.4.2
async-generator     1.10
attrs              20.3.0
backcall           0.2.0
bleach             3.3.0
cffi                1.14.4
colorama           0.4.4
decorator           4.4.2
defusedxml         0.6.0
entrypoints        0.3
ipykernel          5.4.3
ipython            7.20.0
ipython-genutils   0.2.0
ipywidgets         7.6.3
isort              5.7.0
jedi               0.18.0
Jinja2             2.11.3
jsonschema         3.2.0
jupyter            1.0.0
jupyter-client     6.1.11
jupyter-console    6.2.0
jupyter-core       4.7.1
jupyterlab-pygments 0.1.2
jupyterlab-widgets 1.0.0
MarkupSafe         1.1.1
```

Checking compatibility between packages via pip

If you wish to check your installed packages have compatible dependencies, you can use the below command :

>pip check

If your packages are compatible, you'll get the below message.

A screenshot of a Windows Command Prompt window. The title bar reads 'Command Prompt'. The command prompt shows the user's location as 'C:\Users\Saberi' and the command 'pip check' has been entered. The output is 'No broken requirements found.' followed by a new prompt 'C:\Users\Saberi>'.

```
Command Prompt
C:\Users\Saberi>pip check
No broken requirements found.
C:\Users\Saberi>
```

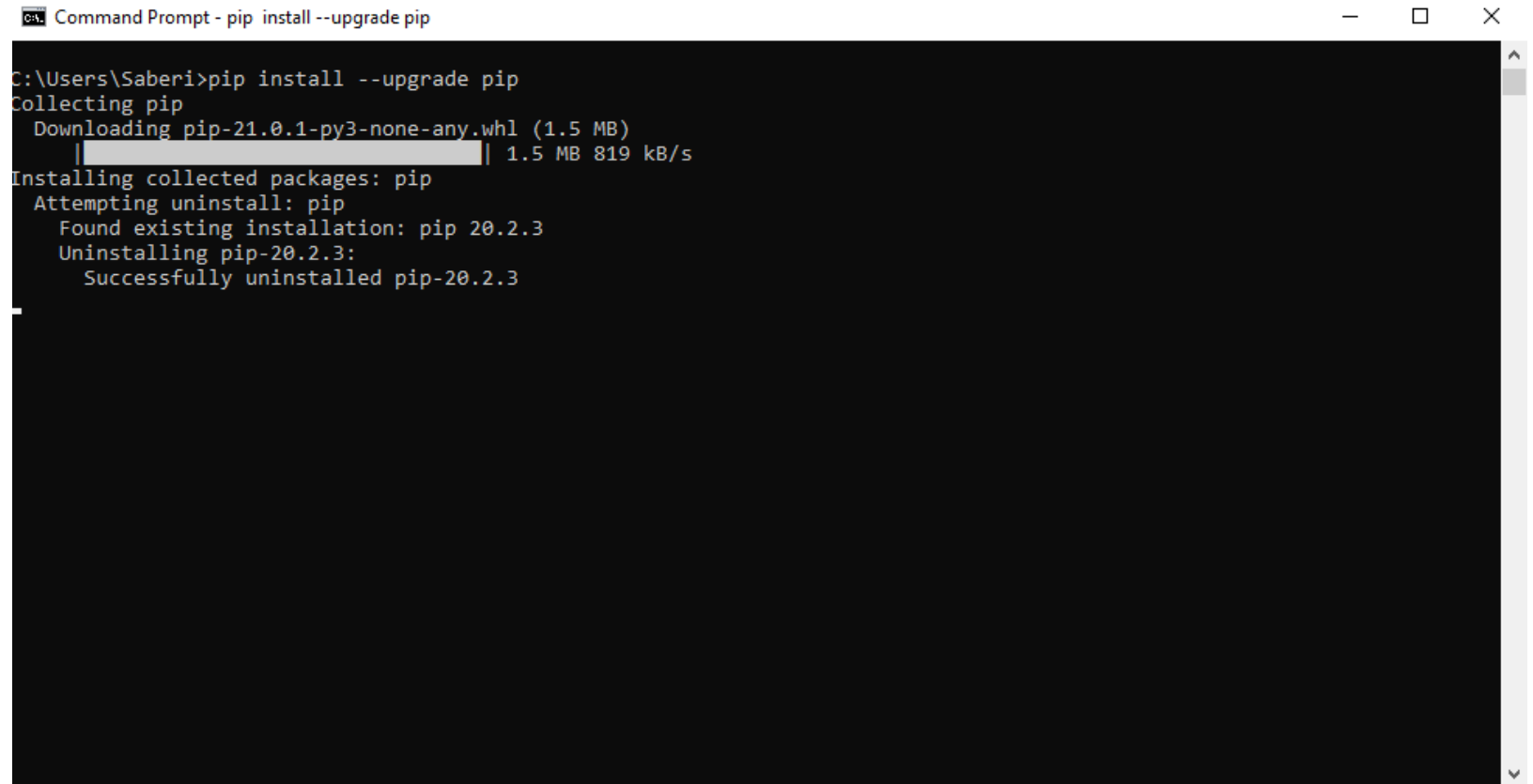
But if your packages are incompatible, you'll get something like the below message.

```
nbclient 0.5.1 has requirement jupyter-client>=6.1.5, but you have jupyter-client 5.3.5.
datascience 0.10.6 has requirement folium==0.2.1, but you have folium 0.8.3.
albumations 0.1.12 has requirement imgaug<0.2.7,>=0.2.5, but you have imgaug 0.2.9.
```

Updating pip

You can update your pip to the latest version via the below command:

```
>pip install --upgrade pip
```



```
cmd Command Prompt - pip install --upgrade pip

C:\Users\Saberi>pip install --upgrade pip
Collecting pip
  Downloading pip-21.0.1-py3-none-any.whl (1.5 MB)
    | 1.5 MB 819 kB/s
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 20.2.3
    Uninstalling pip-20.2.3:
      Successfully uninstalled pip-20.2.3
```

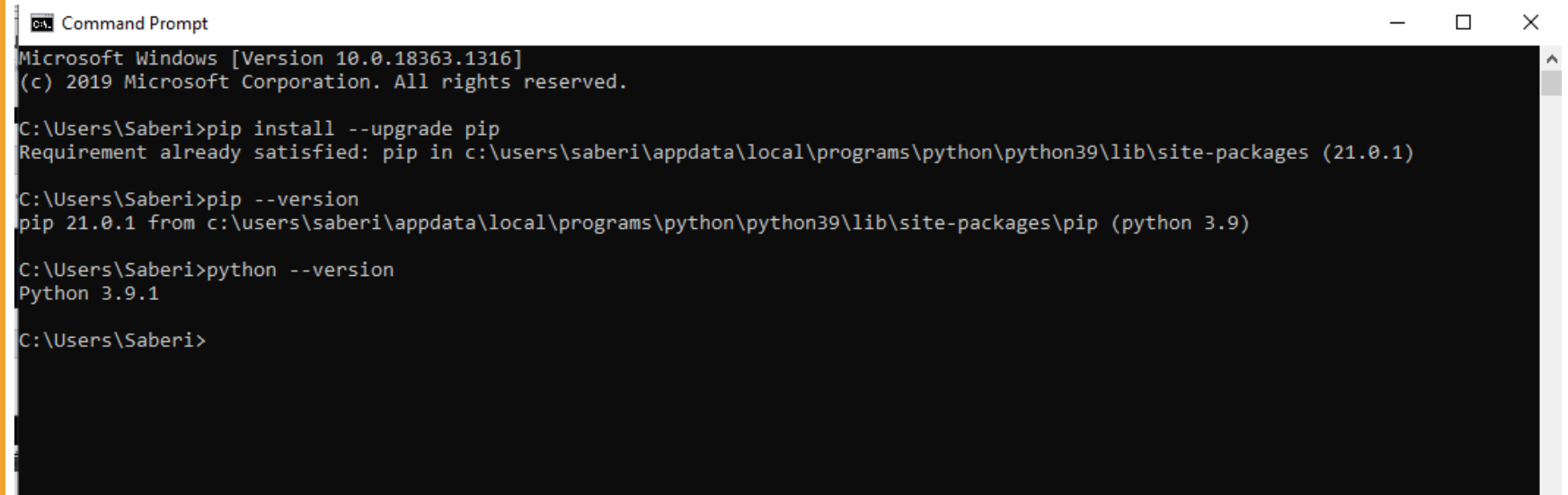
Version check

To check your pip version :

>pip --version

To check your python version :

>python --version

A screenshot of a Windows Command Prompt window. The title bar reads "C:\ Command Prompt". The window content shows the following text:

```
Microsoft Windows [Version 10.0.18363.1316]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Saberi>pip install --upgrade pip
Requirement already satisfied: pip in c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages (21.0.1)

C:\Users\Saberi>pip --version
pip 21.0.1 from c:\users\saberi\appdata\local\programs\python\python39\lib\site-packages\pip (python 3.9)

C:\Users\Saberi>python --version
Python 3.9.1

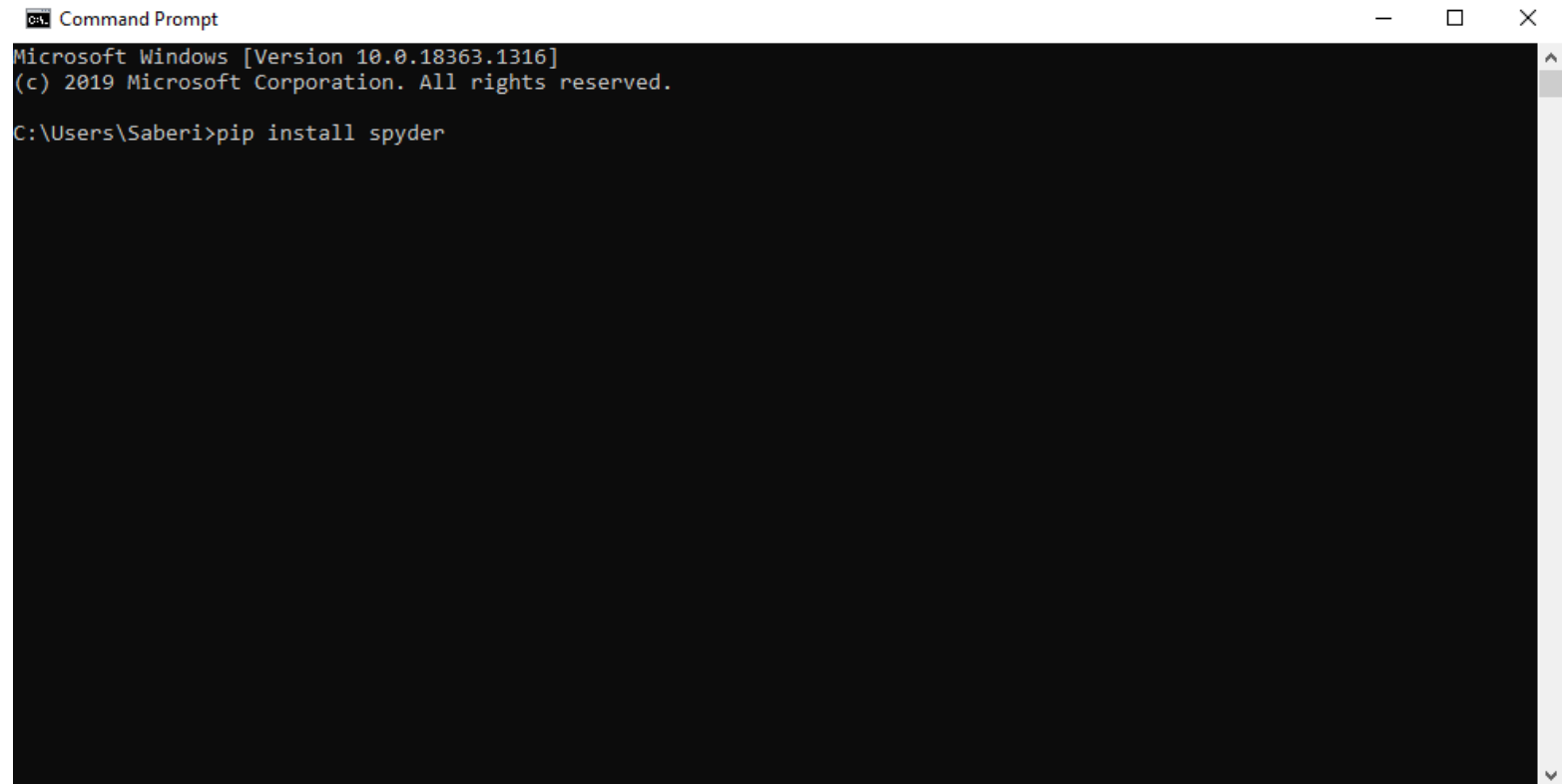
C:\Users\Saberi>
```

Spyder

Installing Spyder

To install Spyder IDE, open your OS's command-line interpreter, then type:

```
>pip install spyder
```

A screenshot of a Windows Command Prompt window. The title bar reads 'Command Prompt'. The window content shows the following text: 'Microsoft Windows [Version 10.0.18363.1316]', '(c) 2019 Microsoft Corporation. All rights reserved.', and 'C:\Users\Saberi>pip install spyder'. The command prompt is currently at the end of the command line, waiting for the installation to complete. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

Installation process may take awhile.

Hands on Spyder

To run Spyder, type *spyder* on the Command Prompt.

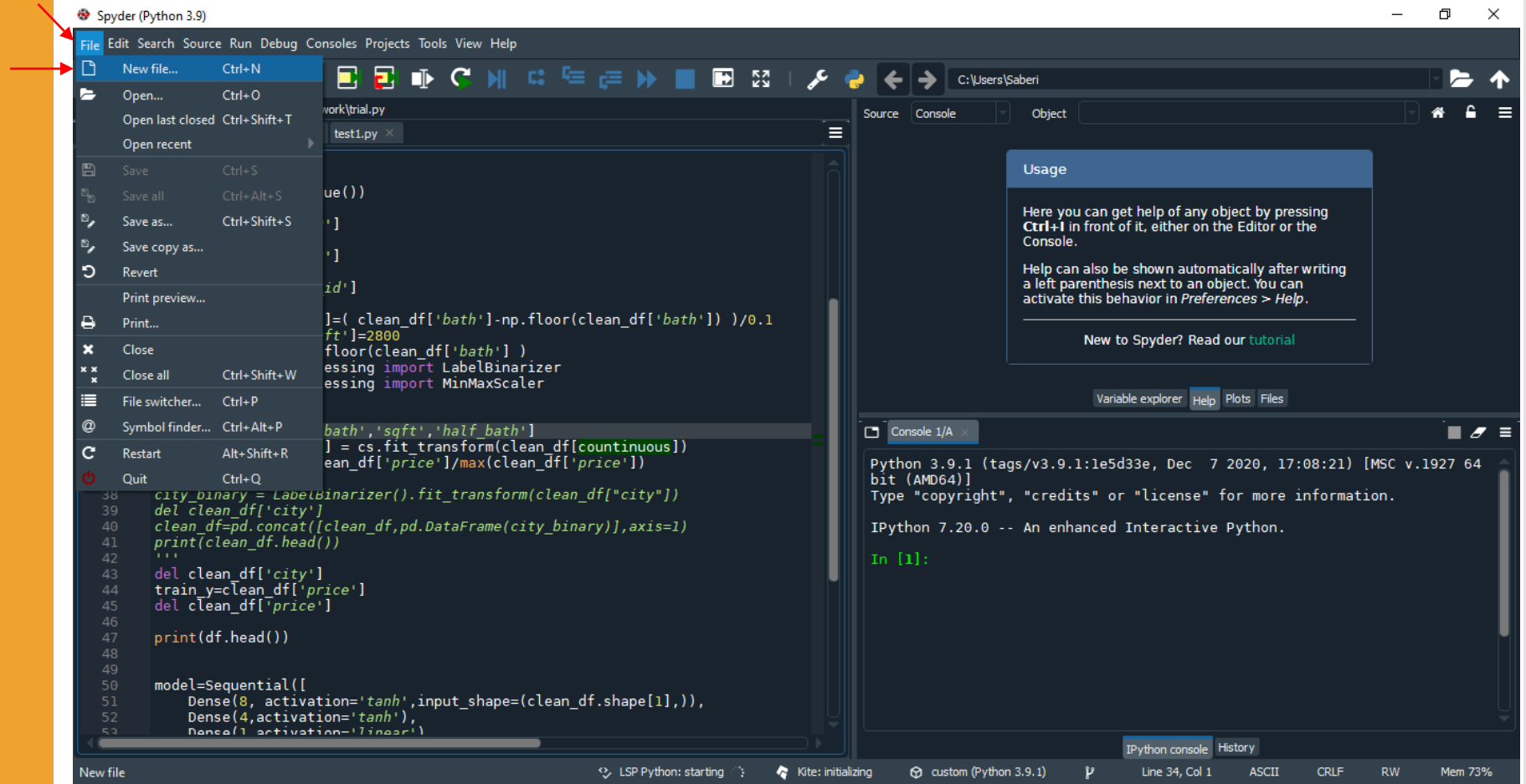
A screenshot of a Windows Command Prompt window. The title bar at the top reads "Command Prompt" with standard minimize, maximize, and close buttons on the right. The command prompt shows the directory "C:\Users\Saberi" and the command "spyder" has been entered. The cursor is positioned at the end of the command line.

```
Command Prompt
C:\Users\Saberi>spyder
C:\Users\Saberi>
```

It may take awhile for Spyder to boot up, be patient!

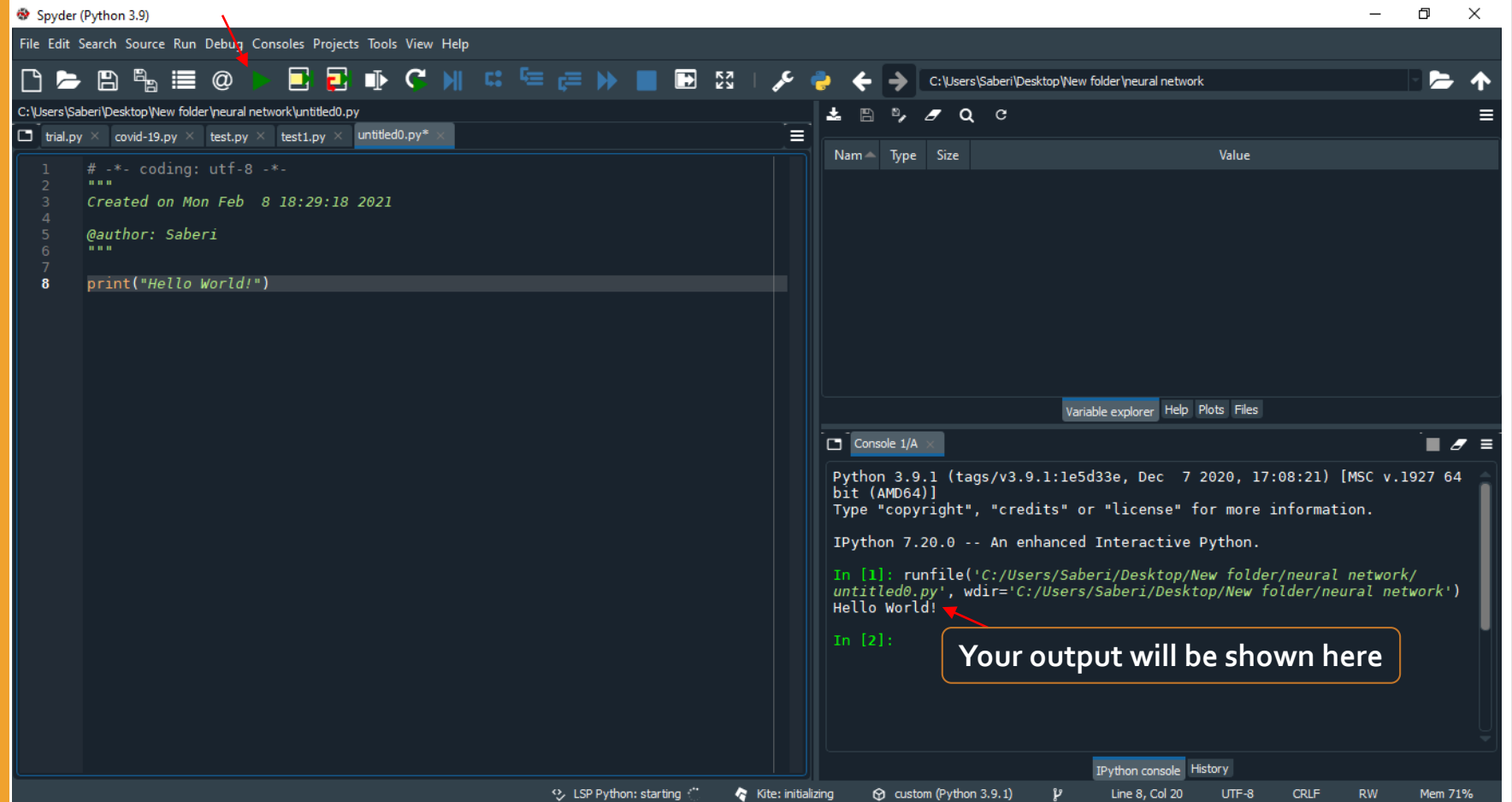
Hands on Spyder

Now that you've run Spyder, you can create a new file from the menu bar and start coding right away!



Hands on Spyder

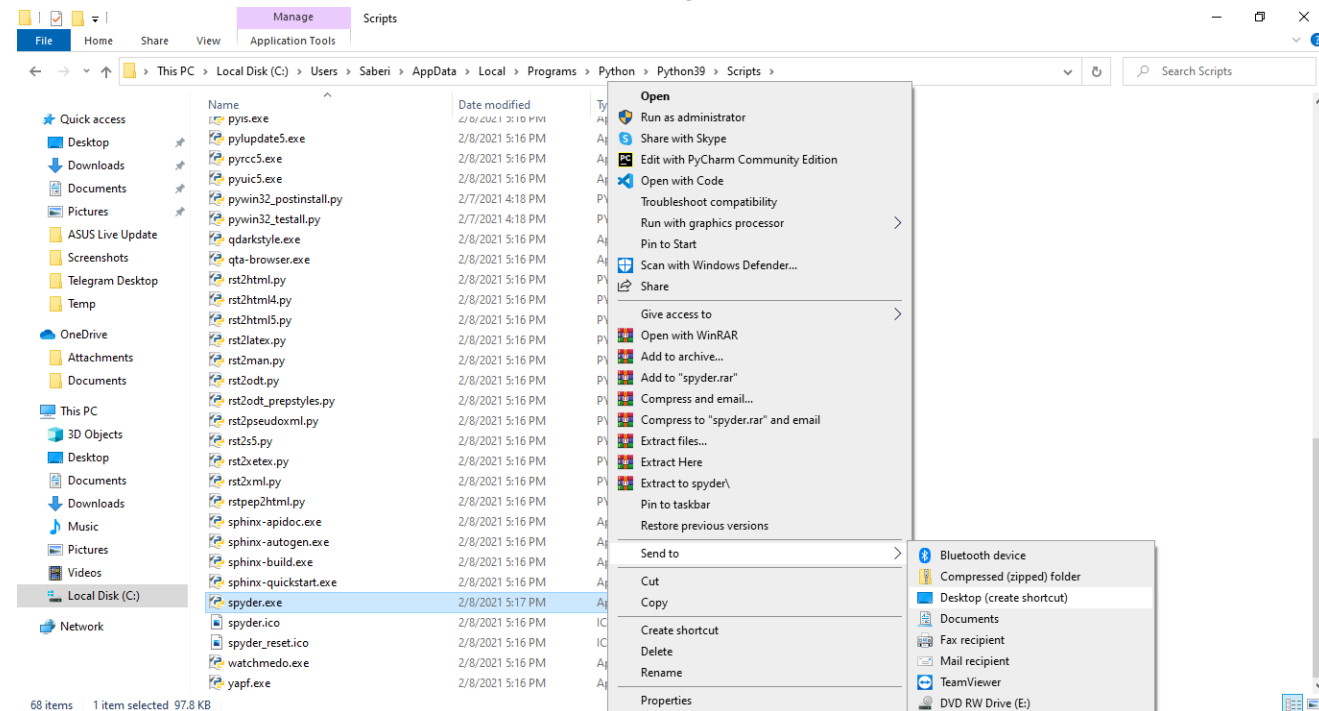
You can run your program either by pressing **F5** on your keyboard or by clicking on the green icon above.



Hands on Spyder

If you wish to have a shortcut for Spyder so you don't have to run it from CMD, you can follow the steps below.

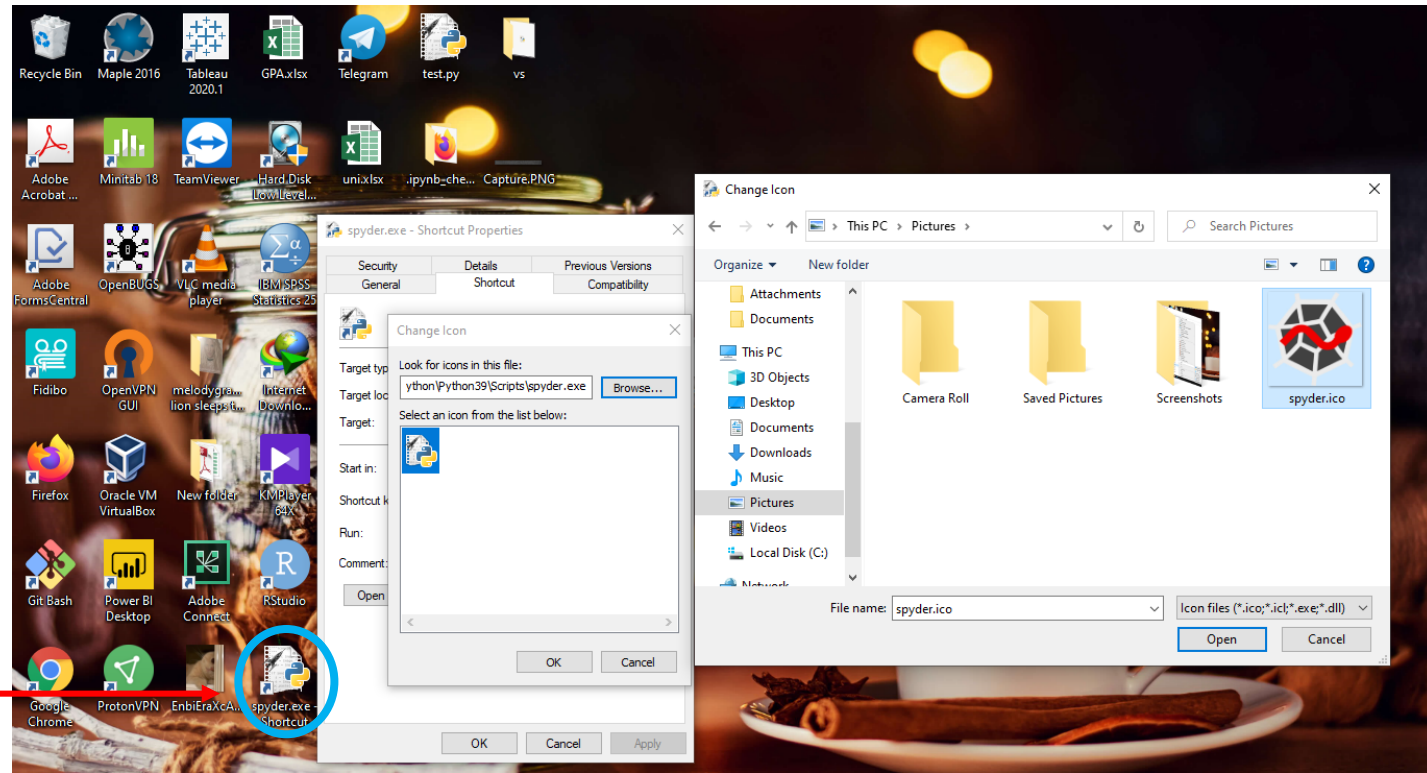
- Go to the directory of your python (The path you installed python in)
- Enter *Scripts* folder
- Find *spyder.exe*
- *Right click on it and send a shortcut to your Desktop*



Hands on Spyder

If you have downloaded an icon for Spyder, you can apply it by:

- Right click on the shortcut
- Select Properties
- From the Shortcut tab, select the Change Icon button
- Then browse the downloaded icon.
- Click on *OK*



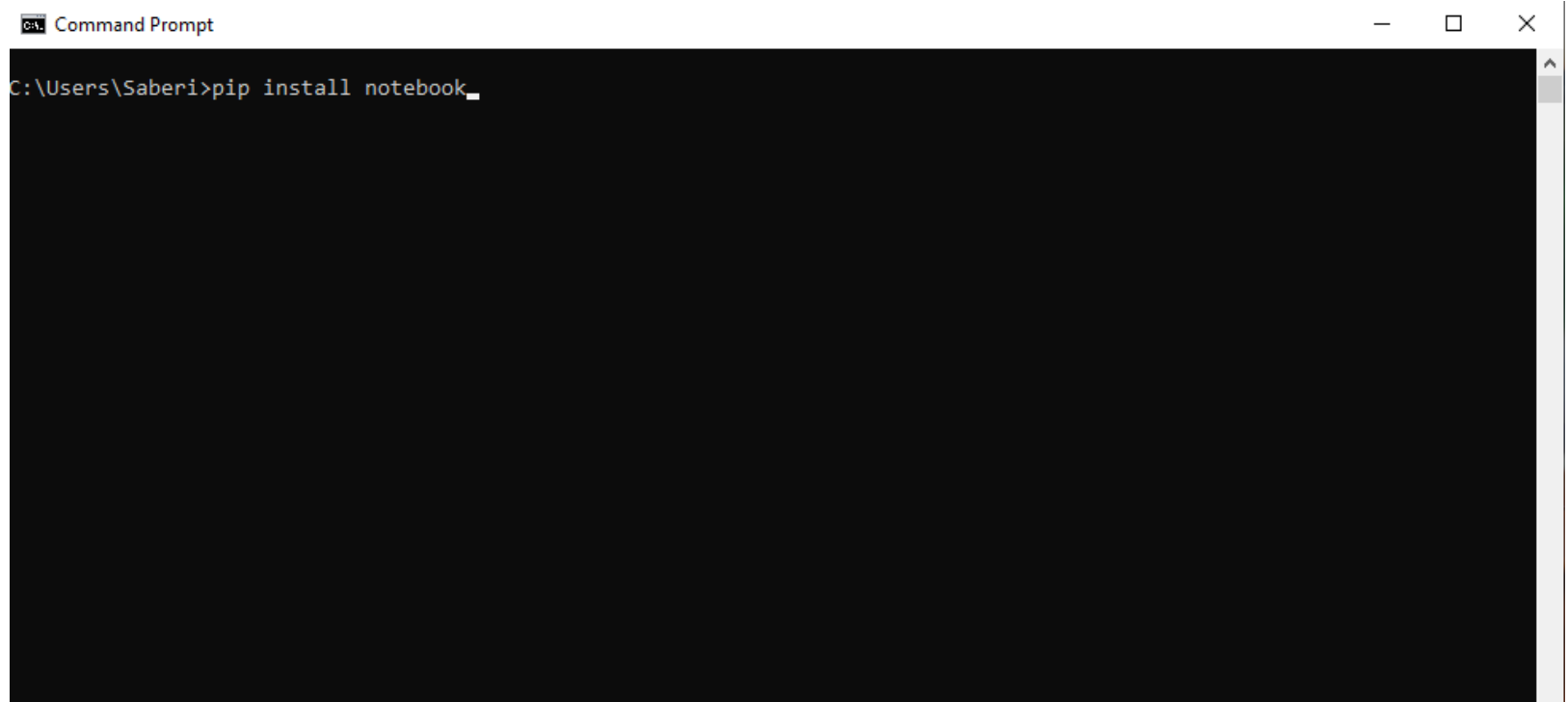
This is the shortcut we are trying to allocate an icon to

Jupyter Notebook

Installing Jupyter Notebook

To install Jupyter Notebook, open your OS's command-line interpreter, then type:

```
>pip install notebook
```

A screenshot of a Windows Command Prompt window. The title bar at the top reads "Command Prompt" with standard window controls (minimize, maximize, close) on the right. The command prompt shows the path "C:\Users\Saberi>" followed by the command "pip install notebook" and a cursor at the end. The background of the command prompt is black, and the text is white.

Installation process may take awhile.

Hands on Jupyter Notebook

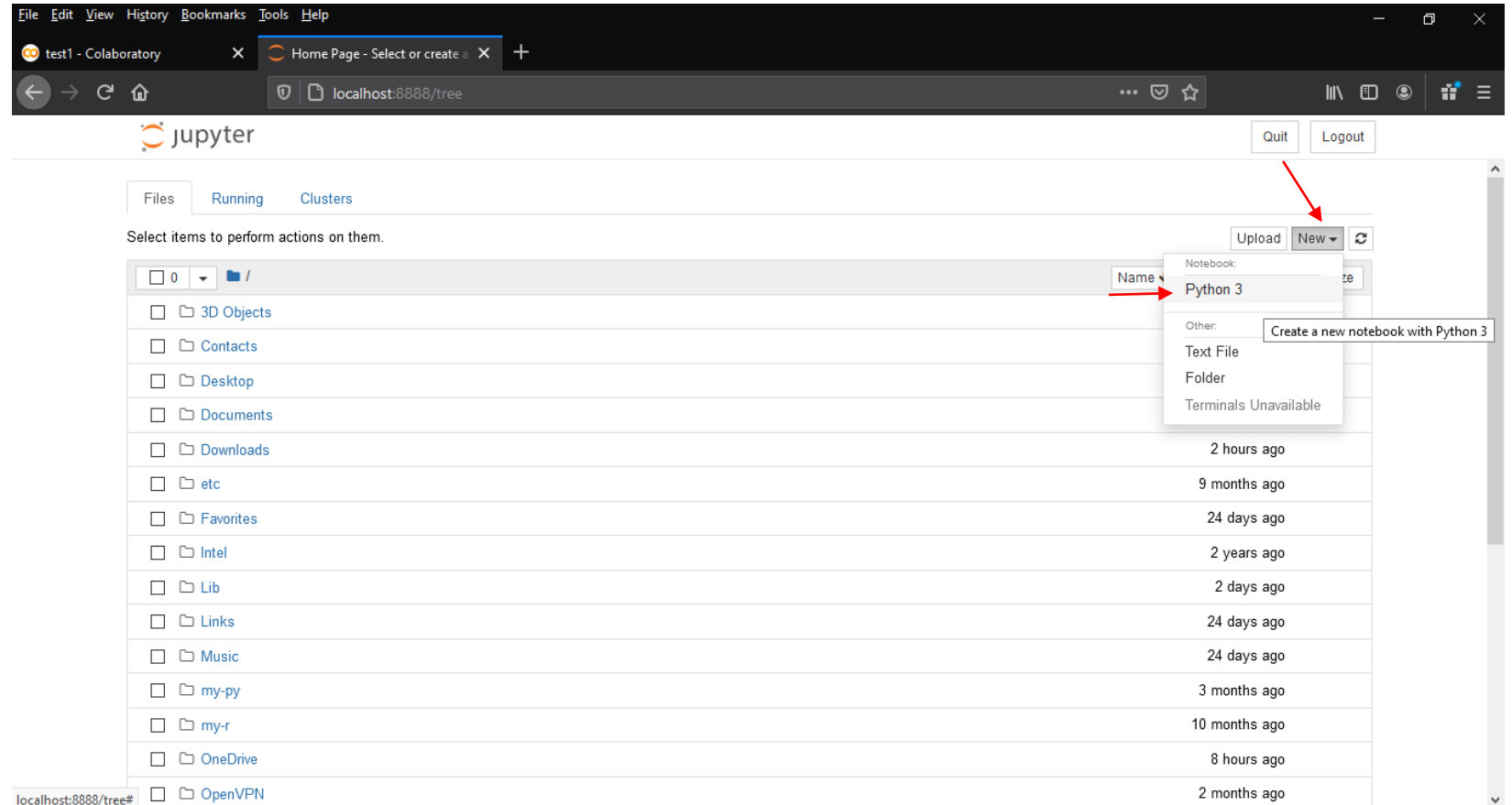
To run Jupyter Notebook, type *jupyter notebook* on the Command Prompt.

A screenshot of a Windows Command Prompt window. The title bar at the top reads "Command Prompt" with standard window control buttons (minimize, maximize, close) on the right. The command prompt shows the current directory as "C:\Users\Saber" followed by a prompt character ">". The command "jupyter notebook" has been typed into the command line.

After running the command above, you'll be redirected to a web page.
That's your Jupyter environment.
Keep in mind that the Jupyter kernel is running on CMD, so do not close it !

Hands on Jupyter Notebook

To create a python notebook, go to your desired path, then click on New->Python 3



Hands on Jupyter Notebook

You are all set!

To run a cell and create a new one below it, hit Shift+Enter keys.

