

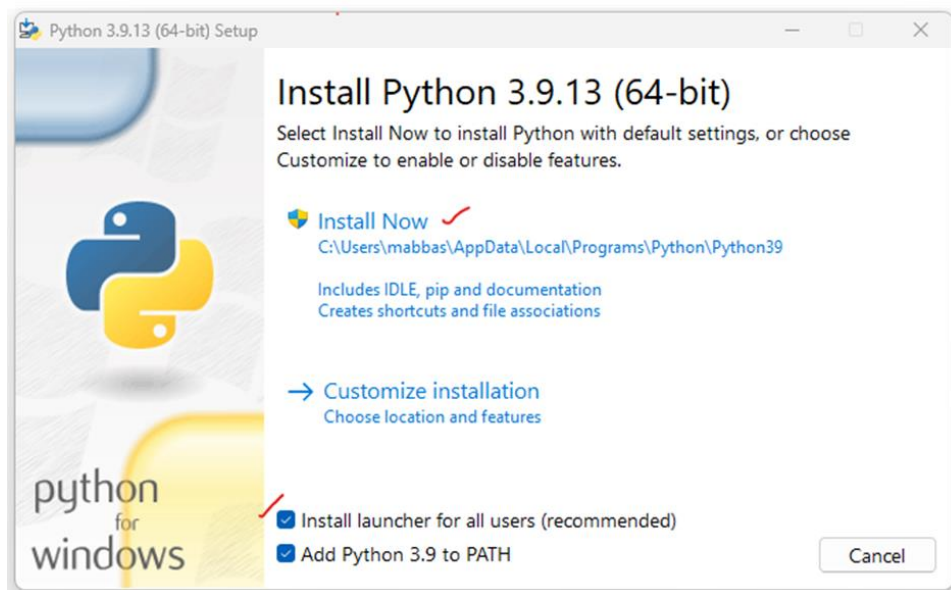
Installing Python and the InfraFair Model

Installing Python¹

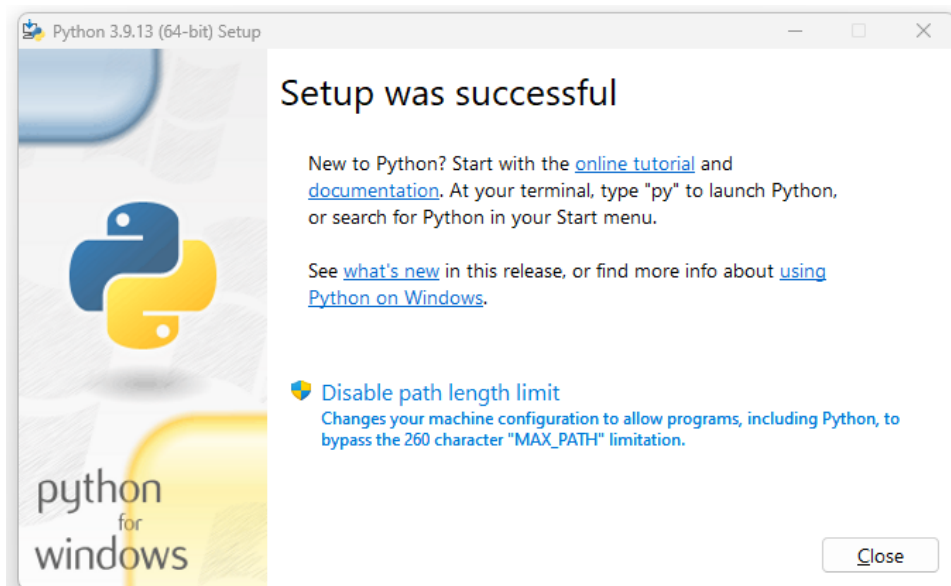
You can download Python freely from: <https://www.python.org/downloads/release/python-3913/>

If your operating system is 64-bit (most common), install the file named “**python-3.9.13-amd64.exe**”. If it is 32-bit, install the file named “**python-3.9.13.exe**”. Follow the following steps.

Click on “**Install Now**” and make sure that you select the option “**Add Python 3.9 to PATH**” so that you can use Python on your command prompt (uncheck it if you are using another terminal or IDE).



You should get the following message that indicates you have successfully installed Python.



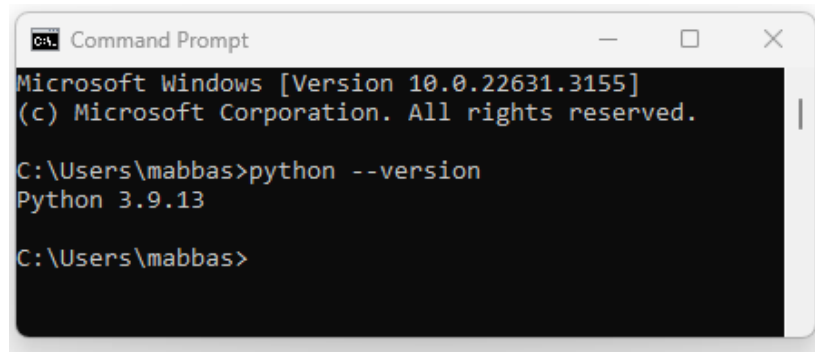
¹ Skip this section if you have Python installed

After closing the message, restart your computer so that the system is updated.

To test that Python is working on your computer, open the command prompt from the start menu, type the following command, and press enter on the keyboard:

```
python --version
```

You should get the following message.



```
Microsoft Windows [Version 10.0.22631.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\mabbas>python --version
Python 3.9.13

C:\Users\mabbas>
```

Installing InfraFair

To install InfraFair, you should be connected to the internet, type the following command and press enter on the keyboard:

```
pip install InfraFair
```

You should see the screen below.



```
C:\Users\mabbas>python --version
Python 3.9.13

C:\Users\mabbas>pip install InfraFair
Collecting InfraFair
  Downloading InfraFair-1.0.0-py2.py3-none-any.whl (31 kB)
Collecting numpy>=1.21.4
  Downloading numpy-1.26.4-cp39-cp39-win_amd64.whl (15.8 MB)
----- 15.8/15.8 MB 65.6 MB/s eta 0:00:00
Collecting pandas<2.0.0,>=1.3.4
  Downloading pandas-1.5.3-cp39-cp39-win_amd64.whl (10.9 MB)
----- 10.9/10.9 MB 65.2 MB/s eta 0:00:00
Collecting matplotlib>=3.5.0
  Downloading matplotlib-3.8.3-cp39-cp39-win_amd64.whl (7.6 MB)
----- 7.6/7.6 MB 70.1 MB/s eta 0:00:00
Collecting openpyxl>=3.0.0
  Downloading openpyxl-3.1.2-py2.py3-none-any.whl (249 kB)
----- 250.0/250.0 KB 15.0 MB/s eta 0:00:00
Collecting pillow>=8
  Downloading pillow-10.2.0-cp39-cp39-win_amd64.whl (2.6 MB)
----- 2.6/2.6 MB 84.2 MB/s eta 0:00:00
Collecting importlib-resources>=3.2.0
  Downloading importlib-resources-6.1.2-py3-none-any.whl (34 kB)
Collecting python-dateutil>=2.7
  Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
----- 247.7/247.7 KB 14.8 MB/s eta 0:00:00
Collecting fonttools>=4.22.0
  Downloading fonttools-4.49.0-cp39-cp39-win_amd64.whl (2.2 MB)
----- 2.2/2.2 MB 46.2 MB/s eta 0:00:00
Collecting cycler>=0.10
  Downloading cycler-0.12.1-py3-none-any.whl (8.3 kB)
Collecting pyparsing>=2.3.1
  Downloading pyparsing-3.1.1-py3-none-any.whl (103 kB)
----- 103.1/103.1 KB ? eta 0:00:00
Collecting packaging>=20.0
  Downloading packaging-23.2-py3-none-any.whl (53 kB)
----- 53.0/53.0 KB ? eta 0:00:00
Collecting kiwisolver>=1.3.1
  Downloading kiwisolver-1.4.5-cp39-cp39-win_amd64.whl (56 kB)
----- 56.2/56.2 KB ? eta 0:00:00
Collecting contourpy>=1.0.1
  Downloading contourpy-1.2.0-cp39-cp39-win_amd64.whl (181 kB)
----- 181.9/181.9 KB ? eta 0:00:00
Collecting et-xmlfile
  Downloading et_xmlfile-1.1.0-py3-none-any.whl (4.7 kB)
Collecting pytz>=2020.1
  Downloading pytz-2024.1-py2.py3-none-any.whl (505 kB)
----- 505.5/505.5 KB ? eta 0:00:00
Collecting zipp>=3.1.0
  Downloading zipp-3.17.0-py3-none-any.whl (7.4 kB)
Collecting six>=1.5
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: pytz, zipp, six, pyparsing, pillow, packaging, numpy, kiwisolver, fonttools, et-xmlfile, cycler, python-dateutil, openpyxl, imp
ortlib-resources, contourpy, pandas, matplotlib, InfraFair
Successfully installed InfraFair-1.0.0 contourpy-1.2.0 cycler-0.12.1 et-xmlfile-1.1.0 fonttools-4.49.0 importlib-resources-6.1.2 kiwisolver-1.4.5 matplotlib-3
.8.3 numpy-1.26.4 openpyxl-3.1.2 packaging-23.2 pandas-1.5.3 pillow-10.2.0 pyparsing-3.1.1 python-dateutil-2.8.2 pytz-2024.1 six-1.16.0 zipp-3.17.0
WARNING: You are using pip version 22.0.4; however, version 24.0 is available.
You should consider upgrading via the 'C:\Users\mabbas\AppData\Local\Programs\Python\Python39\python.exe -m pip install --upgrade pip' command.

C:\Users\mabbas>
```

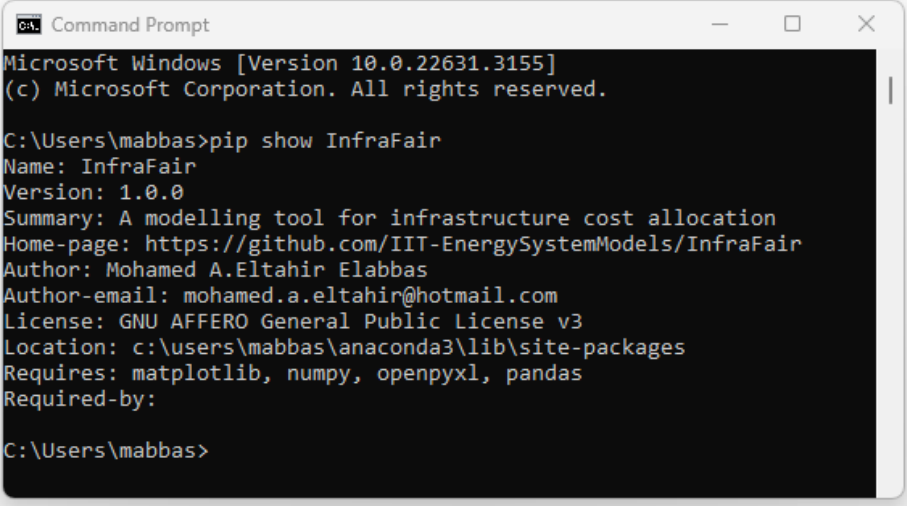
There should be a message at the end that says, “**Successfully installed InfraFair-1.0.0**”, indicating that the model has been installed without errors. If there is a warning, just ignore it.

Running InfraFair

To test and run the InfraFair model, you should first locate where the model is installed in your computer by opening the command prompt, typing the following command and pressing enter on the keyboard:

```
pip show InfraFair
```

You should see the following screen. You should see where the model is installed in the “**Location**” information. This is where you can find the model script, and it is named “**InfraFair.py**”

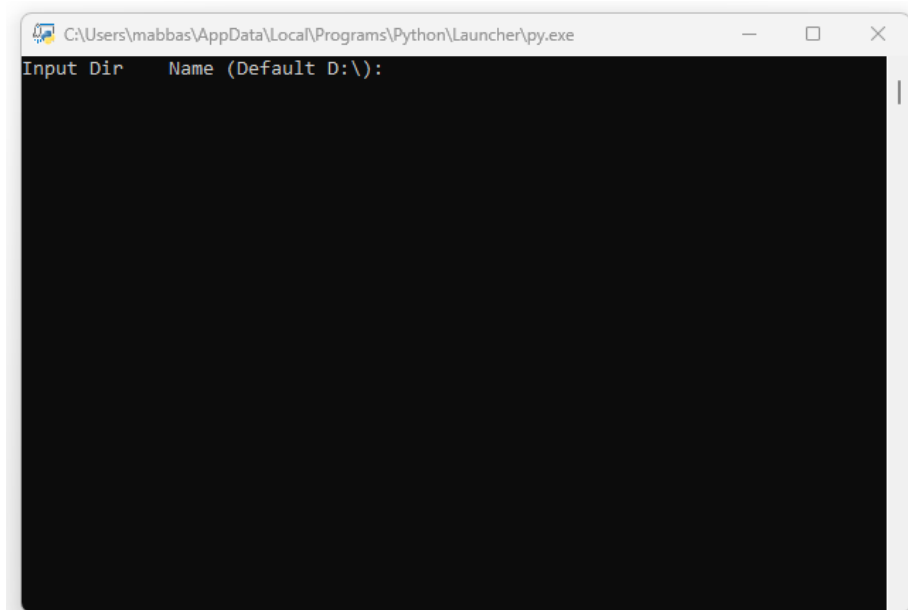


```
Microsoft Windows [Version 10.0.22631.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\mabbas>pip show InfraFair
Name: InfraFair
Version: 1.0.0
Summary: A modelling tool for infrastructure cost allocation
Home-page: https://github.com/IIT-EnergySystemModels/InfraFair
Author: Mohamed A.Eltahir Elabbas
Author-email: mohamed.a.eltahir@hotmail.com
License: GNU AFFERO General Public License v3
Location: c:\users\mabbas\anaconda3\lib\site-packages
Requires: matplotlib, numpy, openpyxl, pandas
Required-by:

C:\Users\mabbas>
```

To run the model, simply double-click on “InfraFair.py” (either from the installation location on your computer or from the downloaded file with this guide; they are both the same) to open it with the Python application installed in the first step. This should open the following screen.



The model will ask you for three inputs: the directory, the case and the input files. Once given these inputs, the model will produce results in the directory it is located in.

You will see the following screen when you run the model successfully.

[illegible]

Note that the screen above will disappear immediately after the model is executed. In order to see the message, you should run the model using the command prompt by opening it, navigating to the directory of the code and running it using the following command:

```
python InfraFair.py
```

Then follow the same steps above by entering the inputs, and you will see the message after the execution.