Starting the Jupyter Notebook

Once you have installed Anaconda, you can start the Jupyter notebook,
Either

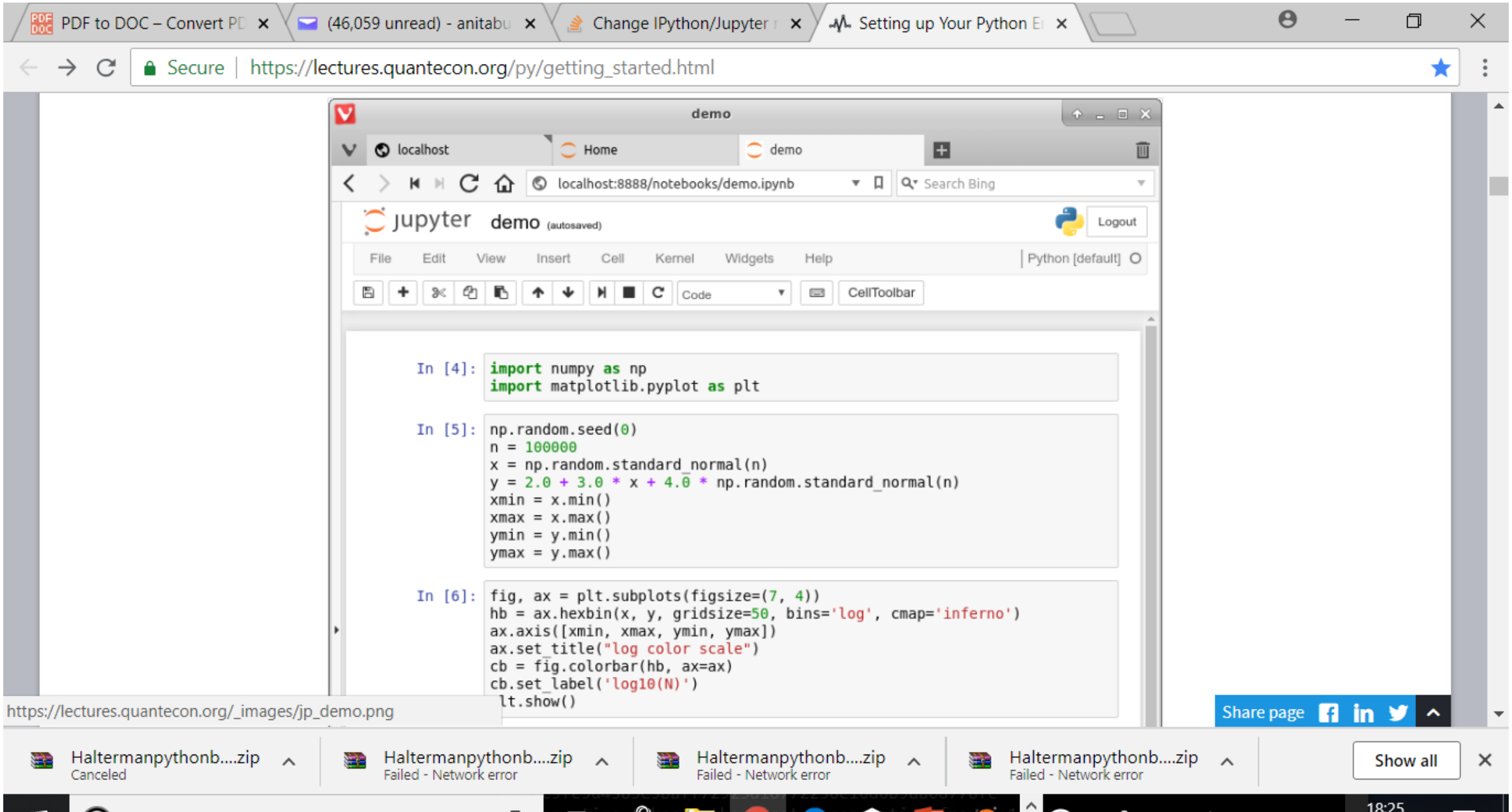
search for Jupyter in your applications menu,

or

•open up a terminal and type Jupyter Notebook

•Windows users should substitute “Anaconda command prompt” for “terminal” in the previous line

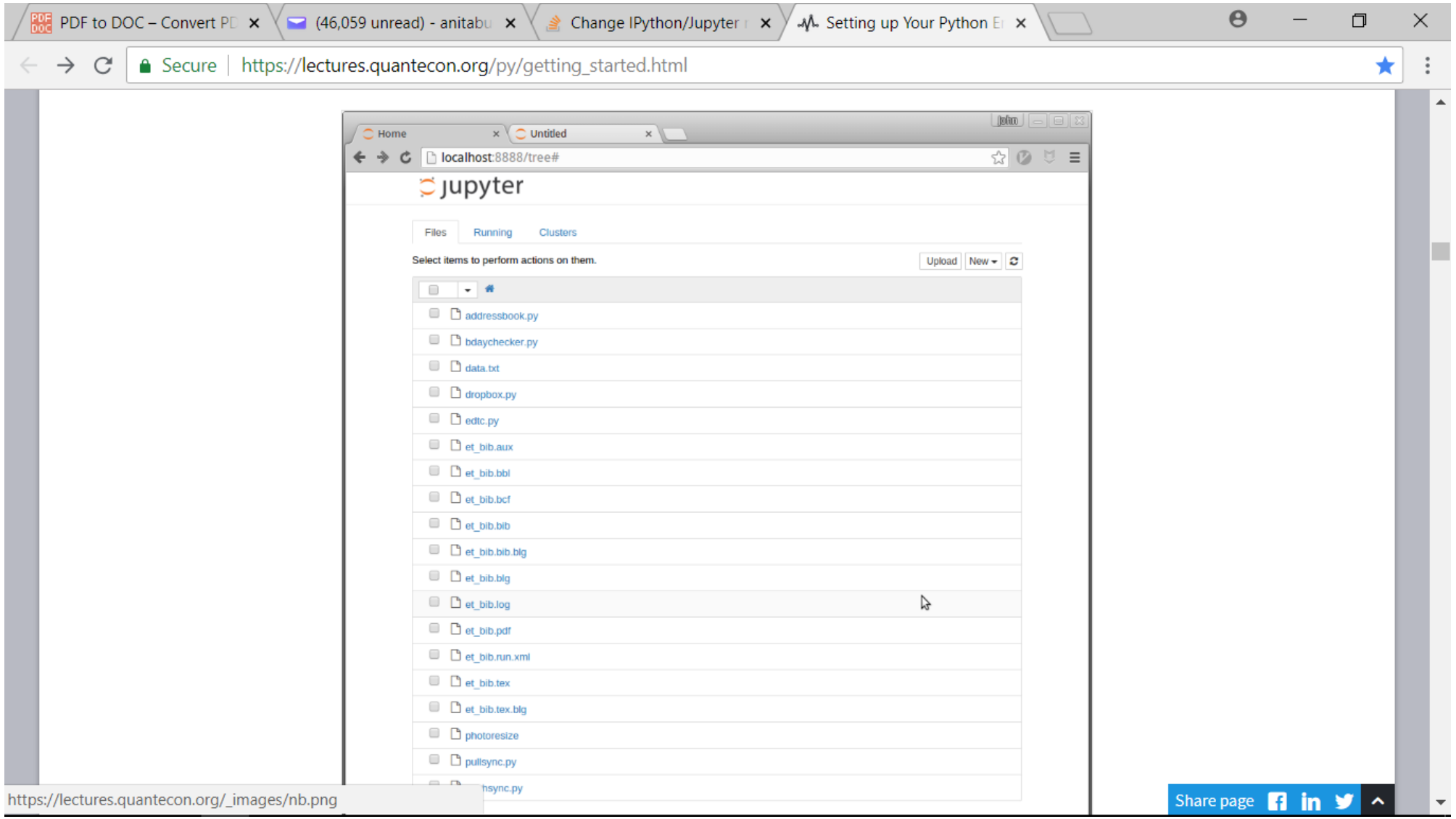
The Jupyter will run in browser



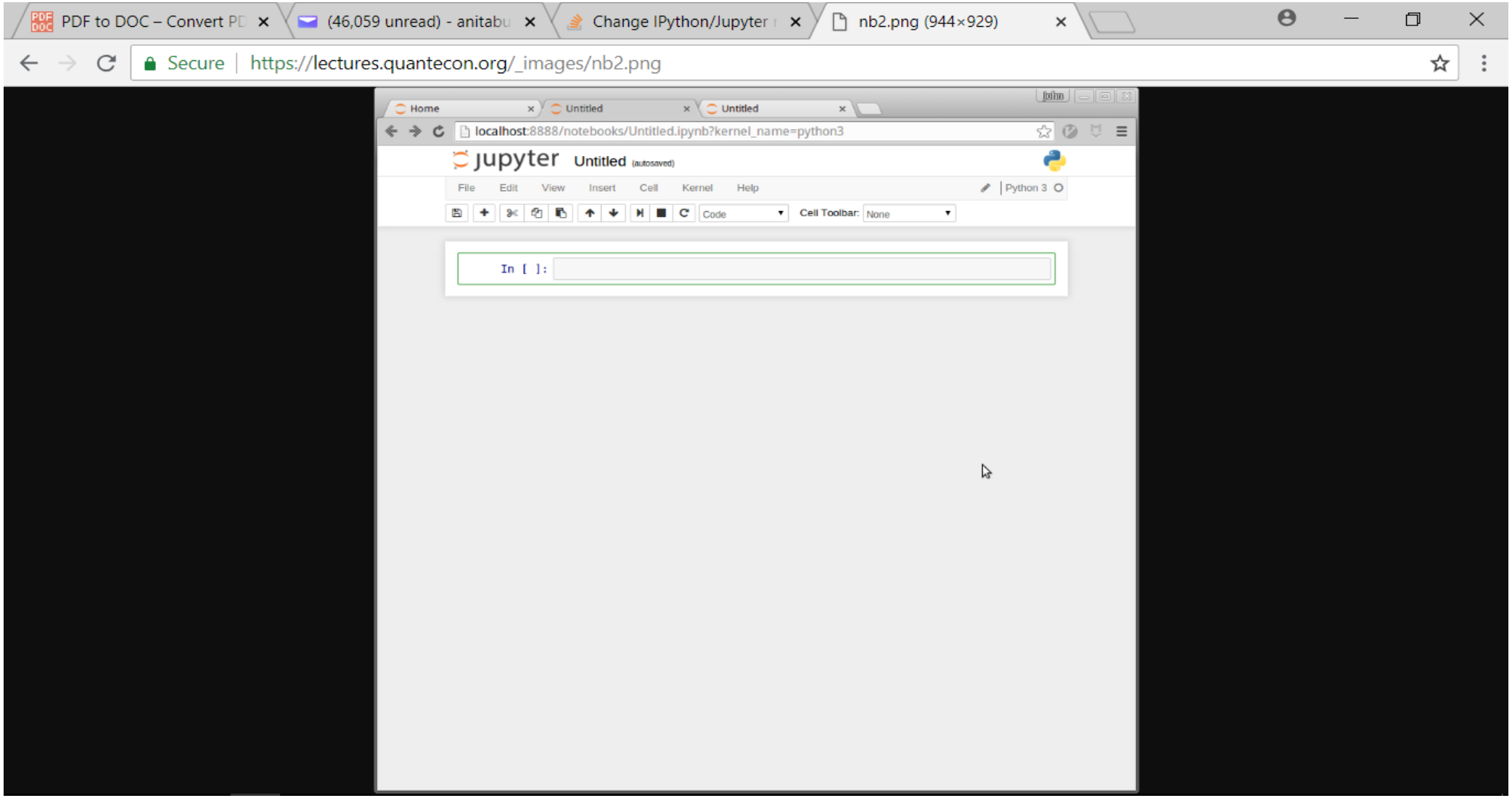
Jupyter

- The default browser opens up with a web page.
- The output tells us the notebook is running at http://localhost:8888
- Localhost is the name of the local machine
- 8888 refers to port number of the computer
- Thus, the Jupyter kernel is listening for Python commands on port 8888 of our local machine.

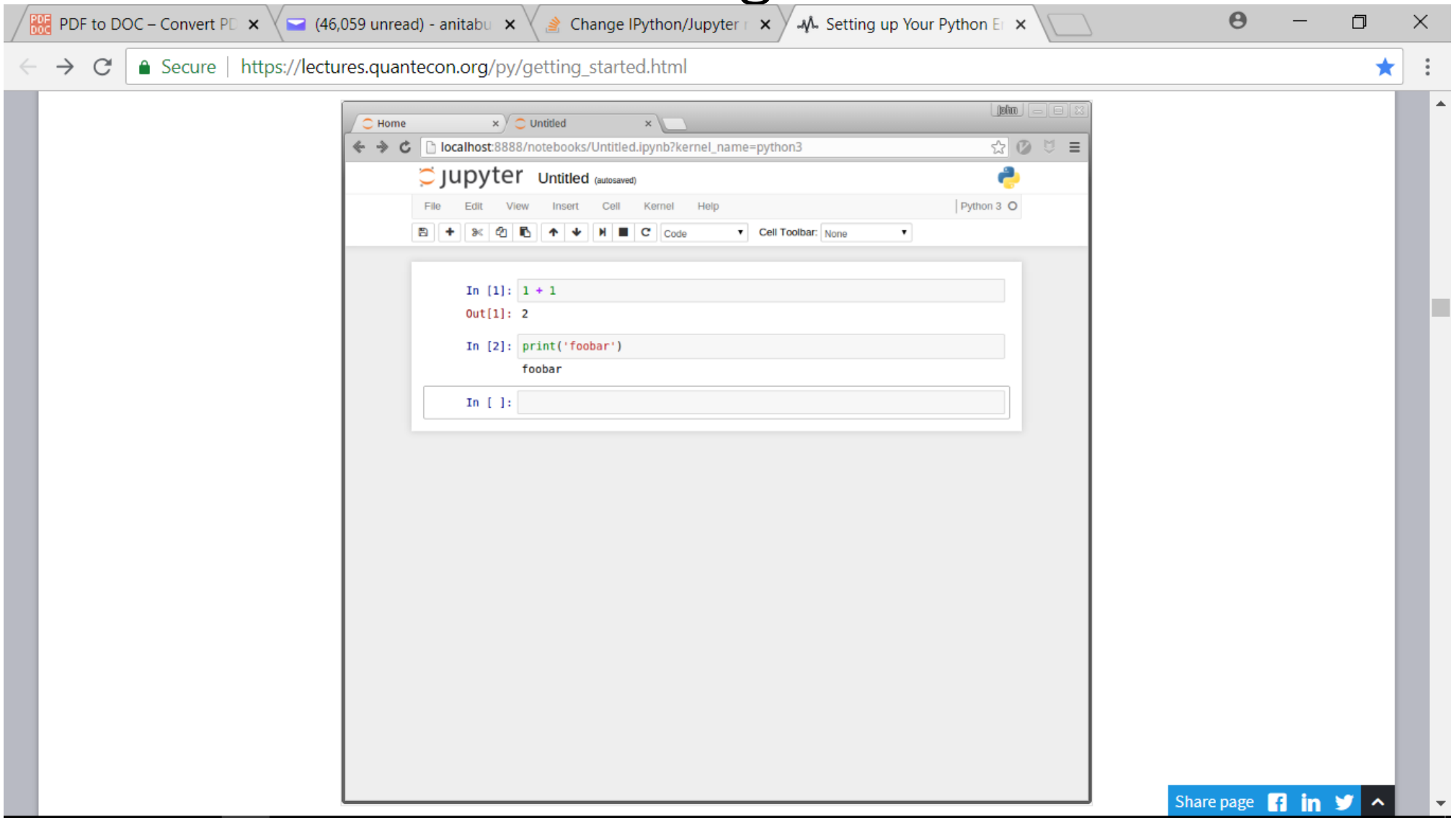
Jupyter *dashboard*



Click New and Select Python3 to see the an *active cell to* type Python commands :

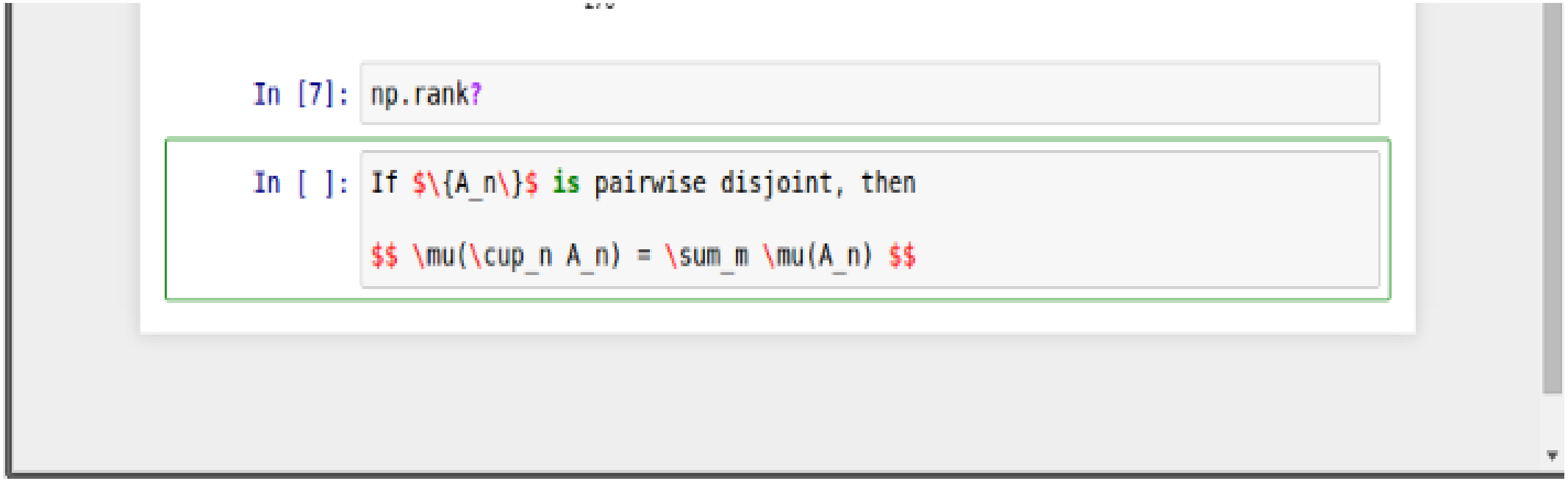


Running Cells



Other Content

In addition to executing code, the Jupyter notebook allows you to embed text, equations, figures and even videos in the page. Next press Esc to enter command mode and press m to indicate that you are writing Markdown, a markup language similar to Latex, or use dropdown to select Markdown box just below the list of menu items.



Modal Editing

- Modal Editing means that the effect of typing at the keyboard depends on which mode you are in:
- The two modes are
- This means that the effect of typing at the keyboard **depends on which mode you are in:**
- **The two modes are:**

    - **Edit Mode:**
        - Indicated by a green border around the cell
        - Whatever you type appears as in the cell
    - **Command Mode:**
        - The green border is replaced by grey border
        - Keystrokes are interpreted as commands: example typing b adds a new cell below the current one

- **To switch between the two modes**
    - to command mode from edit mode, press Esc key or CTRL M
    - To edit mode from command mode, hit enter or click on a cell

- The modal behavior of the Jupyter notebook is a little tricky at first but very efficient when you get used to it

Working with the Notebook

- Example
- Import numpy as np (NumPy is a numerical library we'll work with in depth)
- After this import command, functions in NumPy can be accessed with

np.functionname

Example np.random.randn(3)

After typing np.ran press tab

Jupyter will tell us about all the functions available

On-Line Help

- One can get online help on various library functions
- Example

To get help on np.rank

write np.rank?

And run the code

Documentation appears in a split window of the browser

Sharing Notebooks

- Notebook files are just text files structured in JSON and typically ending with ipynb.

- You can share them in the usual way that you share files — or by using web services such as nbviewer.

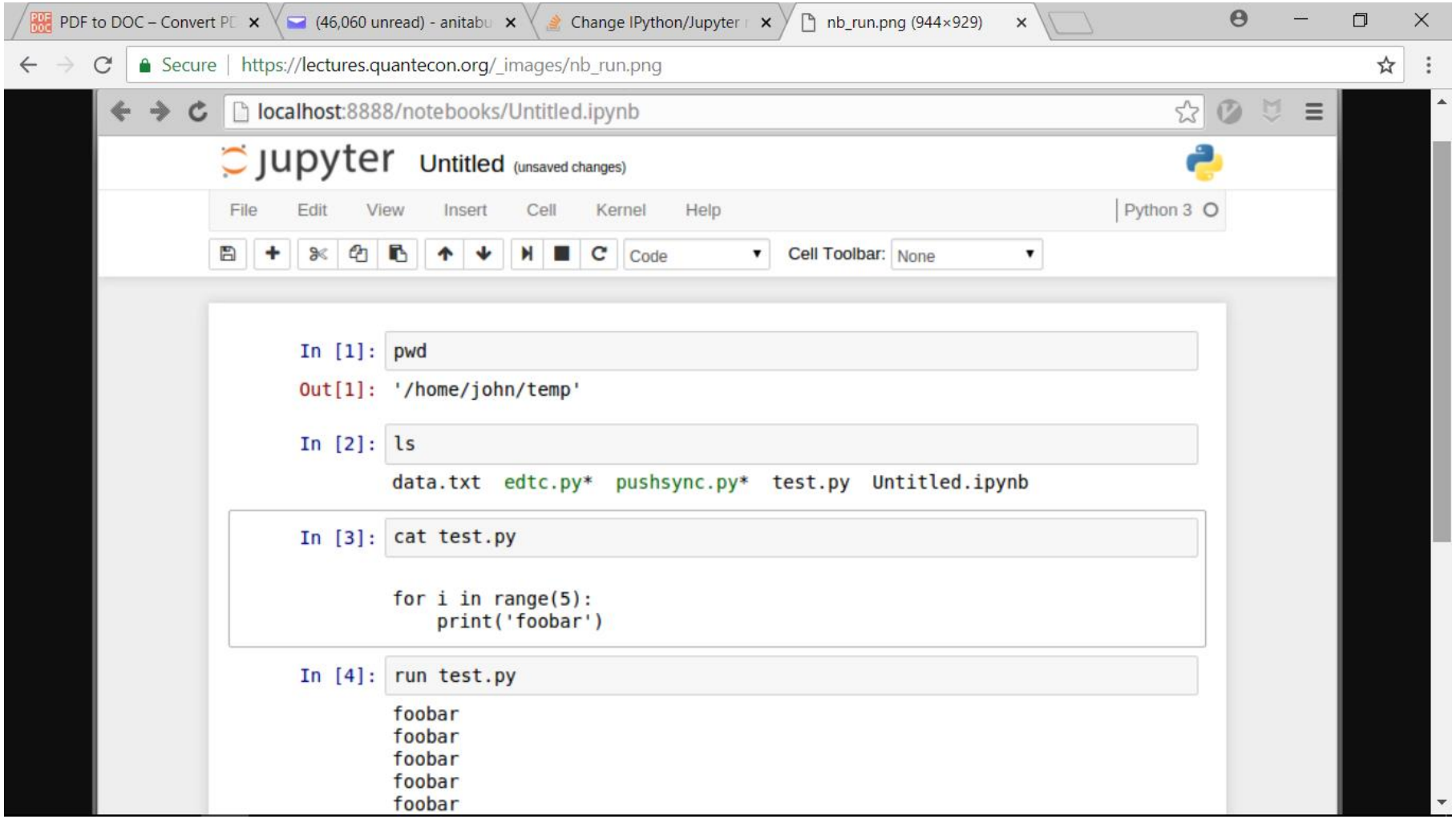
Updating Anaconda

- Anaconda supplies a tool called conda to manage and upgrade your Anaconda packages
- One command you should execute regularly is the one that updates the whole Anaconda distribution
- As a practice run, please execute the following
  - Open up a terminal
  - Type conda update anaconda

How does one run a locally saved Python file?

- Option 1: Copy and Paste
  - Navigate to your file with your mouse / trackpad using a file browser
  - Click on your file to open it with a text editor
  - Copy and paste into a cell and Shift+Enter
- Method 2: Run
- Using the run command is often easier than copy and paste
- For example, %run test.py will run the file test.py

Viewing the Dir and Files from Jupyter



IF the program file is not in your directory?

- If you're trying to run a file not in the present working director, you'll get an error
- To fix this error you need to either

  Shift the file into the PWD,

  or

  Change the PWD to where the file lives
- One way to achieve the first option is to use the Upload button which is on the top level dashboard, where Jupyter first opened
- The second option can be achieved using the cd command

  cd c:\python25\scripts

Saving Files in Jupyter

- To save the contents of a cell as file prog1.py
- Put %%file prog1.py as the first line of the cell
- Run the file by button or Shift+Enter
- It will save the file as prog1.py in the current path folder
- %%file is and example of cell magic

Future : JupyterLab

- It is an integrated development environment centered around Jupyter notebooks
- It is available through Anaconda and will soon be made the default environment for Jupyter notebooks
- Reading the docs or searching for a recent YouTube video will give you more information

Text Editors

- A text editor is an application that is specifically designed to work with text files — such as Python programs
- Nothing beats the power and efficiency of a good text editor for working with program text
- A good text editor will provide
  - efficient text editing commands (e.g., copy, paste, search and replace)
  - syntax highlighting, etc.
- Among the most popular are Sublime and Atom
- For a top quality open source text editor with a steeper learning curve, try Emacs

Text Editors Plus IPython Shell

- A text editor is for writing programs
- To run them you can continue to use Jupyter as described above
- Another option is to use the excellent Ipython Shell
- To use an IPython shell, open up a terminal and type.
- The IPython shell has many of the features of the notebook: tab completion, color syntax, etc.
- It also has command history through the arrow key
  - Run magicfile.py

What are IDEs?

- IDEs are Integrated Development Environments, which allow you to edit, execute and interact with code from an integrated environment

- One of the most popular in recent times is VS Code, which is now available via anaconda

Exercise 1

- If Jupyter is still running, quit by using ctrl C at the terminal where you started it
- Now launch again, but this time using
  - Jupyter notebokk - - no-browser
  - This should start the kernel without launching the browser
- Now Start your browser — or open a new tab if it's already running
- Enter the URL from above (e.g. http://localhost/:8888) in the address
- You should now be able to run a standard Jupyter notebook session
- This is an alternative way to start the notebook that can also be handy