digital skills programme

For Data Science

Structure

- Part 1 - Introduction, recap & warm-up exercises
- Part 2 - NumPy (Numerical Python)
- Part 3 - Basic plotting
- Part 4 - pandas (Python Data Analysis Library)

Ask!

The art and science of asking questions is the source of all knowledge.

- Thomas Berger

- Do not hesitate to ask!
- During exercises (you can also ask others).

Now let me ask something..

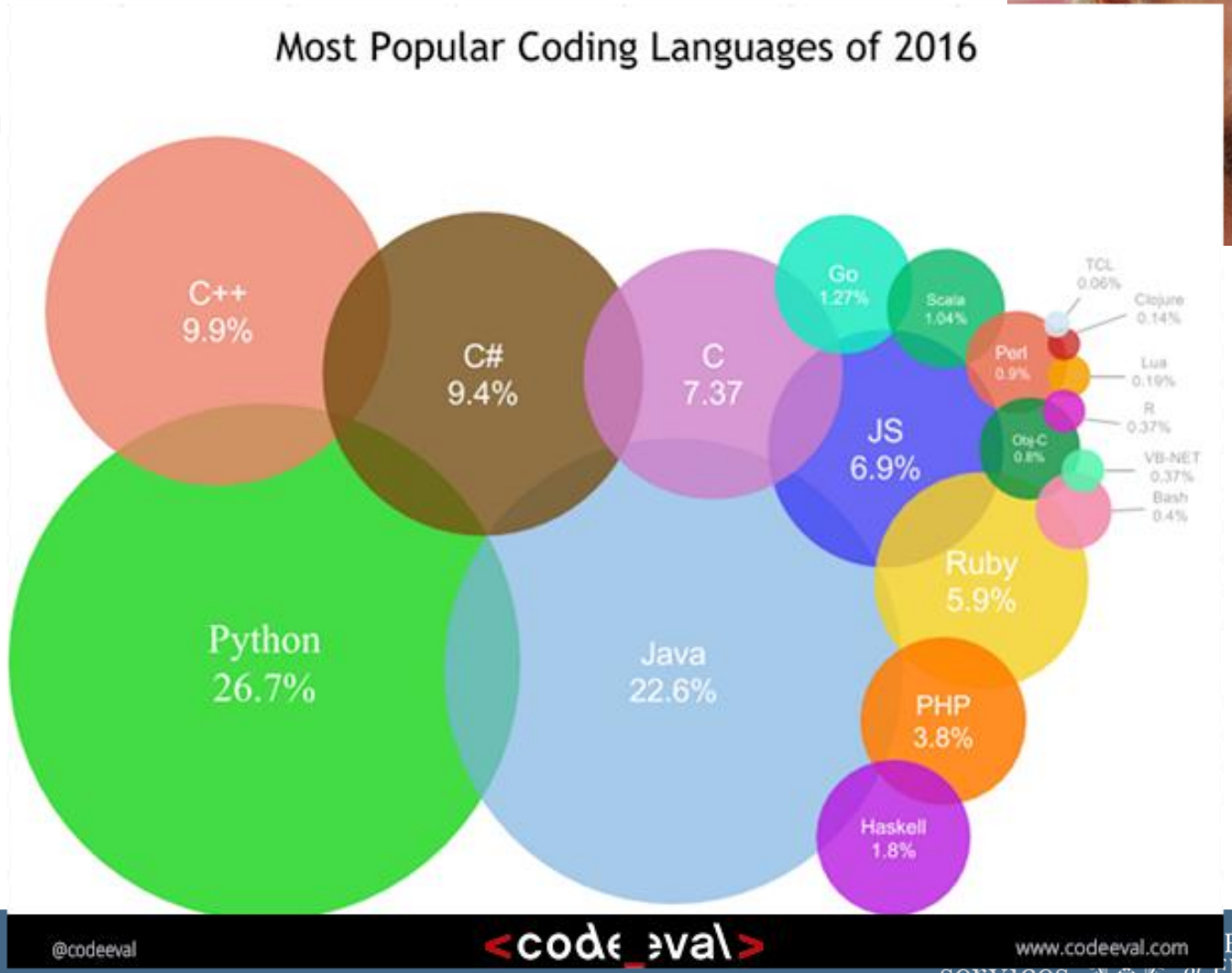
- Why do you want to learn Python/programming?
- What would you use Python for?

Failure

- Coding is all about trial and error.
- Don't be afraid of it.
- Error messages aren't scary, they are useful.

History

- Started by Guido Van Rossum as a hobby
- Now widely spread
- Open Source! Free!
- Versatile



Python today

- Developed a large and active scientific computing and data analysis community
- Now one of the most important languages for
  - Data science
  - Machine learning
  - General software development
- Packages: NumPy, pandas, matplotlib, SciPy, scikit-learn, statsmodels

2 Modes

1. **IPython**

Python can be run interactively

Used extensively in research

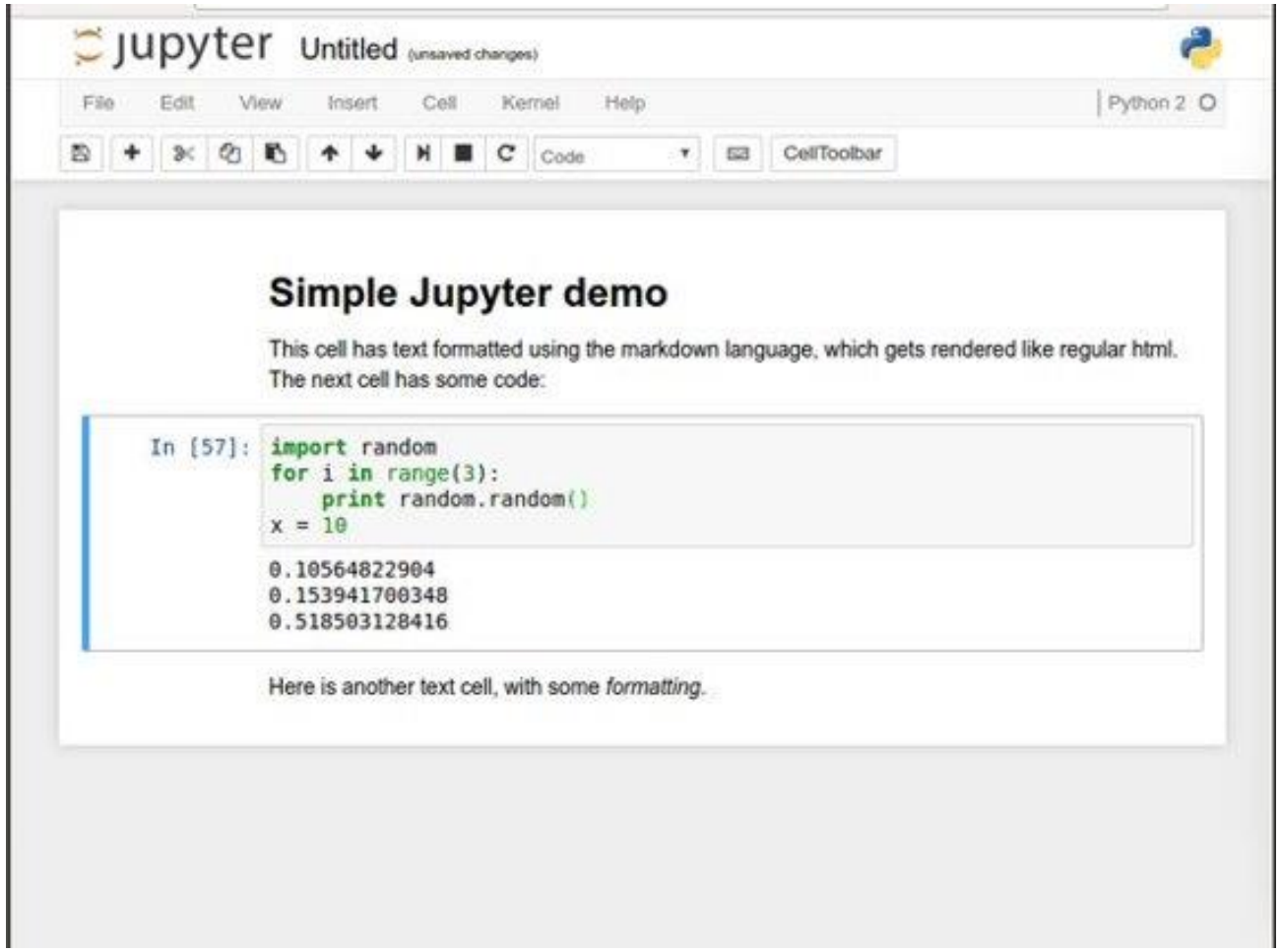
2. **Python scripts**

What if we want to run more than a few lines of code?

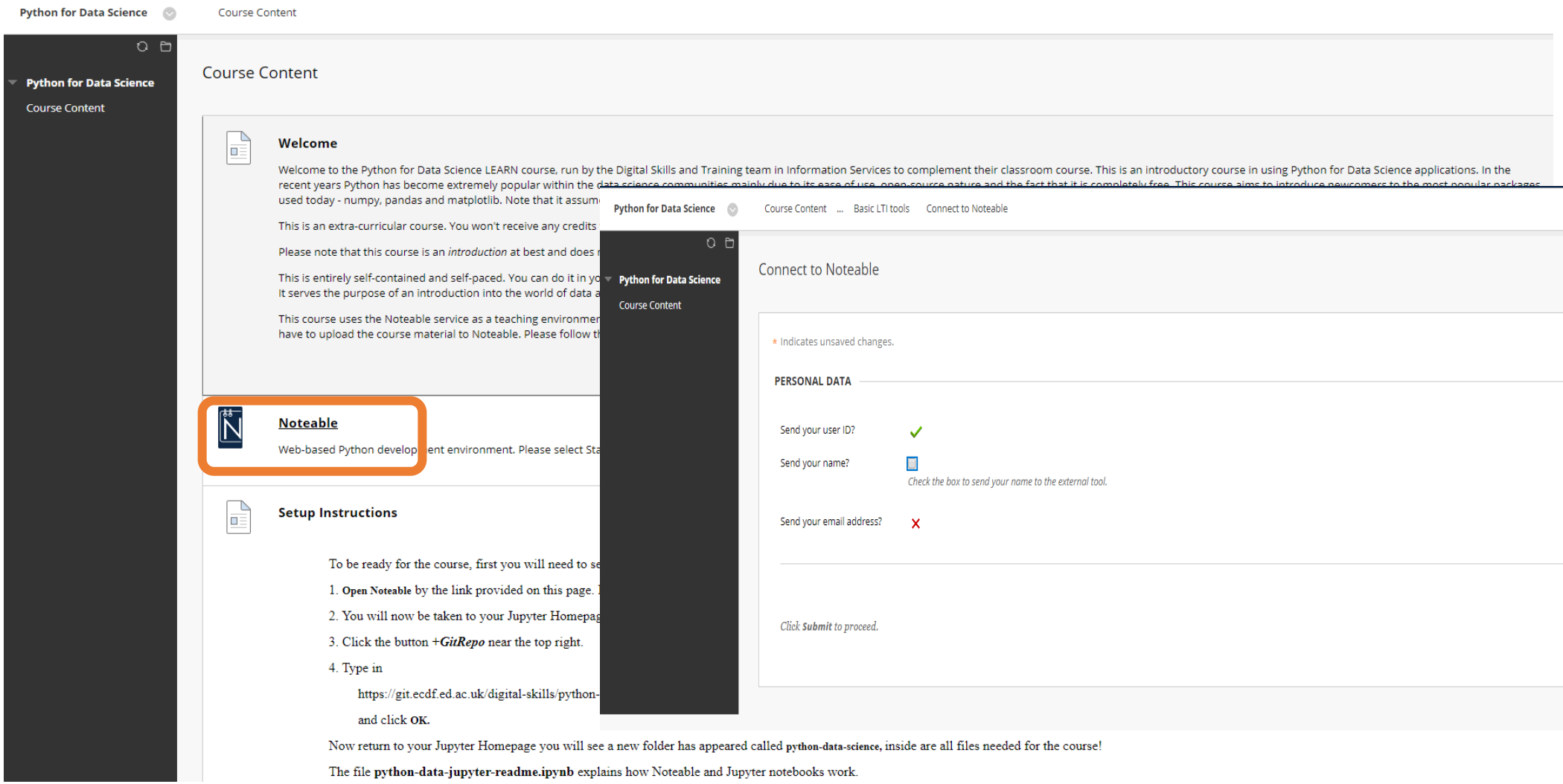
Then we must write text files in .py

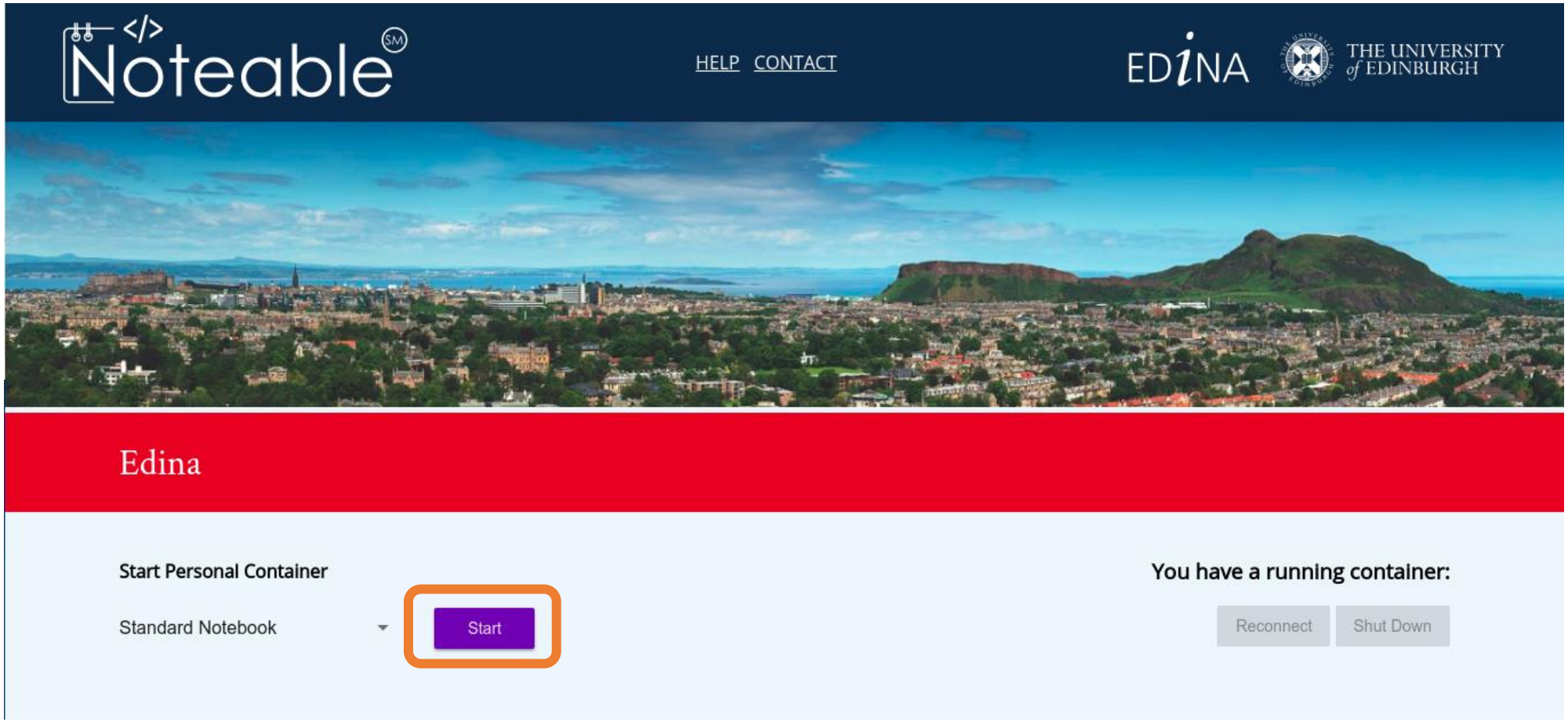
Noteable (Jupyter notebooks)

- Easy to use environment
- Web-based
- Combines both text and code into one
- Come with a great number of useful packages

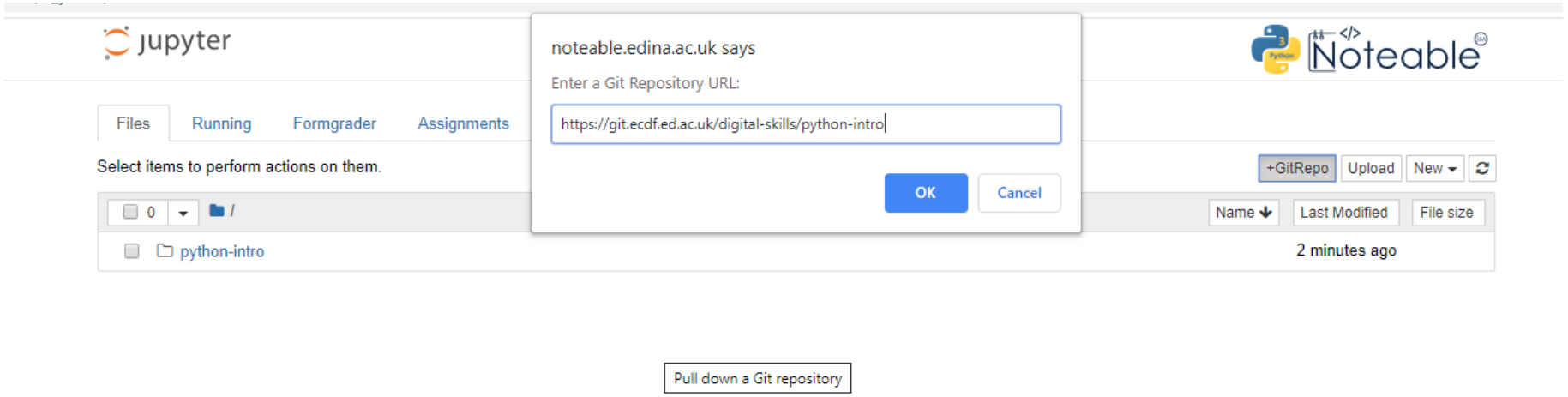


1. Start Noteable

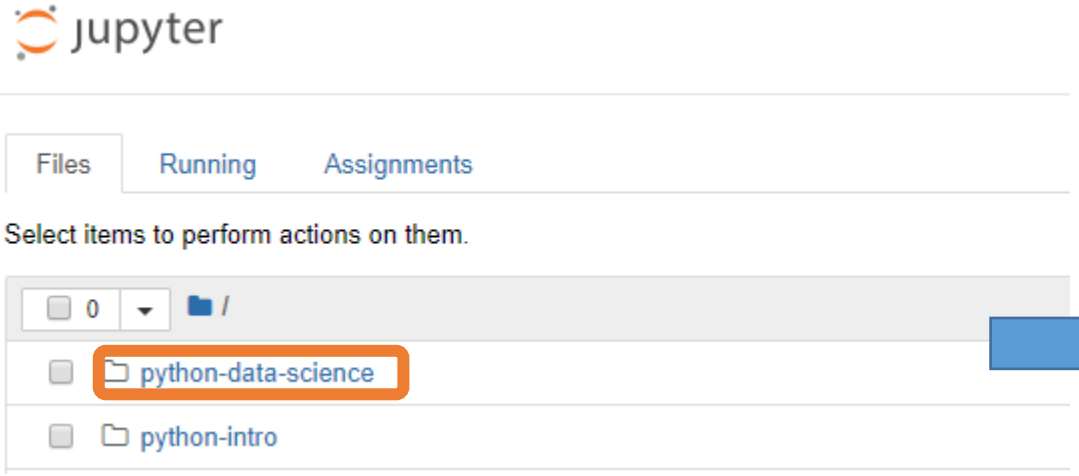


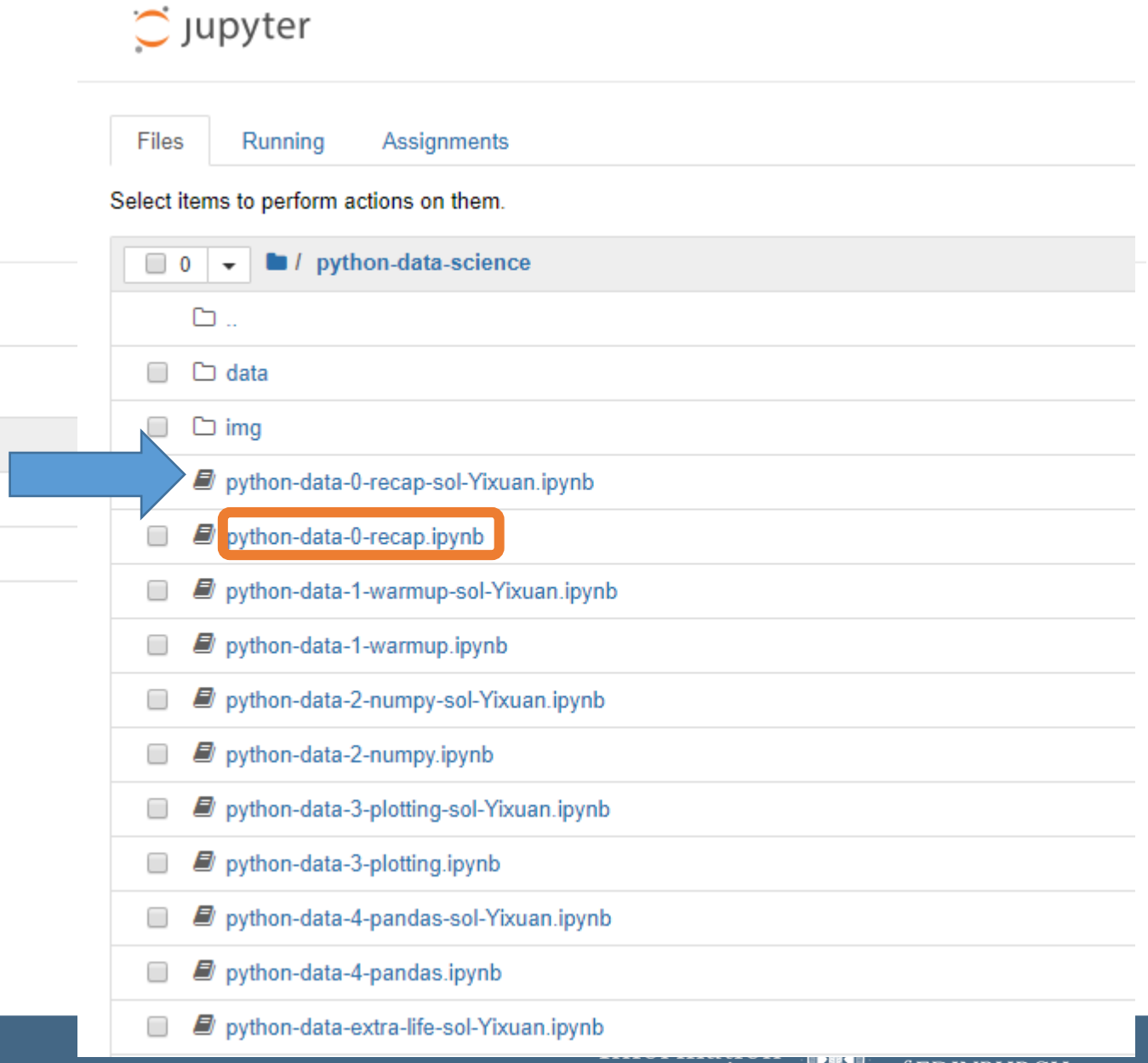

Noteable
HELP CONTACT
EDINA
THE UNIVERSITY of EDINBURGH
Edina
Start Personal Container
Standard Notebook
Start
You have a running container:
Reconnect
Shut Down

2. Clone GitRepo(recommended)

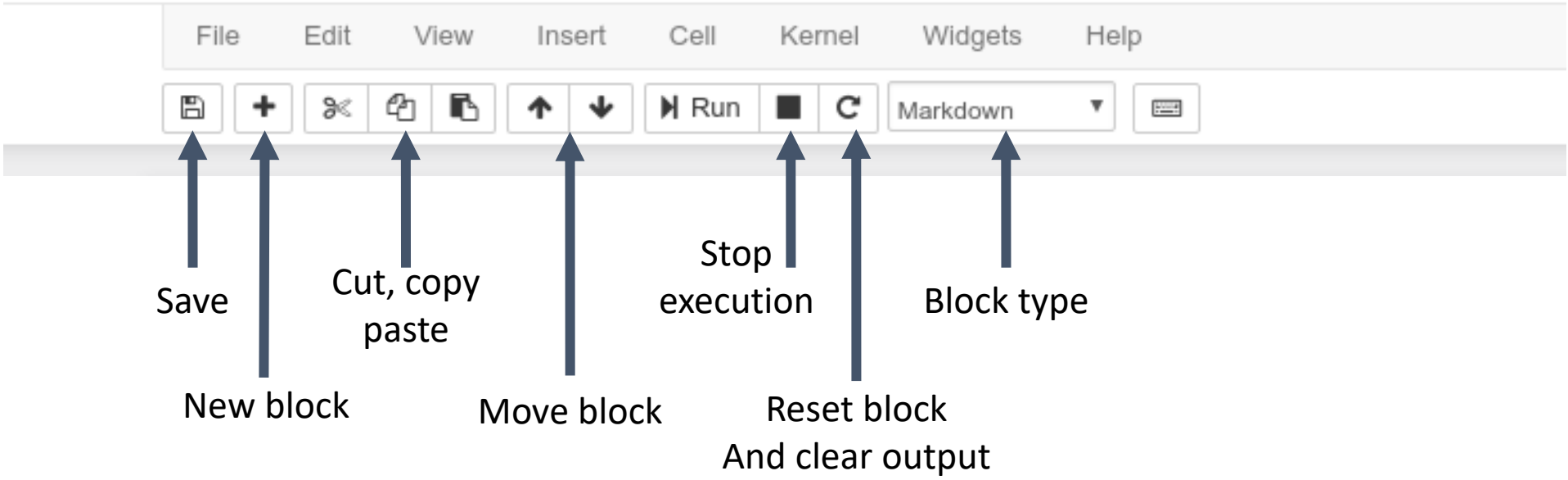


3. Starting a notebook

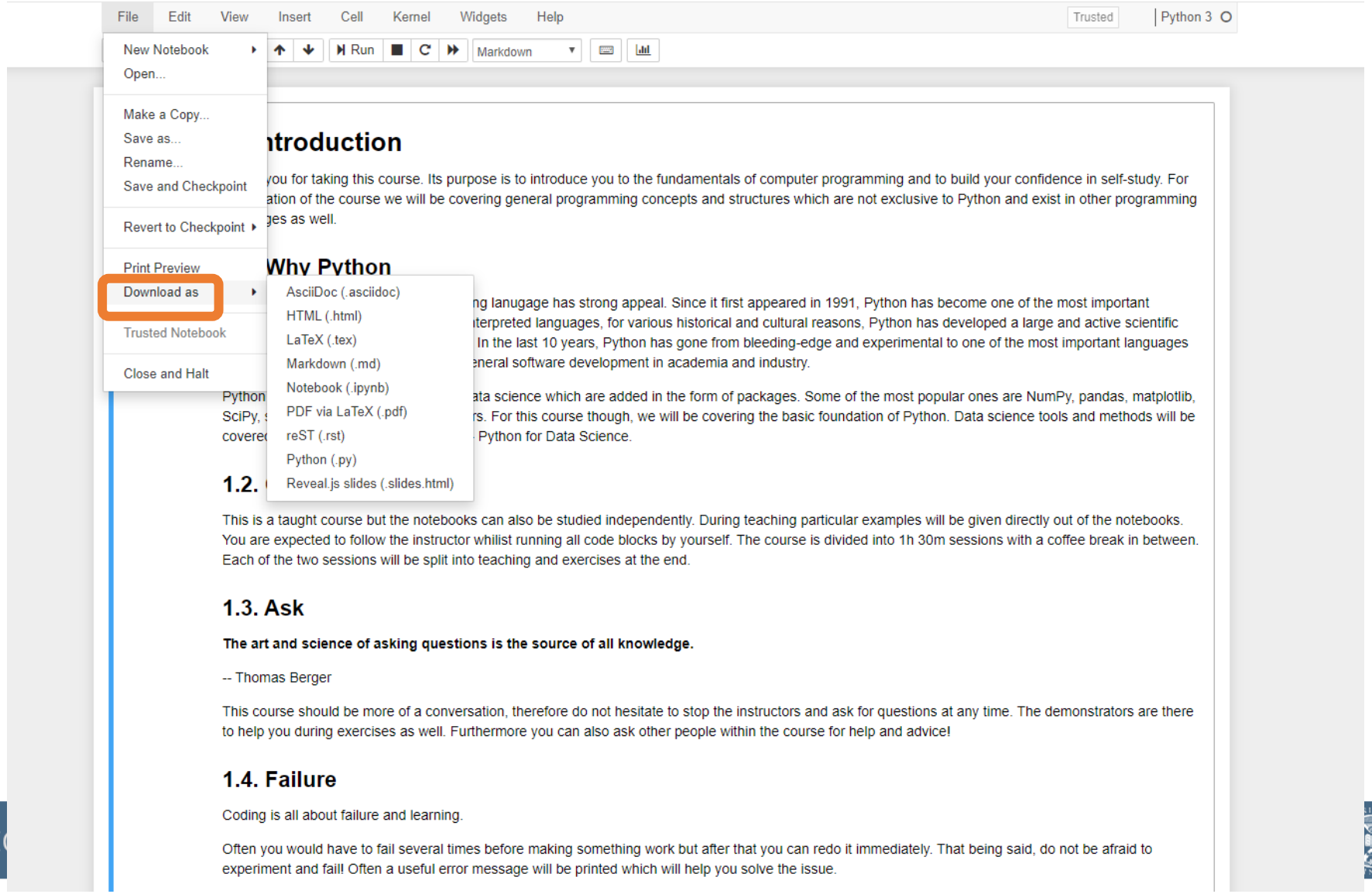




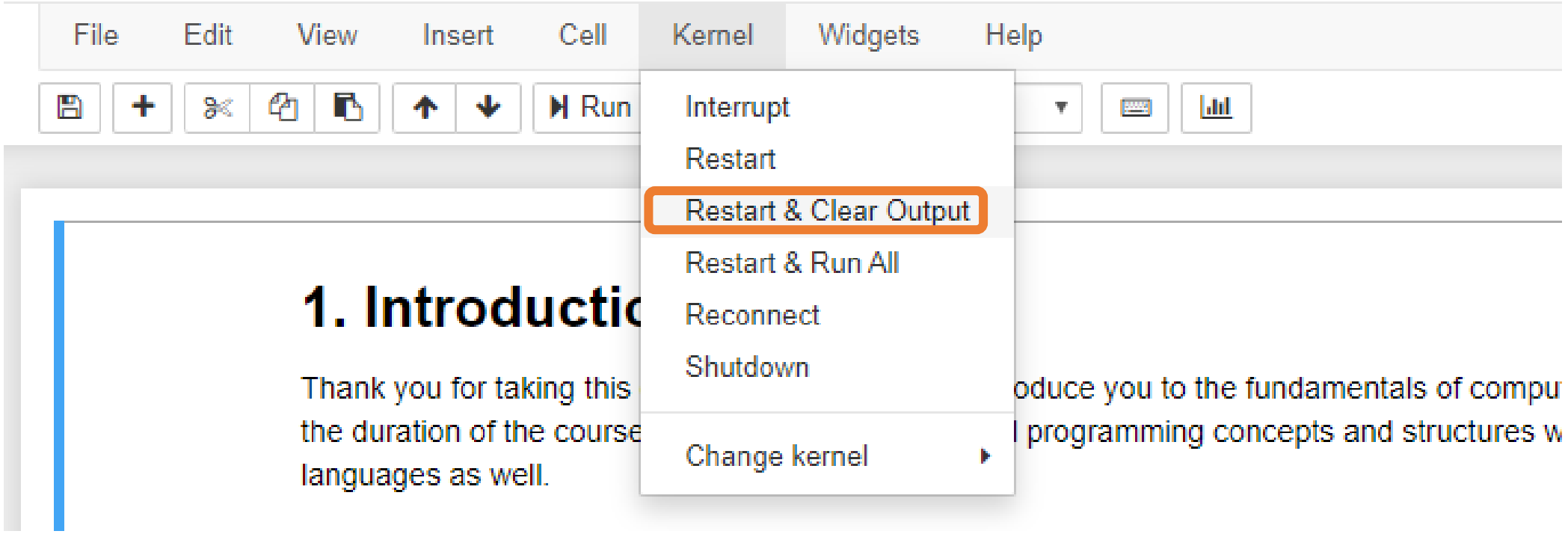
4. Toolbar


File
Edit
View
Insert
Cell
Kernel
Widgets
Help
Run
Markdown
Save
New block
Cut, copy
paste
Move block
Stop
execution
Reset block
And clear output
Block type

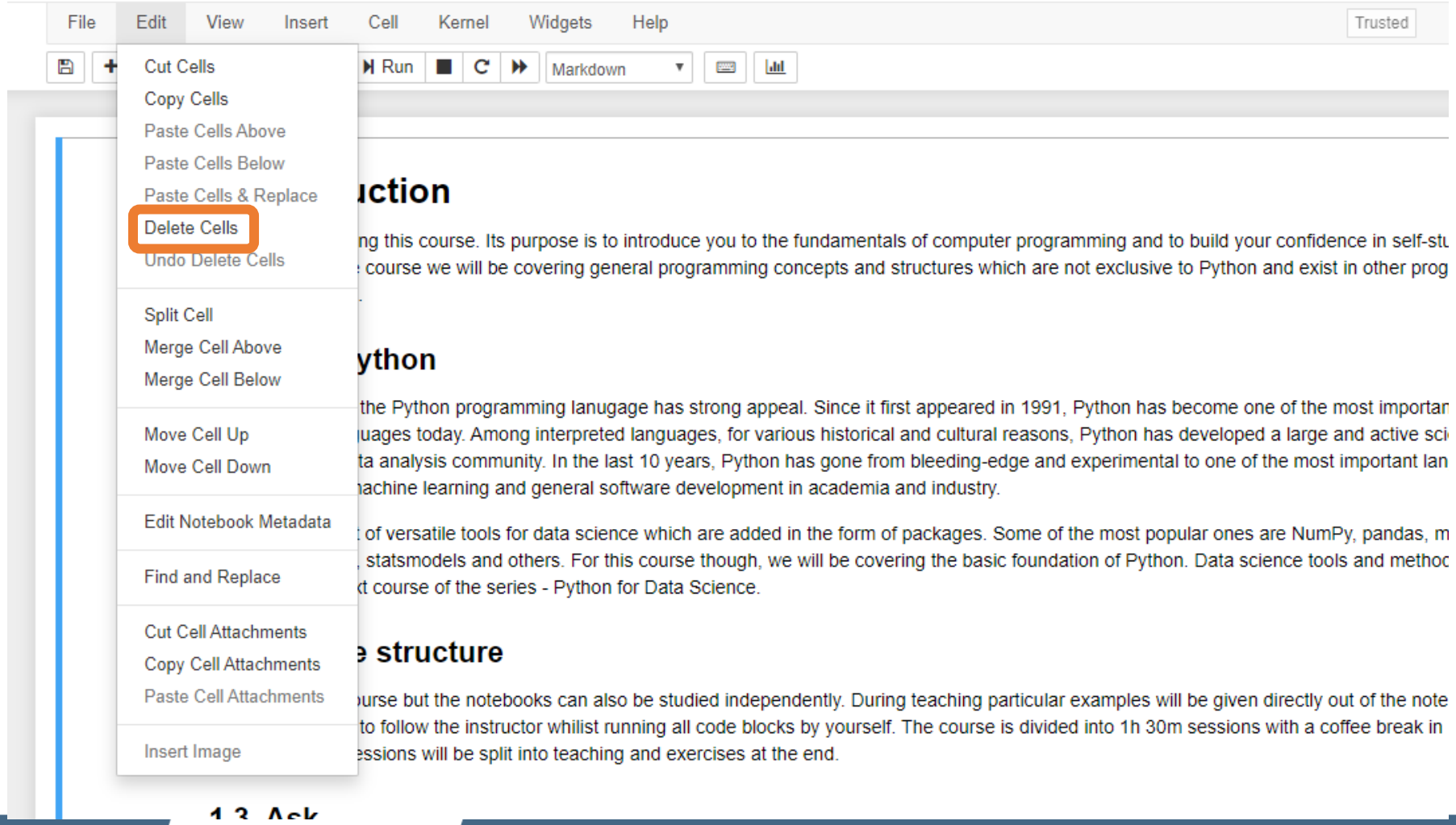
5. Download files



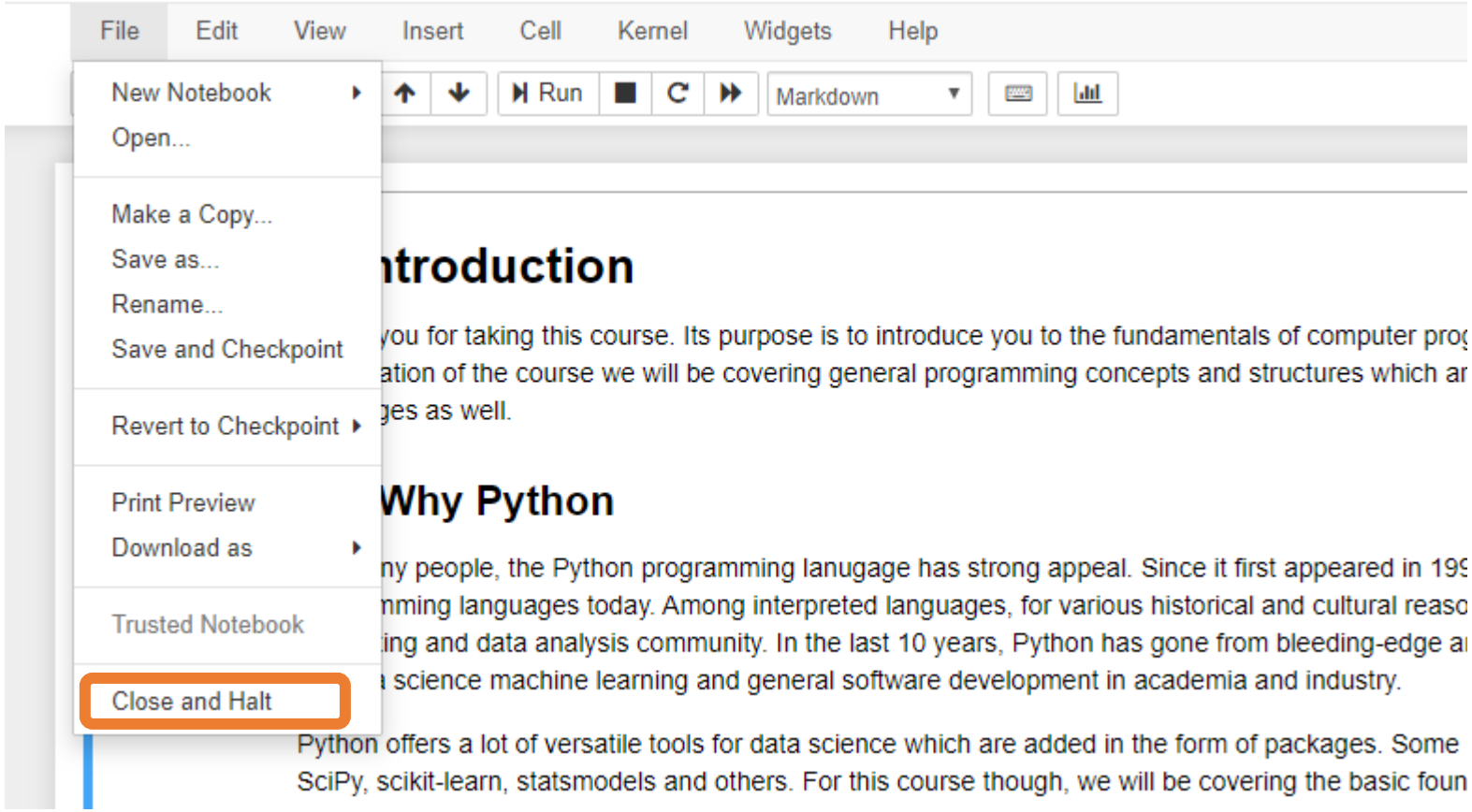
6. Kernel/Restart & Clear output



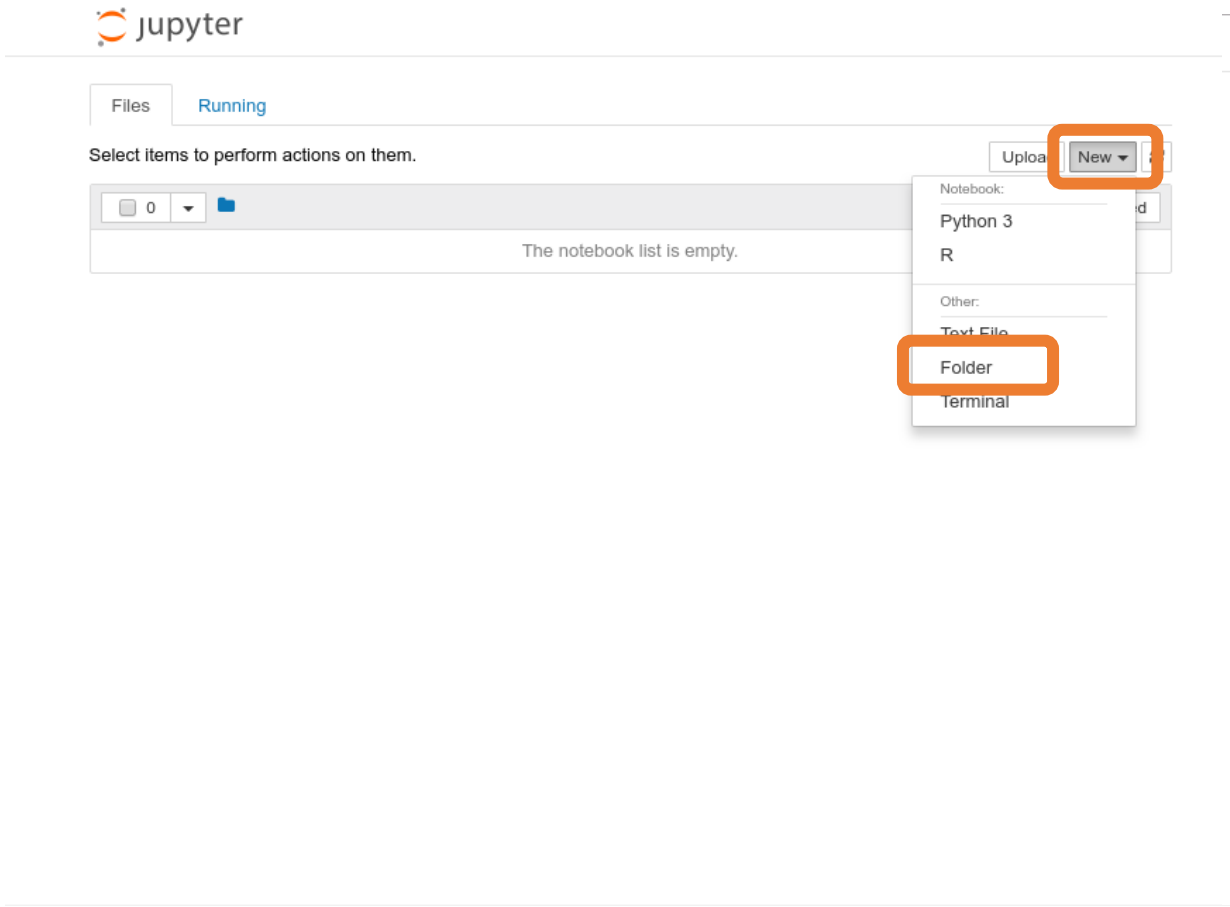
7. Edit/Delete Cell



8. File/ Close & Halt

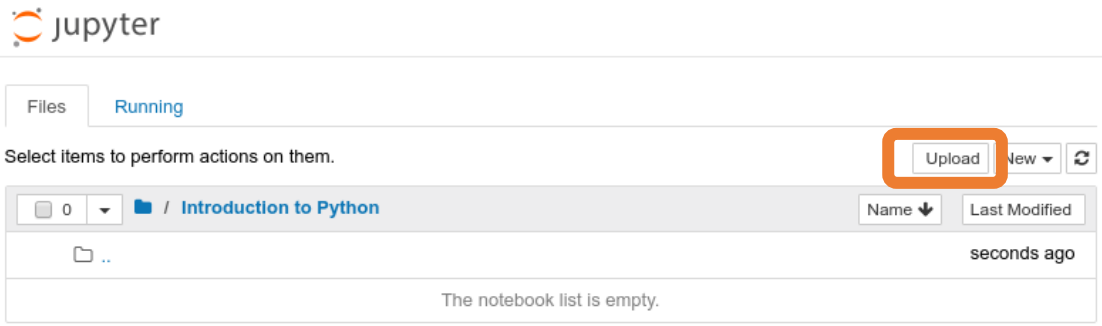


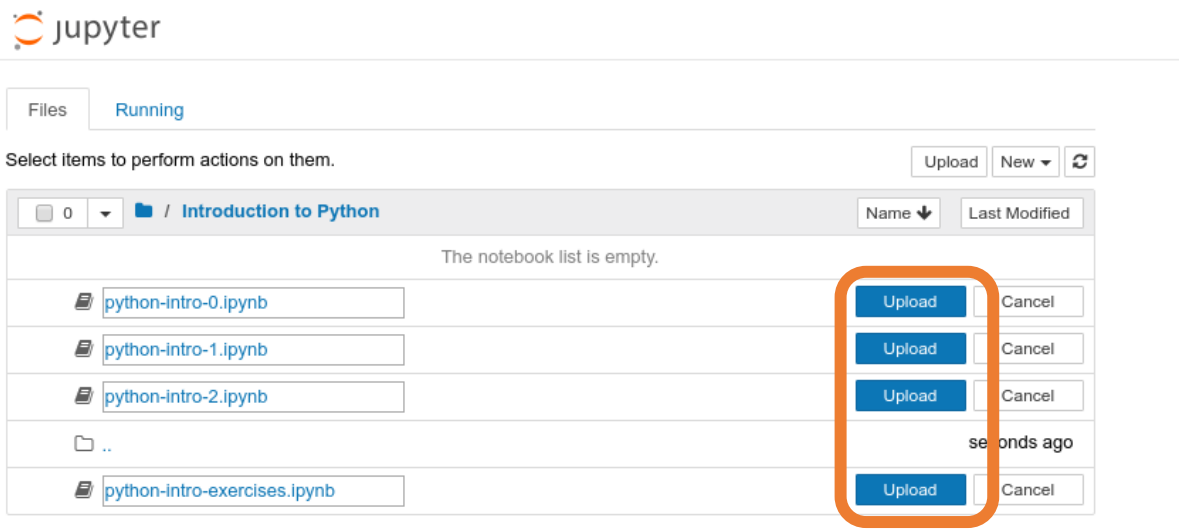
9. Create a folder



10.Rename

11. Upload files





Running blocks

- By pressing the Run button
- Shift + Enter – runs block
- Alt + Enter – creates a new block

Other operations

- File/Save and Checkpoint
- File/Revert to Checkpoint
- Tab completion
- Introspection

Let us start

To follow along, you need to open your own notebook. But please try to keep up with my presentation, as you still have time for exercises during the teaching.

Thank you for attending!

- You can continue to access the ‘Python for Data Science’ Learn course and notebooks after the course.
- There are solution notebooks for all the topics we have covered today, plus notebooks covering additional topics (text analysis, signal processing, regular expressions, network analysis, machine learning & Conway’s game of life).
- Visit the Digital Skills Framework to find more Python learning resources: https://www.digitalskills.ed.ac.uk/