Master in Scientific Computing and Data Analysis (MISCADA)

Computer Infrastructure

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Programming skills and proficiencies

- MISCADA requires some baseline proficiency in C programming — see the pre-sessional C & C++ Programming Course on Blackboard Ultra
- Some modules also utilize Python (esp. those with ML and Data Science content)
- Some modules may incorporate other languages as the lecturer sees fit

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We can not give you advice on purchasing decisions.

Clusters at Durham University

- Hamilton
- BEDE
- NVIDIA Cuda Centre (NCC)
- Complete list of platforms...

Jupyter Notebooks

Jupyter notebooks are interactive documents where text, code and images are combined
These support a number of languages; highlighting those relevant for MISCADA:

- C and C++ (c.f., pre-sessional Software Development in C course)
- Python
- R

Notebook Access

Using a modern web browser[2], you should access the notebook server with:

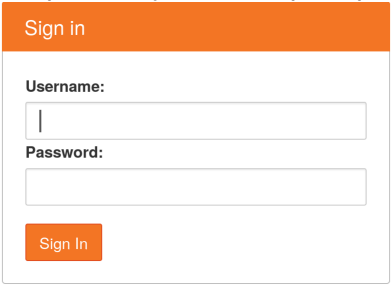
`https://COURSE.notebooks.danielmaitre.phyip3.dur.ac.uk/`

Where `COURSE` can be

- miscada-python-2425,
- miscada-da-2425,
- miscada-sc-2425,
- miscada-ml-2425,
- ...

The notebook server is accessible from anywhere.

These present you with a prompt:



Sign in with your *CIS credentials*.

[2] Something which is receiving updates...

Notebook Platform

When you access the notebook platform, a new virtual machine is created in the background.
This virtual machine will become *your own notebook server*.

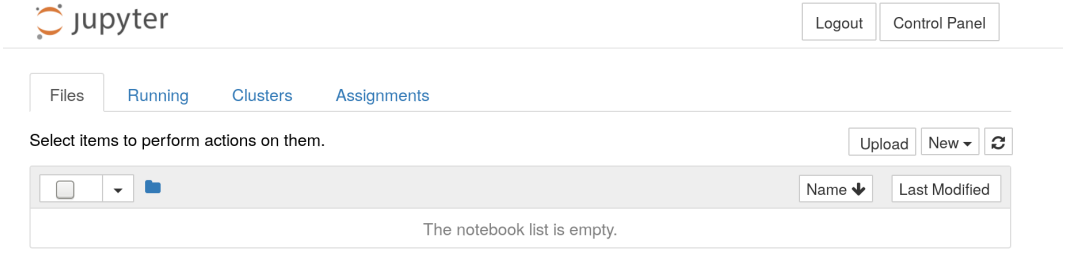
A note about server load

During periods of high utilization, it can take a while (10-60 seconds) to create the virtual machine. Please be patient.

- After one hour of inactivity the server is shut down.
- The files persist, and will be there when you log back in.
- However, you will need to *re-execute your code* to restore the notebook state.

Notebook Usage

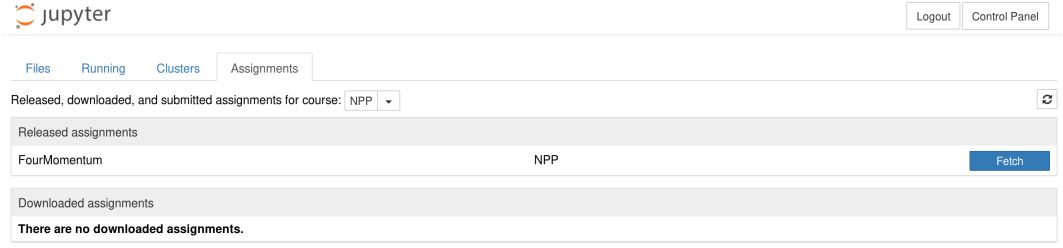
Once logged in you will see the files interface:



The *New* button is where you can create notebooks or terminals.

*Fetch*ing Assignments

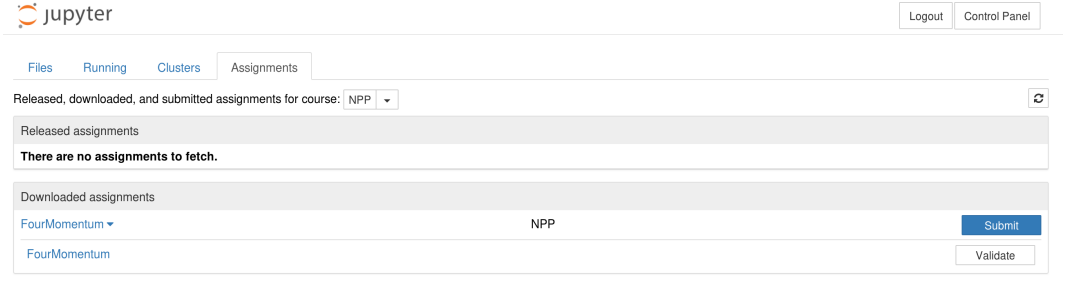
To access the assignments for the course, use the *Assignments* tab:



The *Fetch* button will copy the assignment notebooks to your own server.

Downloaded Assignments

Once *Fetch*ed, assignments are displayed in the *Downloaded assignments* block:



Once downloaded, each assignment can be opened to show all notebooks contained within.

Assignment Submission

- Click on one of the notebooks and it will open for you to work on
- If requested, submit your finished notebook.
- You can submit as often as you desire:
  - Last submission before the deadline counts
  - Useful to submit partial work to avoid missing a deadline — submit early, submit often!
  - Do not change the name of the notebook!
  - Late submissions up to 5 days after the deadline can be accepted, but the marks are capped at 50% — If you want this to happen, you *must contact the office*.
- Check the submitted notebook works as intended by restarting the kernel and running all cells.

Acceptable Use Policy

The university's IT policy[3] applies on the server.

The notebook server is to be used for *coursework at Durham University*, please do not use it for any other purposes.

[3] `https://www.dur.ac.uk/cis/policy/regulations/`

Privacy and Backups

All files saved on the server can be viewed by the server administrator: *please do not do put anything confidential on the server*.

You can make a copy of notebooks for your safe-keeping at any time.

We encourage you to use the *Download as* option in the *File* menu of the notebook to preserve your work locally:

- Select a PDF (`.pdf`) for archival,
- or a notebook (`.nb`) to preserve executability and markdown text.

Questions

For adminstrative questions regarding the computer infrastructure for the MISCADA programme, please contact:

Prof. Daniel Maître at daniel.maitre@durham.ac.uk.