Griffith University Software Carpentry Workshop
Plotting and Programming with Python
27th April - 1 May 2020

9:00am - 12:30am AEST daily

Please use this document to exchange notes, record useful commands and references, and for whatever else you find useful during the day

- Zoom link -
  https://zoom.us/j/95326599033?pwd=VG9PcWtuR1BqNlFFUjhpNFFXcjNMZz09

- Workshop info page - https://gu-eresearch.github.io/2020-04-27-GriffithUni-Python/

- Workshop data files -
  - Unix:
    http://swcarpentry.github.io/shell-novice/data/data-shell.zip
  - Python:
    https://swcarpentry.github.io/python-novice-gapminder/files/python-novice-gapminder-data.zip

- Workshop manuals -
  - Unix: http://swcarpentry.github.io/shell-novice/
  - Python: http://swcarpentry.github.io/python-novice-gapminder/

- Workshop surveys -
  - Pre-workshop:
    https://carpentries.typeform.com/to/wi32rS?slug=2020-04-27-GriffithUni-Python
  - Post-workshop:
    https://carpentries.typeform.com/to/UgVdRQ?slug=2020-04-27-GriffithUni-Python

- Hacky Hour -
  - Hacky hour is now an online session named "Researcher & HDR Support - Library & eResearch online drop-ins", recurring event on Thursday 2pm-3pm through:
    https://au.bbcollab.com/guest/47b3e8f92a80480c95c66e7a49f7ce01
  - Hacky hour page where you can download/view the event:
    https://hackyhourgriffith.wordpress.com/events/calendar/

    Matplotlib.pyplot

https://matplotlib.org/api/pyplot_api.html
https://python-graph-gallery.com/matplotlib/

Cheat Sheet for data visualization in Python
https://www.analyticsvidhya.com/blog/2015/06/data-visualization-in-python-cheat-sheet/

Sign-in list (Name/University) Please don't complete till Friday 1/05 morning!

- Kim Keogh/Griffith University, eResearch Services (host and instructor)
- McKenna Buckley/Griffith University, eResearch Services (Helper)
- Jacob Dore-Porrett/Griffith University, eResearch Services (Helper)
- Pankaj Kaushik, Griffith University (Phd Candidate) - based in India 4:30am there.
- Sebastian F. Gallagher, Griffith University, First Year Undergraduate B.IT/B.Comm
- Jing Lu, Griffith University (Research Fellow)
- Rajibur Reza (Research Fellow)
- Hanna Sidjabat, GU Research Fellow.
- Roni Tua, Griffith University (PhD Candidate)
-

Notes

ls = list contents of that directory
history = gives a sequential linear history of the commands used
pwd = current location in the directory
ls -F = route directory in the git bash
ls --help = gives a list of commands, similar to a manual
ls -lh = gives a long listing, d is directory, - is a file,
rm = permanently removes the file
* = wildcard, matches to 0 or more characters
? = matches to one character exactly

Monday Attendees 27/04/2020
- Ana Paula da Silva/ Griffith University(PhD Candidate)
- Jayishni Maharaj (Research Fellow)
- Sebastian F. Gallagher, Griffith University, First Year Undergraduate B.IT/B.Comm
- Pankaj Kaushik, Griffith Uiversity (Phd Candidate)
- Mai Nguyen, Griffith University (PhD Candidate)
- Roni Tua, Griffith University (PhD Candidate)
- Jing Lu, Griffith University (Research Fellow)

- Bianca Molinari (PhD candidate)
- Hanna Sidjabat (Research Fellow)

Tuesday Attendees 28/04/2020
- Jayishni Maharaj (Research Fellow, Griffith University)
- Jing Lu, Griffith University (Research Fellow)
- Roni Tua, Griffith University (PhD Candidate)
- Pankaj Kaushik, Griffith University (Phd Candidate)
- Sebastian F. Gallagher, Griffith University, First Year Undergraduate B.IT/B.Comm
- Hanna Sidjabat, GU Research Fellow.

Wednesday Attendees 29/04/2020

- Jayishni Maharaj (Research Fellow, Griffith University)
- Pankaj Kaushik, Griffith University (Phd Candidate) - based in India 4:30am there.
- Sebastian F. Gallagher, Griffith University, First Year Undergraduate B.IT/B.Comm
- Jing Lu, Griffith University (Research Fellow)
- Hanna Sidjabat, GU Research Fellow.
- Roni Tua, Griffith University (PhD Candidate)

Thursday Attendees 30/04/2020
- Hanna Sidjabat, GU Research Fellow.
- Pankaj Kaushik, Griffith University (Phd Candidate)
- Roni Tua, Griffith University (PhD Candidate)
- Sebastian F. Gallagher, Griffith University, First Year Undergraduate B.IT/B.Comm
- Jing Lu, Griffith University (Research Fellow)
- Rajibur Reza (Research Fellow)

Friday Attendees 01/05/2020
- Pankaj Kaushik, Griffith University (Phd Candidate) - based in India 4:30am there.
- Sebastian F. Gallagher, Griffith University, First Year Undergraduate B.IT/B.Comm
- Jing Lu, Griffith University (Research Fellow)
- Rajibur Reza (Research Fellow)
- Hanna Sidjabat, GU Research Fellow.
- Roni Tua, Griffith University (PhD Candidate)

ANY QUESTIONS? Type general questions here (with your name) and the instructor will come back and address them during a pause or between sessions. *(Use the Zoom chat channel if you have immediate difficulties with the current exercises or content).*

Can we append to a csv file using DataFrames.to_csv?

No append feature for to_csv but you can read in your dataset into a Dataframe. Have another dataset you are working on (same configuration with same columns, same data types in cell). Merge the DataFrames and then write the merged DataFrame to csv.
https://pandas.pydata.org/pandas-docs/stable/reference/api/pandas.DataFrame.merge.html

Comparison Operator
== equal to
> greater than
< less than
>= greater than or equal to
<= less than or equal to
!= not equal to

dir(variable) to list functions you can operate on that variable type

How do I change the background of this graph as it is a Grid ?

https://matplotlib.org/api/pyplot_api.html

*matplotlib.pyplot.grid(b=None, which='major', axis='both', **kwargs)*

Turn the axes grids on or off.

Set the axes grids on or off; b is a boolean. (For MATLAB compatibility, b may also be a string, 'on' or 'off'.)

If b is None and len(kwargs)==0, toggle the grid state. If kwargs are supplied, it is assumed that you want a grid and b is thus set to True.

which can be 'major' (default), 'minor', or 'both' to control whether major tick grids, minor tick grids, or both are affected.

axis can be 'both' (default), 'x', or 'y' to control which set of gridlines are drawn.

How can we exclude a block of code with comments rather than excluding one line at a time using"#"?

Select the block of code in the code editor window right click select Comment/Uncomment. If you want to do it via the keyboard, macOS uses *command + /*, while on Windows you can use *control + /*

For accessing netcdf and shapefiles do I need to install other stuff in Spyder?
Awaiting email for context
[*https://gis.stackexchange.com/questions/113799/how-to-read-a-shapefile-in-python*](https://gis.stackexchange.com/questions/113799/how-to-read-a-shapefile-in-python)
There is a geopandas library
Code:

```
import geopandas as gpd

shapefile = gpd.read_file("shapefile.shp")

print(shapefile)
```

For netcdf files use Scientific.IO.NetCDF or pynetcdf libraries

Software for Manipulating or Displaying NetCDF Data

[*https://www.unidata.ucar.edu/software/netcdf/software.html*](https://www.unidata.ucar.edu/software/netcdf/software.html)
Pupynere (PUre PYthon NEtcdf REader) Roberto De Almeida has developed pupynere, a PUre PYthon NEtcdf REader that allows read-access to netCDF files using the same syntax as the Scientific.IO.NetCDF Python module. Even though it's written in Python, the module is up to 40% faster than Scientific.IO.NetCDF and pynetcdf.

Can Python be used to prepare a LaTeX document in this way? Drawing from saved figures and dataframes
https://jeltef.github.io/PyLaTeX/current/
https://pypi.org/project/PyLaTeX/
https://pypi.org/project/latex/

-
-