Software Carpentry 14-17 April, 2020

Day 2

Zoom connection

https://zoom.us/j/652564572?pwd=dk9hVmVkK25tYUo3dkk4R1c1QVhsdz09

Code of Conduct

Participants are expected to follow our code of conduct:
https://docs.carpentries.org/topic_folders/policies/code-of-conduct.html

License

This Document:

https://tinyurl.com/2020-04-14-swc-day2

Master Document:

https://edu.nl/tcyt9

Workshop website:

https://escience-academy.github.io/2020-04-14-SWC-online/

Working with Zoom

[Guide to using Zoom in the Workshop]

Setup instructions:

https://swcarpentry.github.io/python-novice-gapminder/setup/

Instructors:

Pablo Rodríguez Sánchez and Johan Hidding

Helpers:

Evert Rol, Heather Andrews Mancilla, Nicolas Dintzner, Brett Oliver

Roll Call:

name / affiliation / pronouns (optional) / contact, social media etc. (eg. twitter) / background (formal trainining)

- Pablo Rodríguez-Sánchez / eScienceCenter / t: @DonMostrenco / pabrod.github.io / physicist / mathematician
- Johan Hidding / Netherlands eScience Center / he, him / j.hidding@esciencecenter.nl / t: @jhidding gh:jhidding / Astrophysics
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- Elisabeth Heijmans/ Leiden University/ e.a.r.heijmans@hum.leidenuniv.nl/ Historian
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- Mateusz Kuzak / the Netherlands eScience Center / he, him / t: @matkuzak / life science
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- Alessia Vitiello/ Wageningen University & Research, Post-doc Laboratory of Entomology/ alessia.vitiello@wur.nl / Plant Biotechnologist working on plant-insect interaction
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- keysPaula Martinez Lavanchy / TU Delft/ p.m.martinezlavanchy@tudelft.nl/ Microbiologist-Research Data Officer
- Nicolas Dintzner / TU Delft / N.J.R.Dintzner@tudelft.nl / software writing
- Brett Olivier / VU Amsterdam / Computational Systems Biology / b.g.olivier@vu.nl
- Terezinha Souza / Maastricht University / t.souza@maastrichtuniversity.nl / PostDoc in life sciences
- Evert Rol / Netherlandsd eScience Center / e.rol@esciencecenter.nl / Astrophysics
- Julien Dupeyroux / TU Delft / j.j.g.dupeyroux@tudelft.nl / Postdoc in aerospace engineering

- Michela Busana / Groningen University / michebusana@gmail.com / PhD student in ecology /
- Hossein Asadi Kalameh / ULG / asadi.hosein@gmail.com / PhD student in mechanical engineering

Icebreaker

We'll create 5 videocall rooms with 4-5 people, and we'll introduce each other. Just as in a normal meeting.

Agenda: Schedule on the workshop website👨

09:00 --- Good morning coffee & testing setup ---

09:30 Running and quitting Jupyter Lab. Basic Markdown
09:45 Variables and assignment
10:00 Data types and type conversion
10:30 Built-in functions and help

11:00 --- Morning break ---

11:30 Libraries
12:00 Reading tabular data into DataFrames

12:30 --- Wrap-up ---

Contents:

Markdown

Information about Markdown :
(that's the google query: "Markdown cheat sheet")

Daring Fireball = original Markdown reference: https://daringfireball.net/projects/markdown/
GitHub markdown cheetsheet

Tips 'n Tricks

https://towardsdatascience.com/jypyter-notebook-shortcuts-bf0101a98330

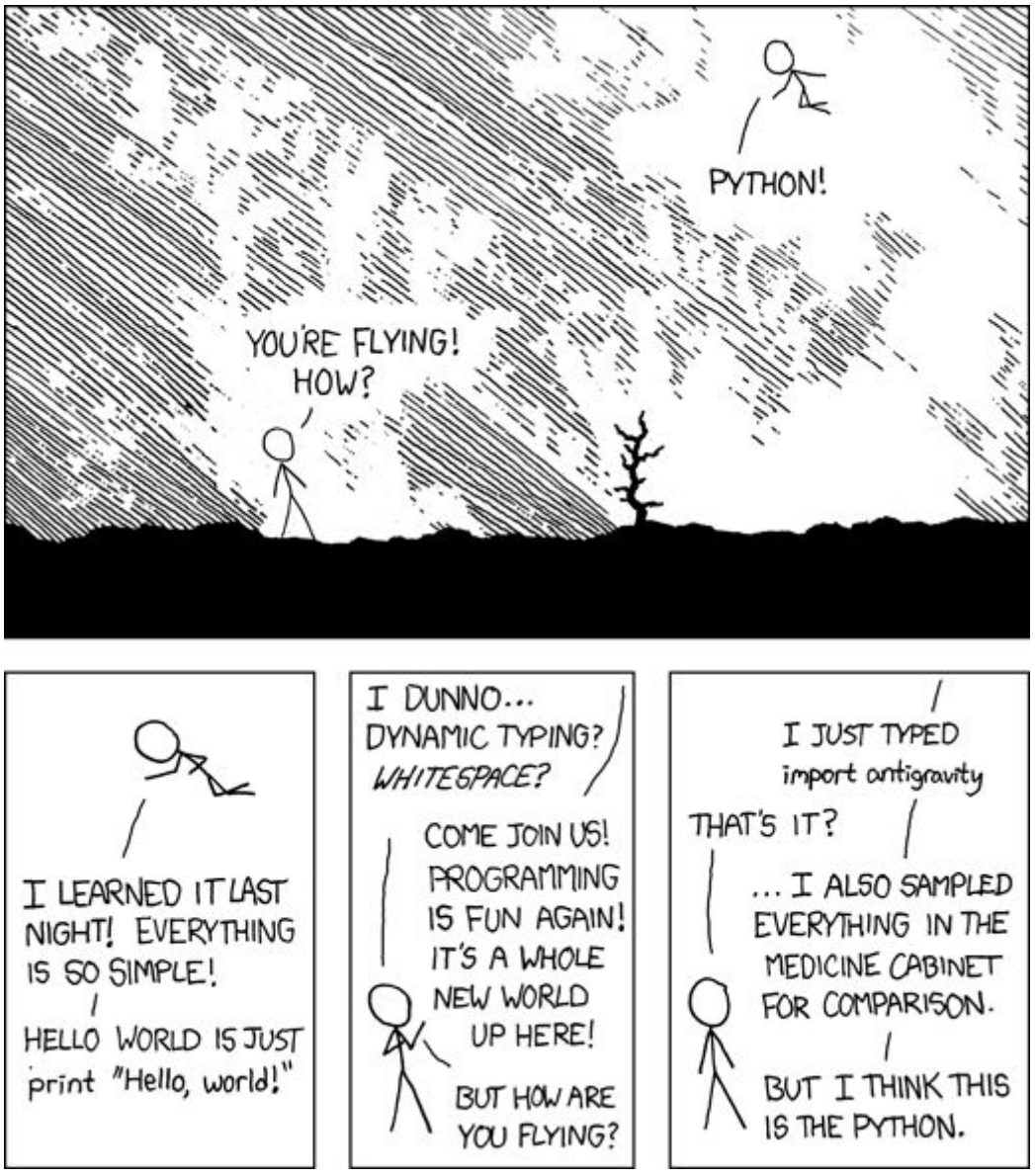
Jupyter hotkeys

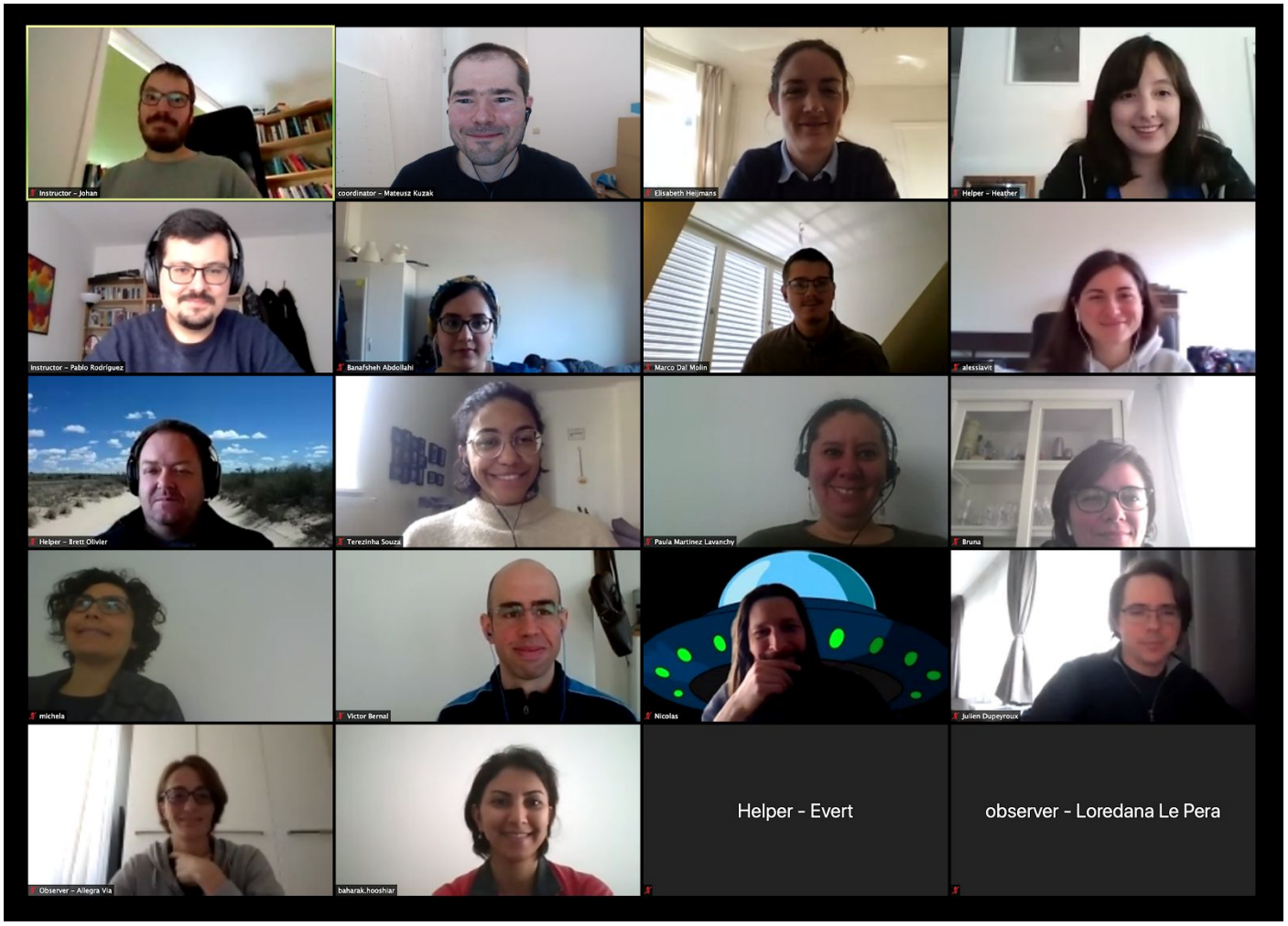
cell mode:
y - code cell
m - markdown cell
a - add cell above
b - add cell below

edit mode:

ctrl-Enter - evaluate cell
shift-Enter - evaluate cell and create new cell below
TAB - complete name
shift-TAB (within the parentheses of a function call) - pop-up function documentation

Python 2 or 3 ? In shell, you can use the following command to find out what you are using:
> python --version





Questions and Answers:

[G Doc line numbering Google Chrome plugin]

Exercise:

Extract three middle letters of the Pablo's name. i.e: `'abl'`
name[1:4]

name[1:4]
name[1:4]
name[1:-1]
name[1:4
name[1:4]
name [1:4]

Excercise:

1. What does thing[low:] (without a value after the colon) do?
    - returns elements from 'low' to the value - 1 mentioned after the colon
    - Prints only the last value
    - returns just the values of low

-
-
-
-
- Returns all elements from index low included +++

2. What does thing[:high] (without a value before the colon) do?
    - Returns all elements up to index high excluded
    - all elements from 0 to high excluded
    - returns all elements excluding 0
    - returns all till high element
    - returns elements from value mentioned before the colon, to ‘high’ - 1
    -
    -
    -
    -

3. What does thing[:] (just a colon) do?
    - Returns all elements +++
    - returns the whole variable/ element
    - returns all elements
    -
    - returns all elements
    -
    -
    -

Excercise:

Find a function that returns the length of a string
len()
len(string)
len(object)
len
len(shift+tab)
len(obj)

Exercise:

a. What function can you use to calculate square root

math.pow(x, 0.5)
x**0.5
math.sqrt(x)
math.sqrt(*x*)
math.sqrt(val)
math.sqrt(val)

b. Why do we even have a sqrt function?
from Nicolas : Efficiency! (for some cases)
just convenient

Exercise:

Extract a random charachter from the string `bases = "ACTTGTTGACGATACA"`

```
bases[random.randint(0, len(bases)-1)]
bases.random()  # doesn't work
random.choice(bases)
```

Exercise:

Get summary statistics for the GDP of Africa

```
africa = pd.read_csv("data/gapminder_gdp_africa.csv", index_col= "country")
africa.T
africa.describe()
```

- data = pd.read_csv('gapminder_gdp_africa.csv') data.describe ()

Vote:

Continue on Friday with:+

```
       Corona data:++++++++
GDP Gapminder data:+++
```

Feedback (one of each)

What went well / new things you learned / what you liked most

- fun and interactive session
- I learned a lot with the pace going a bit faster

- super nice and interactive, thank you
- Very nice, good method to offer help and answer questions
- a lot of new info for me, but clear

What needs improvement / was missing / needs clarification