PYTHON, IPYTHON, & JUPYTER

8.31.2020

Guido van Rossum

* programming language
* named after monty python
* interpreted, not compiled
  * you can type programs directly into the python interpreter

PYTHON DEMO

* python - *start the interpreter*
* print(“blah”) - *printing to screen*
* 5 + 5 - *basic math*
* stuff = 12 - *variables*
* stuff = [1, 2*3, 14, -5] - *lists*

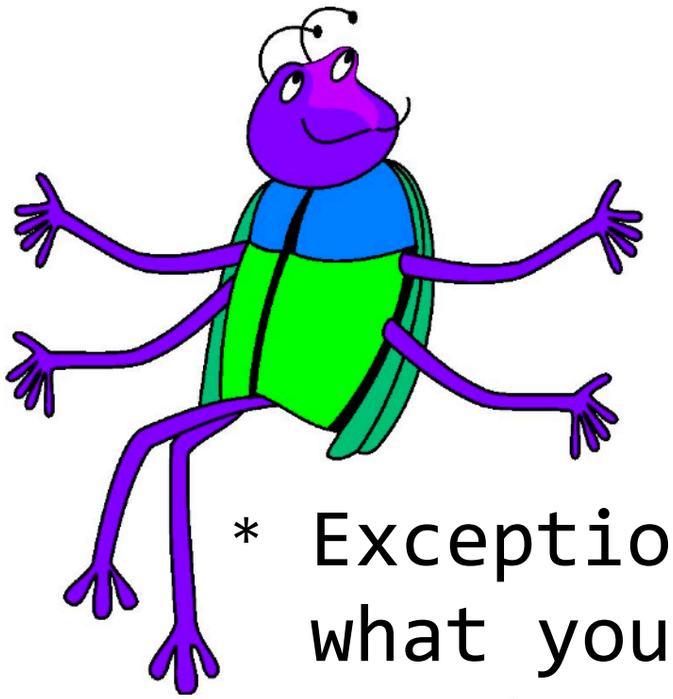
PYTHON DEMO

* breakfast = {‘spam’: 2, ‘eggs’: 1, ‘sausage’: 1} - *dictionary*

* breakfast = dict(spam=2, eggs=1, sausage=1) - *also dictionary*

PYTHON DEMO

* `def my_function(a, b): …` - *functions*
* *whitespace delimited!*
* `if: … else: …` *and* `elif: …`
* `for x in y:` - *for loop*
* `# blah blah` - *# makes this a comment*



EXCEPTIONS

* Exceptions happen when python can’t understand what you did, or otherwise can’t continue running

* SyntaxError - *you straight messed up*

* NameError - *misspelled variable name?*

* KeyError - *dict doesn’t have that key*

* IndentationError - *accidental space?*

TRACEBACKS

* When an exception occurs, python helpfully tells you exactly where and why in the *traceback*

* The traceback also tells you what function called that one (and where), and what function called that one, and so on

* Learning to read tracebacks is **INSANELY USEFUL**. YOU WILL DO THIS ALL THE TIME. **GET GOOD**

IP[y]: IPython
Interactive Computing

Fernando Perez

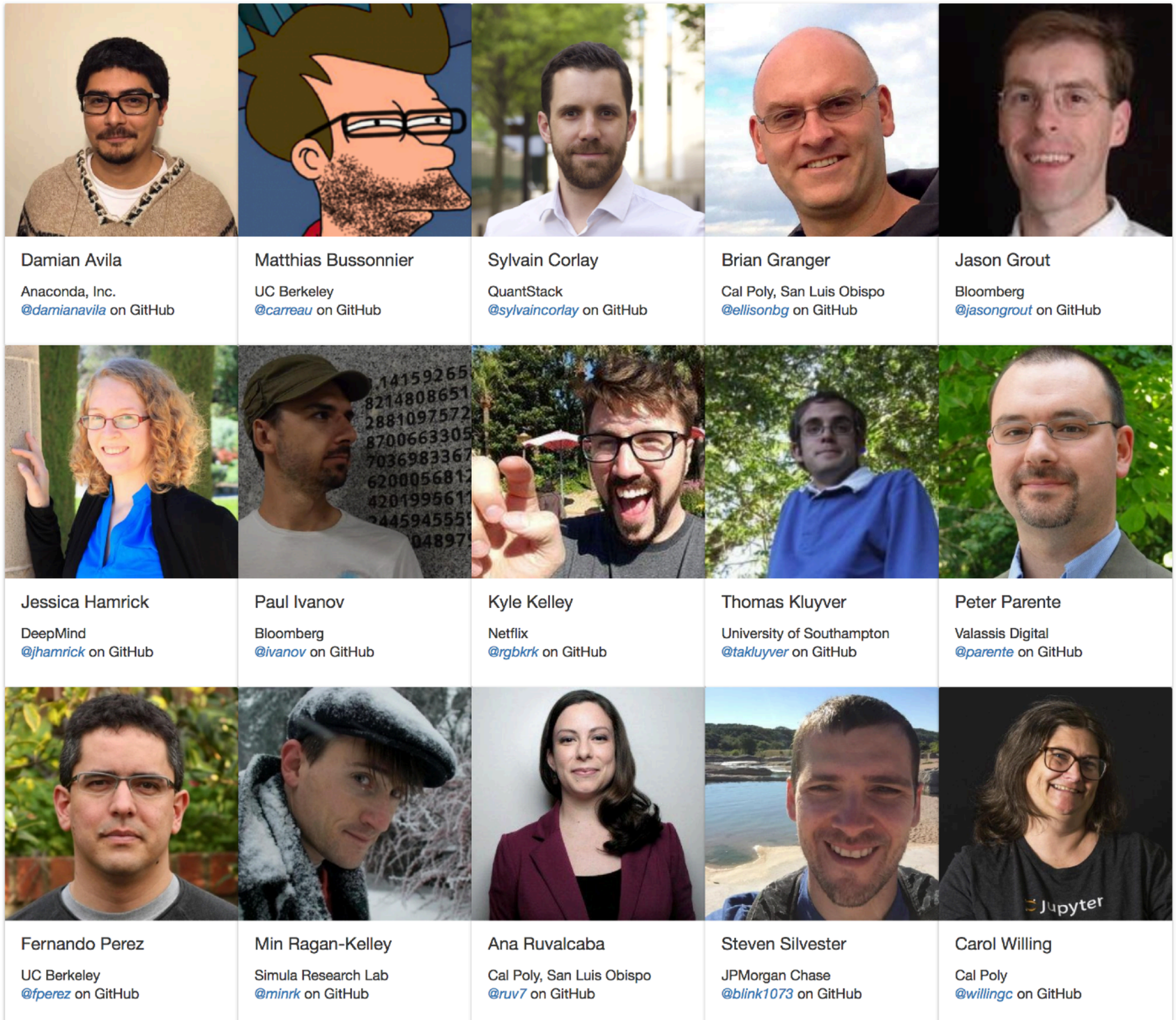
* Different (much, much better) interpreter for python

* When would you use python over ipython? Pretty much never!

IPYTHON DEMO

* Docstrings
  * (Hopefully) every function contains a **docstring** that describes what the function does
  * function? - *show docstring in ipython*
* Source code
  * function?? - *show code of function in ipython*
* Tab completion

JUPYTER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JUPYTER

* Run python “notebooks” in a web browser

  * Code lives in *cells*

JUPYTER DEMO

READING

* By next Wednesday (9/9), please read:

* *Inferential Thinking* Chapter 3.1–3.3

  * https://www.inferentialthinking.com/chapters/03/programming-in-python

* *Python Data Science Handbook* Chapter 1

  * https://jakevdp.github.io/PythonDataScienceHandbook/

ASSIGNMENT

* Download and install Anaconda for Python 3.8 (Anaconda is a distribution of python that includes ipython, jupyter, & a lot of libraries that we will use):

  https://www.anaconda.com/products/individual#Downloads

HASTA LA VISTA