CYPLAN 255

Urban Informatics and Visualization

HIT RECORD

Lecture 04 – C++ Programming

January 31, 2022

Lecture 04 – Python at the Command-line

January 31, 2022

Agenda

1. Announcements
2. Python at the command-line
3. For next time
4. Questions

1. Announcements

Announcements

- ICYMI: I made a guide for using GitHub and posted it here
- Assignment 1 released
  - assignment_1 branch
- Office hours format

2. Python at the Command-line

Python vs. IPython vs. Jupyter

- Python - an **interpreted**, **high-level** programming language
- IPython - “interactive” Python interpreter
  - `In [1]:` instead of `>>>`
- Jupyter Notebooks - web-based GUI for IPython
  - .ipynb = “IPython notebook”

[5]

[4]

[6]

Options for Running Python

- `python my_script.py` — execute a Python script
- `python` — launch the default Python interpreter
  - `exit()` — exit
  - `<ctrl> + d` (Mac/Linux) — exit
  - `<ctrl> + z` (Windows) — exit
- `ipython` — launch the interactive Python interpreter
  - `exit` — exit
  - `<ctrl> + d` (Mac/Linux) — exit
  - `<ctrl> + z` (Windows) — exit
- `jupyter notebook` — launch a notebook server and dashboard
  - `<quit>` (notebook dashboard) — exit
  - `<ctrl> + c` (Mac/Linux) — exit

Managing Packages and Virtual Environments

- Anaconda – a Python **distribution**
- Conda – a Python **package manager** and **environment manager**
  - Created by the Anaconda folks
  - As a package manager
    - Installs Python libraries (packages) from package **repositories** (e.g. conda-forge)
    - Manages dependencies and resolves conflicts
    - Other examples: “pip”
  - As an environment manager
    - Manages Python **virtual environments** (sandboxes)
    - Other examples: “virtualenv”

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ANACONDA®

Max’s Tips for Creating a Conda Environment

1. `conda create -n my-first-env`
2. `conda activate my-first-env`
3. `conda config --add channels conda-forge`
4. `conda config --set channel_priority strict`
5. `conda install python ipython notebook nb_conda_kernels jupyter_contrib_nbextensions`
6. `jupyter contrib nbextension install --user`

Intro to Python (LIVE DEMO)

- SLIDES ⇔ NOTEBOOK
- Options for following along:
  a. Start a Notebook server (`jupyter notebook`) and open the notebook named "lecture_03_intro_python_jupyter.ipynb"
  b. Open a static copy of the rendered notebook on the class GitHub repo here
  c. Sit back and enjoy the demo. You can (and should) explore the notebook on your own time afterwards.

4. For next time

For next time (“homework”)

1. Make sure you’ve finished the GitHub exercise which includes:
    a. Forking the class repo
    b. Cloning your fork
    c. Syncing your fork
    d. Submitting Assignment 0
2. Work through lecture_03_intro_python_jupyter.ipynb on your own
3. Try creating a conda environment and accessing it from a notebook

5. Questions?

Image attribution

[4] https://www.python.org/static/community_logos/python-logo-master-v3-TM.png
[5] https://upload.wikimedia.org/wikipedia/commons/3/3c/IPython_Logo.png
[6] https://commons.wikimedia.org/wiki/File:Jupyter_logo.svg
[7] https://en.wikipedia.org/wiki/Anaconda_(Python_distribution)#/media/File:Anaconda_Logo.png

Bonus Material