Code Review

AAS 231 Conference
Software Carpentry Workshop

What is Code Review?

- Talking about code, line by line
- Peer review
- Individually or in groups
- In person or remote

Motivation

- Astronomers spend a lot of time coding
- Very little formal education in software development
- Most discussion is about scientific results
- Goal: Build a community to discuss coding practices
  - If you supervise students – bring this to your research meetings
  - If not – start a group
  - All skill levels present and contributing

Benefits

- Improve code quality
- Catch bugs
- Get help thinking through design
- See different coding styles/approaches
- Learn best practices
- Learn about new packages and tools
- See all levels of code
- Learn who to talk to
- Avoid redundant code

Code Review Meetings

- Find a time and space to meet
- Review code line by line
- Limit review to a few hundred lines of code
- Avoid:
  - Getting hung up on stylistic decisions
  - Stating opinion as fact
  - Shaming code
  - Assuming knowledge of others (e.g. jargon or tools)

What to discuss

- Does the code perform as expected?
- Are coding guidelines followed (e.g. PEP8)?
- Is the code easy to read and understand?
- Is the code properly documented (e.g. docstrings, references to origin of algorithms)?
- Is the code written as efficiently/flexibly as it should be (e.g. hard coded values, use of functions/classes, design decisions)?

Coding Standards

- The Python community has agreed to a set standards and practices for Python code and its documentation
- These standards promote consistency
- PEP8 Style Guide for Python Code (www.python.org/dev/peps/pep-0008/)
- PEP257 Docstring Conventions (https://www.python.org/dev/peps/pep-0257/)
- Examples in Jupyter notebook form:

http://bit.ly/pep8-examples

Let's Try It!

- Break up into groups of 2 or 3
- Review the code that is available here:

http://bit.ly/code-review-example

Discuss possible improvements with your group

- Feel free to submit comments on the Gist or write down notes on the etherpad