EGM722 – Programming for GIS and Remote Sensing

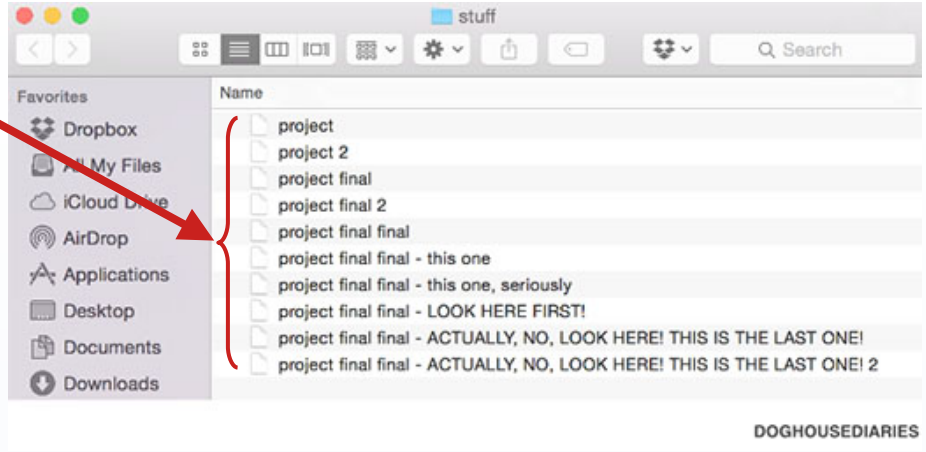
Week 1, Part 5: A brief introduction to git

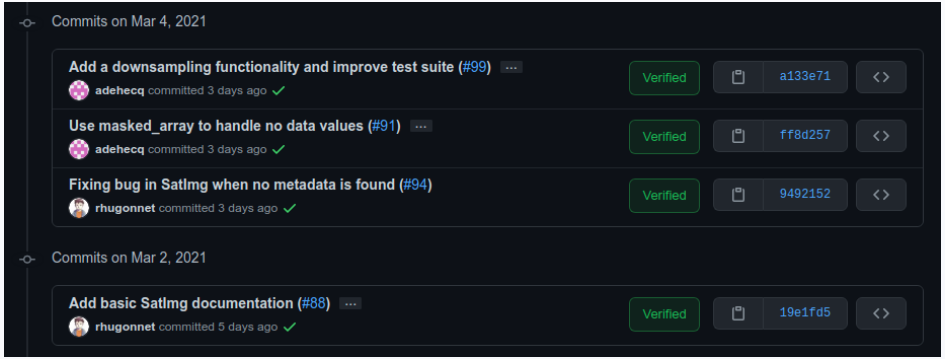
What is git?

- Git is a distributed version control system (DVCS)
  - Version Control System: tool that records changes to file(s) over time
  - Distributed: each copy is independent & has complete history
- Started with software, but is not limited to software
- Enables you to:
  - See the entire timeline of your project
  - Keep track of changes made (and why!)
  - More easily collaborate with others

Why version control?

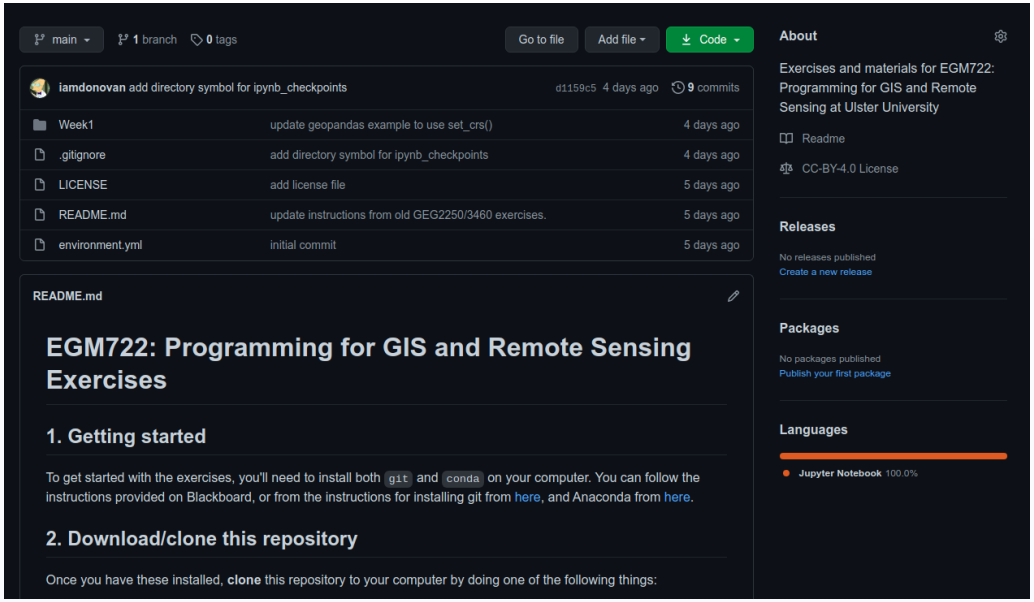
- Because this is nightmare fuel
  - With a version control system, we (hopefully) avoid this
- Version control:
  - Records snapshots of a project
  - Keep track of what/why changes are made
  - Can go back and undo changes if needed





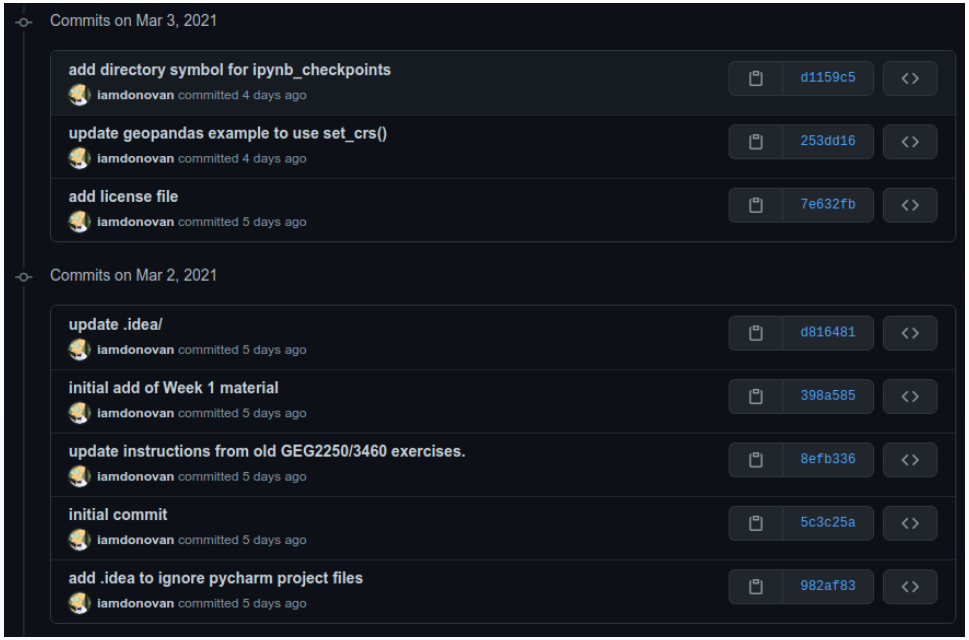
Repositories

- A repository is the storage space for the project
  - Files
  - Past versions
  - All branches
- Any folder can be turned into a git repository:
  - git init



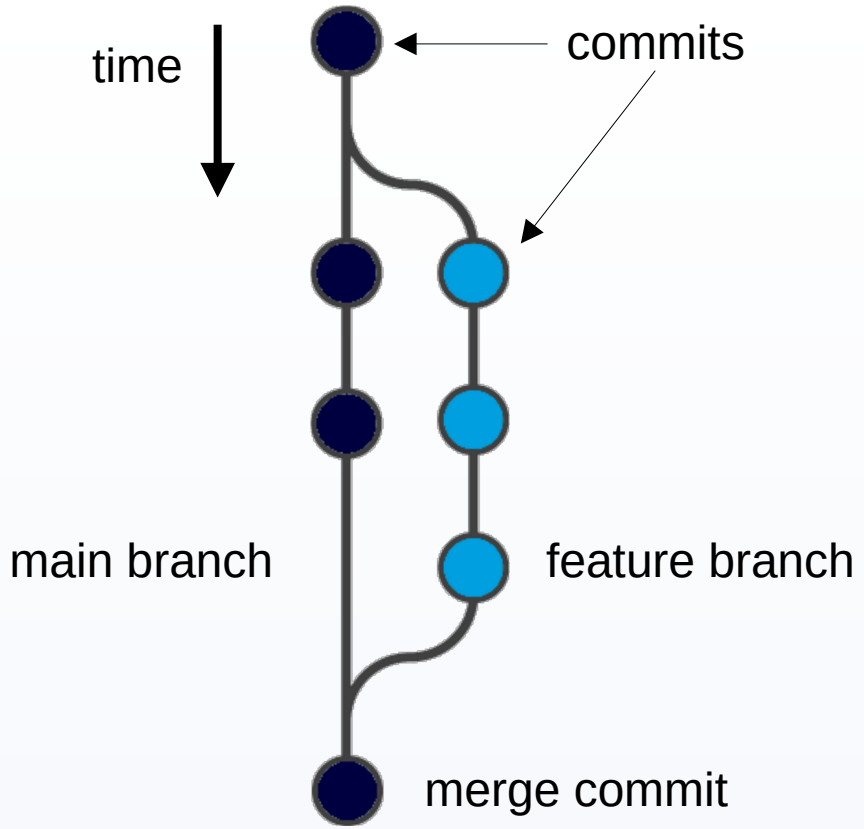
Commits

- A commit is just a snapshot of the project
- Each commit has a unique identifier (hash)
- Should also have a message describing the commit



Branches

- Often, we want to develop different things at the same time
- Branches are independent development lines
  - e.g., work on new feature without breaking everything
  - When feature is ready, merge back to main branch



GitHub != git

- git: a distributed version control system
- GitHub: a popular website for hosting git repositories
  - Others include GitLab, Bitbucket
  - GitHub Desktop provides a GUI for GitHub

git

GitLab

Bitbucket

Summary

- Git is a tool to help us keep track of changes in files over time
- Each project is stored in a repository that includes all files and the history
- Keep track of changes using commits (savepoints)
- GitHub is a (very popular) website for hosting git repositories

Additional resources

- Git Handbook [GitHub]
- Understanding the GitHub flow [GitHub]
- GitHub Training & Guides [YouTube]
- Learn Git Branching
- GitHub without the command line [CodeRefinery]