

# Git Workshop

## Spring 2021

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# Intro: Workshop Structure

## Structure:

- 1 Background: how does Git work?
- 2 Example: managing homework
- 3 Hands-on: solve Git 'puzzles' in browser

## General:

- Ask questions! (want to know more? something isn't clear?)
- Reach out: [neuwireless.slack.com](https://neuwireless.slack.com)

# Intro: Teaching Git



Figure: XKCD 1597 'Git' — CC BY-NC 2.5

# Background: What is Git?



Figure: Git Logo — CC BY 3.0

- broadly; *a tool used to track changes to files and folders.*
- facilitates collaboration on software projects
- captures 'snapshots' of a project
- maintains metadata
  - what was changed
  - who was it changed by
  - when was it changed
  - messages associated with changes

# Background: What is Git used for?

## Group Applications (Industry, co-op)

- large software projects
- resolve conflicts when multiple people are editing the same things
- who wrote this!?

## Personal Applications

- “I swear this worked 10 minutes ago. . .”
- find what broke something and when
- separate tasks; work on bug fixing is isolated from work on new feature
- can use for class work!

# Background: Big Idea of Git

## QUESTION: Intuition

based on this description of what Git does, can you imagine how you would go about making these 'snapshots' manually?



homework1-final-FINAL-  
HAVEMERCY.cpp

# Background: Big Idea of Git

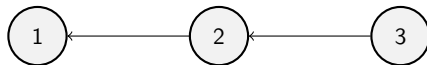


Figure: Linear History

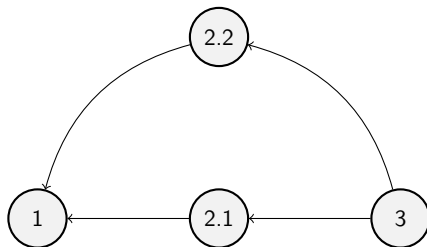


Figure: Branched History

# Example: Managing Local Files

## EXAMPLE: Homework Files

- ① *Init*: make a file
- ② *Add/Commit*: save file
- ③ *Branch/Checkout*: two new features
- ④ *Merge*: combine those new features
- ⑤ *Restore/Checkout*: restore save



# Background: Git vs. GitHub?

## What's the difference between Git and GitHub?

### Git

- tool independent of GitHub
- provides interface for services like GitHub

### GitHub

- centralized location to store git repositories
- alternatives: GitLab, SourceHut, BitBucket, self hosting, ...
- additional project management utilities
- CI, CD, hosting, ...

## General

- MIT Missing Semester Lecture 6: Version Control (Git)
- Tim Pope: A Note About Git Commit Messages
- Implement git from scratch in Python
- How to contribute to code on GitHub

## Git Documentation

- Git configuration documentation
- .gitignore documentation

# Hands-On With git

<https://learngitbranching.js.org/>