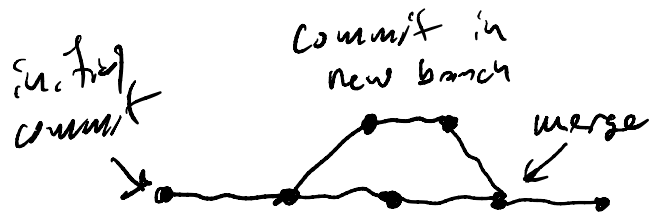# Git

- Version Control System (VCS)
- A git repository stores the complete revision history of a project
- Distributed
    - When a Git repo is cloned, the clone contains the complete history

    - A clone is not permanently tied to the original repo and can be easily hosted on different servers or merged with other repositories

- Commits
    - A commit is a snapshot of files at a certain time
    - Also contains metadata
        - Author, timestamp, commit message
    - Every commit (besides the initial commit) has at least one parent commit

- Branches
  - Every git repo contains at least one branch
  - The default branch is called master, though GitHub has started using a default of main since master has negative connotations
  - New branches can be created from existing branches
  - Different branches can have different histories that split off the same commit
  - Branches can be merged together

initial
commit

commit in
new branch

merge

time ⟶

- The main repo for a project might have a branch that is only updated when there is a new version to release, and other branches are used during development

- GitHub and other git hosting sites allow branches to be merged across repositories on the site via pull requests

- Common practice for adding a feature, bug fix, etc.
  - Create a new branch off of the development branch of the main repository
  - Work on the code within the new branch
  - When finished, merge the new branch back into the development branch (via pull request if on GitHub)