Git & GitHub Bootcamp 2024

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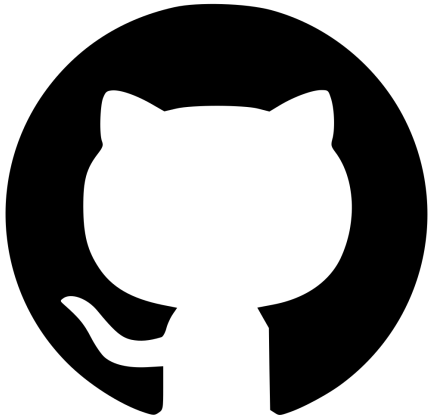
- Introduction to Version Control
- Why Git is Essential for Developers
- GitHub for Collaboration and Sharing Code

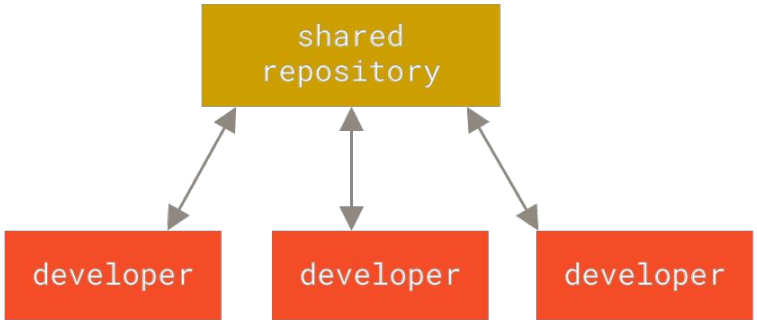
https://github.com/kevinwing/git_bootcamp_2024



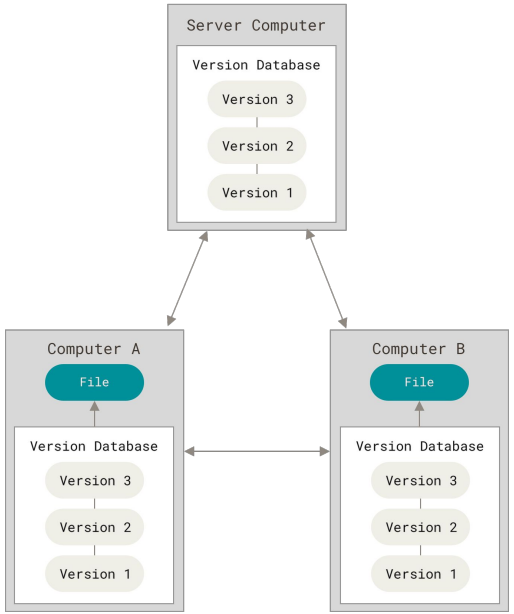
What is Git?

- Git is a distributed version control system (VCS)
- Tracks changes in your code
- Maintains codebase integrity
- Allows for multiple developers to work together

Centralized Vs. Distributed



Centralized



Distributed

Why is it called git?

git

Noun *British Slang*

1. A contemptible person
   - Collins Dictionary

"I'm an egotistical bastard, and I name all my projects after myself. First 'Linux', now 'git'."

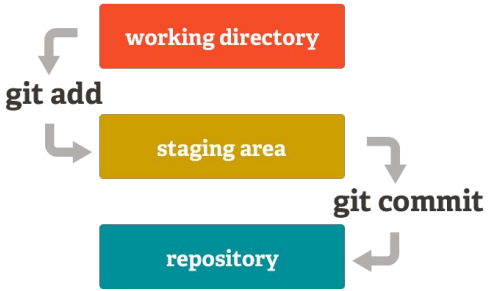
- Linus Torvalds (Creator of the Linux kernel and git)

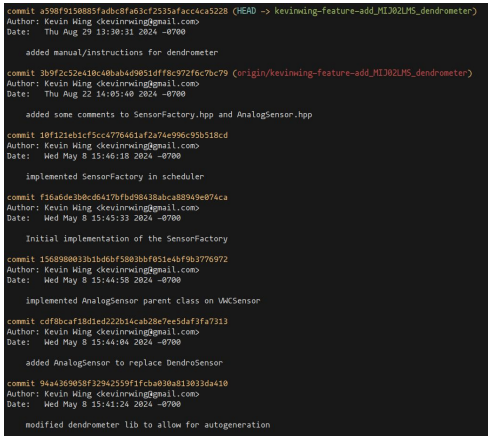
Basic Git Concepts

- Repository (repo)
- Working Directory (where your edits are made)
- Staging Area
- Commit (snapshot)
- Branch (a copy to make some change on)
- Merge (joining branches)
- Merge Conflicts (sounds scary, but really isn’t)

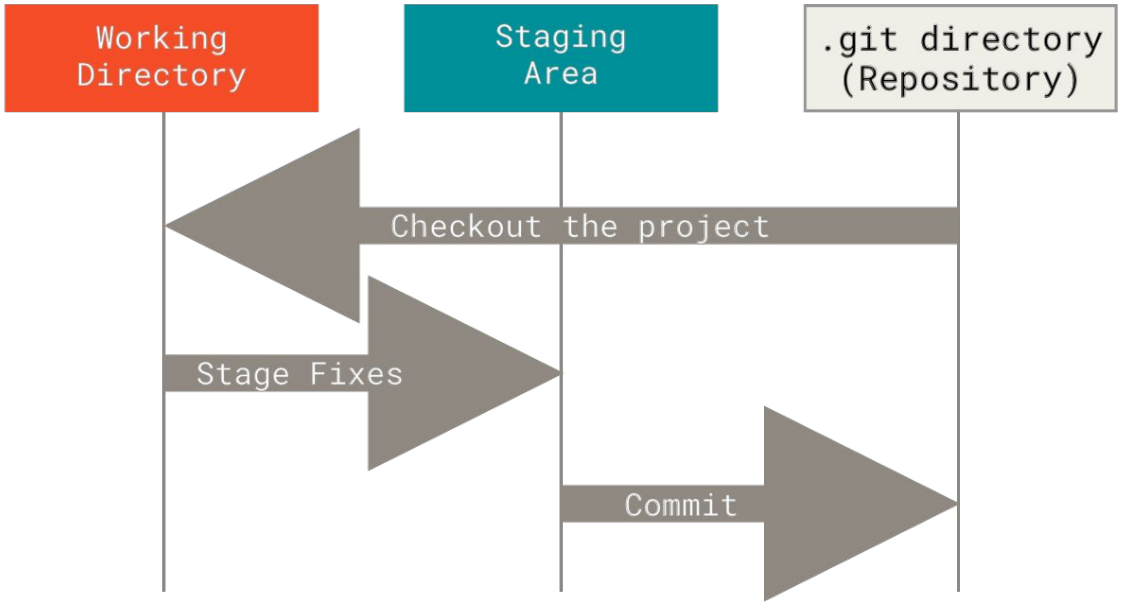
Git Workflow

- Working Directory
- Staging Area
- Commit History
- Pushing and Pulling from Remotes repos





A Better Visual



Common Git Commands

- git init
- git add
- git commit
- git status
- git log
- git push
- git pull
- git clone
- git config

What is GitHub?

- GitHub is a Cloud-Based Platform for Hosting Git Repositories
- Collaboration Tool for Developers
- Additional Features: Issues, Pull Requests, GitHub Actions

GitHub

GitHub Workflow

- Fork and/or Clone a Repository
- Make Changes Locally (commit)
- Push Changes to your Fork
- Submit a Pull Request

Setting Up GitHub

- Create account
- Setup SSH key
- Configure Git on Local Machine
- Basic GitHub Settings

GitHub Features

- Pull Requests (PR) and Code Reviews
- Issues and Project Management
- GitHub Actions
- GitHub Pages

GitHub Workflow Demo

- Fork a Repository
- Create a branch and Make a Change
- Submit a PR
- Merge a PR

Pull Requests (The Magic of GitHub)

What is a Pull Request (PR)

- A request to merge changes into another branch or repository

Why Use PRs?

- Enables code review and feedback before merging
- Ensures quality and consistency in the codebase

Common Workflow

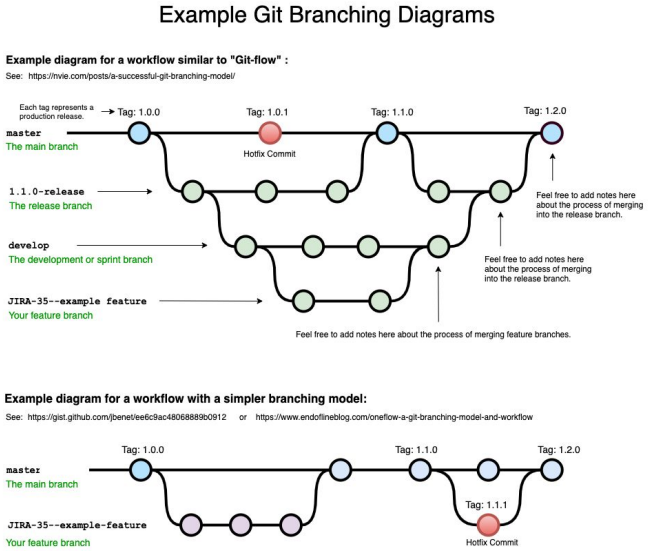
- Fork or clone a repository
- Create a new branch for changes
- Push changes to your branch/fork
- Open a PR to the original repo or main/master branch

Merging PRs

- Can be merged once reviewed and approved
- Can resolve conflicts during the merge process

Git Branching

- Creating and Switching Branches
- Merging Branches
- Handling Conflicts



Best Practices for Git & GitHub

- Commit Often with Meaningful Messages
- Keep Branches Organized
- Use PRs for Code Review
- Sync Local Branches with Remotes Regularly

With Great Power...

- git reset: **Can rewrite history, be careful**
- git checkout - - <file>: **Discards changes permanently**
- git push - -force: **Can overwrite remote history**
- git rebase: **Rewrites commit history, use with caution**
- git clean: **Deletes untracked files permanently**

Q & A

- What is something we did not go over that you would like to know more about?
- Any issues with setup?

Final Thoughts

- Git and GitHub are Essential for Software Development
- Keep Practicing
- Plenty of Resources
    - https://git-scm.org/doc
    - https://docs.github.com
    - etc.

References

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