Getting Going with Git

Pragmatic Start

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Git

Local records

- VCS: Version Control System
- Software installed locally
- Provides a record keeping system for committed changes

Git terminology (unofficial)

- Files & Projects
  - These are your local files that you are editing within your project folder
  - Files are saved either locally or to some cloud service such as Dropbox
  - Git installed locally allows offline use

What it does

- Provides a history of changes
  - Allows reversion to known working code
- Provides structure for code management
- Many deployment platforms now use the Git repo as the source of truth for new builds

Quickstart

Github

- github.com create an account
- Ensure that option to keep email private is selected (left side of user profile -> email)
- Make a note of the email address that is provided for code commits
  - Look in the text body to find this

Why?

- Keep track of changes
  - Allows reversion back to working code
- Modern production deployments trigger on Github updates

Quickstart

Git

- Install Git from git-scm.com
- Note: Git is already built into VSCode
- On MacOS, XCode is a large download but includes Git
- Homebrew can be used on MacOS to install Git
- Windows has an installation script

Quickstart

Local project - new from cli

- Most projects created from CLI’s (command line tools) will include a git configuration
  - Nextjs, Reactjs, Vuejs, Gatsby, Express cli’s include git config
- Associate local project with remote repository
  - Create new repo on Github

Github

- Github is a giant store for source code
  - More than 100 million repositories by 56 million developers
- Projects are called repositories which receive unique naming
- Repositories are synchronized with your local Git control
- Hosts many open source projects

Repo Creation

- Once Github account is created, its possible to create new repos
- Depending upon page, green button “New”
- Name repo, add details, don’t add Readme, gitignore, or license
- Next page offers three different setup options
  - Create new repo on local machine (don’t use with cli created projects)
  - Associate existing local repo to github remote
  - Third option generally not used

Repository

- A single directory under Git/Github account
- Repos can be private or public
- Stores files related to a single project
- This is the “remote” location
- Repository can contain many “branches”

Branch

- “Main” is primary branch in new projects
  - “Master” in older projects (alt: can use any naming convention)
- A Branch is a split from the main codebase
- Use cases
  - Develop a new feature
  - Illustrate a progression of steps in development (e.g. tutorials, book chapters)
  - Repository can contain multiple branches

Commit

- An action where the current state of the code is saved
- Code is saved under local Git control
- ‘Commit message’ describes reason for change (bug fix, new feature, refactor)
- Not all changes have to be committed at once
  - Files to be committed can be individually selected
- Commits can be reverted

Remote

- This is the repository where the code changes are recorded (Github, GitLab, Bitbucket)
- Location is defined by a URL
- The URL is a combination of Github + User + Repo Name
- Can be accessed over HTTPS or SSH
  - Read instructions for config to avoid PW for each commit
  - Requires auth for github access or a Key for SSH

Git Push

- After code is committed locally, changes are ‘pushed’ to remote
- Push is an explicit action - not automatic
- Code & Commit message are synced to Github

Git Pull

- Changes made to codebase are synchronized from Github DOWN to the local project with a “Pull” request
- Unusual for individual devs to use this
- Typically a team function with multiple devs working on codebase
- Directly making changes to remote code on Github leads to multiple problems
- Similarly, working on the same code version on multiple computers under the same user account creates conflicts

Pull Request

- Pull requests are made when changes to the codebase need to be approved
- e.g. Merging a feature branch into the main branch

Cloning a Repo

- Task of copying a repository: your own or another’s
- Making use of project code
- Modifying code for own project use
- Does not sync back to original codebase

Forking a Repo

- This is the action of replicating a repository on which to make changes
- Changes are committed back to the original repo (PR request)
- Become contributor to project