Git Masterclass

Day 1 of 3

Today's Topics

- What is Version Control
- What is Git
- Git Terminology
- Intro to Git Hosting and GitHub
- Creating out first repo
- Basic Git workflow
- Cloning
- Branching and Tagging

1

What is Version Control?

Version Control

Version control systems are a category of software tools that help a software team manage changes to source code over time.

Version Control Cont.

Version control software keeps track of every modification to the code in a special kind of database. If a mistake is made, developers can turn back the clock and compare earlier versions of the code to help fix the mistake while minimizing disruption to all team members.

2

What is Git?

Git

Git is a ***distributed*** version control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files. Its goals include speed, data integrity, and support for distributed, non-linear workflows.

What the heck does that even mean?

- There is no central version of a codebase. Each user has a working copy and the full change history
- Tracks changes to a codebase and exchanges patches when codebase needs to be synchronized

More about Git

- Created in 2005
- Created by Linus Torvalds, the creator of the Linux kernel.....for the development of the Linux Kernel

Git Repositories

Our Code needs a home!

Git Repositories store metadata for a set of files and/or directories. it stores the set of file as well as history of changes made to those file.

But if it's on my computer...how can others get it?

War of the Repository Hosts

GitHub

- Acquired by Microsoft
- Largest Market Share
-Unlimited Free Public and Private Repos(Private repos limited to only 3 collaborators)

GitLab

- More than just SCM
- Project Planning
- CI/CD Pipeline
- Monitoring
- Metrics
-Unlimited Public and Private Repos

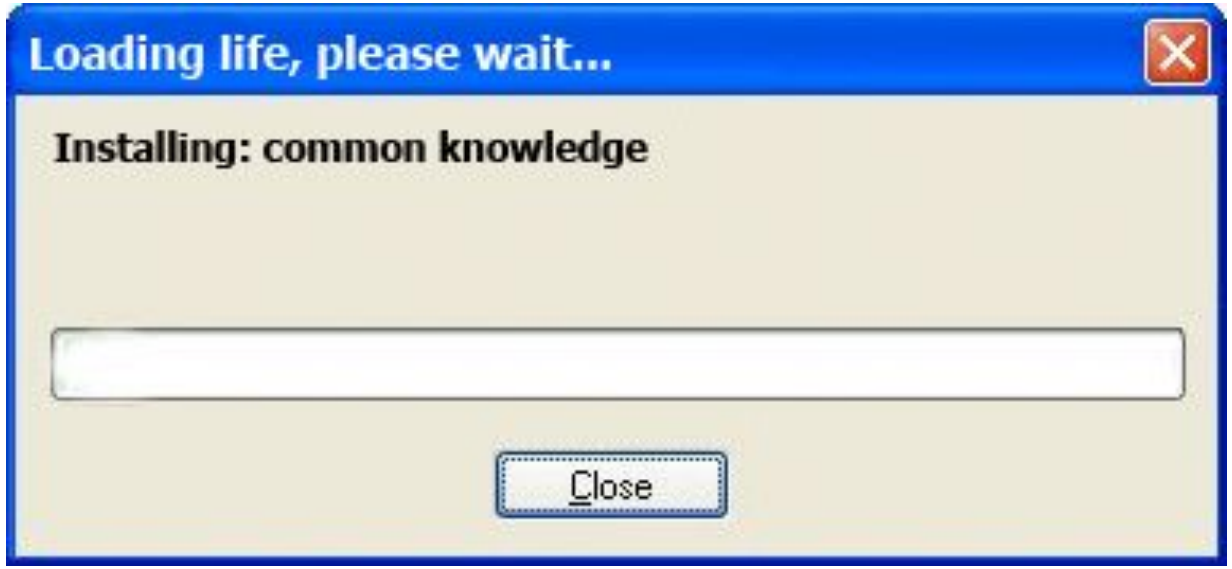
BitBucket

- Atlassian product means good integration with other Atlassian products
- Built-in CI
-Unlimited Public and Private Repos

Git != Github or Gitlab or Bitbucket

4

Installation



Installation

- https://git-scm.com/downloads
- brew install git
- apt install git
- choco install git

5

Some Git Terminology

USE YOUR WORDS!!!

object - The unit of storage in Git. Cannot be changed, uniquely identifiables

commit - a single point in the Git history

working tree - The tree of actual checked out files

master/main - usually the default branch

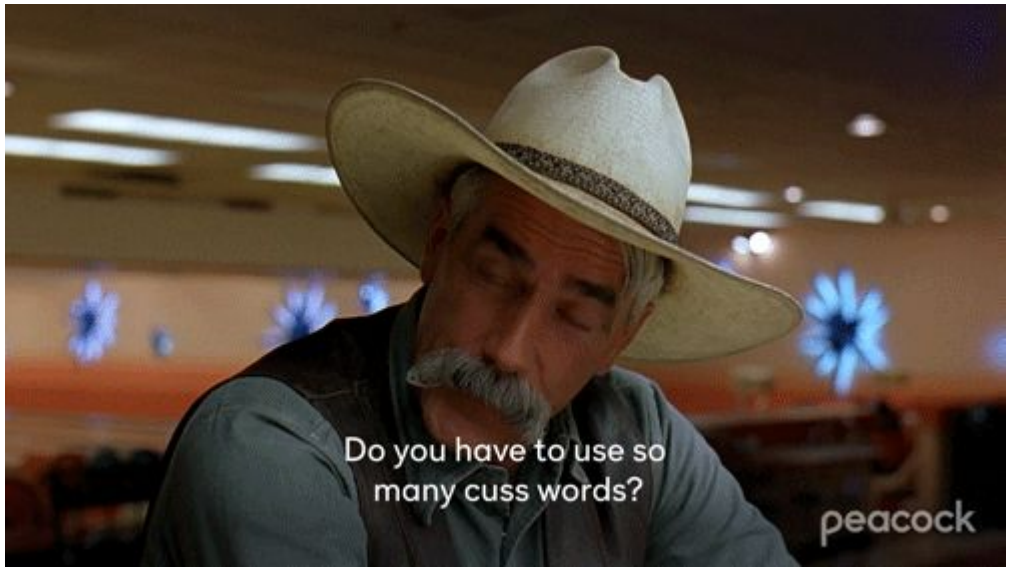
USE YOUR WORDS.....again!!!

ref - path that points to an object or another ref

branch - an active line of development

HEAD - The current branch

checkout - change/update the working tree



continue USING YOUR WORDS!!!

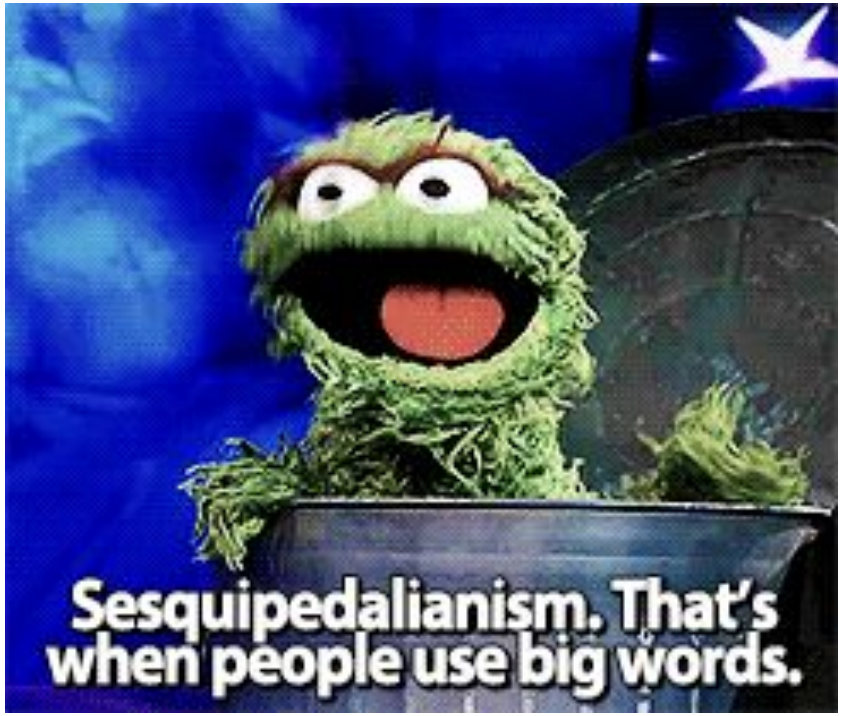
fetch - grab head ref from remote repo. Get all new objects you need

remote - common repo to sync to/from

merge - bring contents of another branch into the current one

pull - fetch + merge

push - update remote head ref and push objects



Basic Workflow

What's The Status?

First, let's make sure we know what the heck is going on

git status

Stage Your Changes

Next we need to tell git what things we would like to include in our next snapshot

git add filename

What's The Status?...Again

Things are different, let's make sure we're doing what we want to do

git status

Say Cheese!

Now it's time to record this moment in the history books. Let's create a snapshot of our changes by committing our code

git commit -m "hopefully meaningful message"

What's The Status?...AGAIN

I know, I know...but we gotta be sure

git status

Share your updates

Now that we've changed the history, let's push these changes to our remote.

git push

7

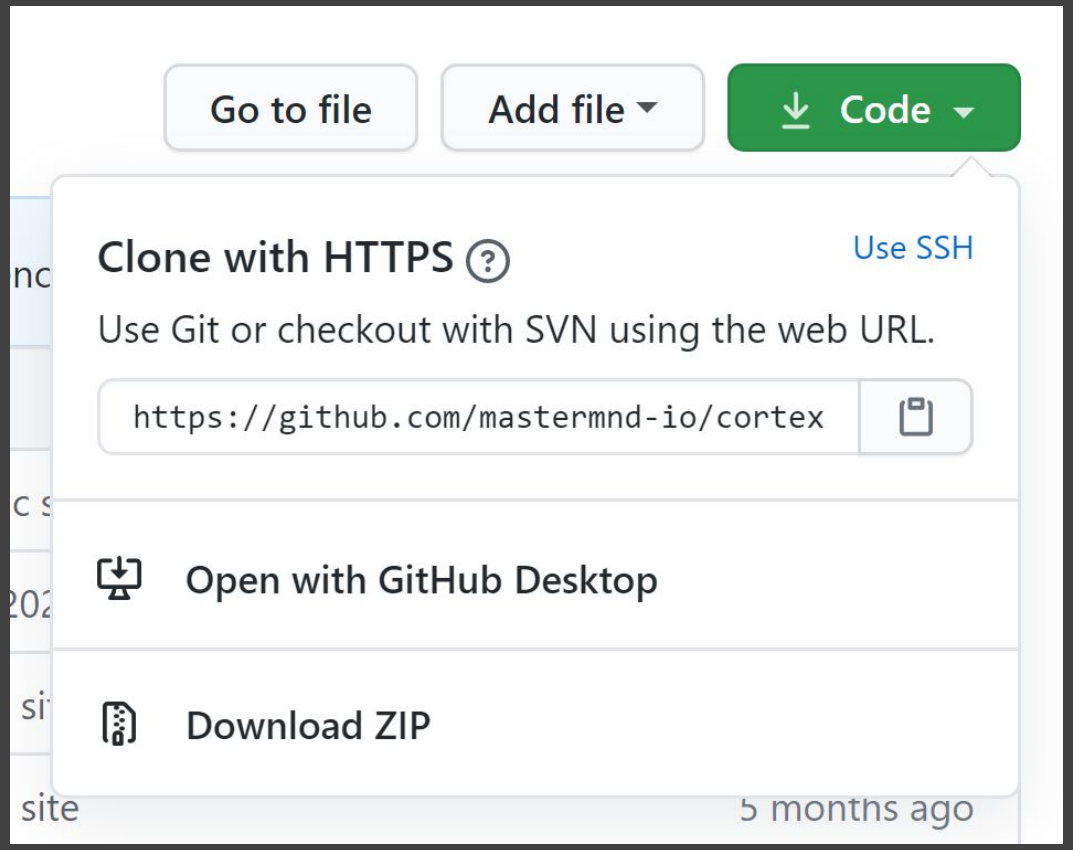
Cloning

Cloning

Cloning creates a copy...or a clone of another repository.

It also sets up remote-tracking for all the branches in the cloned repository

Cloning - How?



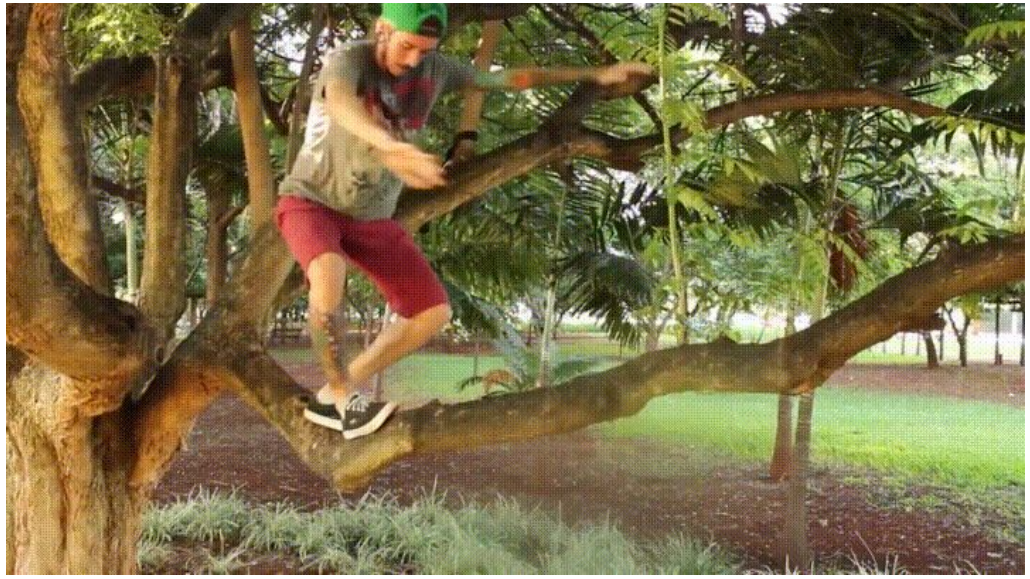
Grab that URL!

git clone <URL>

8

Branching and Tagging

Branches



Branches are simply a pointer to a series of commits.

Think different branch of history

Manage branches via the “git branch” command

Tags

Git Tags are a pointer to a specific commit or moment in history

Manage Tags via the “git tag” command