

An Introduction to Git Version Control



February 4, 2014

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What is Git?

- Version Control Systems (VCSs)
 - “Using a VCS (...) means that if you screw things up or lose files, you can generally recover easily.”
 - Backup
 - Revert state
 - Collaborate
 - Low overhead
- Git is a Distributed VCS
 - Each user has a local repository



Why you should use Git

- Easy to quickly change back to old versions of a file
- Easy to see differences between file versions
- Enables experimentation on source code
- Easy collaboration, even in the same file
- Allows advisers to easily see progress in projects
- Easy to share work with others
- Allows for quick annotation of changes to files
- It's **great!**



How Git Handles Data

- Data as snapshots
 - Contrasts with Δ s
- Files are stored locally
 - Current files in base directory
 - Metadata in .git file
- Almost everything is undoable



3-Tier Model

- Tracked vs. untracked files
- Modified
 - There are unstaged changes to files since the last commit
- Staged
 - A snapshot of the file has been taken with the intent to commit later
- Committed
 - The changes have been saved permanently in the .git file with added metadata



Linux (if not pre-installed)

- `apt-get install git`
- `yum install git-core`

Mac

- With MacPorts:
`sudo port install git-core +svn +doc +bash_completion`
- With a GUI installer:
<http://code.google.com/p/git-osx-installer>

Windows

- Git bash + GUI installer: <http://msysgit.github.com/>



Demo!





GitHub

- Free public repositories
- Free plan with (limited) private repositories for students and teachers
- Used VERY widely



Bitbucket

- Unlimited private repositories for up to 5 users for anyone
- Unlimited private repositories for **unlimited** users with .edu email address
- It's great!

(And others)

