

# Git



## History and Alternatives

## Last time on Git Stuco (or perhaps earlier today)

- working directory/index(stage)/repository
- add files to the staging area
- viewing changes in your working directory
- viewing git history
- writing good commit messages

# Version Control Systems

- Three generations
- By time period
  - First generation 1972
  - Second generation 1990
  - Third generation 2005

# First Generation

- RCS, SCCS (claimed to be the first VCS)
- operations completed one file at a time
- concurrency controlled through locks
- Drawbacks
  - only one developer per file at any given moment
  - difficult to manage large amounts of interdependent files
  - very little merge support

# Second Generation

- CVS, SourceSafe, Subversion (very popular especially Apache subversion SVN), Team Foundation Server
- Multifile operations common
- Merge must be completed before committing

# Third Generation

- BitKeeper, Bazaar, Mercurial
- Merge and commit separate allowing for faster development

# Advantages of Distributed

- Workspace is more private
- Much faster
- Offline is possible
- Workflow more flexible (commits are not as big of a deal; branching is easier)
- Implicit Backups

# Advantages of Centralized

- Locks are easier to implement
- Repository size
- Deletion
- Access Control
- Ease of use



# Snapshotting vs Changeset

- Snapshotting
  - Stores compressed versions of files (ie. .pak)
  - git, SVN
- Changesets or patch sets
  - stores changes in files
  - mercurial

# History of Git

- Linus Torvalds - father of Linux and Git
  - developed for the Linux Kernel project
- Bitkeeper revoked free-use access
- Linus set out to make his own
- Git was born in 2005

# Goals of Git

- Speed - fast/scales pretty well
- Distributed - everyone has their own copy of the repository
- Secure - SHA1 hashing of files to maintain data integrity
- Non-linear development - easy branching

# Next Week

- Viewing git log in more detail
- Modifying history
- Reverting files and branches

# Homework 2

- Download the .zip from the website, unzip it
- Add a text (.txt) file with your andrew id
  - ex. alvinw.txt
- Commit the changes with an appropriate message
- Set your remotes
- Push the changes
- Due before the **start** of next class

# Questions

