Git to work!

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What is version control?

Version Control

A system to record or manage changes to files or sets of files over time.

- Collaboration - Teams generate many variations
- Branching - Bugs may only exist in specific versions
- Trunk - Make changes without causing more errors

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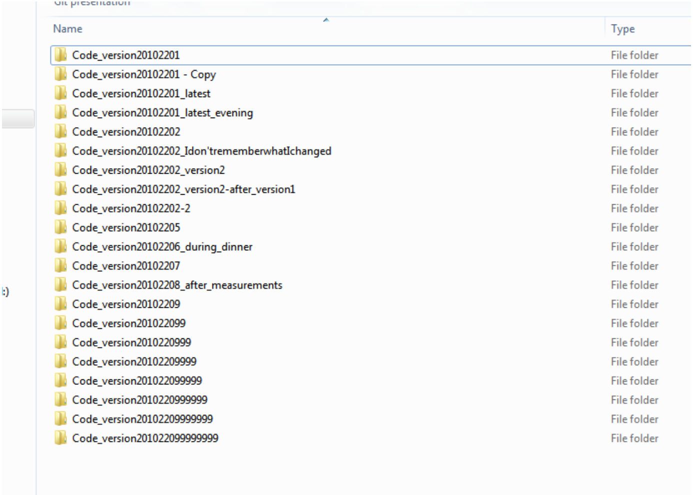
What are some examples?



Git presentation

Name	Type
Code_version20102201	File folder
Code_version20102201 - Copy	File folder
Code_version20102201_latest	File folder
Code_version20102201_latest_evening	File folder
Code_version20102202	File folder
Code_version20102202_Idon'trememberwhatIchanged	File folder
Code_version20102202_version2	File folder
Code_version20102202_version2-after_version1	File folder
Code_version20102202-2	File folder
Code_version20102205	File folder
Code_version20102206_during_dinner	File folder
Code_version20102207	File folder
Code_version20102208_after_measurements	File folder
Code_version20102209	File folder
Code_version201022099	File folder
Code_version2010220999	File folder
Code_version20102209999	File folder
Code_version201022099999	File folder
Code_version2010220999999	File folder
Code_version20102209999999	File folder
Code_version201022099999999	File folder

What are some examples?

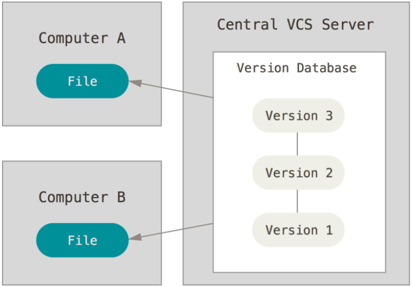
- Multiple computers or hardware (hexrotor)
- ROS
- Navy Boat
- Paper writing ($\LaTeX$)
- Website

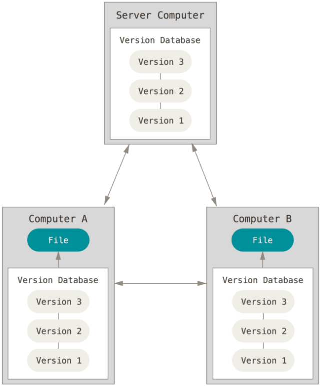
This is my slide

Shankar Kulumani

Version Control Software

- Centralized Model
  - CVS, SVN, others...
- Distributed Model
  - Mercurial, Git, others...





Git history

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- Track changes in TEXT files!
- Git stores Snapshots - Saving the current state!
- Everything is local - no internet needed
- Integrity - Use of hash functions

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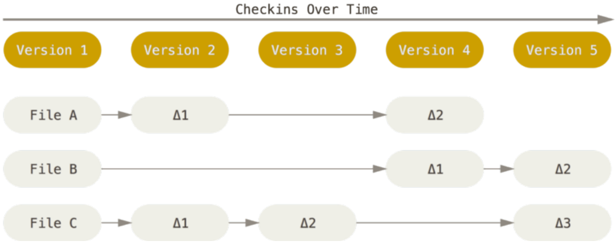

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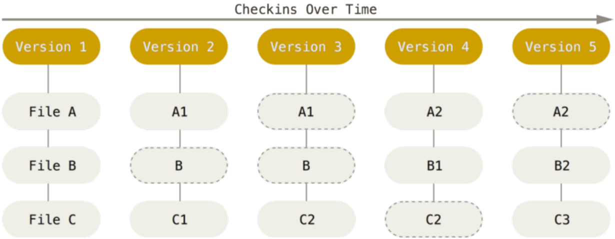

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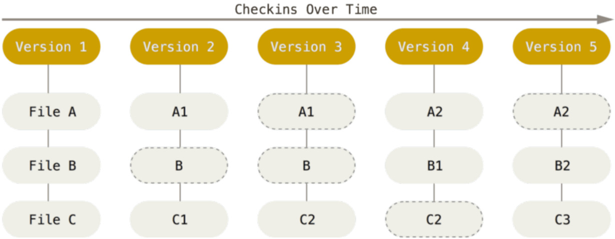
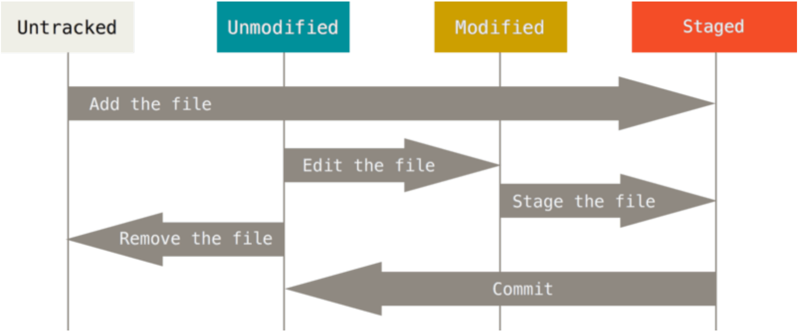


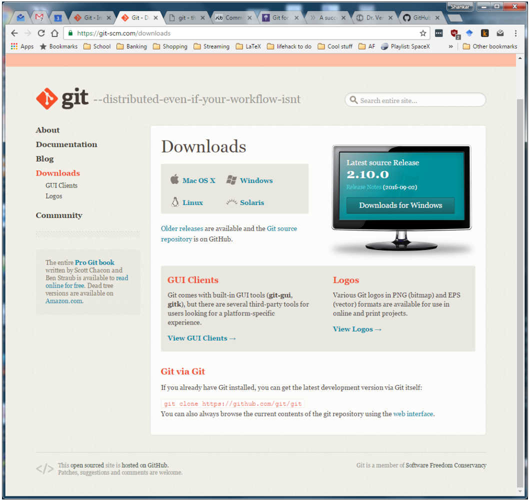
Git basics

1. Modify files in your diretory
2. Stage the files by adding snapshots of the current state
3. Commit and permanently store the snapshot to the Git repo



Installing Git

`https://git-scm.com/downloads`



git --distributed-even-if-your-workflow-isnt

Search entire site...

- About
- Documentation
- Blog
- Downloads
  - GUI Clients
  - Logos
- Community

The entire Pro Git book written by Scott Chacon and Ben Straub is available to read online for free. Dead tree versions are available on Amazon.com.

Downloads

Mac OS X · Windows · Linux · Solaris

Latest source Release
2.10.0
Release Notes (2016-09-02)
Downloads for Windows

Older releases are available and the Git source repository is on GitHub.

GUI Clients

Git comes with built-in GUI tools (**git-gui**, **gitk**), but there are several third-party tools for users looking for a platform-specific experience.

View GUI Clients →

Logos

Various Git logos in PNG (bitmap) and EPS (vector) formats are available for use in online and print projects.

View Logos →

Git via Git

If you already have Git installed, you can get the latest development version via Git itself:

```
git clone https://github.com/git/git
```

You can also always browse the current contents of the git repository using the web interface.

This open sourced site is hosted on GitHub.
Patches, suggestions and comments are welcome.

Git is a member of Software Freedom Conservancy

Git Terminology

- Repo - Project folder that contains all the files
- Commit - “Revision” - unique change/version of a file/files
- Branch - Parallel version of a repo
- Remote - Copy of repo that lives on another computer
- Clone - Create a copy from a remote
- Push - Send your changes to a remote
- Fetch - Retrieve the changes from the remote
- Merge - Combine changes between branches
- Pull - Fetch and Merge changes at once

Using Git

We'll practice now!

1. Working alone
2. Working with others
3. Git and Github

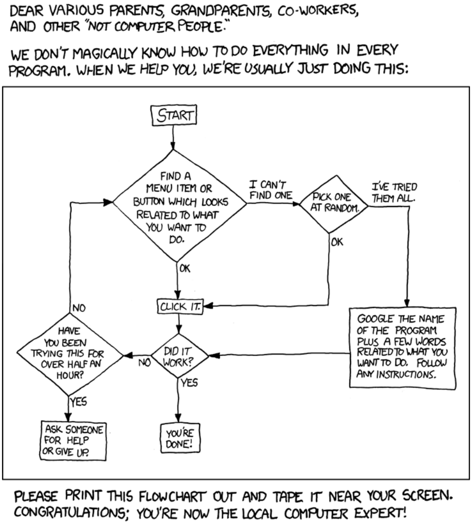
```
git pull
git push
```

Some helpful tips!

THIS IS GIT. IT TRACKS COLLABORATIVE WORK ON PROJECTS THROUGH A BEAUTIFUL DISTRIBUTED GRAPH THEORY TREE MODEL.
COOL. HOW DO WE USE IT?
NO IDEA. JUST MEMORIZE THESE SHELL COMMANDS AND TYPE THEM TO SYNC UP. IF YOU GET ERRORS, SAVE YOUR WORK ELSEWHERE, DELETE THE PROJECT, AND DOWNLOAD A FRESH COPY.

- Not the only/best solution!
- For $\LaTeX$: every sentence on a separate line
- Don't put your repo in Google Drive/Dropbox
- Commit often with USEFUL messages!
- If you get lost... GUI: `gitk`, `gitkraken`, or others
- use gitignore.io for generation of .gitignore file

Finished!



DEAR VARIOUS PARENTS, GRANDPARENTS, CO-WORKERS, AND OTHER "NOT COMPUTER PEOPLE."

WE DON'T MAGICALLY KNOW HOW TO DO EVERYTHING IN EVERY PROGRAM. WHEN WE HELP YOU, WE'RE USUALLY JUST DOING THIS:

START
FIND A MENU ITEM OR BUTTON WHICH LOOKS RELATED TO WHAT YOU WANT TO DO.
I CAN'T FIND ONE
PICK ONE AT RANDOM.
I'VE TRIED THEM ALL.
OK
OK
CLICK IT.
GOOGLE THE NAME OF THE PROGRAM PLUS A FEW WORDS RELATED TO WHAT YOU WANT TO DO. FOLLOW ANY INSTRUCTIONS.
NO
HAVE YOU BEEN TRYING THIS FOR OVER HALF AN HOUR?
NO
DID IT WORK?
YES
YES
ASK SOMEONE FOR HELP OR GIVE UP.
YOU'RE DONE!

PLEASE PRINT THIS FLOWCHART OUT AND TAPE IT NEAR YOUR SCREEN. CONGRATULATIONS; YOU'RE NOW THE LOCAL COMPUTER EXPERT!

Useful Resources

- Git Book
- Visual Git
- StackOverflow