Version Control with Git

Pete Alonzi
Research Data Services UVa Library
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Installation Instructions

• Windows: http://msysgit.github.io/

• Mac: type git at terminal and click install
  – If that fails goto: http://alonzi.github.io/2015-04-16-uvalib/
What we’re gonna do today

• Version Control Software
  – principles
  – workflow

• Git repositories
  – Implementation of VCS principles
  – commands

• Collaboration (remote repositories)
  – Github
  – conflicts
What version control does

• Record all versions of code
• Permit switching of versions
• Allow collaboration
• (Easy to use) ... if you build the habit

Good for text based files. Not so much for things like pdfs.
"FiNAL."doc

FINAL_rev.1.doc

FINAL_rev.6 COMMENTS.doc

FINAL_rev.8 correction5. CORRECTIONS.doc

FINAL_rev.18 correction7. MORE 30.doc

FINAL_rev.22 correction49. MORE 99.doc

FINAL_rev.22 correction49. I COMETOGRADSCHOOL???? .doc
Solutions to this problem
Taxonomy

• Local data model (SCCS)
  – shared file system

• Client-server model (CVS)
  – singular reference file system

• Distributed model (Git)
  – All work is on local file system (not shared)
Terminology

- **Repository**: A directory where Git has been initialized to start version controlling your files.” - https://try.github.io/levels/1/challenges/1

- **Revision**: An entry in the repository.
Version Control Workflow

load  modify  record
Git 101

• The way git works is by issuing commands at the command line.

• The look like this “git verb”

  eg
  git commit
  git add
  git rm
  git revert
Git workflow

- Check status – `git status`
- load
- modify
- record
- `git init`
- `git add`
- `git commit`
  (only once)

- Check status – `git status`
Jedi Code

• There is no emotion, there is peace.
• There is no ignorance, there is knowledge.
• There is no passion, there is serenity.
• There is no chaos, there is harmony.
• There is no death, there is the Force.

Exercise 1
Create a repository
Add a text file
Make five commits
More commands

• git log
• git diff [revision]
Dangerous commands

- `git mv`
- `git rm`
- `git checkout [revision]`
- `git checkout master` (to get back)
Sith Code

- Peace is a lie, there is only passion.
- Through passion, I gain strength.
- Through strength, I gain power.
- Through power, I gain victory.
- Through victory, my chains are broken.
- The Force shall free me.

Exercise 2
Add Sith Code to repository
Remote repositories
Remote repository

Computer A

- git clone
- git add

Computer B

- git push

Remote repository clone

• mkdir code
• cd code
• git clone https://github.com/alonzi/gitdemo.git
Remote repository II

Computer A

- git clone

Computer B

- git fetch / git pull
- git add
- git push
CONCLUSIONS

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.
extras
git persona

• git config --global user.name "Vlad Dracula"
• $ git config --global user.email "vlad@tran.sylvan.ia"
• $ git config --global color.ui "auto"
• $ git config --global core.editor “editor”

From:
http://swcarpentry.github.io/git-novice/01-setup.html
Ignoring file

• Create a file .gitignore
• Put command line style statements in it
  • Eg: *.txt or directory/

• Git will now ignore the following files
• ned