Getting Git

git

Intros

- Name
- Job/Role
- Length of time at Rackspace
- What you hope to get from this class
- Previous experience with version control tools

Learning Objectives

- Learn what version control is
- Recognize what Git and Github are and how they are used
- Practice day to day Git usage
- Collaborate online through GitHub

What is Version Control

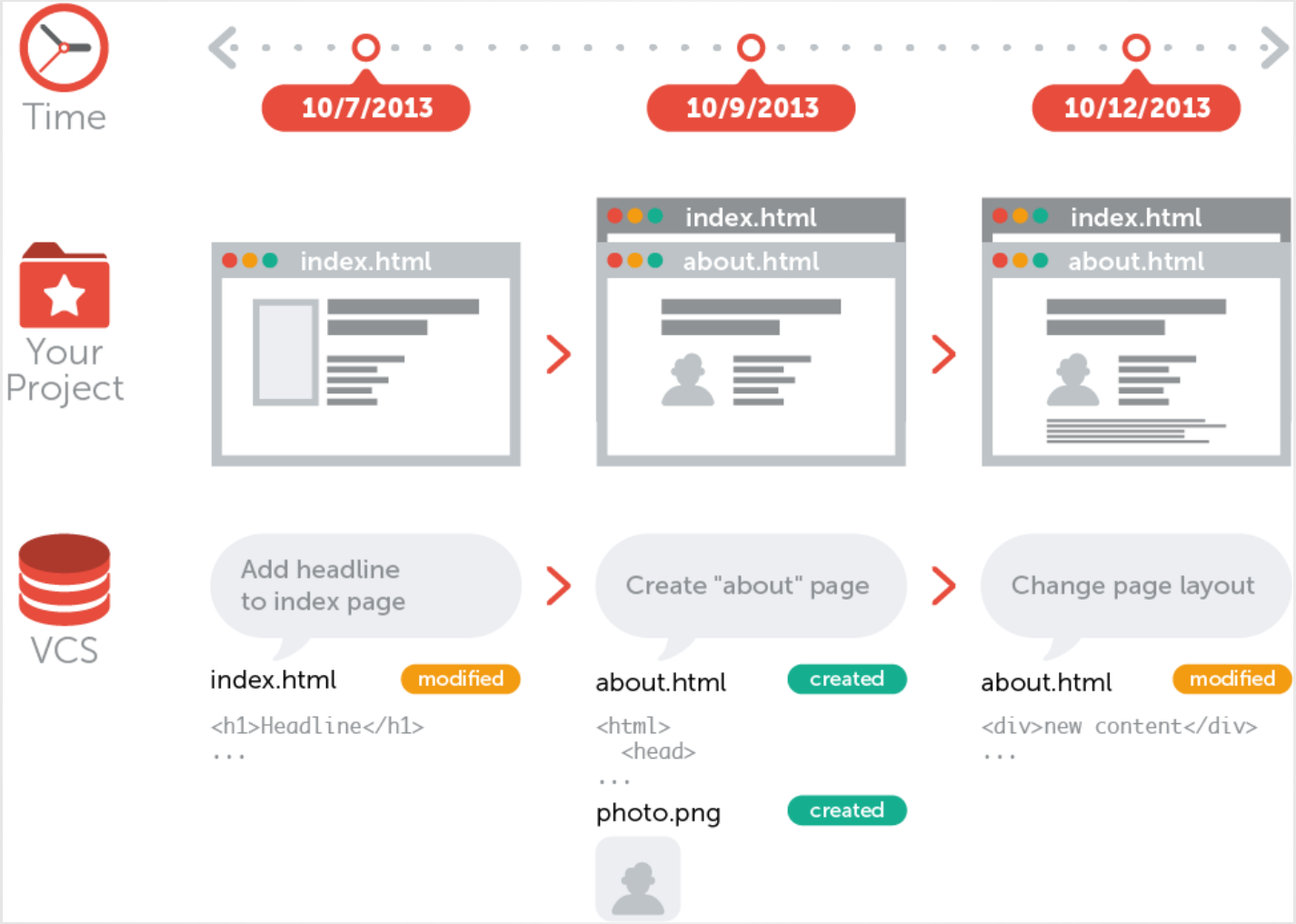
- A time machine for files and projects
- Snapshots/checkpoints of the project as a timeline
- Also referred to as revision control

Why use Version Control?

What should we use Version Control for?

- Different kinds of files
  - Text files
    - Scripts, config files, software, etc.
  - Binary files (with caveats)
  - Images / logos (with caveats)
- Files that are shared with others
  - Anything that can be changed by multiple folks
- Managing the flow of changes
  - Deploying known versions of files

What is Version Control



Graphic from http://www.git-tower.com/learn/git/ebook/command-line/basics/what-is-version-control

Nomenclature

- Version control
- Source control
- Revision control

Use Case 1:

- Multiple people (team members) working on the same stuff

Use Case 2:

- Keeping track of changes as you manage a system

Use Case 3:

- Tracking / managing common configs across multiple systems

War Stories

Work Flow

- Get / open a repository
  - Pull down changes shared with you by others
- Create a branch for your work
- Do some work
  - Check in (commit) changes periodically
- Push your branch to a server to share your work with others
- Merge branches to bring changes into the main "master" branch
- Lather, rinse, repeat

Work Flow

- Each step in that workflow maps to a Git command
  - or a set of Git commands
- You can map your own workflow activities to Git
  - It is really flexible
- We will work on labs that illustrate all these workflow steps

What is Git?

What is Git

- From the web: Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.
- Git is a suite of tools for you to implement version control
  - The core stuff is command line
  - GUIs are available (more on that later)

Installing Git

- Git is available for all the major OSes
  - Linux, Windows, OS X
- http://git-scm.com/downloads
- We will experience this in the upcoming lab

What is a repository?

- A repository is the place that stores all the data for your version controlled directory
  - database for all the versions, metadata, file contents, etc.
- A repository can live on a local machine, cloud server, or other nebulous device
- Repositories can be cloned and shared

Git Commands - init

- Get / open / create a repository

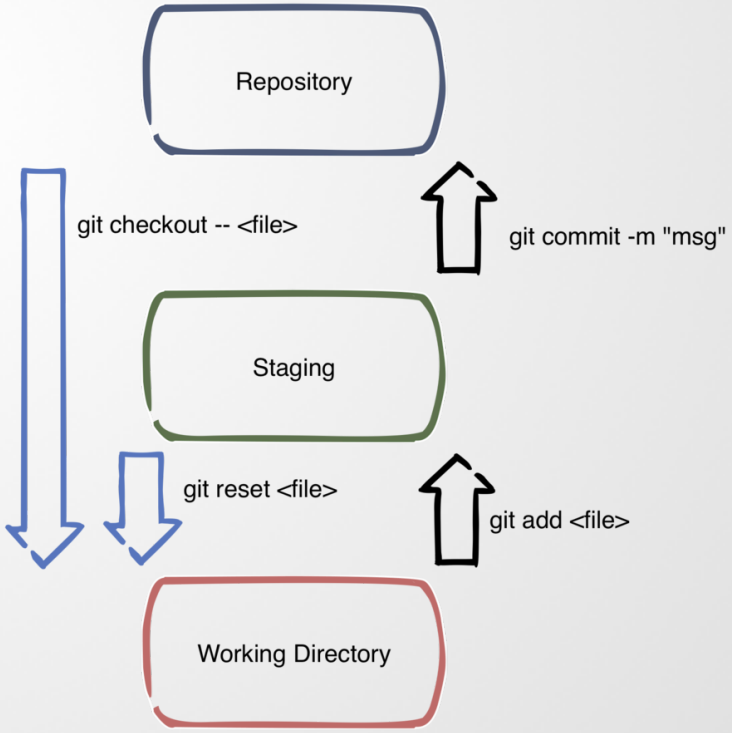
```
git init .
```

Git Commands - add

- Do some work
  - Check in (commit) changes periodically
- To commit your changes first you have to stage them
  - Tell Git which changes you will be committing

```
git add my_file.txt image.jpg
```

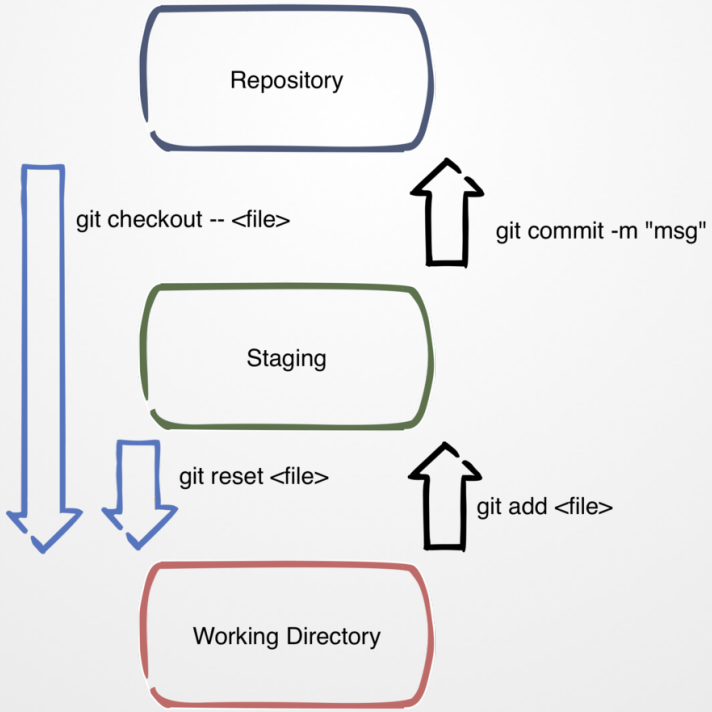
```
git commit -m "my cool comment"
```



Git Commands - rm

- Remove a file (or files) from the repo

```
git rm my_file.txt image.jpg
```



Git Commands - status

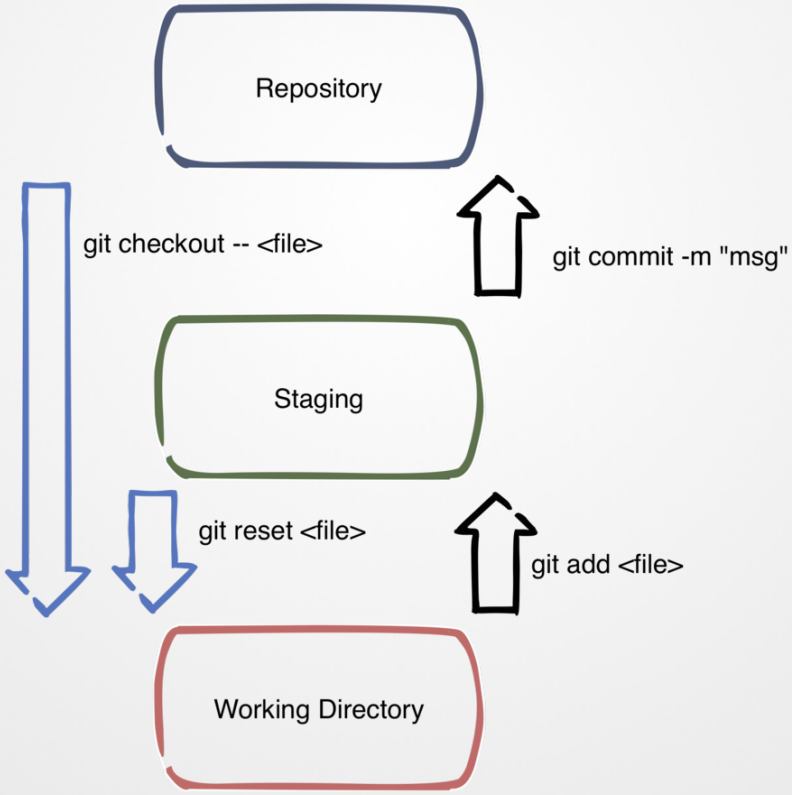
- Find out the status of the repo

```
git status
```

Git Commands - reset

- Unstage a change
- (after an add)

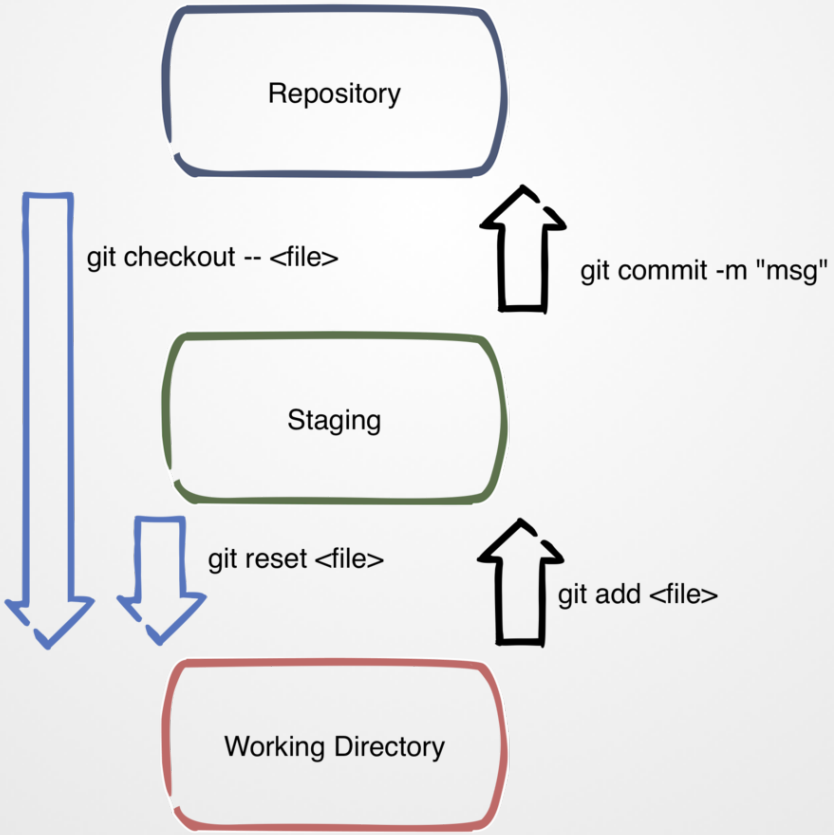
```
git reset new_file.txt
```



Git Commands - undo an edit

- Undo all edits to a file
- Great caution is advised here

```
git checkout -- changed_file.txt
```



Lab 1

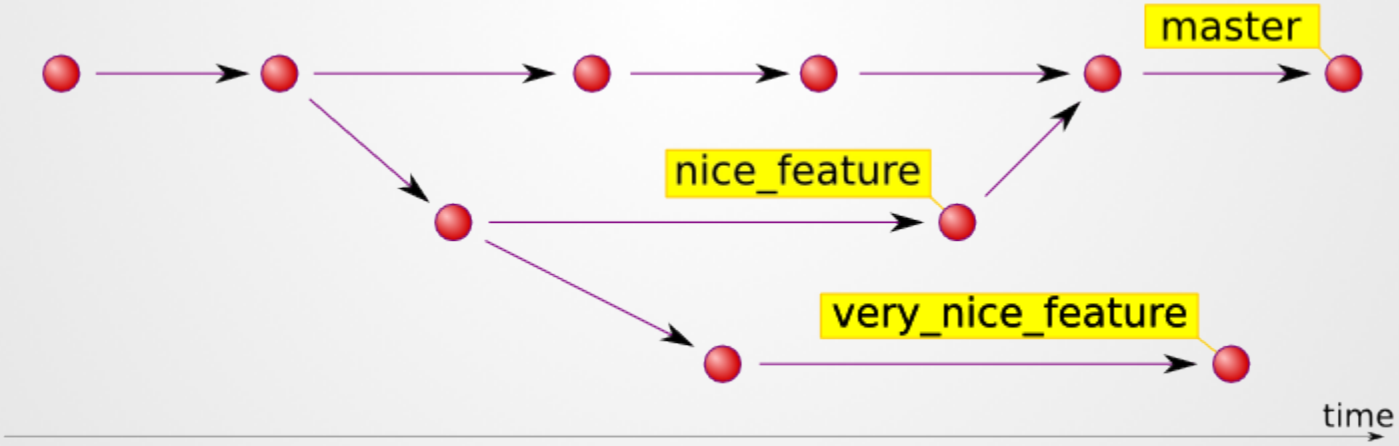
https://github.com/jeremyprice/GettingGit/blob/master/lab01.md

Branching, Merging, and Conflicts

Workflow Continued

- Working linearly on a project doesn't scale well
- We need to be able to work on parallel sets of changes
- Thankfully, we have branching and merging

Branching and Merging Illustrated



Branching

- Creating a branch called nice_feature

```
git branch nice_feature
```

- Make that branch the active branch

```
git checkout nice_feature
```

Branching

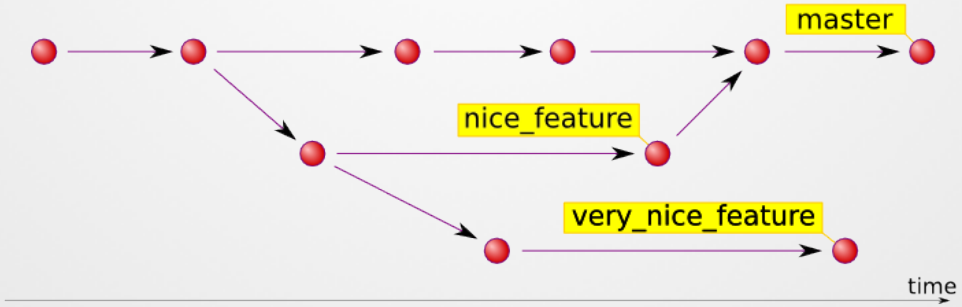
- Shortcut: Creating a branch called nice_feature and make it active

```
git checkout -b nice_feature
```

Merging Branches

- Merging branches asks Git to take the changes from one branch and put them in the other
- Merge changes from nice_feature into master

```
git checkout master
git merge nice_feature
```



A note about the master branch

- The **master** branch is special
- It is considered the core branch that changes are merged into
- By convention, master is usually a known state of the files in the repository
- It is not the only branch you can merge changes into
- From Git's perspective it is just any old branch

Conflicts

- Merge conflicts happen when you try to merge changes that overlap from one branch to another
- Example: in your README file
  - `Branch A: Hello world!`
  - `Branch B:Goodbye world!`
- Git can't tell which one it should go with, so it tells you to pick

Lab 2

https://github.com/jeremyprice/GettingGit/blob/master/lab02.md

GitHub for Collaboration

GitHub

- GitHub is a web-based Git repository hosting service
  - Centralized repository
- Social coding features
  - pull requests
  - documentation (markdown)
  - wikis
  - issue tracking
  - small websites
  - history browsing
  - code reviews
- Example: https://github.com/jeremyprice/GettingGit

Lab 3

https://github.com/jeremyprice/GettingGit/blob/master/lab03.md

Other Topics

GUI Clients

- (Mac) Tower - http://www.git-tower.com
- (Mac) GitHub - http://mac.github.com
- (Win) GitHub - http://windows.github.com
- (Mac, Win) SourceTree - https://www.sourcetreeapp.com/
- (Linux) gitg - https://wiki.gnome.org/Apps/Gitg/

Good list of GUI apps:

- http://git-scm.com/downloads/guis
- https://git.wiki.kernel.org/index.php/InterfacesFrontendsAndTools

Demo of Git GUI

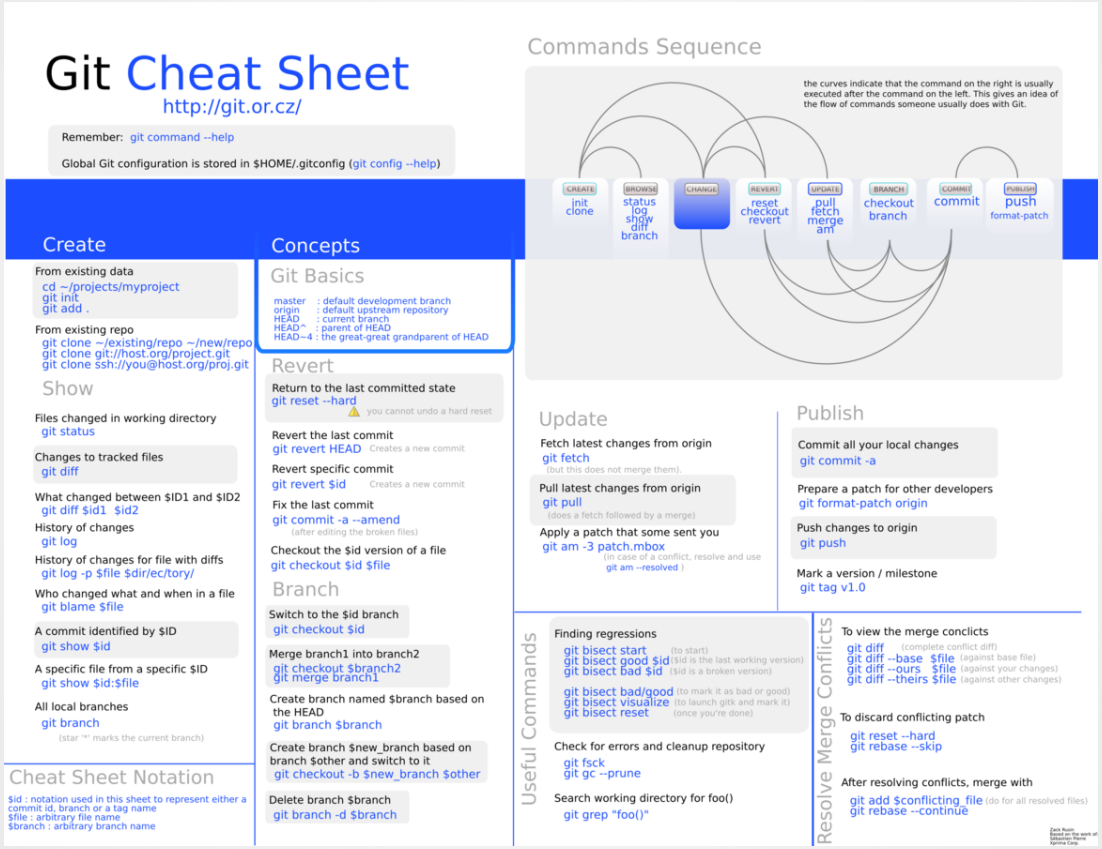
SourceTree

Further reading

- Git Pro book - http://git-scm.com/
- Git Immersion tutorial - http://gitimmersion.com/
- Try Git - https://try.github.io/
- Learn Git branching - http://pcottle.github.io/learnGitBranching/
- Git Tower - http://www.git-tower.com/learn/git/ebook/
- Getting started with GitHub - https://www.youtube.com/watch?v=TAObtTxBUzk
- Good advice about Git Style - https://github.com/agis-/git-style-guide

Desk Reference

Cheat Sheet



http://byte.kde.org/~zrusin/git/git-cheat-sheet-large.png

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- Please take a moment to fill out a brief evaluation for this class:
- Go to mylearn.rackspace.com
- Scroll down to My Tasks on your myLearn welcome page
- Click on the evaluation link for this class
- Fill out the evaluation then submit

We appreciate your feedback!