Git / Sphinx Workshop

ANU - Research School of Economics

Matthew McKay [matthew.mckay@anu.edu.au]

October 2017

What is Git?

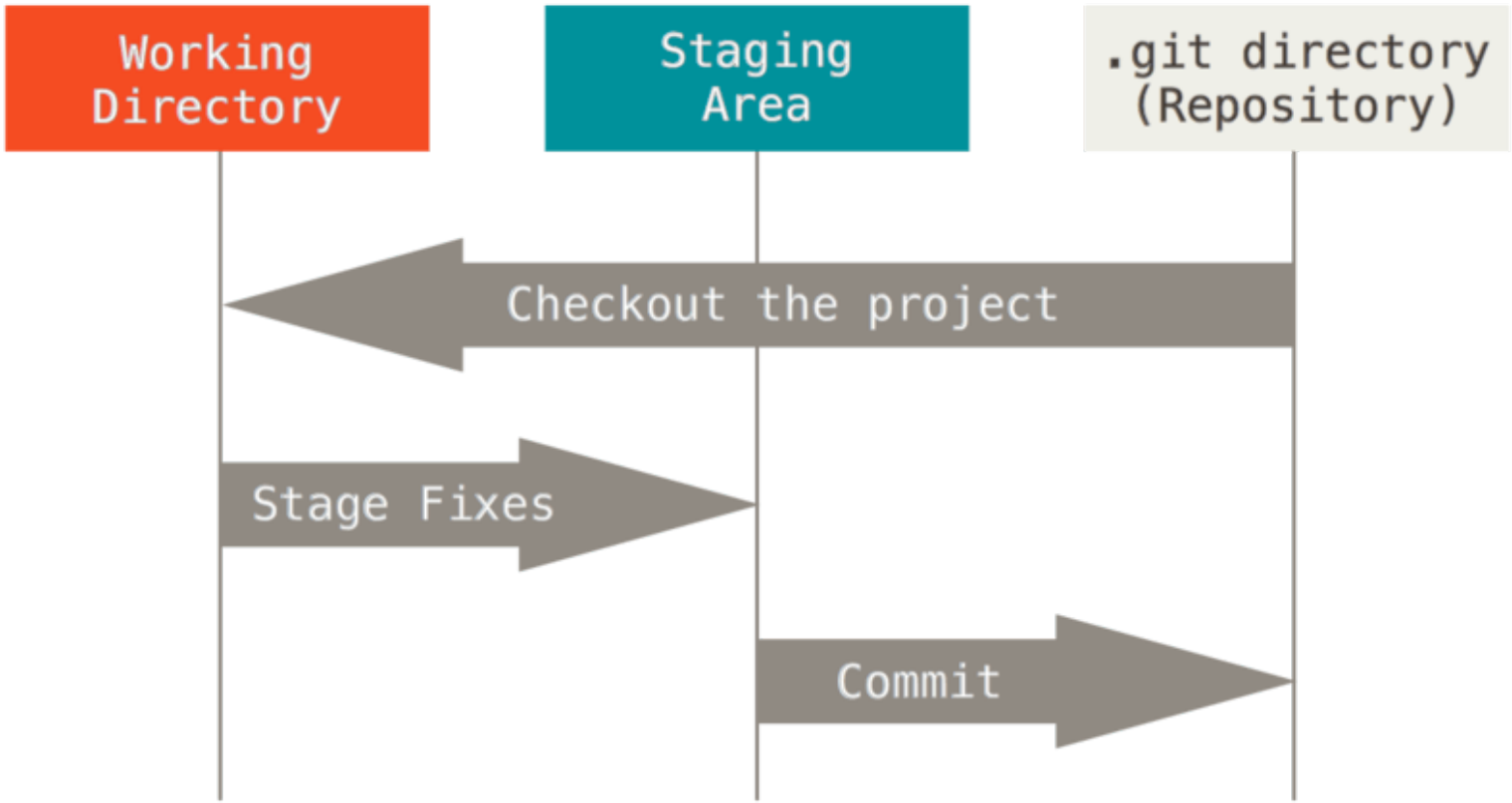
Git is a *distributed* version control system that sits on top of your file system and manipulates files.

Git is essentially a directed graph that tracks changes to a collection of files using **SHA-1** hashes to track changes in the contents of files.

Conceptual Model

1. most operations are local
2. **git** has integrity due to tracking contents of files
3. **git** generally only adds data, can get any prior state
4. **git** considers files in three primary states (see next slide)

The Three States



What is GitHub?

Provides:

1. a remote **git** repository
2. a collaboration space
3. a user friendly web interface for
   - checking commit history
   - managing pull requests and merging
   - look at difference comparisons ...

The Standard Workflow

1. Open command-line and change directory to repository
2. *git pull* retrieves new updates
3. *git status* show status of commit
4. Edit files
5. *git status* show status of commit
6. *git add .* puts **all** changed files into **staging area**
7. *git commit -m "some message"* commit changes to local git repository
8. *git push* pushes the new version to Github

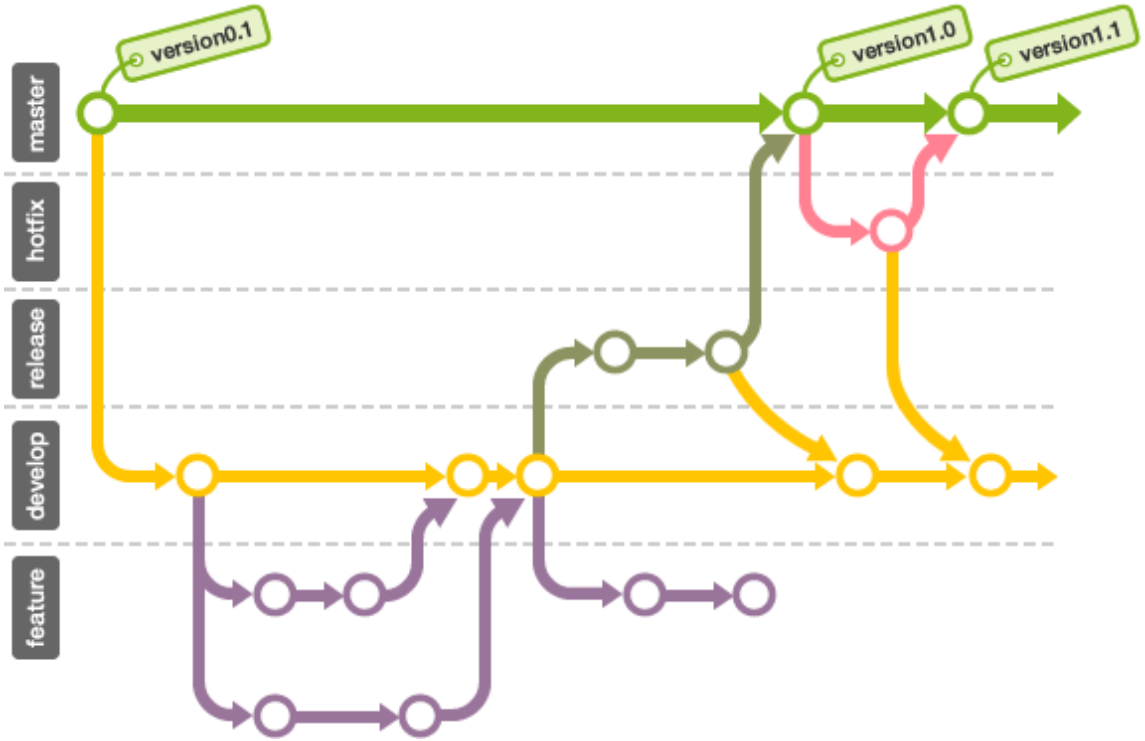
Branching

A **branch** is like a parallel copy of the repository.

It allows development to occur in parallel and usually a discrete task is best done in a branch

The master branch does not get modified until the branch is merged through a **pull request**

Branching


version0.1
version1.0
version1.1
master
hotfix
release
develop
feature

Key Git Commands

1. **git status**
2. **git pull**
3. **git add**
4. **git commit -m**
5. **git push**
6. **git checkout -b “branch-name”**

Other Git Commands and Concepts

1. **git clone**
2. **git branch**
3. **git merge**
4. **git rebase**
5. **git log**
6. **forking** used in open source work
7. **git checkout hash**
8. **git diff hash1 hash2**

Git Resources

Understanding Git:

1. https://try.github.io/levels/1/challenges/1
2. https://git-scm.com/book/en/v2
3. https://juristr.com/blog/2013/04/git-explained/

GUI Options (OS X and Windows):

1. https://desktop.github.com/

Exercise 1: Working on master

1. Clone: git clone `https://github.com/mmcky/git-tutorial-quantecon`
2. Look at state: git status
3. add a file to the working directory titled **<your name>.txt**
4. add your file to staging area for git: git add <your name>.txt
5. commit your changes: git commit -m “message”
6. push your changes: git push origin master
7. Look at Github for Changes

Exercise 2: Branching

In this exercise you will setup a branch and pull request for the github repo

1. Get updated version of the Repository: git pull
2. Setup a New Branch: git checkout -b “branch-name”
3. Make and edit to your file then look at state using: git status
4. Add Changed Files: git add .
5. git commit -m “message”
6. git push origin “branch-name”
7. Look at Github and Setup a Pull Request

What is Sphinx?

Sphinx is originally a tool for generating documentation for **Python** software projects.

It is now very capable as a publishing platform. We use it to publish the QuantEcon Lectures.

Abstracts the notion of a document and allows us to generate different representations (html, pdf, etc) from a collection of **source** files.

`http://www.sphinx-doc.org/en/stable/`

Jupyter Extension

1. Setup a sphinx project using “sphinx-quickstart”
2. Add **jupyter.py** to local extension directory
3. Add extension configuration settings to “conf.py”
4. Write RST files
5. Use “make jupyter” to generate Jupyter notebooks