

# Getting Started with Git

Introduction to version control

Benefits of using Git

Basic commands

Workflow



THIS IS GIT. IT TRACKS COLLABORATIVE WORK  
ON PROJECTS THROUGH A BEAUTIFUL  
DISTRIBUTED GRAPH THEORY TREE MODEL.

COOL. HOW DO WE USE IT?

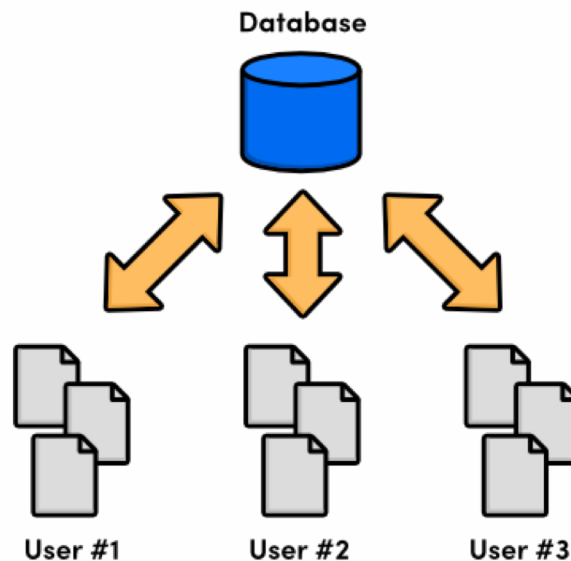
NO IDEA. JUST MEMORIZE THESE SHELL  
COMMANDS AND TYPE THEM TO SYNC UP.  
IF YOU GET ERRORS, SAVE YOUR WORK  
ELSEWHERE, DELETE THE PROJECT,  
AND DOWNLOAD A FRESH COPY.



<http://xkcd.com/1597/>

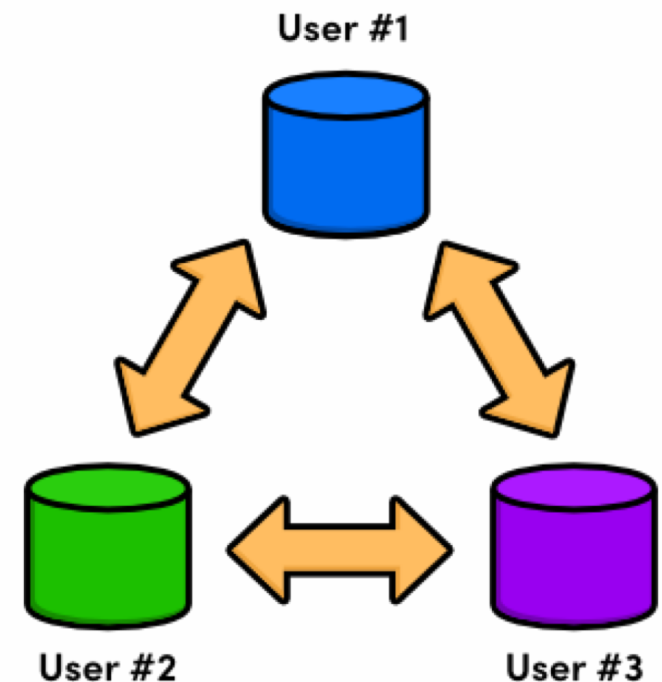
# Version Control Systems

- Goal of a Version Control System
  - Software that manages changes that you make to your files (source code).
  - Track versions of each file (more accurately, versions of sets of changes to your files).
  - Handles concurrent changes from multiple sources (e.g. different developers working on the same code base).
  - Typically central repository stores every version of every file.



# Distributed Version Control

- Distributed version control systems (DVCS)
  - No central server required!
  - Every user has a copy of every file.
- We use Git, a very popular DVCS.
  - Developed in 2005, to manage development for the Linux kernel (Bitkeeper -> Git)
  - Very specific design goals
    - Large-scale development
    - Distributed
- Git doesn't require a server, but it's common to use one for coordination e.g. Github

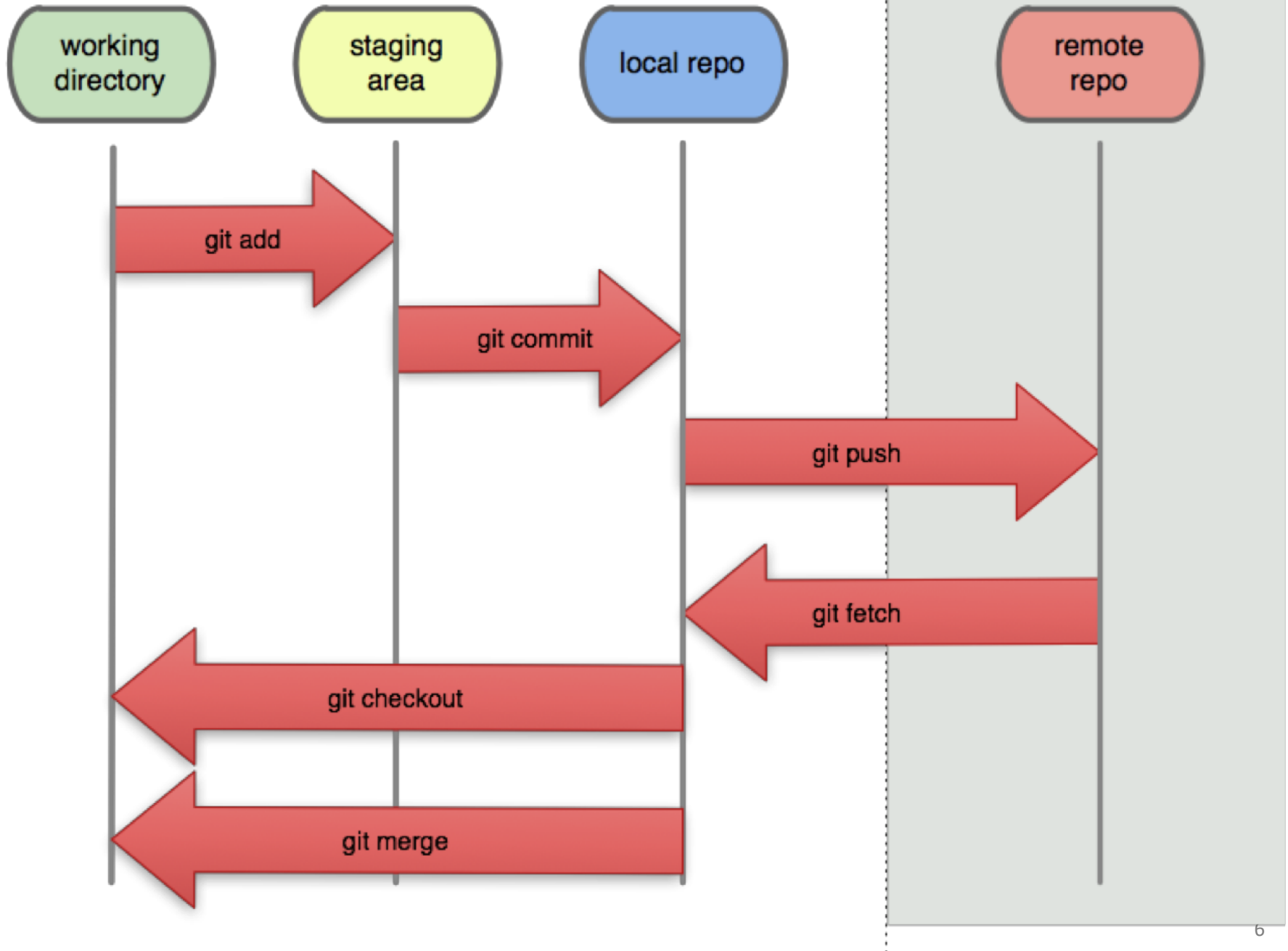


# Concepts

- Working directory
  - your local copy of the files that you’re working with.
- Staging area
  - a “place” where you tell Git to hold a set of changes, temporarily.
- Repository
  - a place where Git stores copies of your files and their history.  
Local repository: on your working machine  
Remote repository: a server (e.g. GitHub)

## Local

## Remote



## Commands

- You perform these operations using a Git client (command-line or GUI, the work the same).
- Commands typically move files between working directory, staging area and local or remote repository.

Local Commands	Description
git add	Add a file from working directory to staging area
git commit	Commit changes from staging area to repo
git checkout	Get files from repo to working directory

Remote Commands	Description
git clone	Make a copy from remote repo to working dir
git pull	Pull (merge) changes from repo to working dir
git push	Push (merge) changes from staging area to repo

## Resources

- Git Home
  - documentation, binaries
  - <https://git-scm.com>
- Git Reference
  - cheat-sheet of commands
  - <http://gitref.org>
- Book: Pro Git
  - Scott Chacon and Ben Straub
  - extensive manual
- Ry's Git Tutorial
  - <http://rypress.com/tutorials/git/index>

