GIT
REAL

GIT BASICS

LEVEL 1

SAME OLD STORY

Collaboration Issues!

GIT REAL

VERSION CONTROL SYSTEMS

GIT
REAL

REPOSITORY LOCATIONS

Central Repository

Distributed Repository

GIT REAL

Git is a

DISTRIBUTED VERSION CONTROL SYSTEM

(DVCS)

ORIGINS

- Linux Kernel project.
- Meant to be distributed, fast and more natural.
- Capable of handling large projects.

GIT REAL

WORKING WITH GIT

- Command line interface
- Many GUI tools available
- Official Git Site —

  http://git-scm.com/

start here

GIT REAL

GIT HELP

```
$ git help
usage: git [--version] [--exec-path[=<path>]] [--html-path]
           [-p|--paginate|--no-pager] [--no-replace-objects]
           [--bare] [--git-dir=<path>] [--work-tree=<path>]
           [-c name=value] [--help]
           <command> [<args>]

The most commonly used git commands are:
   add         Add file contents to the index
   bisect      Find by binary search the change that introduced a bug
...
```


GIT REAL

GIT HELP

```
$ git help config
GIT-CONFIG(1)                    Git Manual                    GIT-CONFIG(1)
```

pass in any git command

```
NAME
       git-config - Get and set repository or global options

SYNOPSIS
       git config [<file-option>] [type] [-z|--null] name [value [value_regex]]
       git config [<file-option>] [type] --add name value
...
```


GIT REAL

SETTING UP GIT

```
$ git config --global user.name "Gregg Pollack"
```

Who gets credit for changes

```
$ git config --global user.email gregg@codeschool.com
```

What email you use

```
$ git config --global color.ui true
```

Pretty command line colors

STARTING A REPO

```
$ mkdir store

$ cd store

$ git init
Initialized empty Git repository in /Users/gregg/store/.git/
```

git metadata is stored here

GIT WORK FLOW

Jane creates README.txt file

Starts as untracked

Add file to staging area

Getting ready to take a picture

Commit changes

A snapshot of those on the stage

GIT REAL

GIT WORK FLOW

- Jane creates README.txt file
- Add file to staging area
- Commit changes

- Jane modifies README.txt file & adds LICENSE
- Add both files to staging area
- Commit changes

Jane creates README.txt file

```
$ git status
# On branch master
#
# Initial commit
#
# Untracked files:
#   (use "git add <file>..." to include in what will be committed)
#
#   README.txt
nothing added to commit but untracked files present (use "git add" to track)
```

To check what's changed since last commit

Our newly created file

GIT REAL

Add file to staging area

```
$ git add README.txt

$ git status

# On branch master
#
# Initial commit
#
# Changes to be committed:
#   (use "git rm --cached <file>..." to unstage)
#
#   new file:   README.txt
#
```

Our staged file

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Commit changes

Commit message

what work was done?

timeline

```
$ git commit -m "Create a README."

[master abe28da] Create a README.
 1 files changed, 1 insertions(+), 0 deletions(-)
 create mode 100644 README.txt
```

master

```
$ git status
# On branch master
nothing to commit (working directory clean)
```

No new or modified files since last commit

GIT REAL

Jane modifies README.txt file & adds LICENSE

```
$ git status

# On branch master
# Changed but not updated:
#
#   modified:    README.txt
#
# Untracked files:
#
#   LICENSE
no changes added to commit
```

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Add both files to staging area

```
$ git add README.txt LICENSE
```

OR

```
$ git add --all
```

Adds all new or modified files

```
$ git status

# On branch master
# Changes to be committed:
#
#   new file:   LICENSE
#   modified:   README.txt
#
```

master

GIT REAL

Commit changes

```
$ git commit -m "Add LICENSE and finish README."

[master 1b0019c] Add LICENSE and finish README.
 2 files changed, 21 insertions(+), 0 deletions(-)
 create mode 100644 LICENSE
```

GIT TIMELINE HISTORY

```
$ git log
commit 1b0019c37e3f3724fb2e9035e6bab4d7d87bf455
Author: Gregg Pollack <gregg@codeschool.com>
Date:   Thu Jul 5 22:31:27 2012 -0400

    Add LICENSE and finish README.

commit 5acaf86b04aaf9cbbb8ebb9042a20a46d0b9ce76
Author: Gregg Pollack <gregg@codeschool.com>
Date:   Thu Jul 5 22:00:46 2012 -0400

    Create a README.
```

DIFFERENT WAYS TO ADD

`$ git add <list of files>`	Add the list of files
`$ git add --all`	Add all files
`$ git add *.txt`	Add all txt files in current directory
`$ git add docs/*.txt`	Add all txt files in docs directory
`$ git add docs/`	Add all files in docs directory
`$ git add "*.txt"`	Add all txt files in the whole project

GIT
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STAGING & REMOTES

LEVEL 2

GIT DIFF

LICENSE

```
Copyright (c) 2012 Envy Labs LLC
...
Permission is hereby granted,
free of charge, to any person
obtaining a copy
```

edit

LICENSE

```
Copyright (c) 2012 Code School LLC
...
Permission is hereby granted, free
of charge, to any person obtaining
a copy
```

```
$ git diff
diff --git a/LICENSE b/LICENSE
index 7e4922d..442669e 100644
--- a/LICENSE
+++ b/LICENSE
@@ -1,4 +1,4 @@
-Copyright (c) 2012 Envy Labs LLC
+Copyright (c) 2012 Code School LLC
```

Show unstaged differences since last commit

Line removed

Line added

GIT REAL

VIEWING STAGED DIFFERENCES

```
$ git add LICENSE
$ git diff
$ git diff --staged
diff --git a/LICENSE b/LICENSE
index 7e4922d..442669e 100644
--- a/LICENSE
+++ b/LICENSE
@@ -1,4 +1,4 @@
-Copyright (c) 2012 Envy Labs LLC
+Copyright (c) 2012 Code School LLC
```

No differences, since all changes are staged

View staged differences

GIT REAL

UNSTAGING FILES

```
$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#  modified:   LICENSE
#
$ git reset HEAD LICENSE
Unstaged changes after reset:
M  LICENSE
```

Unstage Tip

Refers to last commit

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DISCARD CHANGES

```
$ git status
  # On branch master
  # Changed but not updated:
  #   (use "git add <file>..." to update what will be committed)
  #   (use "git checkout -- <file>..." to discard changes in working directory)
  #
  #  modified:   LICENSE
  #
$ git checkout -- LICENSE
$ git status
  nothing to commit (working directory clean)
```

Blow away all changes since last commit

GIT REAL

SKIP STAGING AND COMMIT

Readme.txt

```
here is my readme

and now I can sleep
```

edit

Readme.txt

```
here is my readme

the cake is a lie
```

Add changes from all tracked files

```
$ git commit -a -m "Modify readme"

[master d00fefc] Modify readme
 1 files changed, 1 insertions(+), 1 deletions(-)
```

Doesn't add new (untracked) files

GIT REAL

UNDOING A COMMIT

Whoops, we forgot something on that commit.

Reset into staging

```
$ git reset --soft HEAD^

$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#  modified:   README.txt
#
```

Move to commit before 'HEAD'

Now I can make changes, and re-commit

GIT REAL

ADDING TO A COMMIT

Maybe we forgot to add a file

Add to the last commit

New commit message

```
$ git add todo.txt
$ git commit --amend -m "Modify readme & add todo.txt."

[master fe98ef9] Modify readme and add todo.txt.
 2 files changed, 2 insertions(+), 1 deletions(-)
 create mode 100644 todo.txt
```

Whatever has been staged is added to last commit

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USEFUL COMMANDS

```
$ git reset --soft HEAD^
```
Undo last commit, put changes into staging

```
$ git commit --amend -m "New Message"
```
Change the last commit

```
$ git reset --hard HEAD^
```
Undo last commit and all changes

```
$ git reset --hard HEAD^^
```
Undo last 2 commits and all changes

HOW TO SHARE?

“git remote” command

Git doesn’t take care of access control

GIT REAL

REMOTE REPOSITORY HOSTING

Hosted

- GitHub
- BitBucket

Self Managed

- Gitosis
- Gitorious

GIT REAL

github
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Owner
Repository name
Gregg
git-real
Great repository names are short and memorable. Need inspiration? How about glowing-tyrion.
Description (optional)
Public
Anyone can see this repository. You choose who can commit.
Private
You choose who can see and commit to this repository.
Initialize this repository with a README
This will allow you to git clone the repository immediately.
Add .gitignore: None
Create repository

PUBLIC Gregg / git-real

Admin Unwatch 1

Code | Network | Pull Requests 0 | Issues 0 | Wiki | Graphs

Global setup:

Set up git

```
git config --global user.name "Gregg Pollack"
git config --global user.email greggpollack@gmail.com
```

Next steps:

```
mkdir git-real
cd git-real
git init
touch README
git add README
git commit -m 'first commit'
git remote add origin https://github.com/Gregg/git-real.git
git push -u origin master
```

Existing Git Repo?

```
cd existing_git_repo
git remote add origin https://github.com/Gregg/git-real.git
git push -u origin master
```

ADDING A REMOTE

```
$ git remote add origin https://github.com/Gregg/git-real.git
```

New remote

our name for this remote

address

origin

show remote repositories

```
$ git remote -v
origin  https://github.com/Gregg/git-real.git (fetch)
origin  https://github.com/Gregg/git-real.git (push)
```


GIT REAL

PUSHING TO REMOTE

remote repository name

local branch to push

```
$ git push -u origin master
  Username for 'https://github.com': Gregg
  Password for 'https://Gregg@github.com':
  Counting objects: 11, done.
  Delta compression using up to 4 threads.
  Compressing objects: 100% (6/6), done.
  Writing objects: 100% (11/11), 1.50 KiB, done.
  Total 11 (delta 0), reused 0 (delta 0)
  To https://github.com/Gregg/git-real.git
   * [new branch]      master -> master
```

Password caching → https://help.github.com/articles/set-up-git

GIT REAL

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Gregg / git-real
Admin
Pull Request
Unwatch 1
Fork 1
Code
Network
Pull Requests 0
Issues 0
Wiki
Graphs
No description or homepage.
Clone in Mac
ZIP
HTTP SSH Git Read-Only
https://github.com/Gregg/git-real.git
Read+Write access
branch: master
Files
Commits
Branches 1
Tags
Downloads
Latest commit to the master branch
Modify readme and add todo.txt.
Gregg authored 2 days ago
commit fe98ef98ed
git-real /
name
age
message
history
LICENSE
3 days ago
Add LICENSE and finish README. [Gregg]
README.txt
2 days ago
Modify readme and add todo.txt. [Gregg]
todo.txt
2 days ago
Modify readme and add todo.txt. [Gregg]

github Search... Explore Gist Blog Help Gregg

UBLIC Gregg / git-real

Admin Pull Request Unwatch 1 Fork 1

Code Network Pull Requests 0

Same information from “git log”

branch: master Files Commits Branches 1 Tags Downloads

git-real / Commit History

Keyboard shortcuts available

Jul 07, 2012

Modify readme and add todo.txt.
Gregg authored 2 days ago
fe98ef98ed
Browse code

Jul 06, 2012

Add LICENSE and finish README.
Gregg authored 3 days ago
08495290b6
Browse code

Jul 05, 2012

Create a README.
Gregg authored 4 days ago
5acaf86b04
Browse code

PULLING FROM REMOTE

To pull changes down from the remote

```
$ git pull
 remote: Counting objects: 5, done.
 remote: Compressing objects: 100% (1/1), done.
 remote: Total 3 (delta 1), reused 3 (delta 1)
 Unpacking objects: 100% (3/3), done.
 From https://github.com/Gregg/git-real
    fe98ef9..4e67ded  master     -> origin/master
 Updating fe98ef9..4e67ded
 Fast-forward
  todo.txt | 1 +
  1 file changed, 1 insertion(+)
```

It's good to do this often

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HAVING MULTIPLE REMOTES

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WORKING WITH REMOTES

To add new remotes

```
$ git remote add <name> <address>
```

To remove remotes

```
$ git remote rm <name>
```

To push to remotes

```
$ git push -u <name> <branch>
```

usually master

GIT REAL

HEROKU REMOTE

```
$ heroku create
Creating dev-server-1426... done, stack is cedar
http://dev-server-1426.herokuapp.com/ | git@heroku.com: dev-server-1426.git
Git remote heroku added

$ git remote -v
heroku  git@heroku.com: dev-server-1426.git (fetch)
heroku  git@heroku.com: dev-server-1426.git (push)
origin  https://github.com/Gregg/git-real.git (fetch)
origin  https://github.com/Gregg/git-real.git (push)
```

git repo ssh address

To push to heroku

```
$ git push heroku master
```

→ triggers deploy

GIT REAL

USEFUL COMMANDS

Don't do these after you push

```
$ git reset --soft HEAD^
```

```
$ git commit --amend -m "New Message"
```

```
$ git reset --hard HEAD^
```

```
$ git reset --hard HEAD^^
```