Practical Git

Adithya Balaji

The superhero you didn’t know you need

```
commit e83c5163316f89bfbde7d9ab23ca2e25604af290
Author: Linus Torvalds
<torvalds@ppc970.osdl.org>
Date:   Thu Apr 7 15:13:13 2005 -0700

Initial revision of "git", the information
manager from hell
```

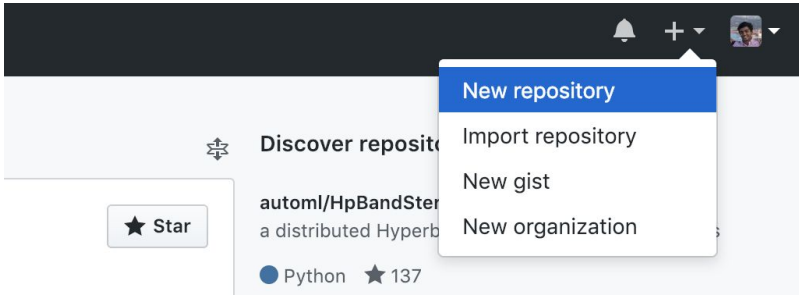
The What and Why

- Have you ever dealt with this?
  - MyCode
  - MyCode(v1)
  - MyCode(final)
  - MyCode(final2)
- Git is here to help save your day
- Git is a **version control system**
  - Subversion, Perforce, Mercurial
- Code is tracked in terms of **commits**
  - Snapshot of your code at that point in time
  - Changes are tracked

```
$ mkdir IEEEWorkshop
$ cd IEEEWorkshop
$ # Install Git (see Appendix)
$ git config --global user.name “FIRST LAST”
FIRST LAST
$ git config --global user.email
“example@gmail.com”
example@gmail.com
$ git init
Initialized empty Git repository in
/Users/adithyabalaji/Desktop/IEEEWorkshop/.git/
$ git status
On branch master

No commits yet

nothing to commit (create/copy files and use
"git add" to track)
```

Setting Up

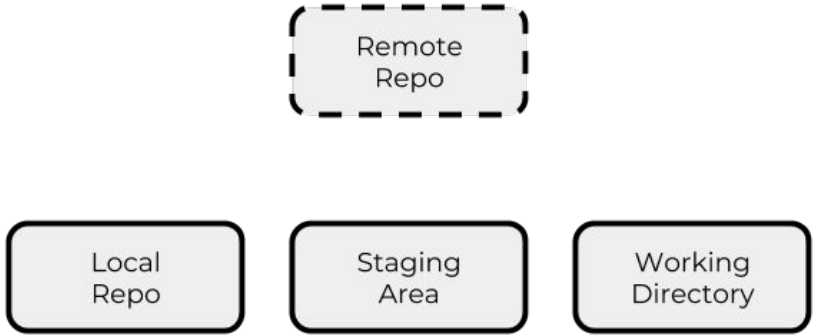
- Git **is not** GitHub
- GitHub is remote code store
  - GitLab, BitBucket, CodeCommit
- We will use GitHub in this example
  - git clone remote://repo-url
  - git remote add remote://repo-url
- Go to github.com
  - Create a repository called IEEEWorkshop
  - Make sure to leave everything else as default




```
$ git remote add origin
https://github.com/{USER_NAME}/IEEEWorkshop.g
it
$ echo -e "#IEEEWorkshop\n" > README.md
$ cat README.md
#IEEEWorkshop
```

Key Ideas

- Remote Repo
  - Cloud Store (ie GitHub)
- Local Repo
  - On your machine
- Staging Area
  - What you want to operate on (with git)
- Working Directory
  - Changes you have made
  - Tracked
  - Untracked



Basic Commands

- Four commands are all you need:
  - git status
  - git add
  - git commit
  - git push
- Commands move data between each of the four zones

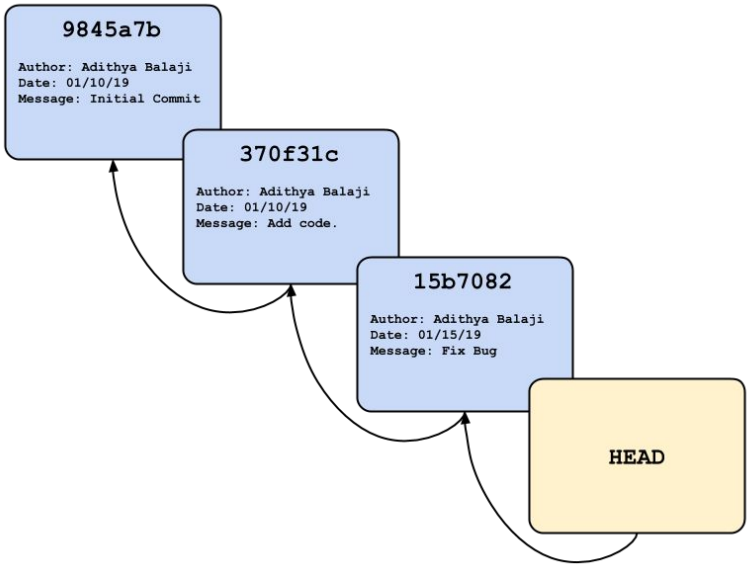
```
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)

      README.md

nothing added to commit but untracked files present (use "git add" to track)
$ git add README.md
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

      new file:   README.md
```

First Commit

- Let’s write our first commit

```
$ git commit -m “Initial Commit.”
[master (root-commit) 9845a7b] Initial Commit.
 1 file changed, 1 insertion(+)
 create mode 100644 README.md
```

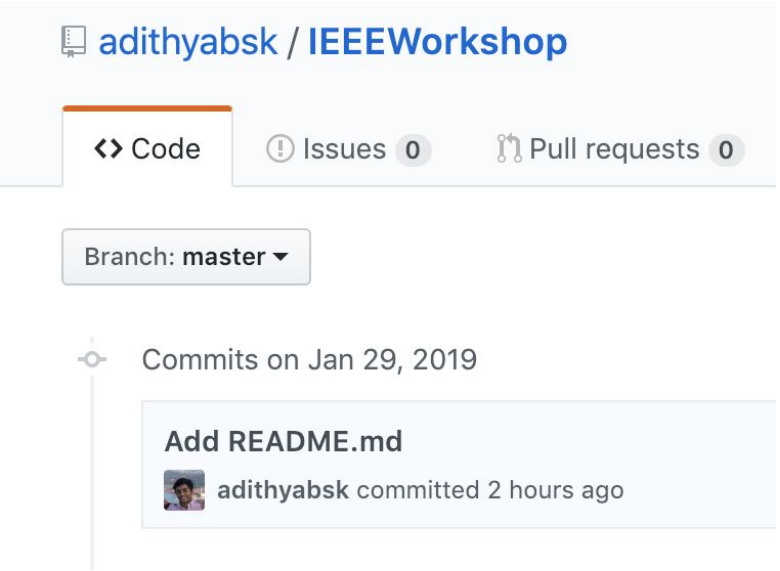
- The commit id (“9845a7b”) is important
  - Used for more advanced manipulations of commit history



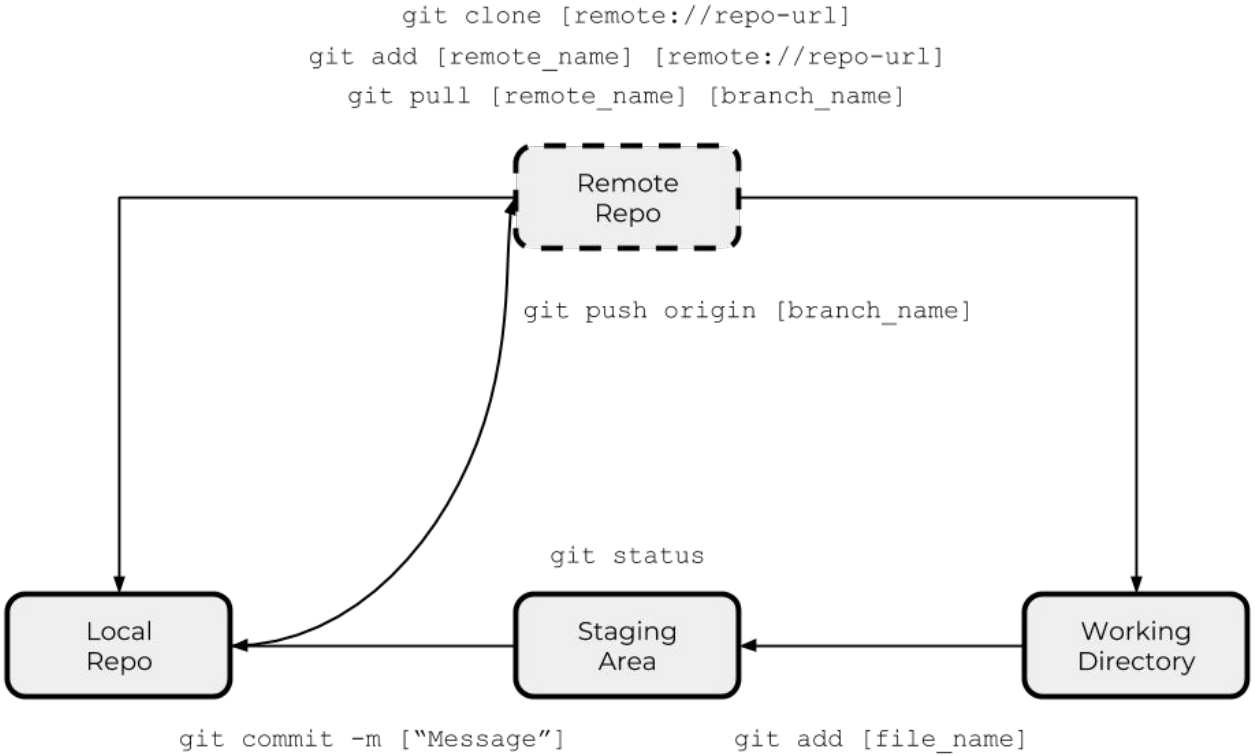
Push to Remote

- Let's push our commit to GitHub

```
$ git push origin master
Counting objects: 3, done.
Writing objects: 100% (3/3), 227 bytes |
227.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To
https://github.com/adithyabsk/IEEEWorkshop.git
 * [new branch]      master -> master
```

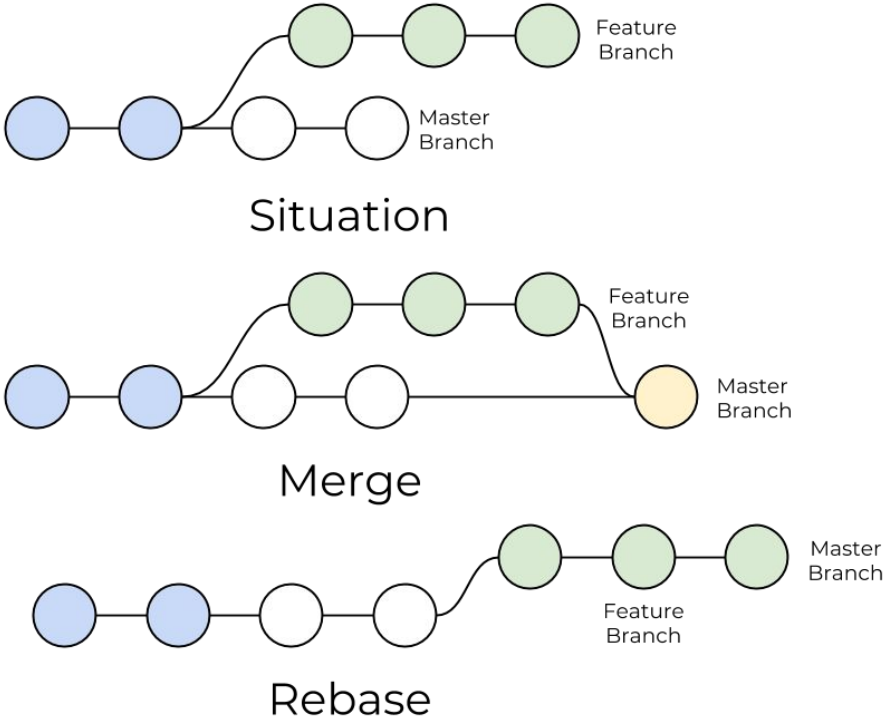


What did we just do?



What’s next

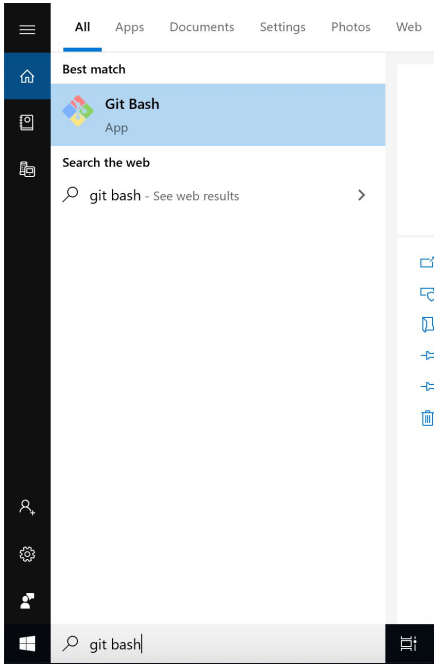
- git log
- git checkout -b [new_branch_name]
- git checkout [branch_name]
- git stash
  - git stash pop
- git merge [source_branch]
  - Merge conflicts!
  - Suggestion: SublimeMerge
- git rebase



Appendix

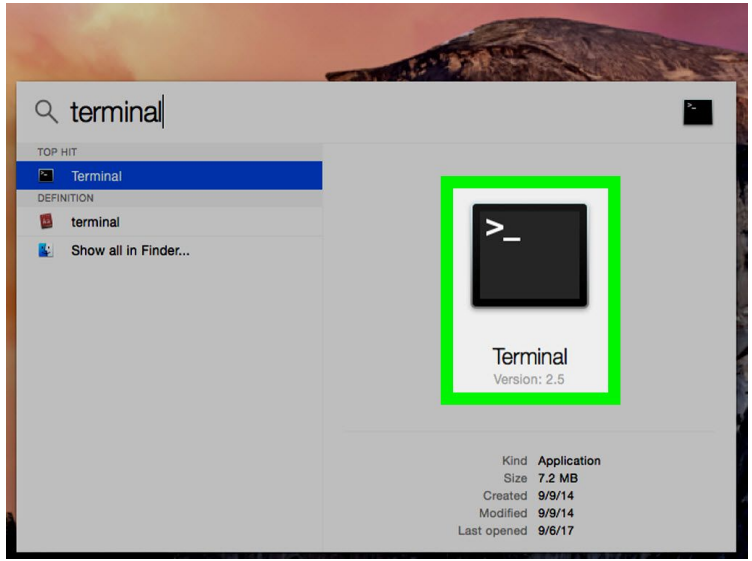
Windows Installation

- https://git-scm.com/download/win
  - Use the defaults for everything



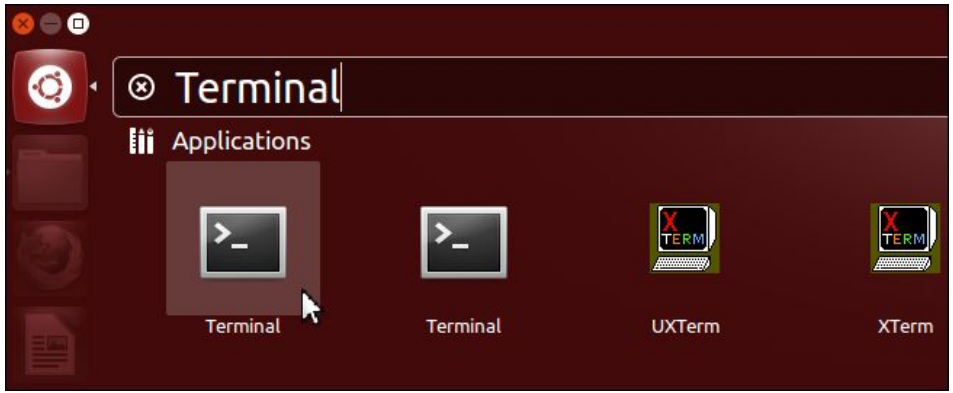
MacOS Installation

- Open Terminal
  - CMD + Space
  - Search for Terminal
- Run this command (Installs homebrew)
  - `/usr/bin/ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install)"`
- Now install git
  - `brew install git`



Linux Flavors

- Open Terminal
- Update package lists
  - `sudo apt-get update`
- Install git
  - `sudo apt-get install git`



Other platforms

- https://www.atlassian.com/git/tutorials/install-git