Version Control System

a *better* workflow

Code Management Before Version Control System

Developers develop source code and store them locally in their system or some remote shared drive. This makes code insecure and there is high risk of code getting deleted.

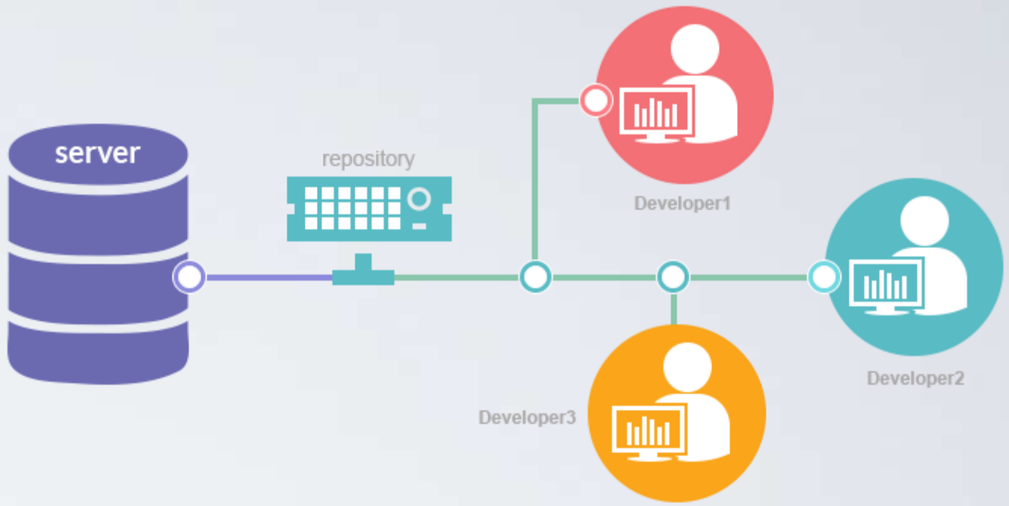
Code Management After Version Control System

Version Control system provides developer an mechanism to manage application source code and provide versioning for each and every change.

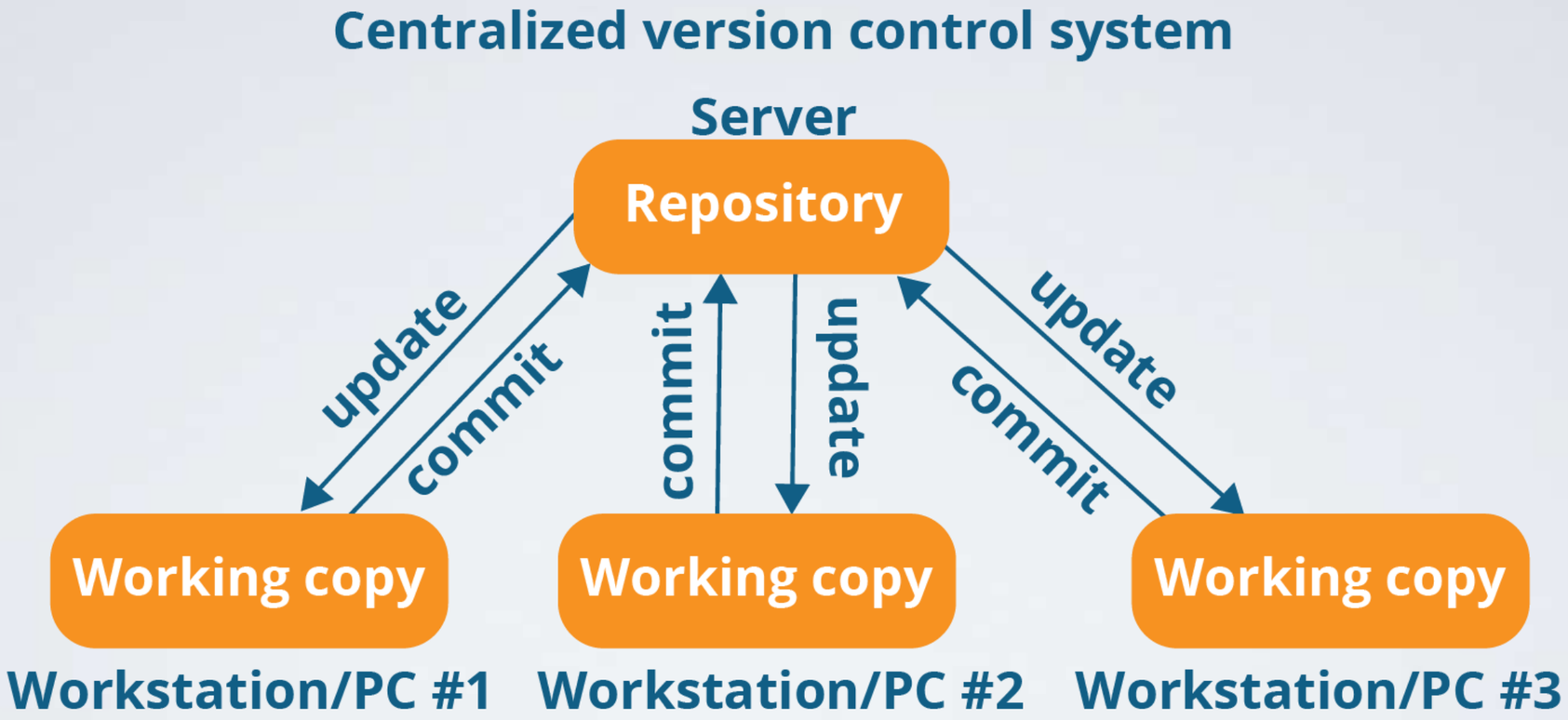
Credits: Medium

Version Control System

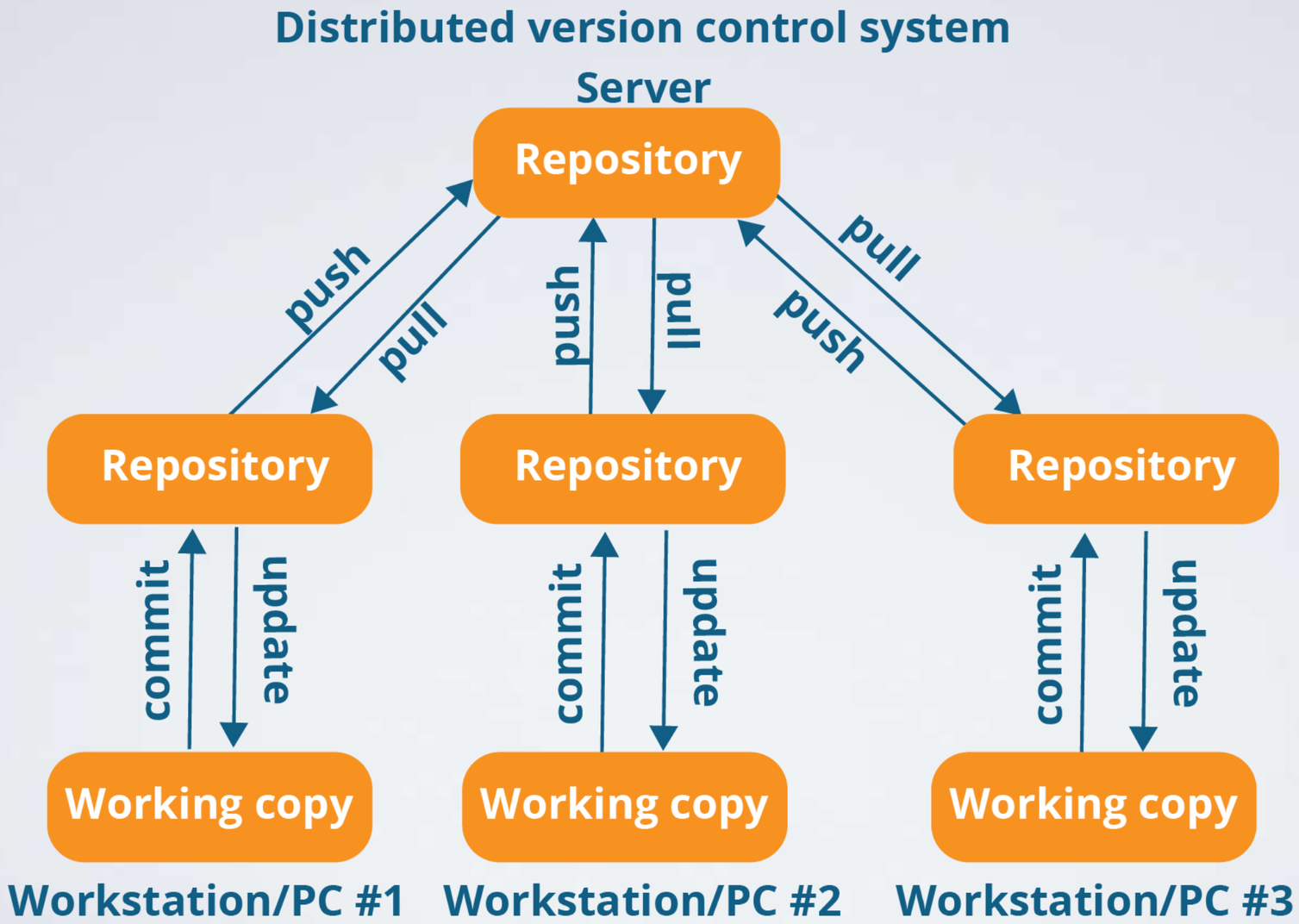
A major focus of version control system (also known as revision control or source control) is to manage the changes to the files, programs, logs, and other information related to code development, code deployment, and code operation.



Centralized Version Control System

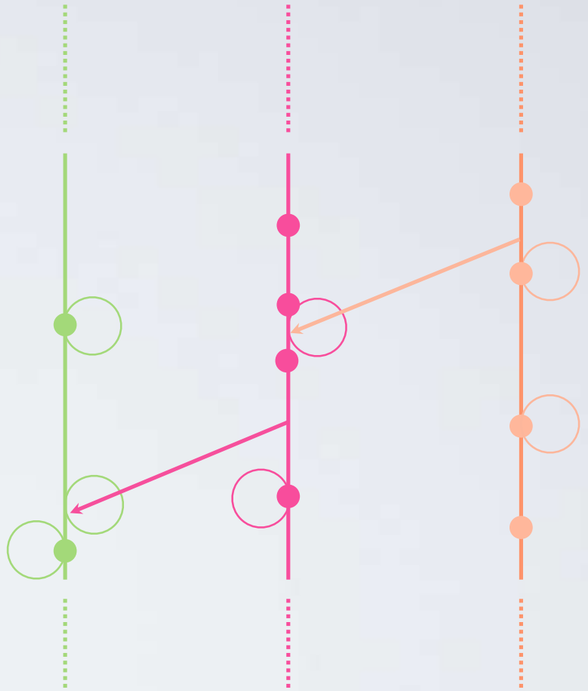


Distributed Version Control System



Git

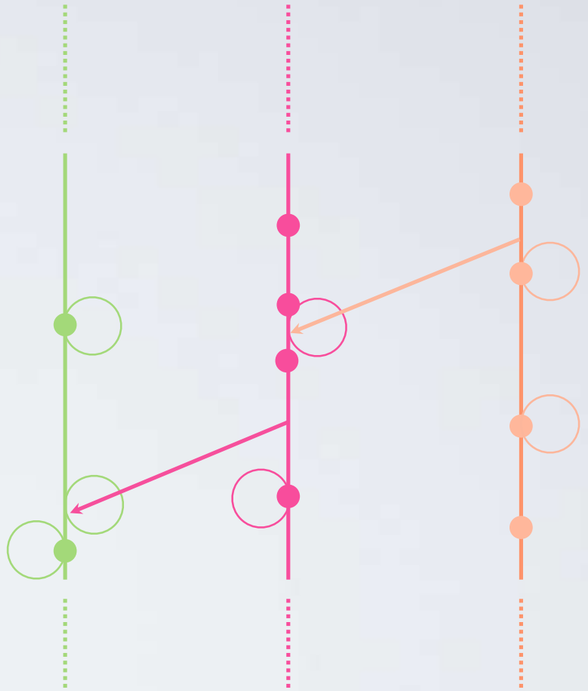
Git is an open source, distributed version control system designed for *speed and efficiency*



(almost) everything is local

No Network needed *for*

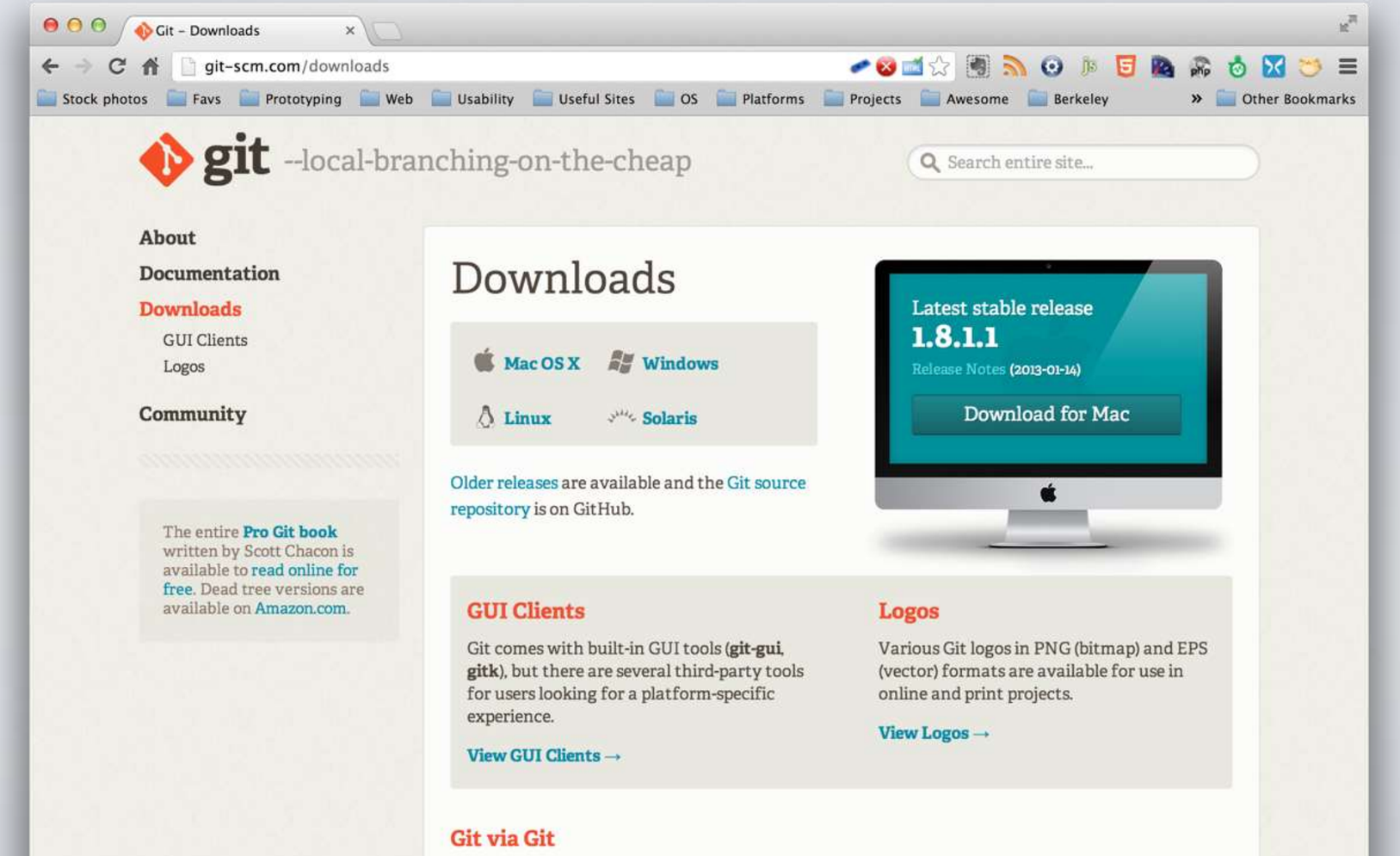
- Performing a diff
- Viewing file history
- Committing changes
- Merging branches
- Obtaining any other revision of a file
- Switching branches



(almost) everything is local

installing git

http://git-scm.com/downloads



getting setup ...

$ git config --global user.name
“<YOUR_NAME>”

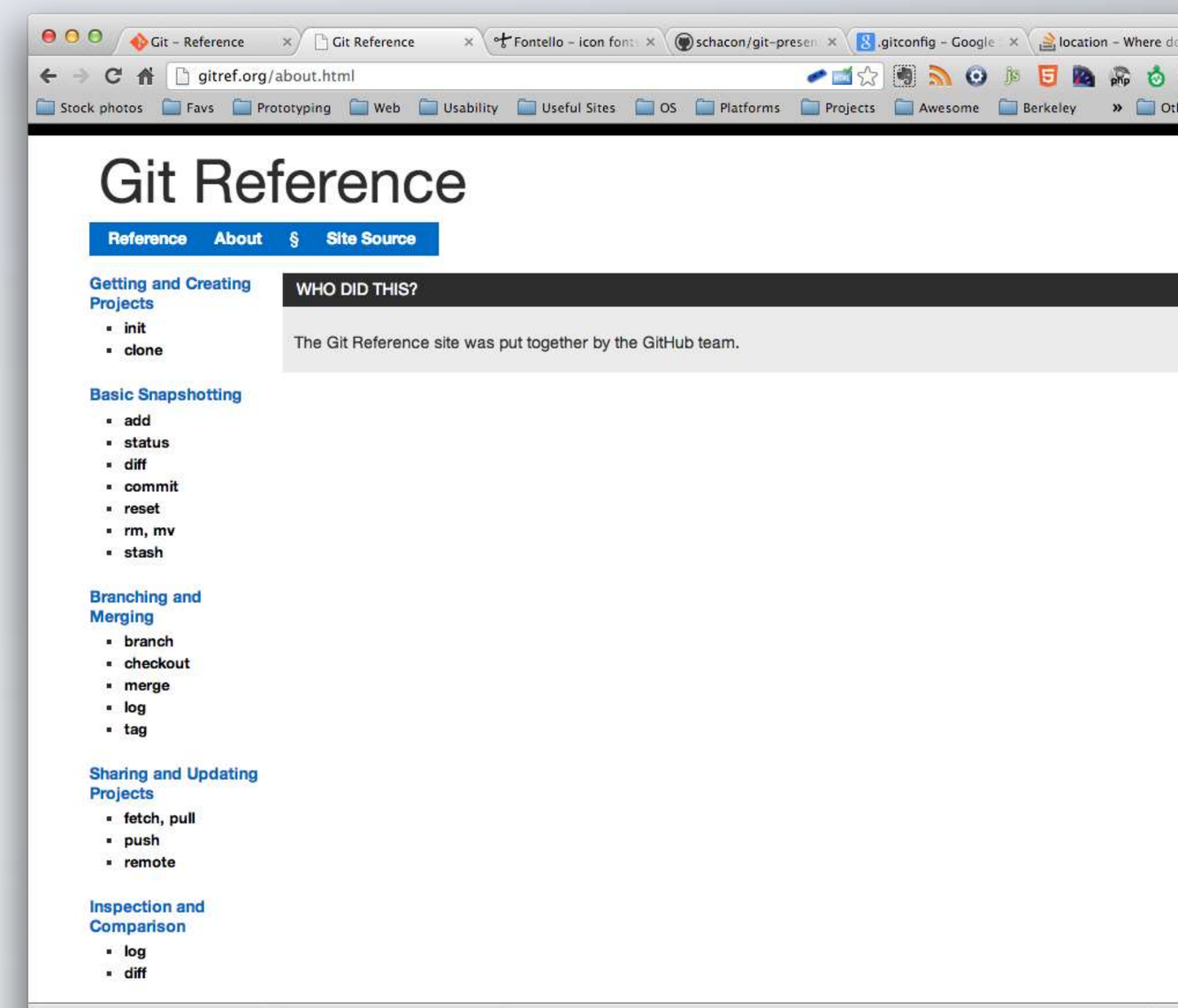
$ git config --global user.email
“<YOUR_EMAIL>”

or edit them in ~/.gitconfig

lets dive in..

gitref.org/

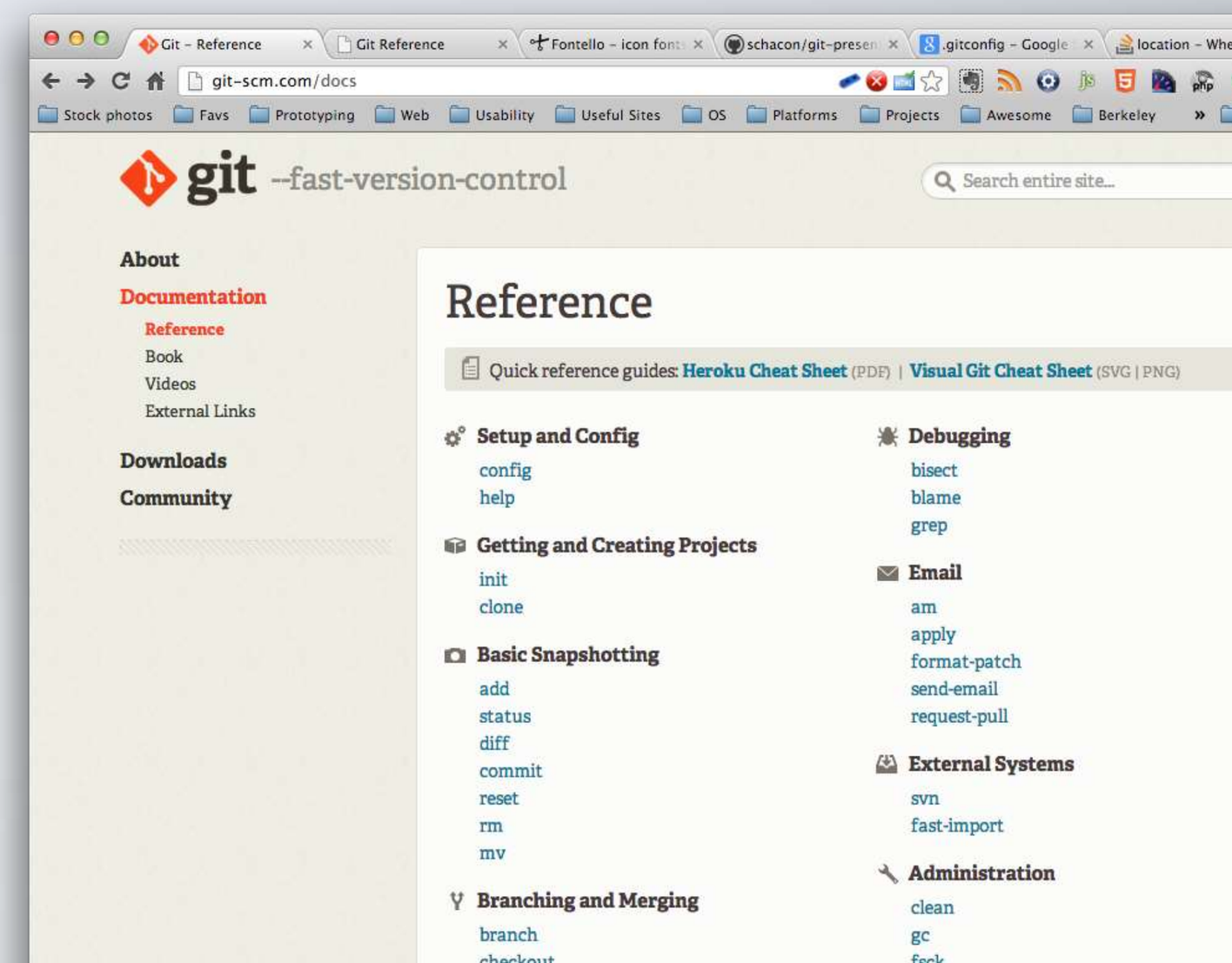
- Creating New Repo
- Committing
- Branching/Merging
- InspectionCloning a RepoUpdating



lets dive in..

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

http://git-scm.com/docs



Git Commands

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

$ git init

$ mkdir workspace

$ cd workspace

$ ls -al

$ git init

$ ls -al

Initialized empty Git repository in ../workspace/.git/

drwxr-xr-x 10 Shreyas staff 340 Jan 15 17:22 .git

Git Commands

- Creating New Repo
- Committing
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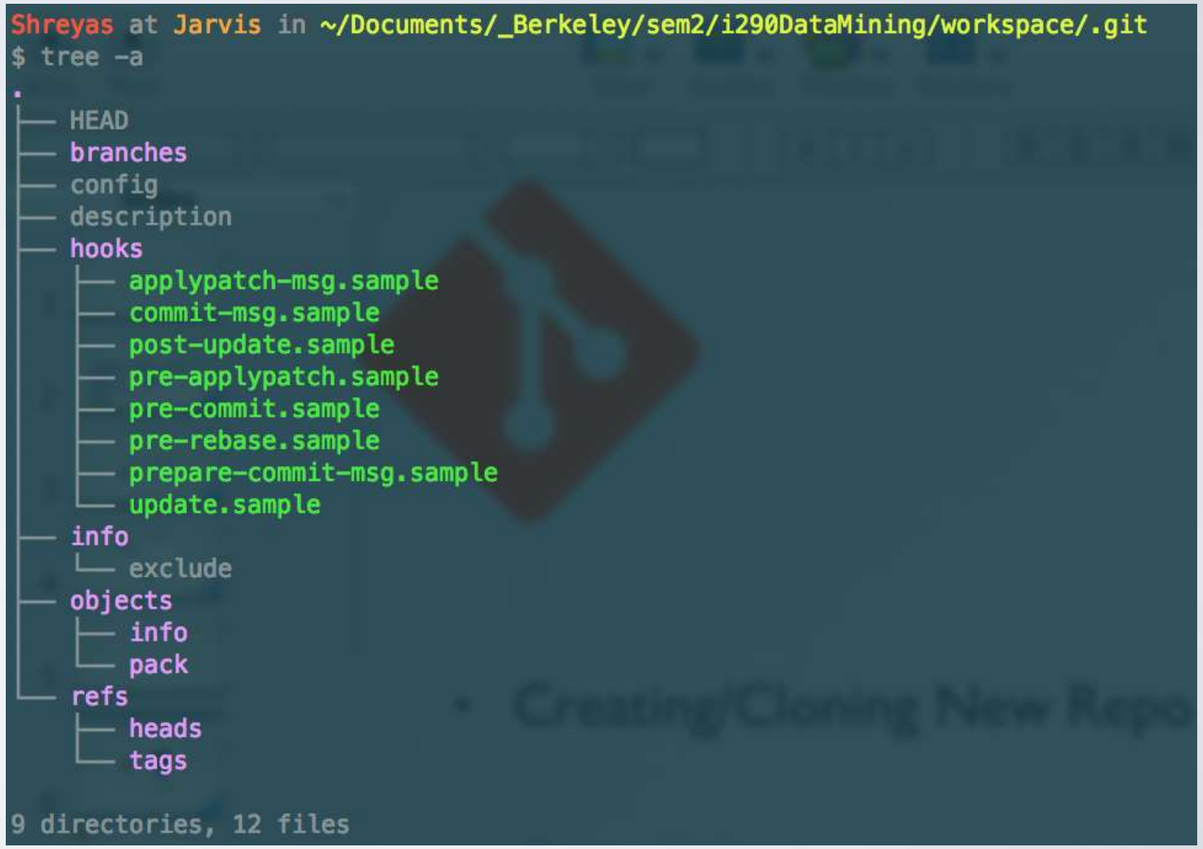
- Inspection
- Cloning a Repo
- Updating

$ cd .git

$ tree -a



Git Commands

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

$ cd ..

$ touch testfile.md

$ git status

branch name →

staging area →

```
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace
$ git status
# On branch master
#
# Initial commit
#
# Untracked files:
#   (use "git add <file>..." to include in what will be committed)
#
#       testfile.md
nothing added to commit but untracked files present (use "git add" to track)
```

Git Commands

- Creating New Repo
- Committing
- Branching/Merging
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- Cloning a Repo
- Updating

$ git add <filename>

$ git status

staging area ⟶

```
$ git add testfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace
$ git status
# On branch master
#
# Initial commit
#
# Changes to be committed:
#   (use "git rm --cached <file>..." to unstage)
#
#       new file:   testfile.md
#
```

Git Commands

- Creating New Repo
- Committing
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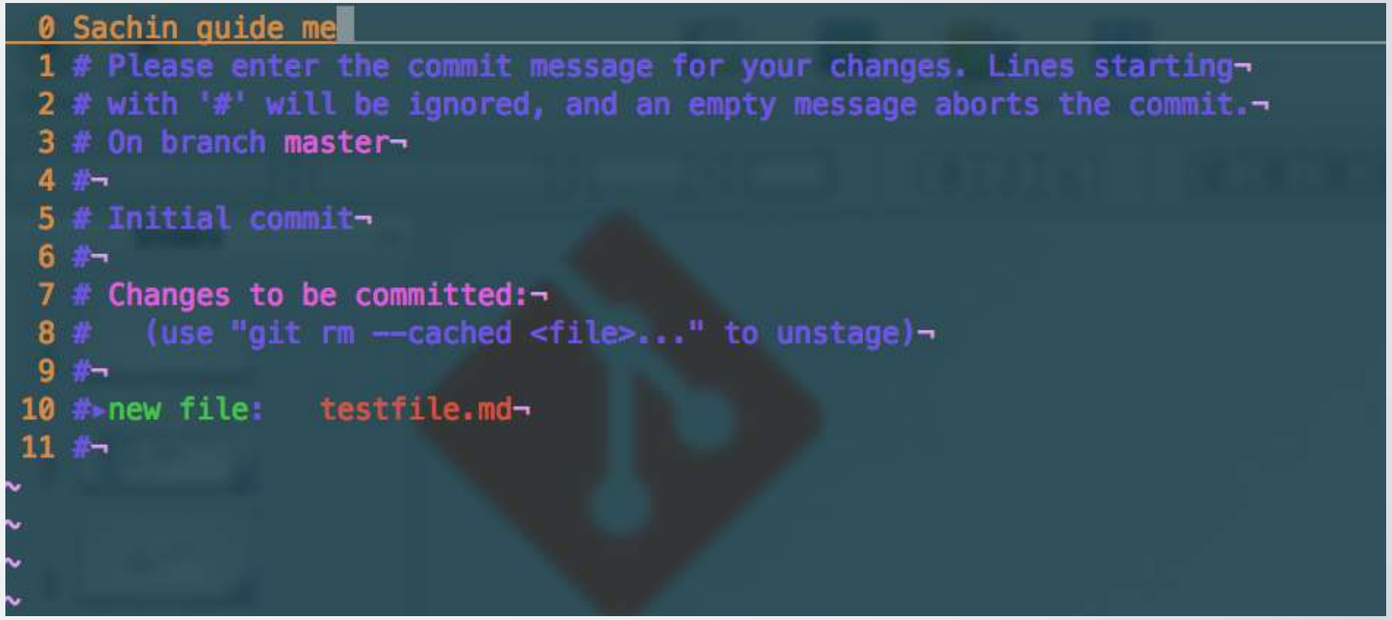
$ git commit

$ git status

your commit msg ⟶



Git Commands

- Creating New Repo
- Committing
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- Cloning a Repo
- Updating

$ git reset

(undo add)

changes staged ⟶

changes unstaged ⟶

```
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git add testfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#       modified:   testfile.md
#
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git reset
Unstaged changes after reset:
M       testfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git status
# On branch master
# Changes not staged for commit:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in working directory)
#
#       modified:   testfile.md
#
no changes added to commit (use "git add" and/or "git commit -a")
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
```

Git Commands

- Creating New Repo
- Committing
- Branching/Merging
- Updating
- Inspection
- Cloning A Repo

$ git reset --soft HEAD^

(undo a commit and redo)

$ git reset --hard HEAD~3

Rewind the branch to get rid of last three commits

learn more here : http://git-scm.com/docs/git-reset

also refer

git revert : http://git-scm.com/docs/git-revert.html

git stash : http://git-scm.com/docs/git-stash

Git Commands

- Creating New Repo
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$ git rm <filename>

remove a file from the repo
as expected, you will need to commit the change

$ git mv <filename>

move/rename a file from the repo
as expected, you will need to commit the change

Git Commands

- Creating New Repo
- Committing
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- Updating

```
$ git branch
```
list of branches

```
$ git branch <branchname>
```
new branch

```
$ git checkout <branchname>
```
switch

Git Commands

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

branch list →

new branch *dev* →

switch branch →

```
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git branch
* master
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git branch dev
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git branch
  dev
* master
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master*
$ git checkout dev
M       testfile.md
Switched to branch 'dev'
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on dev*
$ git branch
* dev
  master
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on dev*
```

Git Commands

- Creating New Repo
- Committing
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$ git merge <branchname>

merge branches

branch merge →

```
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on dev
$ ls
anotherfile.md testfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on dev
$ git branch
* dev
  master
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on dev
$ git checkout master
Switched to branch 'master'
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master
$ ls
testfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master
$ git merge dev
Updating e63df69..d0f3f3f
Fast-forward
 testfile.md |    3 ++-
 1 file changed, 2 insertions(+), 1 deletion(-)
 create mode 100644 anotherfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master
$ ls
anotherfile.md testfile.md
Shreyas at Jarvis in ~/Documents/_Berkeley/sem2/i290DataMining/workspace on master
```

Git Commands

- Creating New Repo
- Committing
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$ git log

--graph

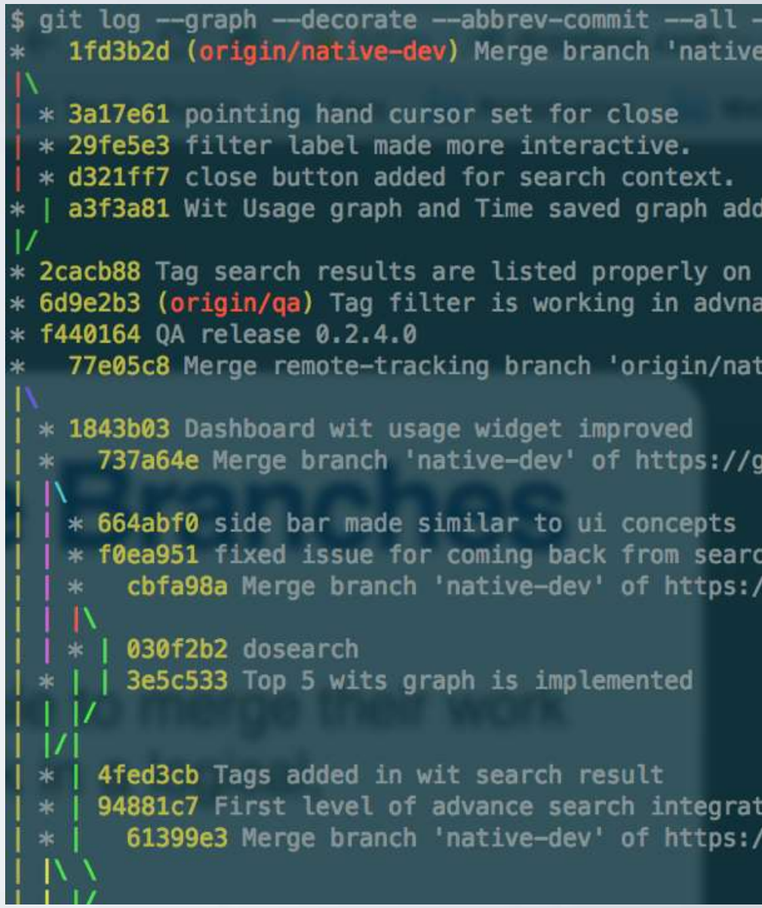
--decorate

--abbrev-commit

--all

--pretty=oneline

text-based graph :)



Git Commands

- Creating New Repo
- Committing
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~/.gitconfig

[alias]

l = log --pretty=oneline -n 20 --graph

.gitconfig

```
[alias]
    # View the SHA, description, and history graph of the latest 20 commits
    l = log --pretty=oneline -n 20 --graph
```

```
$ git l
*   883567e70d3325eb566c15bcf743200d8d5a572a Merge branch 'qa'
|\
| *   d603345f32fcf4b53325311ccf284f88750a28d6 Merge branch 'wp-dev' of github.c
| |\
| | * e1d9cd4da0e42a03c95c599baa0d1939db924586 Read file icon association from O
| | * aaa61ad3c87d0422876971e16dec6b60a5363021 Search animation done
| | *   aa359488a3bac15e1a1ed8da350eff28cc89fe90 Merge branch 'wp-dev' of https:
| | |\
| | * | daa54ce681898aa53b3cdc49e8e09ffb73fcb8c8 Search bar implemented
| * | | 6d8f2d261d94a4c24ce27296dd909ff86d6fe15f new api modifications
| | |/
| |/|
| * | 70bcbb0acd1b3ec7a1e31e1972c11d9bfb70cda9 search query clear images added
```

Git Commands

- Creating New Repo
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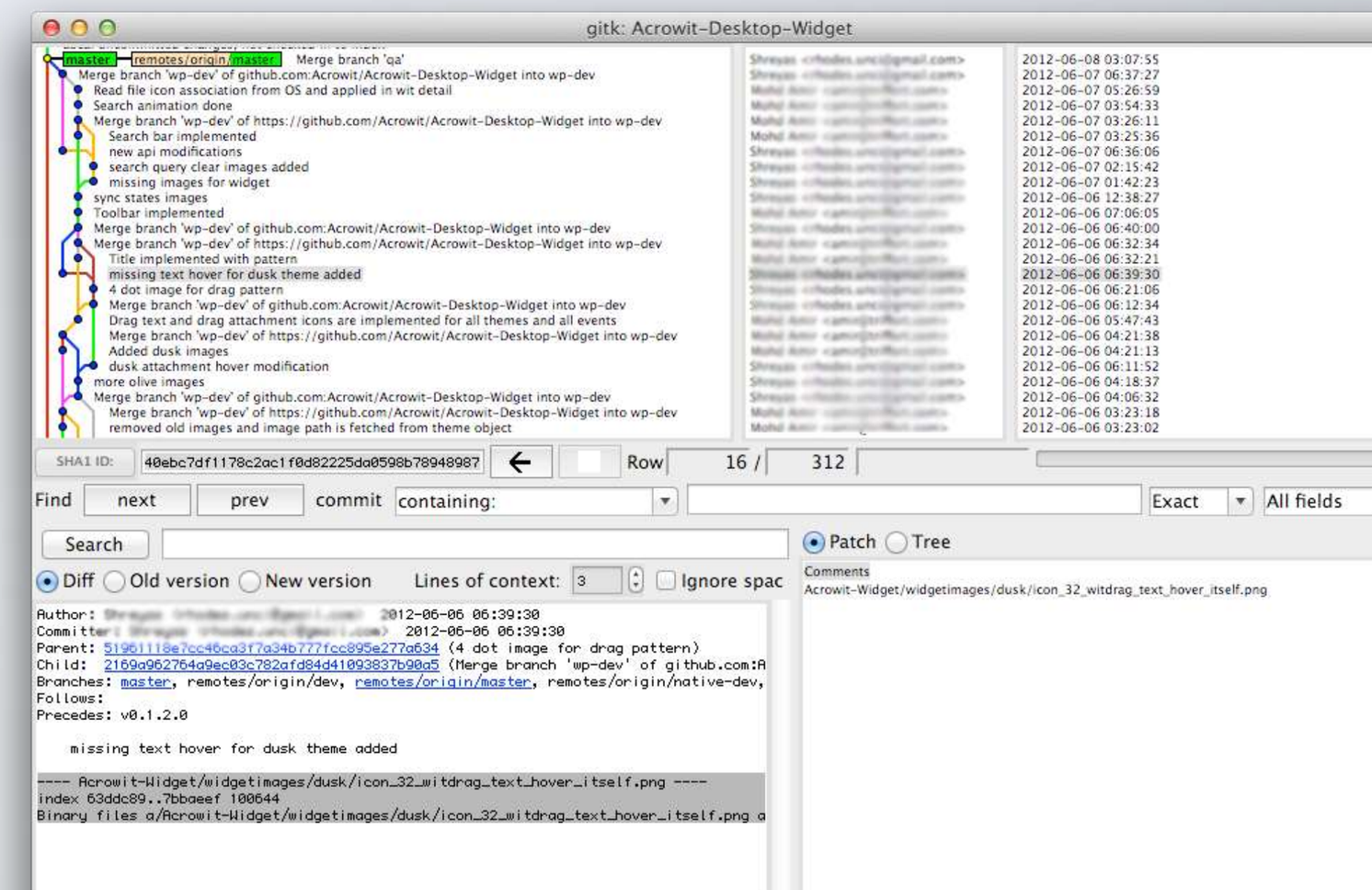
$ gitk



Working with others...

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

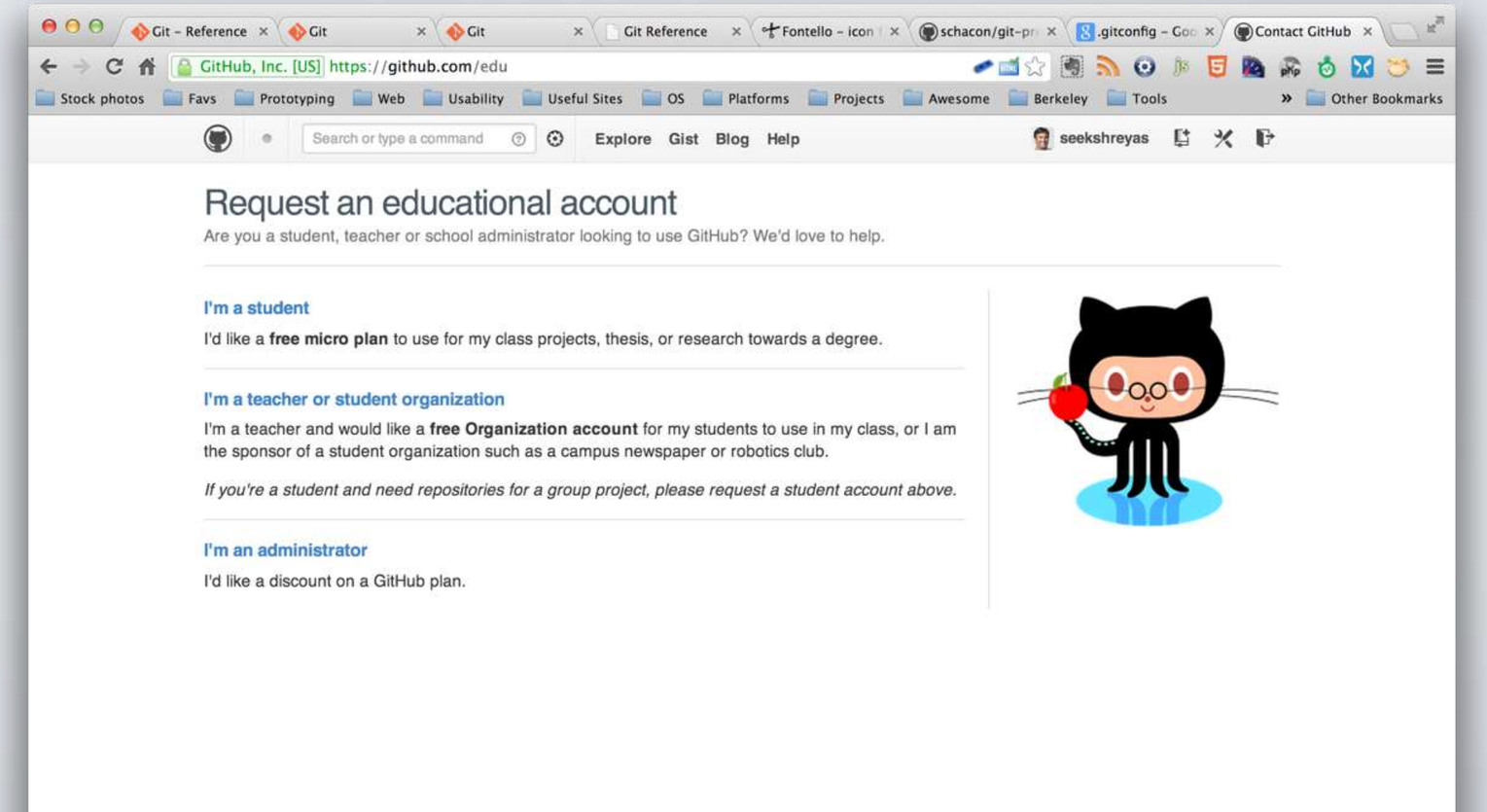
github

GitHub

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

create an account

www.github.com/

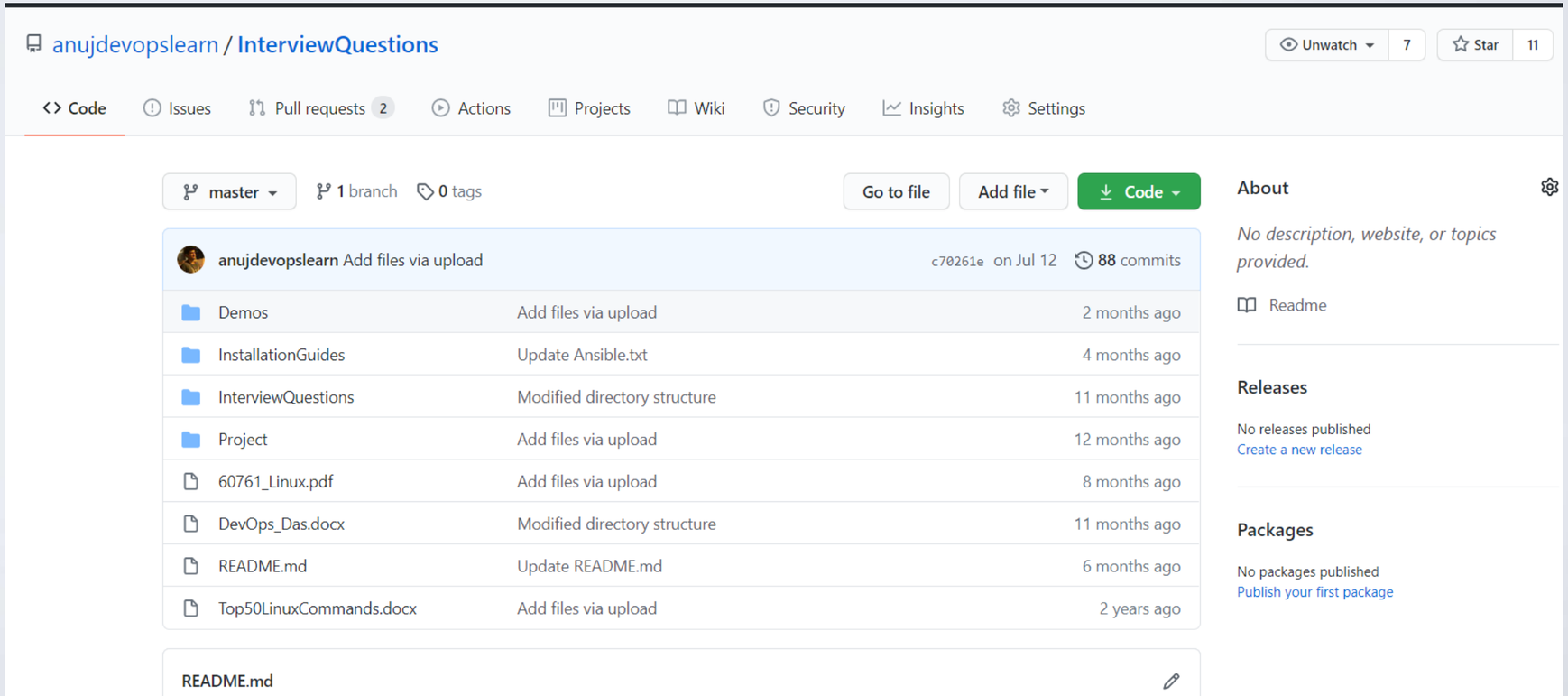


GitHub

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

$ git clone <url> <name>

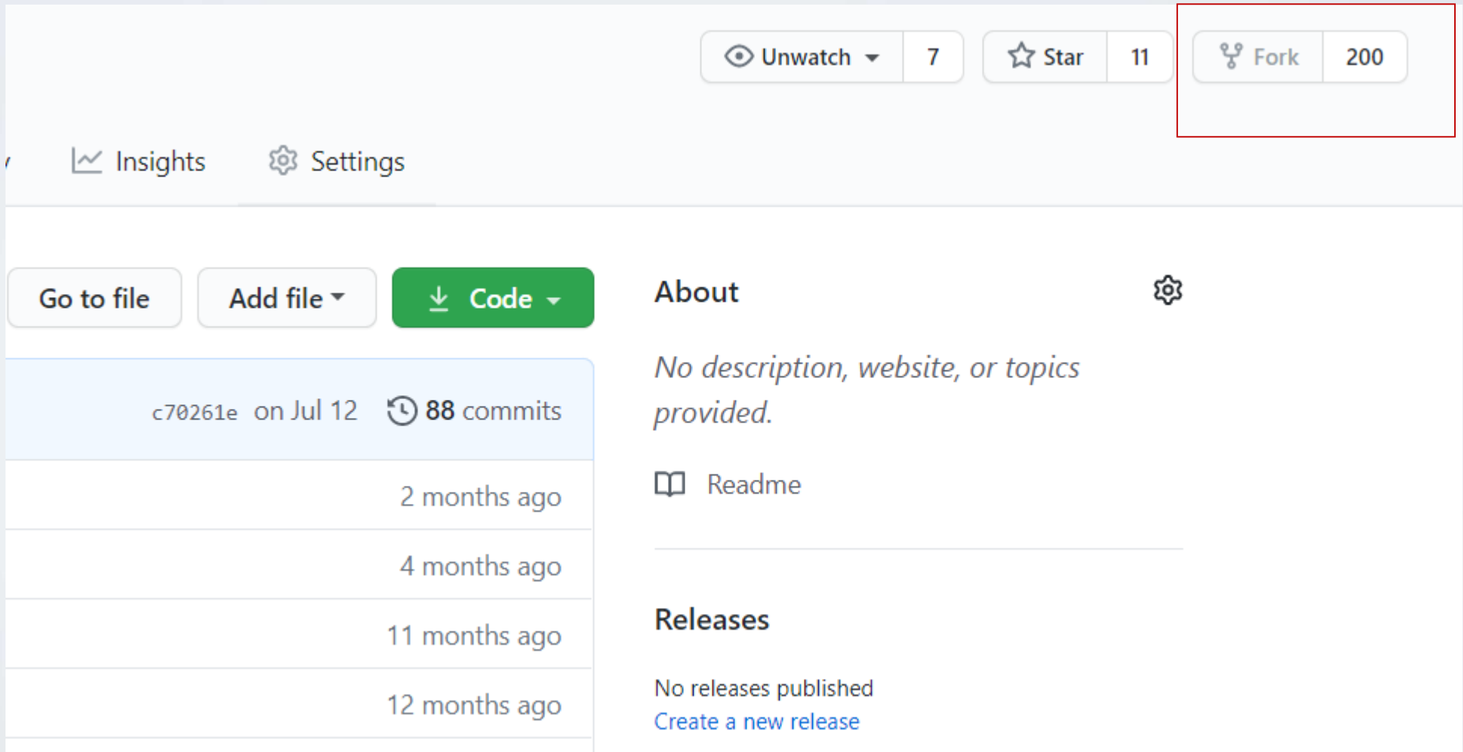
https://github.com/anujdevopslearn/InterviewQuestions



GitHub

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

Fork a repo



GitHub

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

$ git pull

= git fetch + git merge

$ git push

GitHub

GitHub Pull Request

- Creating New Repo
- Committing
- Branching/Merging
- Inspection
- Cloning a Repo
- Updating

Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also compare across forks.

base: master ← compare: develop ✓ Able to merge. These branches can be automatically merged.

Discuss and review the changes in this comparison with others. Learn about pull requests

Create pull request

1 commit | 1 file changed | 0 comments | 1 contributor

Commits on Jul 21, 2018

Update pom.xml Verified e43721f