The Official GitHub Training Manual

Table of Contents

GitHub

Welcome to GitHub

Today you will embark on an exciting new adventure: learning how to use Git and GitHub.

As we move through today's materials, please keep in mind: this class is for you! Be sure to follow along, try the activities, and ask lots of questions!

License

1GitHub.com

GitHub.com

-
-

github.com

1. GitHub.comSign up
2.
3.
4.

2Git

Git Git

Git MacWindowsPowerShell

```
$ git --version
```

```
$ git --version
git version 2.11.0
```

2.0

Git

Gitwww.git-scm.comGit

GitProGitGit `http://git-scm.com/book/en/v2/Getting-Started-Installing-Git`

Git

- WindowsGit `Git Bash` Posh-gitPowershell
- MacUnix

3

- Atom
- GitPad
- ViVim
- Sublime
- NotepadNotepad++

Atom

```
$ atom .
```

> MacAtomWindows

Git

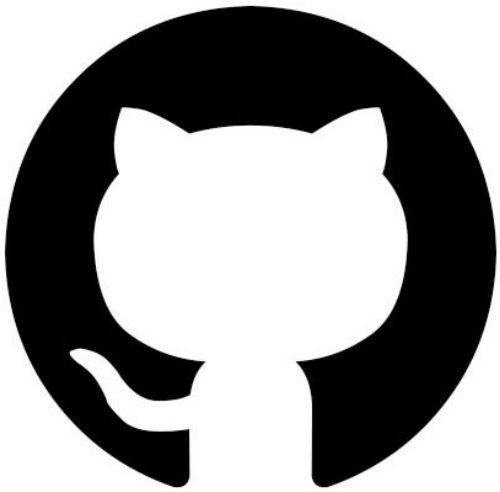
- *github.com/explore* ExploreGitHub Universe Star
- *services.github.com/on-demand* GitHub contributionsIssues

```
https://github.com/github/training-kit
```

GitGitHub GitHub

GitHub

GitHubGit

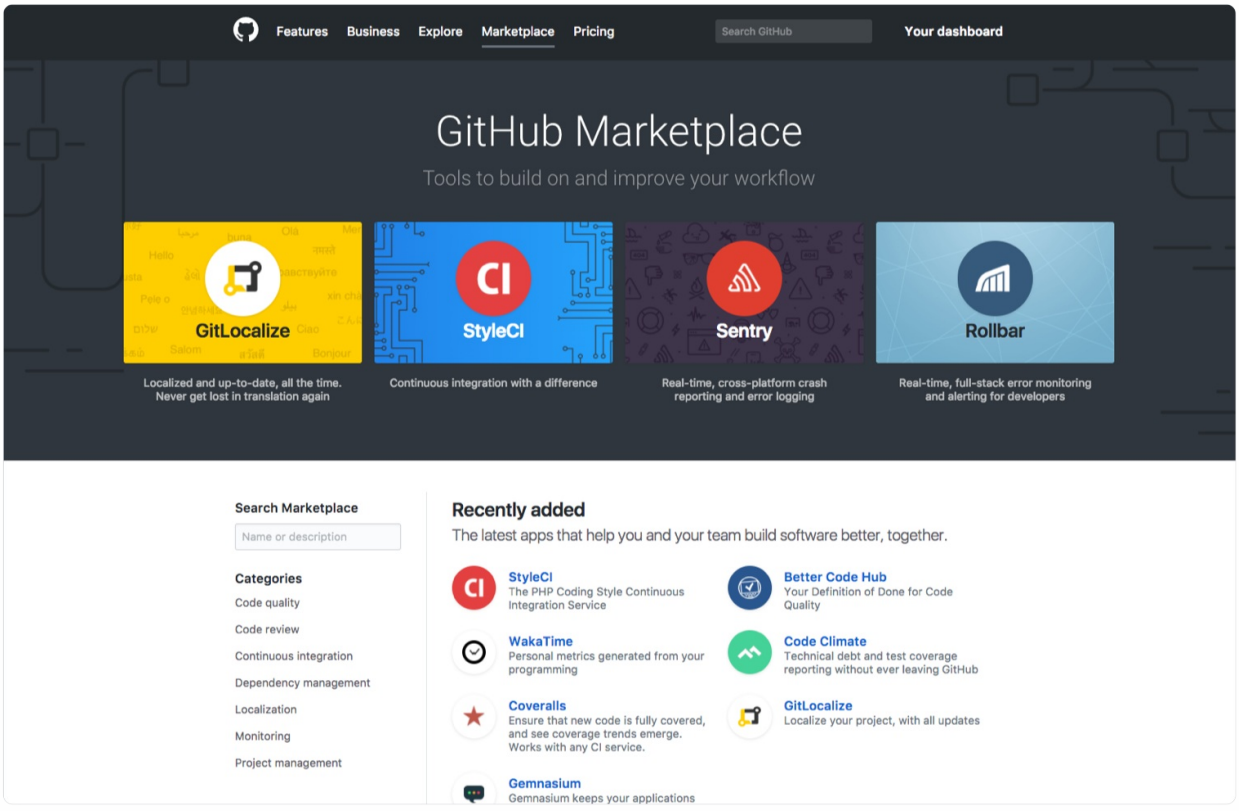


GitHubGitGitHub

- Issues
- Pull requests
- Projects
- OrganizationTeam

GitHub Ecosystem

GitHubecosystem https://github.com/integrations



Git

Git

- DVCS
-
-
-

Git

GitGitVCS GitVCS

GitGit

Git Git

Git

Git

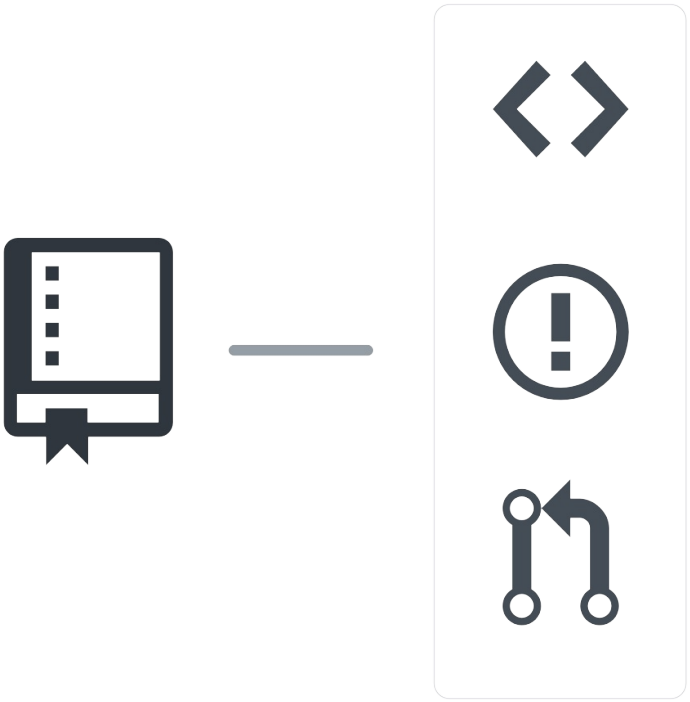
Git Git

Git

Git Git

GitHub

GitHub GitHub



GitHubUser AccountOrganization Account

GitHub

Code

code view　Git

Issues

Issues Issues

Pull requests

Pull Requests Pull Request

Projects

Projects

Wiki

GitHubWiki WikiGitHub

Pulse

Pulse

Graphs

Graphs

README.md

README.md GitHub README

CONTRIBUTING.md

CONTRIBUTING.md CONTRIBUTING.mdIssuePull Request

ISSUE_TEMPLATE.md

ISSUE_TEMPLATE.md (Pull Request)Issue Issue

GitHubIssues

GithubIssue Issue

-
- IssuePull Request
-
- @

GitHubIssue

Issue

1. *Issues*
2. *New Issue*
3. Subject line `YOUR-USERNAME Workflow`
4. Issue

```
YOUR-USERNAME

- [ ]
- [ ]
- [ ]
- [ ] Pull Request
- [ ]
- [ ]
- [ ]
- [ ] Pull Request
```

Markdown

GitHub **Markdown**IssuePull Request `.md`

Markdown

`# Header`

`#` # = Header 1## = Header 2

`* List item`

`*` `-`

`**Bold item**`

2 `**`

`- [ ] Checklist`

`-` `[ ]` IssuePull Request

`@mention`

Issue@IssuesubscribeWatch

`#975`

`#` IssuePull Request

`:smiley:`

GitHub ID `:`

GitHub Pages

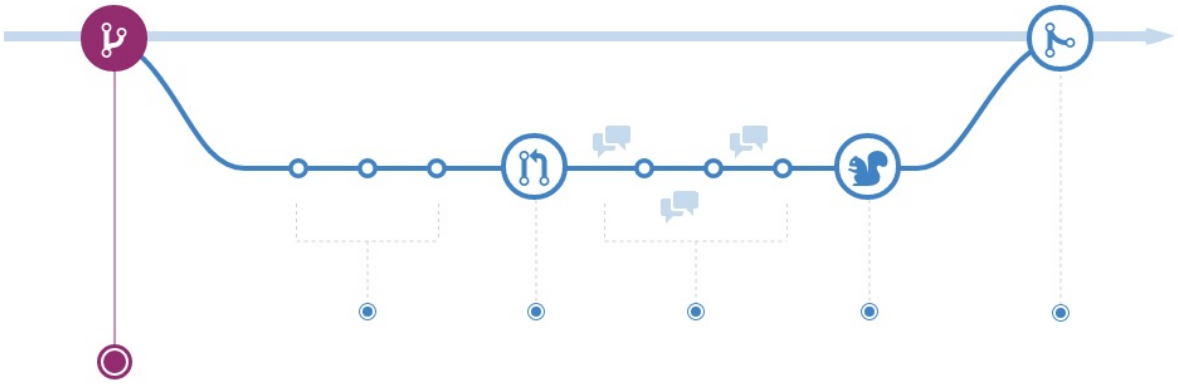
GitHub PagesGitHub GitHub Pages GitHub Pages

- User/OrganizationProject Project
- ProjectGitHub `master` `gh-pages` `master` `/docs`
- `githubschool.github.io/repo-name`

GitHub

GitHub

GitHub



GitHub

GitHub `master`

`master`

Pull Request Pull Request

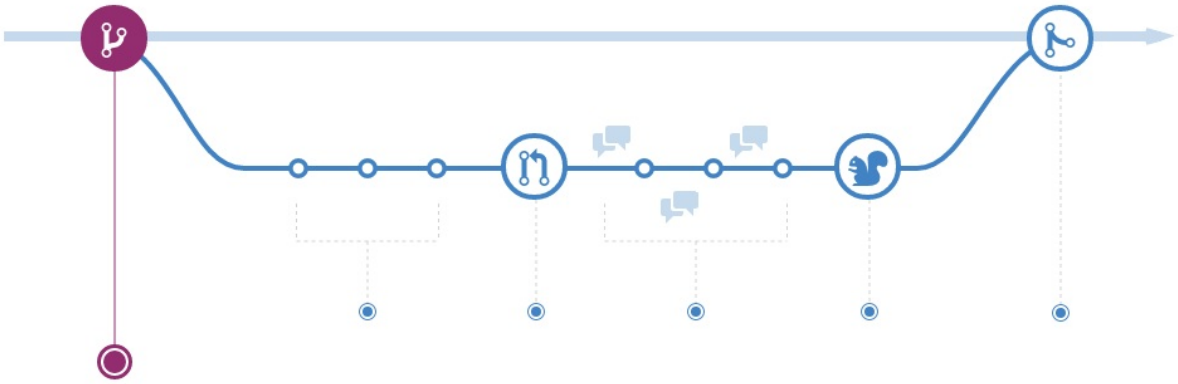
Pull Requestmaster GitHub

- *guides.github.com/introduction/flow/* GitHub

GitBranching

GitHub

Branching



GitHub

Issue

> GitHub

1. *Code*
2. *branch dropdown*
3. github-username-caption
4. `Enter`

GitHub

> GitHub

- GitHub *https://youtu.be/H5GJfcp3p4Q*

Git

Git

Git

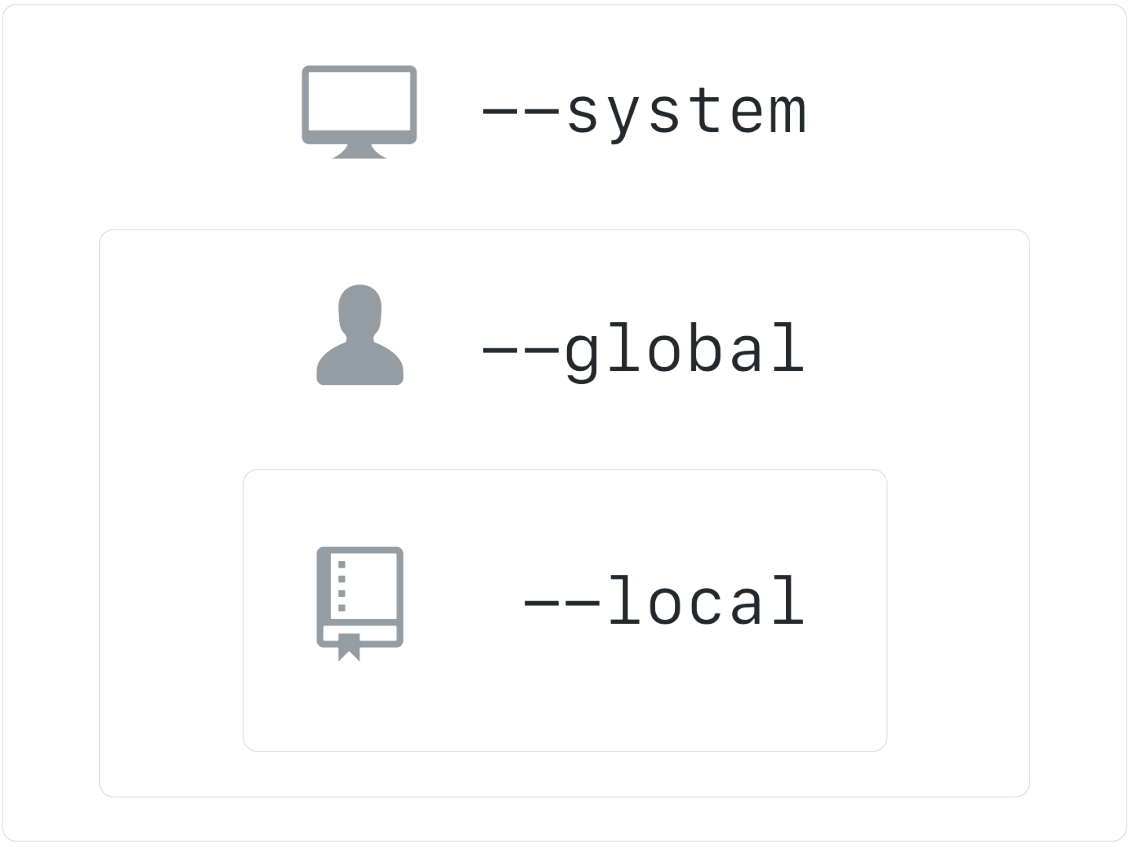
Git Installation

```
$ git --version
$ git version 2.11.0
```

GitGit

> Git www.git-scm.com

Git



Git3

--system

--global

--local

> git config `--local`

`git config --list`

```
$ git config --list
```

```
$ git config --global --list
```

Git

```
$ git config --global user.name "First Last"
$ git config --global user.email "you@email.com"
```

Git

`user.name` `user.email` `--global` `--global`

```
git config user.email "you@email.com"
```

Git GitHub Settings > Emails **Keep my email address private**

`ID +username@users.noreply.github.com`

```
git config --global user.email 18249274+githubteacher@users.noreply.github.com
```

Autocrlf

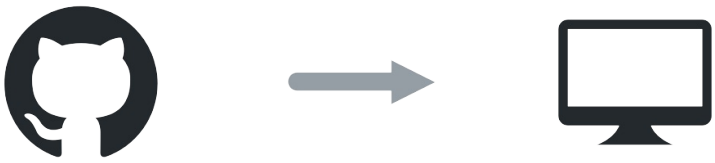
```
$ //for Windows users
$ git config --global core.autocrlf true
$ //for Mac or Linux users
$ git config --global core.autocrlf input
```

Git

> `autocrlf` auto carriage return line feed

Git

Git



git

1. GitHub *Code*
2. *Clone or download*
3. *clone URL*
4.
5. GitHub `git clone <CLONE-URL>`
6. `cd <REPOSITORY-NAME>`

Git `git status`

```
$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
nothing to commit, working tree clean
```

`git status` gh-pagesorigin/gh-pages

```
$ git branch
```

`git branch`

```
$ git branch --all
$ git branch -a
```

`--all` `-a`

> `--all` `-a` Git

```
$ git checkout <BRANCH-NAME>
```

git checkout Gitorigin

> `remotes/origin` `remotes/origin` HEAD

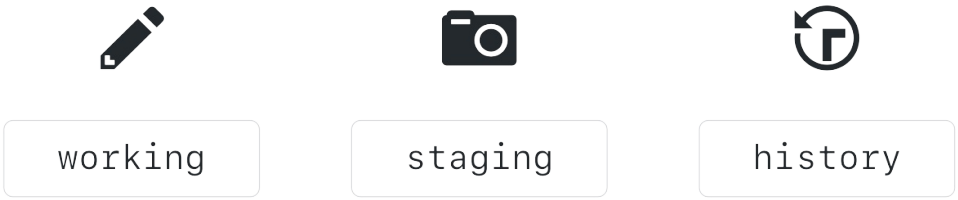
1. named `2010-02-##-USERNAME.md`
2.
3.
4.

    ```
    CAPTION-HERE
    {: .fragment}
    ```

1. *Save*

> Git IDEVIM
>
> IDE `atom .` Atom `code .` Visual Studio Code

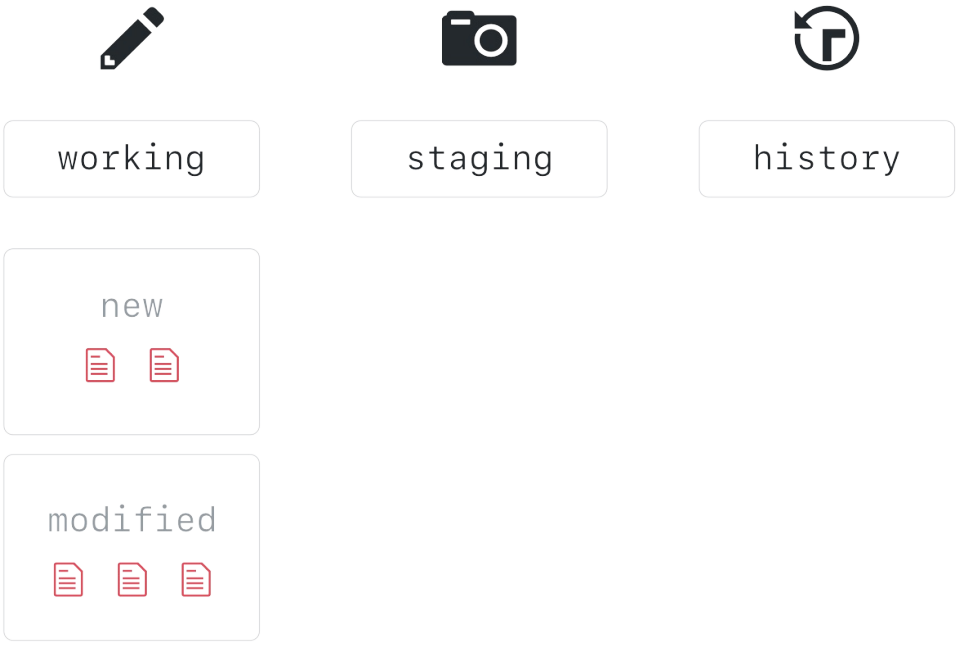
2

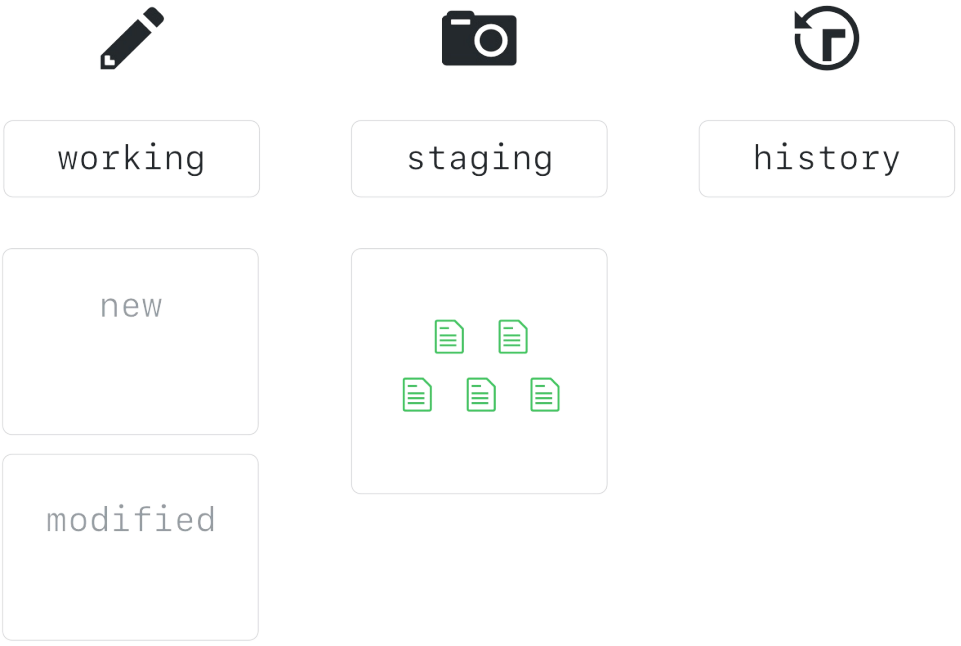


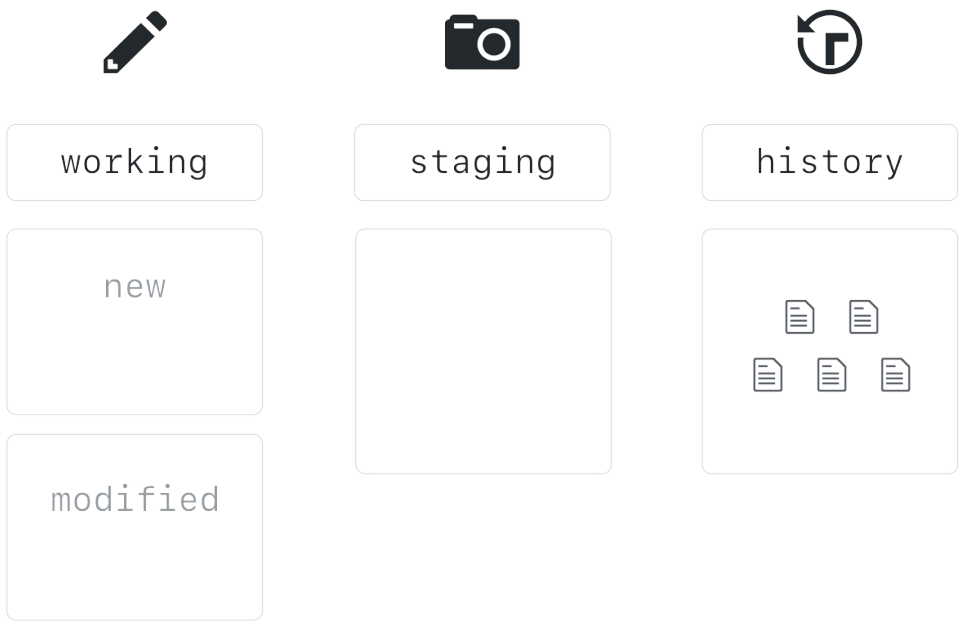
untrackedmodifiedstagedcommitted

Untracked

Git3 WorkingStaging History


working
staging
history
new
modified


working
staging
history
new
modified



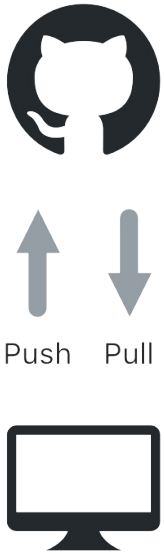
git addgit commit

1. `git status`
2. `git add my-file.md`
3. `git status`
4. `git commit`
5. Git
6.
7. `git status`

>

- 50
-
-

GitHub



GitHub.comGitHub Enterprise

GitHub

```
$ git push
```

> GitHub Git

- Windows: `git config --global credential.helper wincred`
- Mac: `git config --global credential.helper osxkeychain`

Pull Request

Pull Request Pull RequestIssue Pull Request

Pull Request Pull Request

1. *Pull Request*
2. *New Pull Request*
3. *base* `gh-pages`
4. *compare*
5. Subject line
6. MarkdownPull Request
7. `closes` `fixes` `resolves` Pull RequestIssueIssue `This resolves #3`
8. Pull Request *Preview*
9. Pull Request
10. *Create pull request*

> *Compare & pull request* Pull Request

Pull Request

Pull RequestPull Request

Conversation view

IssuePull Request CoversationPull Request

Commits view

Commits view ID

Files changed view

Files changed view `diff` diffdiff

Pull Request

GitHub3

General Conversation

*Conversation*Pull Request

Files changed view `+` Conversation view

Start a Review

Pull Request

1. *Pull Request*
2. *Author*Pull Request
3. *Files Changed*
4. 1+ +
5. *Start review*
6.
7. *Review*
8. *Approve* *Request changes*
9.
10. *Submit review*
11. *Conversation* view

GitHub

Pull Request GitHub

GitHub

Pull Request *Files Changed* view

1. diffGitHub
2.

GitHub

1. *Commit changes*
2.
3. *Commit directly to your branch*
4. *Commit changes*

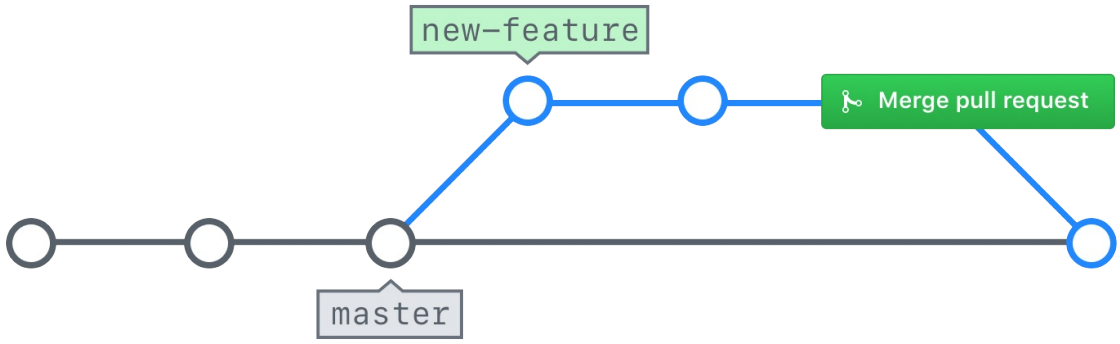
Pull Request

Pull Request

Pull Request

Pull Request

`gh-pages`



Pull Request

- Pull Request
-
- Pull Request

Pull Request

Pull Request

1. Pull RequestPull RequestAuthorAssignee
2. *Conversation*
3. Pull Request *Merge pull request*
4. *Confirm merge*
5. *Delete branch*
6. *Issues*Issue

> GitHubPull Request

- **Create a merge commit:**
- **Squash and merge:**
- **Rebase and merge:** GitHubfast forward

Pull RequestGitHub

GitHub

1. `git checkout gh-pages`
2. GitHub `git pull`

`git pull` GitHub `git fetch` `git merge`

`git branch --all`

1. `git branch --all`
2. `git branch --merged`
3. `git branch -d <branch-name>`
4. `git branch --all`
5. `git pull --prune`

> `--merged` `git branch` gh-pages

Pull `git config --global fetch.prune true`

Git Log

log

```
$ git log
$ git log --oneline
$ git log --oneline --graph
$ git log --oneline --graph --decorate
$ git log --oneline --graph --decorate --all
$ git log --stat
$ git log --patch
```

> ↑↓ q

log Git

log

```
$ git log --oneline --graph --decorate --all
```

```
$ git config --global alias.lol "log --oneline --graph --decorate --all"
```

```
$ git lol
```

```
$ git config --global alias.co "checkout -b"
$ git config --global alias.s "status -s"
$ git config alias.dlb '!git checkout <DEFAULT-BRANCH> && git pull --prune &&
 git branch --merged | grep -v "\*" | xargs -n 1 git branch -d'
```

- *git-scm.com/book/en/v2/Git-Basics-Git-Aliases*

1

-
- 2
-

12

1. `USERNAME-conflict`
2.
3. `base: master` `compare: USERNAME-conflict` Pull Request
4. *1* Pull Request
5. *2* Pull Request
   i. `master`
   ii. `Unmerged Paths` `git status`
   iii. (`<<<<<<<` , `=======` , `>>>>>>>`)
   iv.
   v.
   vi. Pull Request
6. Pull Request

> Git

: GitHub Games

`github-games`

`github-games` githubschool organization `https://github.com/githubschool/github-games-username`

: README.md

READMEGitHub

> `https://githubschool.github.io/github-games-username`
>
> URL
>
> `README.md`

1. `git clone https://github.com/githubschool/github-games-USERNAME.git`
2. `readme-update` `git checkout -b readme-update`
3. README.mdURL
4.
5. GitHub `git push -u origin readme-update`
6. Pull Request (base: `master` , compare: `readme-update`)
7. Pull Request
8. GitHub
9. `git pull --prune`

`git checkout -b readme-update` `git branch readme-update` `git checkout readme-update` `-b` Git

> `git push -u origin readme-update`
>
> `-u` `--set-upstream` Git
>
> `git push`

`CODEOWNERS`

Protected Branches Code Owners

1. **Settings**
2. **Branches**
3. **Choose a branch...** `master`
4. **Protect this branch**

CODEOWNERS

CODEOWNERS CODEOWNERS

- Javascript `.js`
- `docs/`
- `package.json`

CODEOWNERS

1. `CODEOWNERS` `.github/`
2. `* @YOUR_USERNAME`
   -
3. `*.js @githubteacher`
   -
4. CODEOWNERS **Require pull request reviews before merging Require review from Code Owners Save changes**

CODEOWNERS

`git bisect`

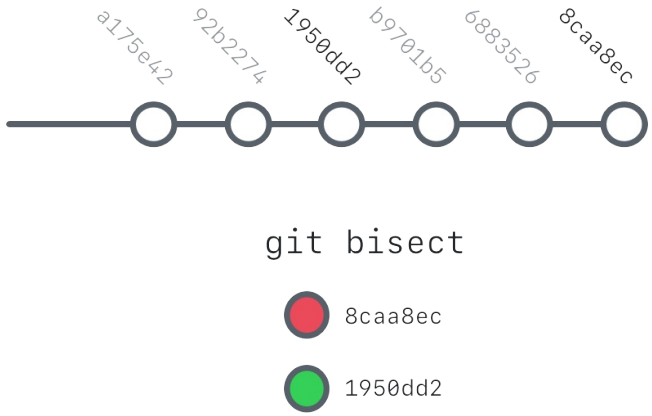
`git bisect`

`git bisect` bisect

-
-
-

Bisect

`git bisect` Git Git



> BisectHEAD (detached HEAD) Git `git bisect reset` bisect {: .warning}

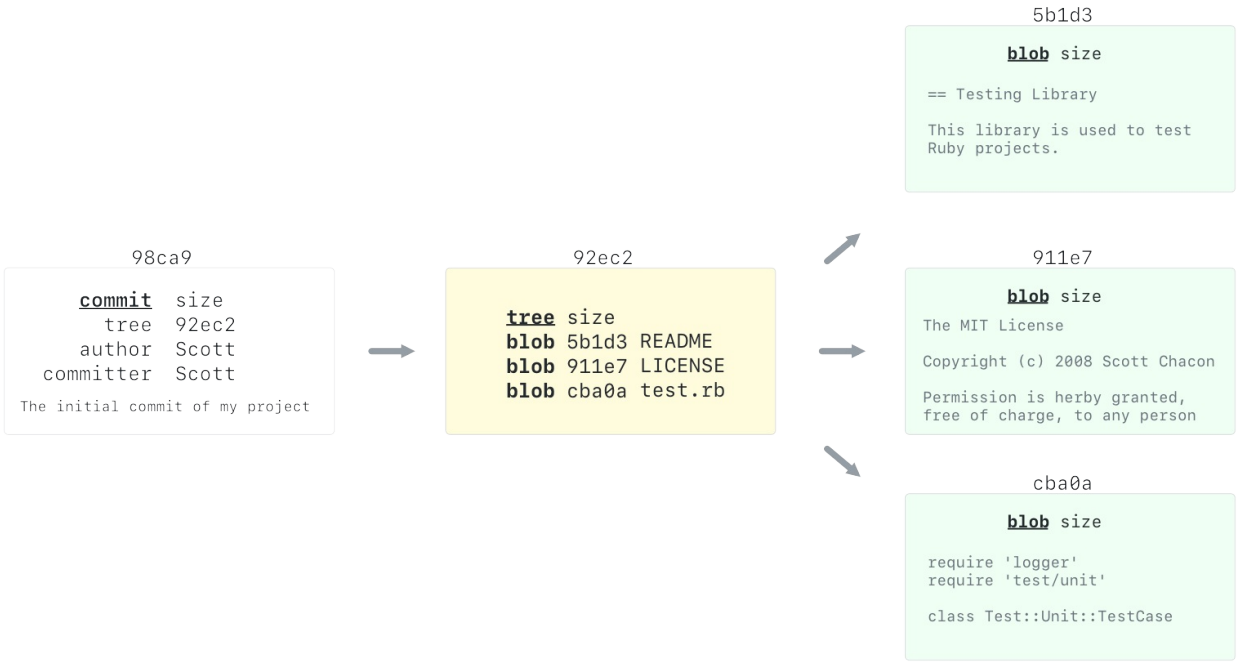
1. `git bisect start`
2. `git bisect bad <SHA>`
3. `git bisect good <SHA>`
4. Bisect
5. `ls` `index.html`
6. `index.html` `git bisect bad`
7. `index.html` `git bisect good`
8. Gitbisect Git
9. Git `SHA is the first bad commit.`
10. Bisect `git bisect reset`

Bisect

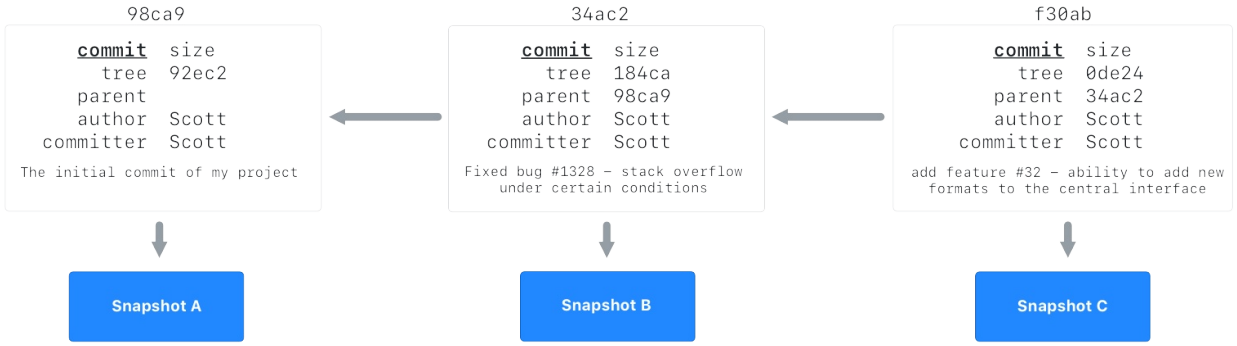
1. `git bisect start <bad-SHA> <good-SHA>`
2. `git bisect run ls index.html`

Git

-
-
-
-


5b1d3
blob size
== Testing Library
This library is used to test Ruby projects.
98ca9
commit size
tree 92ec2
author Scott
committer Scott
The initial commit of my project
92ec2
tree size
blob 5b1d3 README
blob 911e7 LICENSE
blob cba0a test.rb
911e7
blob size
The MIT License
Copyright (c) 2008 Scott Chacon
Permission is herby granted, free of charge, to any person
cba0a
blob size
require 'logger'
require 'test/unit'
class Test::Unit::TestCase

ID


98ca9
commit size
tree 92ec2
parent
author Scott
committer Scott
The initial commit of my project
34ac2
commit size
tree 184ca
parent 98ca9
author Scott
committer Scott
Fixed bug #1328 – stack overflow under certain conditions
f30ab
commit size
tree 0de24
parent 34ac2
author Scott
committer Scott
add feature #32 – ability to add new formats to the central interface
Snapshot A
Snapshot B
Snapshot C

Git

ID

`revert`	
`commit --amend`	
`reset`	
`cherry-pick`	
`rebase`	

`index.html`

```
git show SHA
```

1. `git revert <SHA>`
2.
3. GitHub

Git

Git

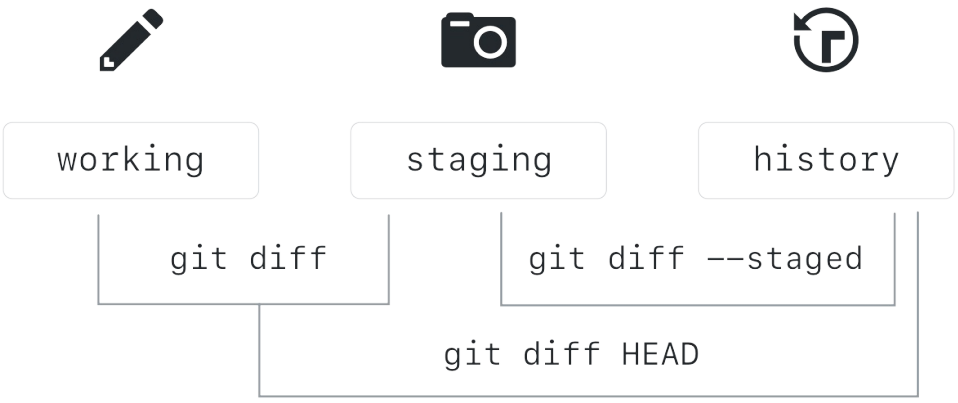
Git

1. `slow-down`
2. index.html *9* URL *(images/texture.jpg)*
3. *78*
4.
5. Git `git status`
6. `mkdir images`
7. Git `git mv texture.jpg images/texture.jpg`

1. Git `git status`
2. `--patch` `git add -p`
3. `y`
4. `n`

> `?`

`git diff` 2ref HEAD




```
$ git diff
$ git diff --staged
$ git diff HEAD
$ git diff --color-words
```

`git diff`

```
$ git diff <REF-1> <REF-2>
$ git diff gh-pages slow-down
$ git diff origin/gh-pages gh-pages
$ git diff 2710 b745
```

> diff diff

Git **tag** GitHub **release**

GitGitHub `-a` `v1.0` SHA

- `git tag -a v1.0 <SHA>`

`git tag --list`

`git push --tags`

config `git config push.followTags true` .

GitHub

GitHub-Games

1. GitHub **Code**
2. Releases
3. Draft a new release
4.
5. master commits
6.
7. Publish release Save draft

> This is a pre-release

Issues

1. `cd ..`
2. git `git init practice-repo` - CD `cd practice-repo` - `README.md` `touch README.md` - README.md

Bash:

```
for d in {1..6}; do touch "file${d}.md"; git add "file${d}.md"; git commit -m
 "adding file ${d}"; done
```

PowerShell:

```
for ($d=1; $d -le 6; $d++) { touch file$d.md; git add file$d.md; git commit -
m "adding file$d.md"; }
```

GitGitHub

`git commit --amend` HEAD 2

-
-

1. `touch file7.txt`
2. `git add file7.txt`
3. `git commit --amend`
4.

Git Reset

`git reset`

Reset

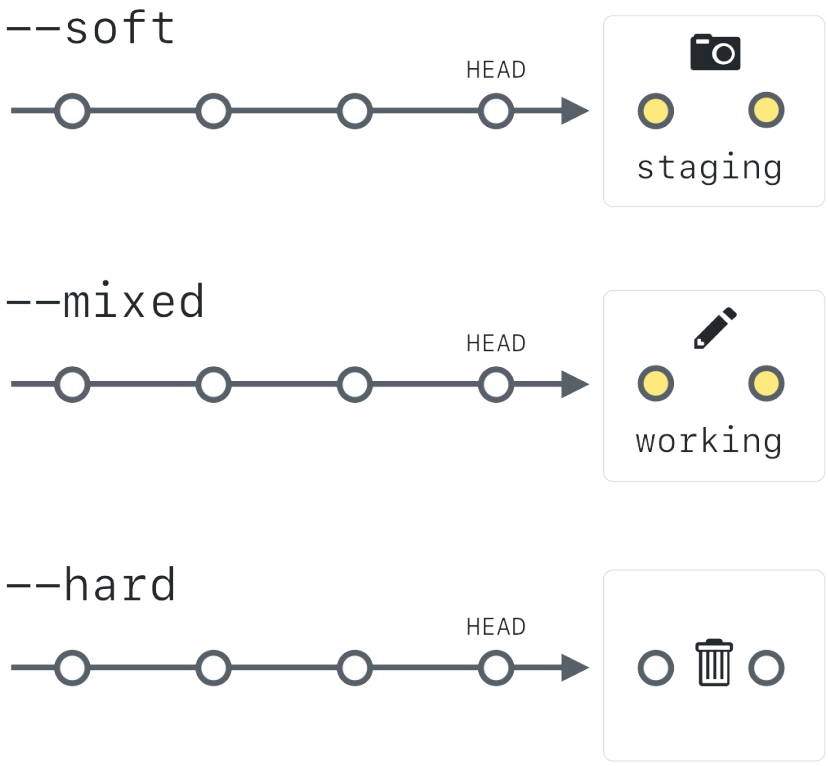
Before

After

3 1HEAD 2 3

`git reset` 3

Reset



git reset3 `--soft` , `--mixed` , `--hard`

`--soft`

`git reset --soft <SHA>` `<SHA>` 1

`--mixed`

`git reset --mixed <SHA>` `<SHA>` Git `--mixed`

`--hard`

`git reset --hard <SHA>` Git 3 `<other-commit>`
`git reset --hard` `--hard`

Reset Soft

`reset --soft`

1. `git log --oneline --decorate`
2. `HEAD`
3. 2 `git reset --soft HEAD~2`
4. `HEAD` 2 `git log --oneline --decorate`
5. 2 `git status`
6. `git commit -m "re-add file 5 and 6"`

> `HEAD` 2git ID

Reset Mixed

reset `reset --mixed`

1. `git log --oneline`
2. 1 `git reset HEAD~`
3. `git log --oneline --decorate`
4. `git status`
5. `git add file5.md file6.md`
6. `git commit -m "re-add file 5 and 6"`

> 56HEADID reset

Reset Hard

hard reset

1. `git log --oneline`
2. README.md `git reset --hard <SHA>`
3. `git log --oneline`
4. `git status`
5. README.md `ls`

> `git reset --hard`

```
$ git reflog
```

reflogHEAD reflog reflog

- **reflog** reflogreflog
- **reflog**90reflog30

`git cherry-pick`

reflog

1

reflog

```
$ ls
README.md
$ git log --oneline
84nqdkq initializing repo with README
```

4

1. file4.mdID `git reflog`
2. `git cherry-pick <SHA>`

```
$ ls
file4.md
README.md
$ git log --oneline
eanu482 adding file 4
84nqdkq initializing repo with README
```

ID

> GitHub ID {: .warning}

`git reset --hard` `git reset --hard`

1. HEAD `git reflog`
2. `file6.md` `git reset --hard <SHA>`

3. `git log --oneline`

`git log --oneline` ID `git reflog`

> 4 `git reset --hard` 2

Git

Git3

Fast forward

fast forward fast forward

git 2

3

Git

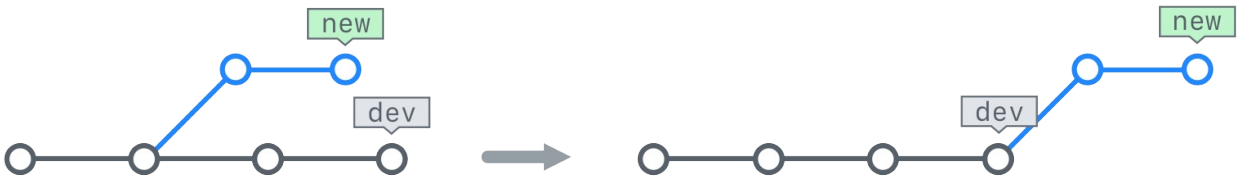
`git rebase` 1squash

`rebase` `git rebase --interactive` `git rebase -i`

`git rebase -i`

-
-
- 1
-

1



git rebase dev

1. SHA `git log --oneline`
2. SHA `git reset --hard SHA`
3. `git checkout -b rebase-me`
4. reflog4-6 `rebase-me`
5. master `git checkout master`
6. reflog1-3 `rebase-me`
7. `git log --oneline --graph --decorate --all`
8.

1. `rebase-me` `git checkout rebase-me`
2. `git rebase -i master`
3.
4. `rebase-todo`
5.
6. `git log --oneline --graph --decorate --all`
7. fast-forward

1. master `git checkout master`
2. master `git merge rebase-me`

1

Pull Request

1. `git checkout -b NEWBRANCHNAME`
2. `_posts` YYYY-MM-DD-username-description.md ---- (
)
3. "Activity: Edit Your File"
4. ``` --- layout: slide ---

   ```
   IMAGEURL
   {: .center}

   CAPTION-HERE
   {: .fragment}
   ```

1.
2. `git push -u origin NEWBRANCHNAME` .
3. Pull RequestPull Request@
4. Pull RequestPull Request

Pull Request

1. Pull Request
2. files changedview
3.
   -
   - `git pull`
   - Pull Request `git checkout BRANCHNAME`
4.

- `git push`

5. Pull Request `@` Pull Request

`README.md`

`README.md`

1. `git checkout -b NEWBRANCHNAME`
2. README.md
3. `git push -u origin NEWBRANCHNAME` .
4. Pull RequestPull Request `base: master` `compare: NEWBRANCHNAME`
5. `@` mention
6. Pull RequestPull Request

1. `git checkout -b NEWBRANCHNAME`
2. `_sass / solarized / solarized.scss`
3.
   - 1219
   - 3335
   - 5255
4.
5. `git push -u origin NEWBRANCHNAME`
6. `base: master` `compare: NEWBRANCHNAME` Pull Request
7. `@` mention
8. Pull RequestPull Request

- `github.com/githubschool/conflict-practice-username`
- 😉

1. `github.com/githubschool/USERNAME` USERNAME
2. **Pull Requests**
3. Pull Request
   - README
   -
   - CSS
4. Pull Request Pull Request

1.
2. master
3.
4. labelsassignees
5.
6. IssuePull Request
7. Pull Request
8. Pull Request

Jekyll

GitHub Pages

OSmacOS

Ruby Ruby ruby-lang.org

- Windows https://rubyinstaller.org `2.3.3` Add Ruby executables to your PATH
- MacRuby homebrew `brew install ruby`

1. Bash `cd`
2. Ruby
   - `ruby -v` `gem -v`
   - Ruby `2.3.x` :+1: ☝🏽
3. `Gemfile.lock`
4. Bundler `gem install bundler`
5. gems `script/setup`
6. `script/server`
7. 🎉

Git

Git

- **Mac** `.bash_profile`
- **Linux** `.bashrc`
- **Windows**

```
parse_git_branch() {
  git branch 2> /dev/null | sed -e '/^[^*]/d' -e 's/* \(.*\)/ (\1)/'
}
export PS1="\w\[\033[36m\]\$(parse_git_branch) \[\033[00m\] > "
```

```
function parse_git_branch () {
  git branch 2> /dev/null | sed -e '/^[^*]/d' -e 's/* \(.*\)/ (\1)/'
}

RED="\[\033[0;31m\]"
YELLOW="\[\033[0;33m\]"
GREEN="\[\033[0;32m\]"
NO_COLOR="\[\033[0m\]"

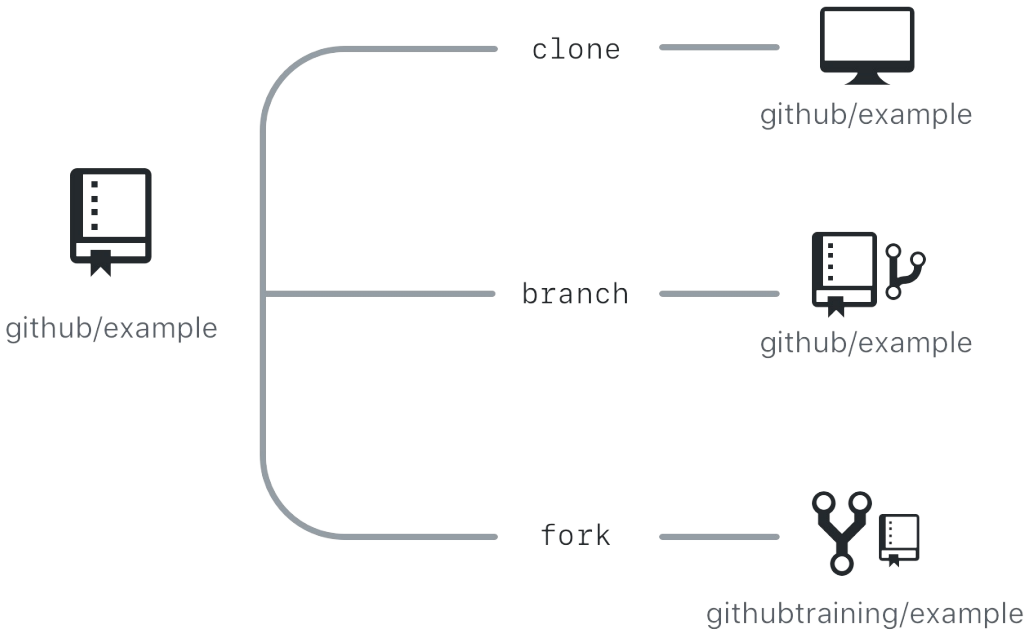
PS1="$GREEN\u@\h$NO_COLOR:\w$YELLOW\$(parse_git_branch)$NO_COLOR\$ "
```

Git

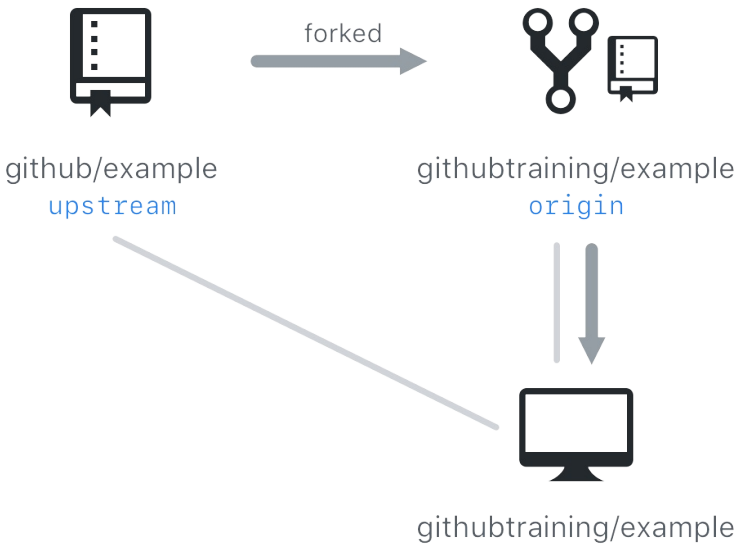
parent

clone **origin**

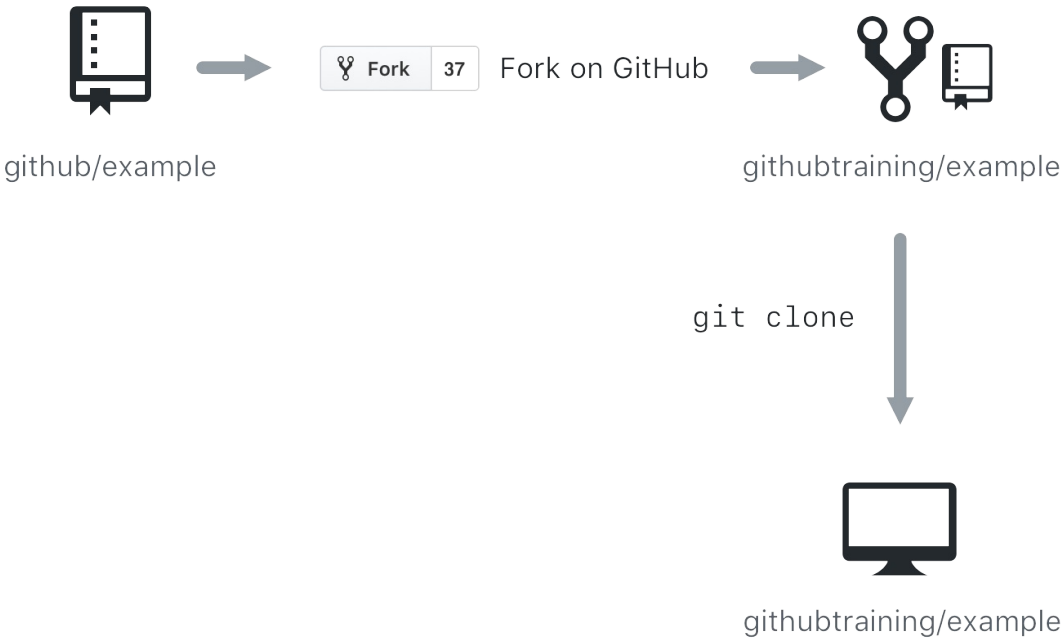
origin



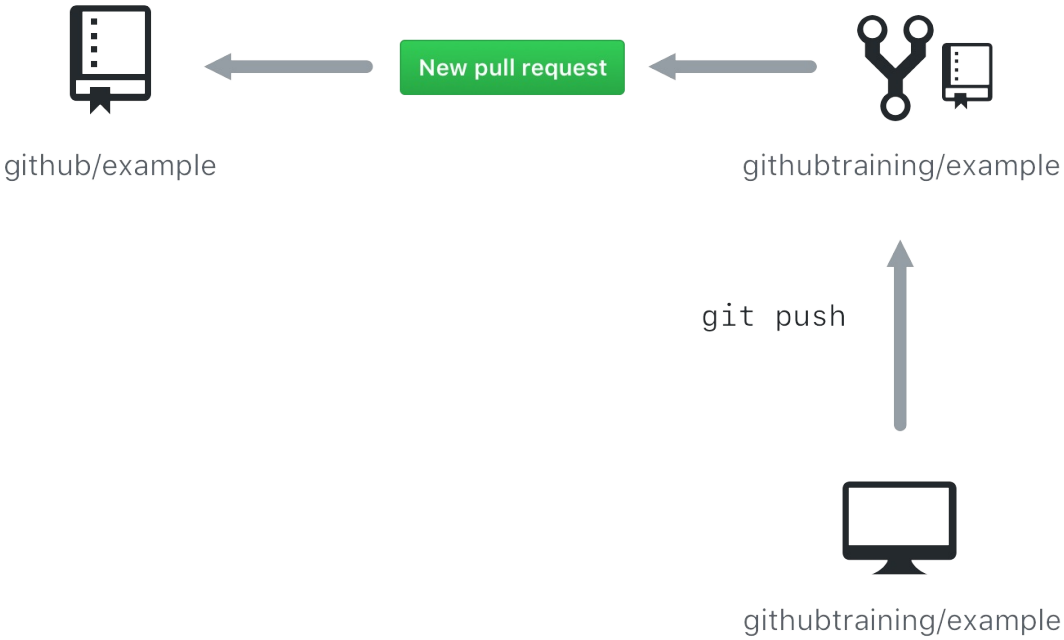
fork upstream



origin



origin **origin**Pull Request


New pull request
github/example
githubtraining/example
git push
githubtraining/example

1config

1. `git config --unset --global user.name`
2. `git config --unset --global user.email`

Step 2:

- **Bash:** `history -c && history -w && exit`
- **Windows:** Alt+F7

3

Windows

1.
2.
3.
4.
5. WindowsGitGitHub

Mac

1.
2. GitHub