



The Official GitHub Training Manual

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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

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1 GitHub.com

GitHub.com

-
-

github.com

1. GitHub.com Sign up
- 2.
- 3.
- 4.

2 Git

Git Git

Git Mac Windows PowerShell

```
$ git --version
```

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

2.0

Git

Git www.git-scm.com Git

Git

- WindowsGit `Git Bash` [Posh-git](#) Powershell
- MacUnix

3

- [Atom](#)
- GitPad
- ViVim
- Sublime
- NotepadNotepad++

Atom

```
$ atom .
```

MacAtomWindows

Git

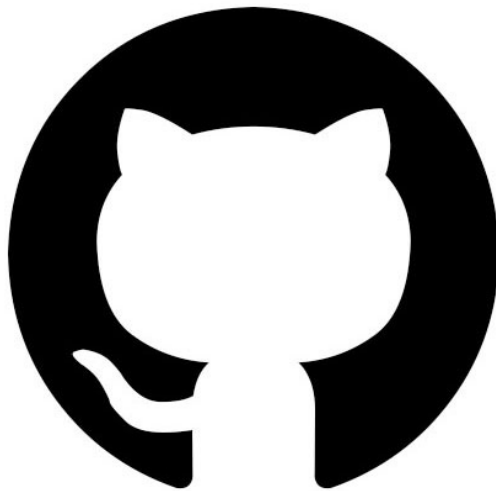
- github.com/explore Explore GitHub Universe Star
- services.github.com/on-demand GitHub contributionsIssues

<https://github.com/github/training-kit>

GitGitHub GitHub

GitHub

GitHubGit



GitHubGitGitHub

- Issues
- Pull requests
- Projects
- OrganizationTeam

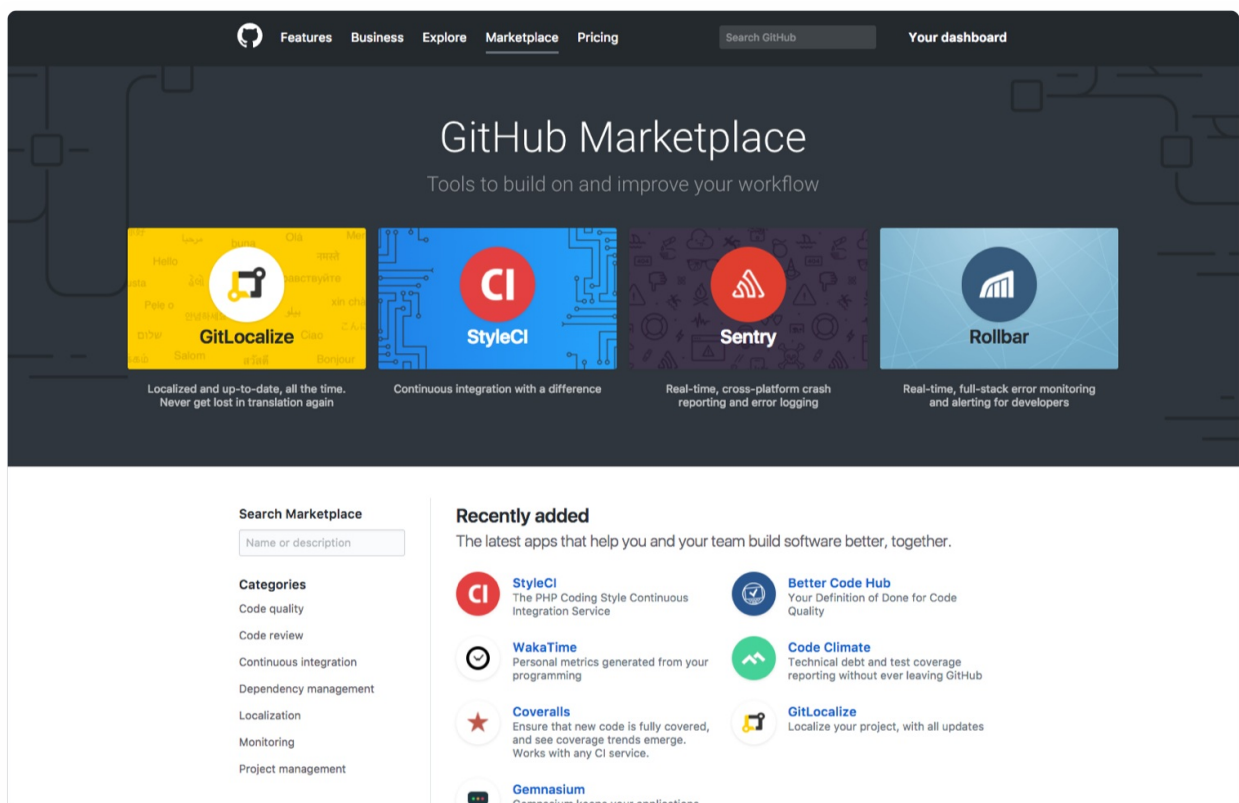
GitHub



GitHub Ecosystem

GitHub ecosystem

<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@IssuessubscribeWatch

#975

IssuePull Request

:smiley:

GitHub ID

:

GitHub Pages

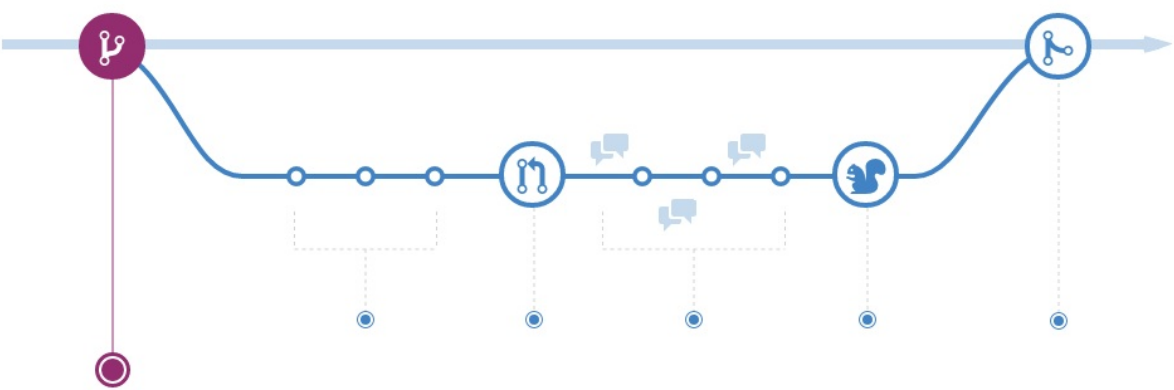
GitHub PagesGitHub GitHub Pages GitHub Pages

- 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

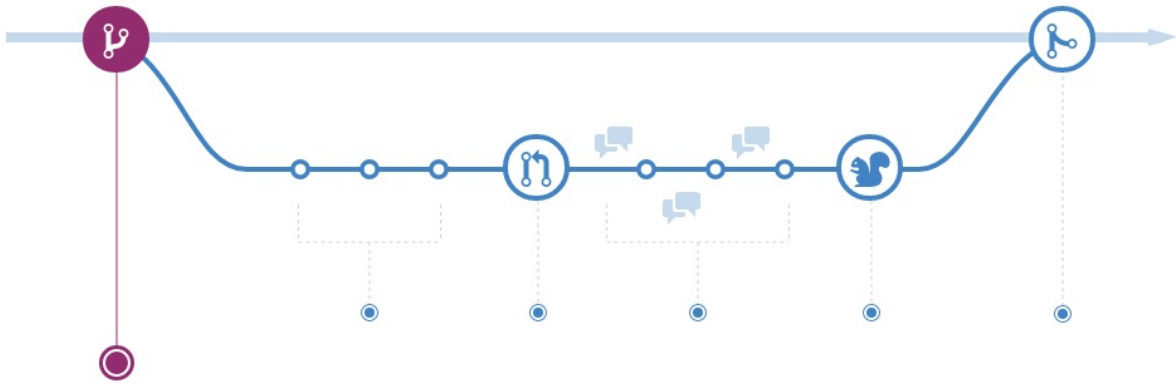
Pull Requestmaster GitHub

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

GitBranching

GitHub

Branching



GitHub

Issue



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



--system



--global



--local

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

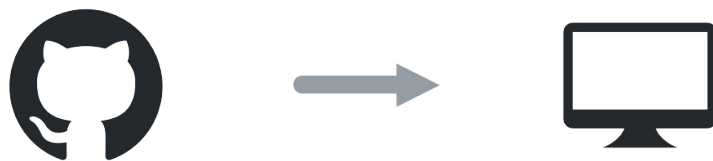
```
$ //for Windows users
$ git config --global core.autocrlf true
$ //for Mac or Linux users
$ git config --global core.autocrlf input
```

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 IDE VIM

IDE

atom . Atom

code . Visual Studio Code

2



working



staging



history

untrackedmodifiedstagedcommitted

Untracked

Git3 WorkingStaging History



working



staging



history

new



modified



working



staging

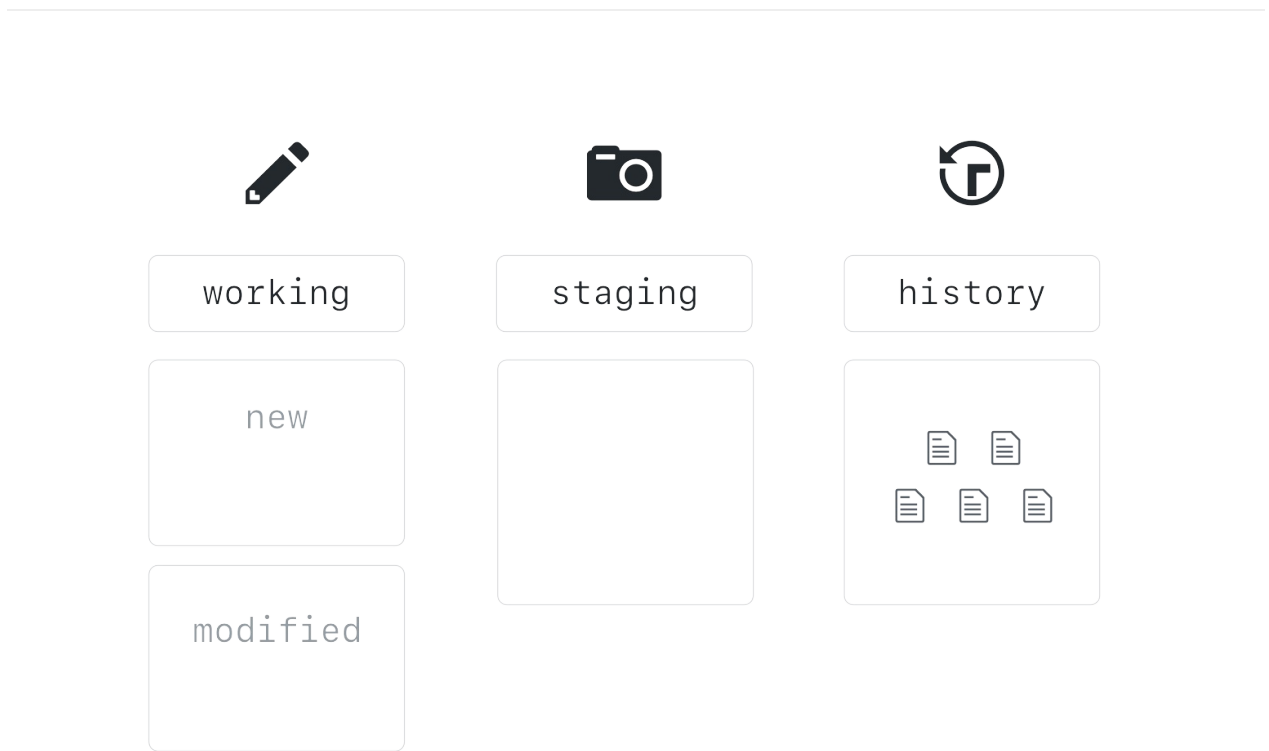


history

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.com GitHub 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 Request Issue 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 ConversationPull Request

Commits view

Commits view ID

Files changed view

Files changed view `diff` `diffdiff`

Pull Request

GitHub3

General Conversation

ConversationPull Request

Files changed view + Conversation view

Start a Review

Pull Request

- 1. *Pull Request*
- 2. *AuthorPull 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

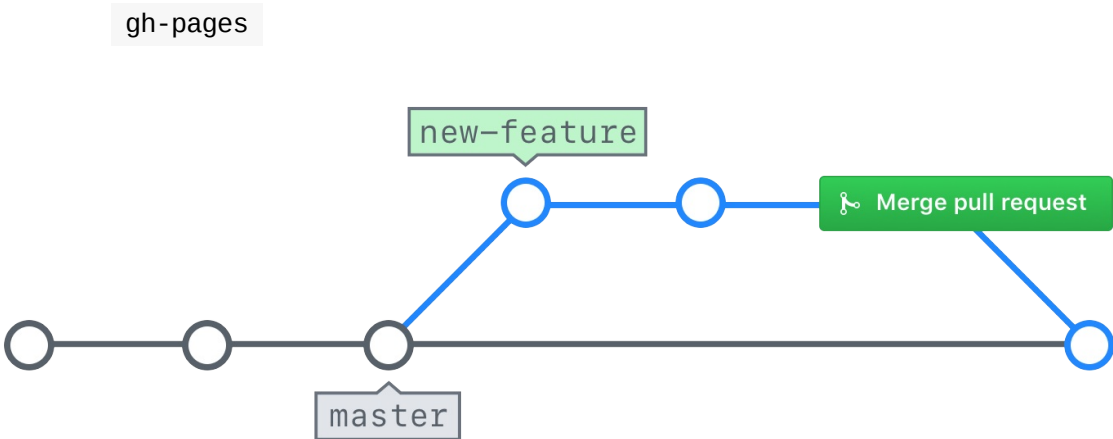
1. *Commit changes*
- 2.
3. *Commit directly to your branch*
4. *Commit changes*

Pull Request

Pull Request

Pull Request

Pull Request



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. IssuesIssue

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
```

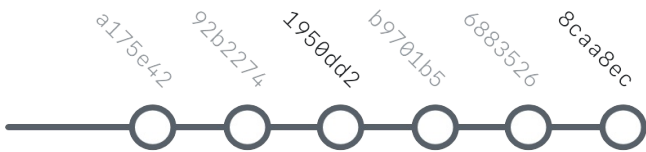
git bisect

```
git bisect bisect
```

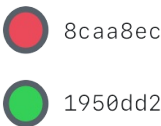
-
-
-

Bisect

```
git bisect Git Git
```



git bisect



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

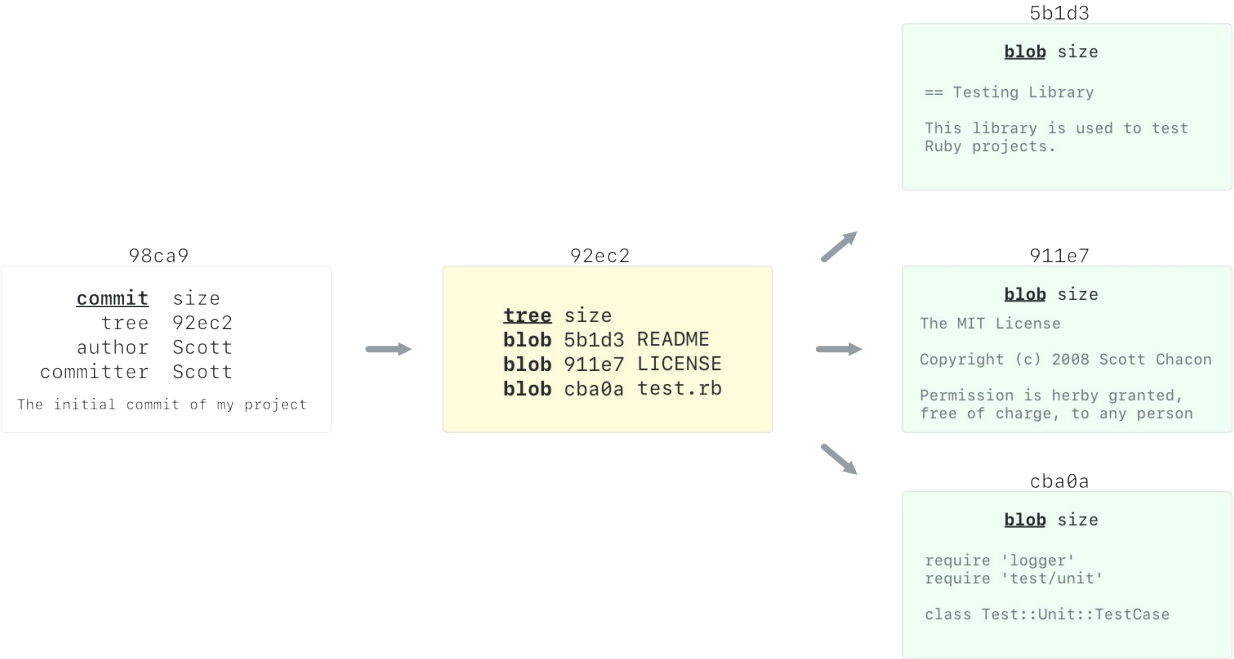

1. `git bisect start`
2. `git bisect bad <SHA>`
3. `git bisect good <SHA>`
4. Bisect
5. `ls index.html`
6. `index.html git bisect bad`
7. `index.html git bisect good`
8. Gitbisect Git
9. Git `SHA is the first bad commit.`
10. Bisect `git bisect reset`

Bisect

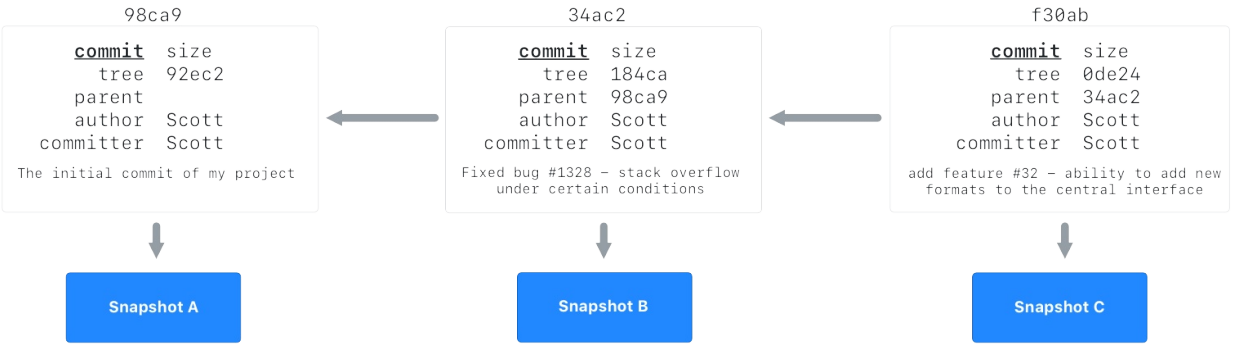
1. `git bisect start <bad-SHA> <good-SHA>`
2. `git bisect run ls index.html`

Git

-
-
-
-



ID



Git

ID

revert	
commit --amend	
reset	
cherry-pick	
rebase	

- index.html
- git show SHA
- git revert <SHA>
 -
 - GitHub

Git

Git

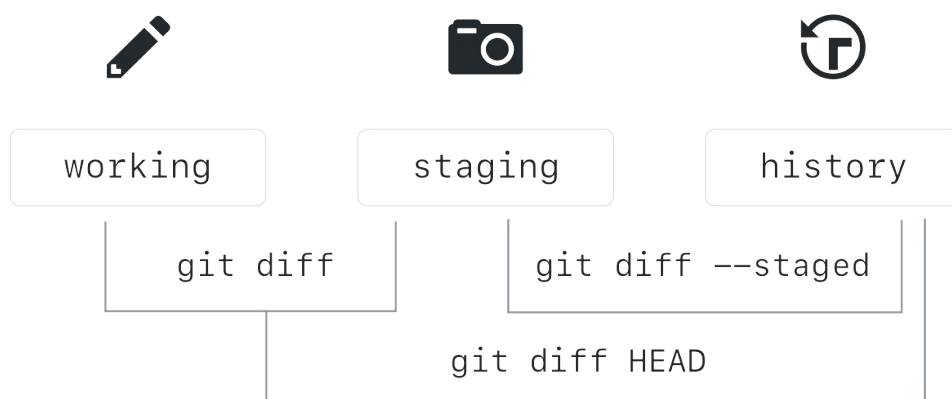
Git

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 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

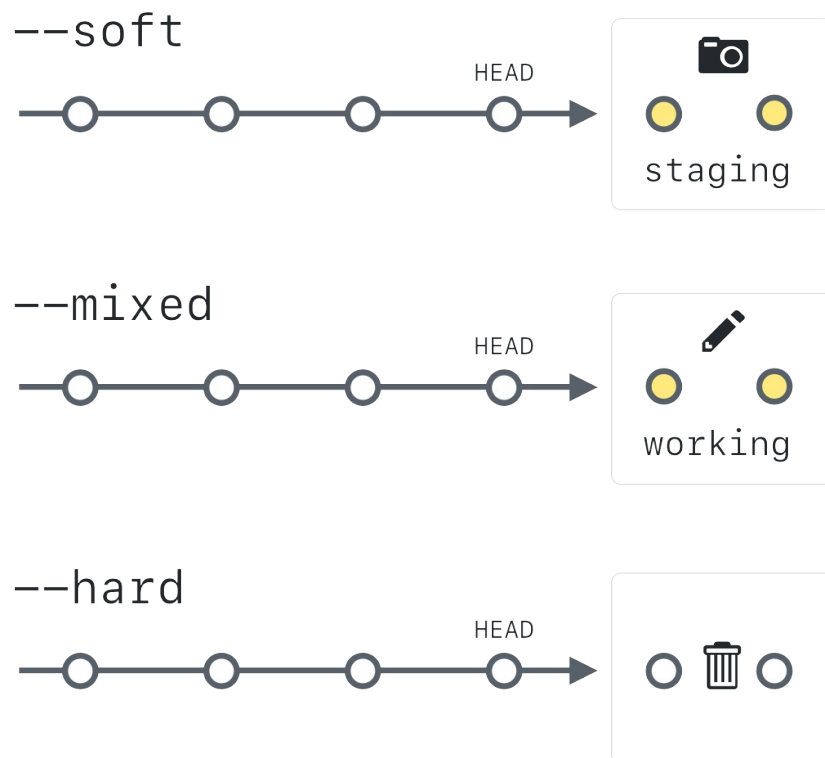
After



3 1HEAD 2 3

```
git reset 3
```

Reset



`git reset` `--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
```

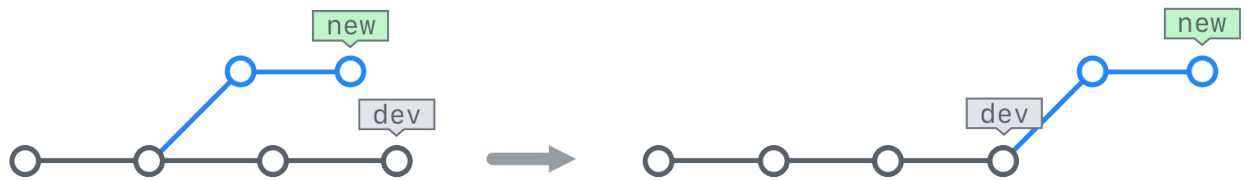
```
git rebase --interactive
```

```
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. rebase-me `rebase-me`
5. master `git checkout master`
6. rebase-me `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](https://ruby-lang.org)

- Windows <https://rubyinstaller.org> 2.3.3 Add Ruby executables to your PATH
- MacRuby [homebrew](https://brew.sh/) `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) \[\033[00m\] > "
```

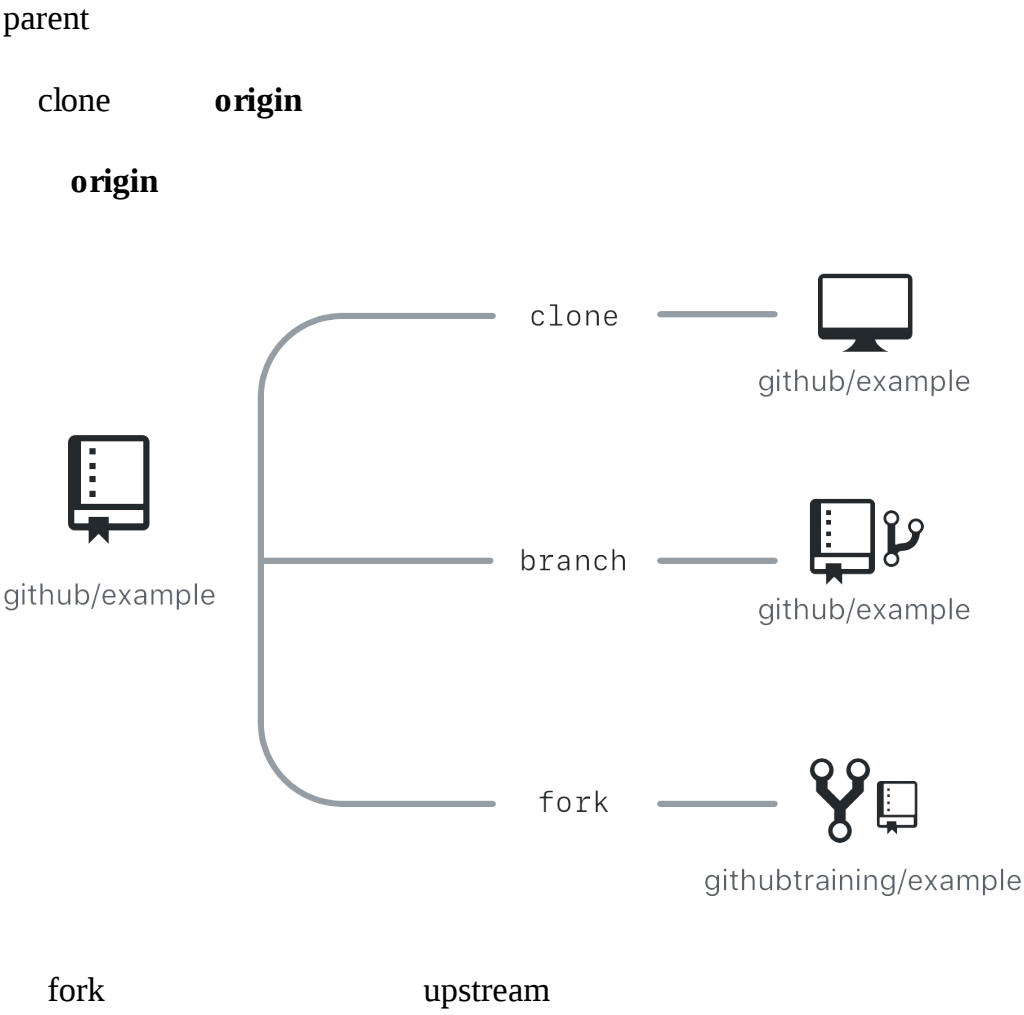
```
function parse_git_branch () {
 git branch 2> /dev/null | sed -e '/^[^*]/d' -e 's/* \(.*/ (\1)/'
}

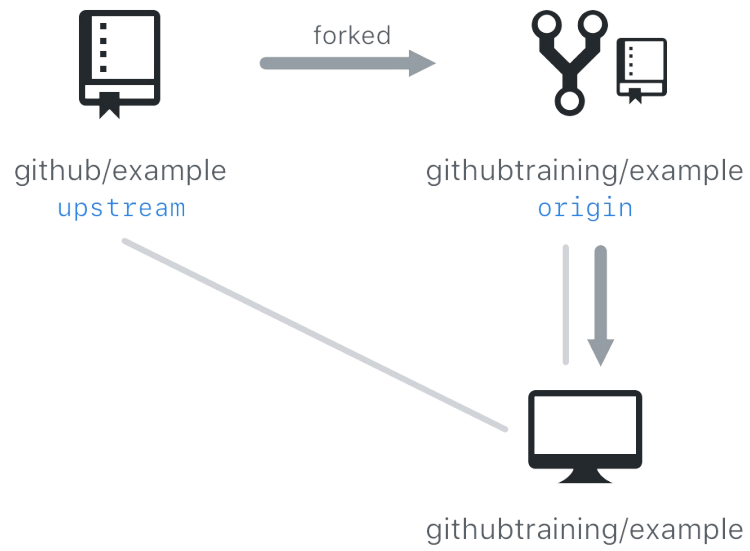
RED="\[\033[0;31m\
YELLOW="\[\033[0;33m\
GREEN="\[\033[0;32m\
NO_COLOR="\[\033[0m\

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

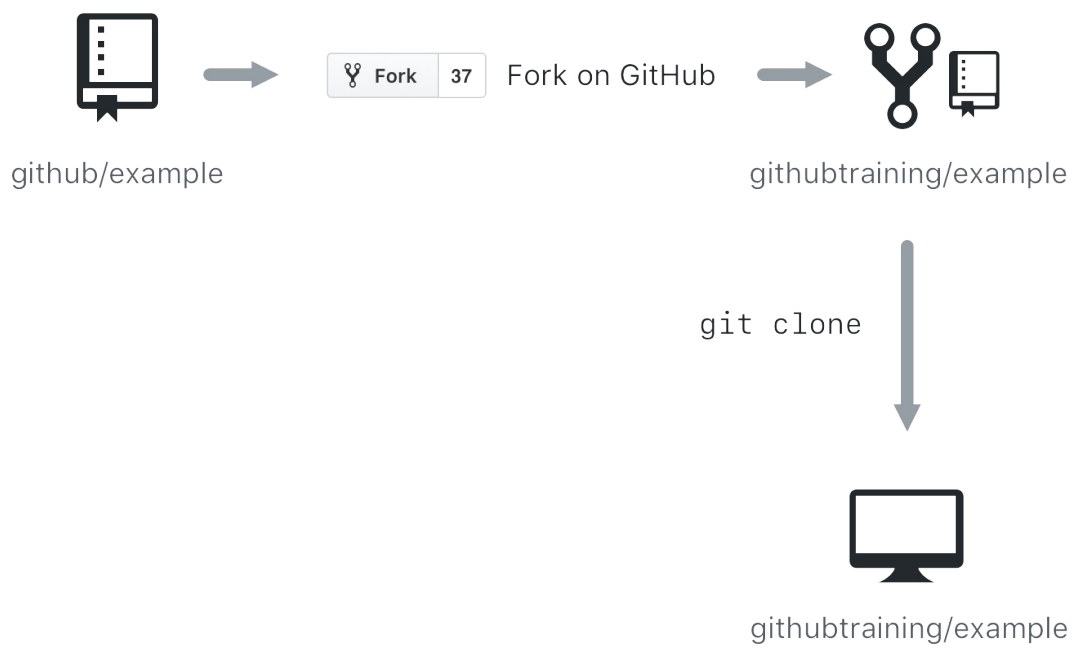


Git

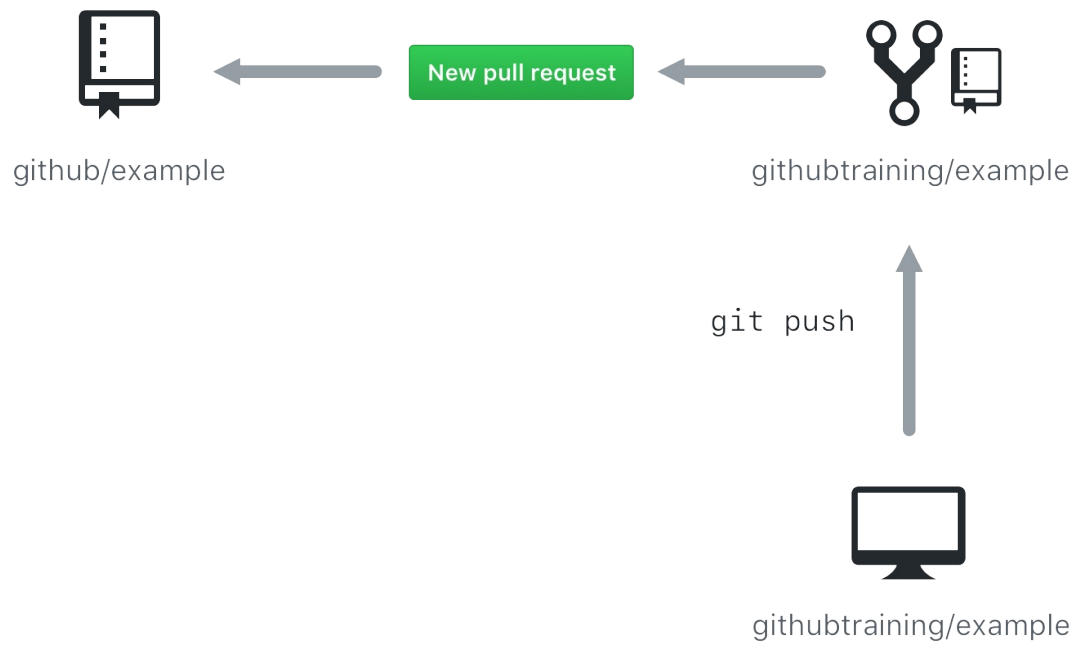




### origin



**origin**   **origin** Pull Request



---

## 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