Intro to Git

March 5, 2019
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Davis Library Research Hub

While you wait...

- Take a Git cheatsheet
- View slides: go.unc.edu/intro-to-git

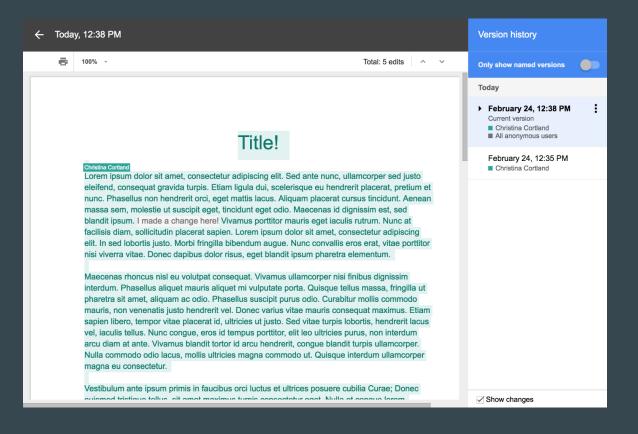
Overview

- → What is Git?
- → Setup!
- → Using Git!
- → Using GitHub!
- → Practice Git with GitHub Pages!
- → Wrap-Up

Slides developed by Christina Cortland

Git is a version control system.

Git is a version control system.



Why use version control?



https://xkcd.com/1459/

What you're going to make

project-matt

Hello, world!

It's me, Mario!

Git Setup!

Setup Overview

Install Git

Configure git username and email

Setup: Install Git

Download Git: https://git-scm.com/download

Leave default settings EXCEPT:

Windows

Default editor: "Use the Nano editor by default"

Terminal emulator: "Use Windows' default console window"

Note: These settings can be changed later if needed. (Official installation documentation)

Setup Overview

Install Git

Configure git username and email

Setup: Configure git username and email

```
$ git config --global user.name "Mona Lisa"

$ git config --global user.email "email@example.com"

$ git config user.name

Mona Lisa

$ git config user.email
email@example.com
```

Using Git!

git repository = place where history of changes to your project files is stored

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local environment = the computer you're using for this workshop

remote environment = other computers, or servers in the cloud

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commit = n. named snapshot of changes to a repository; v. to create a commit

git repository = place where history of changes to your project files is stored local environment = the computer you're using for this workshop remote environment = other computers, or servers in the cloud commit = n. named snapshot of changes to a repository; v. to create a commit branch = named version of the repository

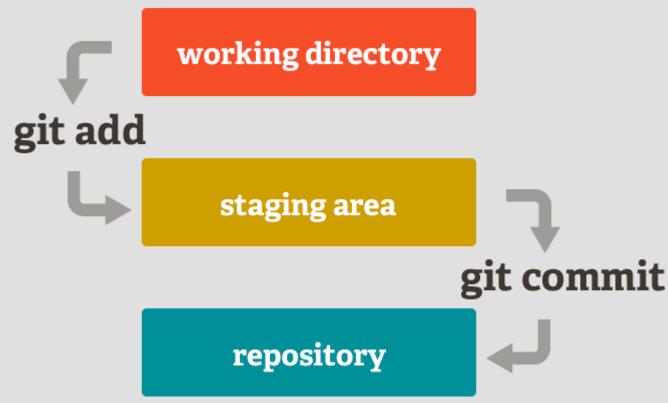
git init Turns Any Folder Into a Git Repository

```
$ pwd
  ls
  cd Documents
 mkdir project-<yourname>
  ls
  cd project-<yourname>
$ git init
Initialized empty Git repository in C:/Users/mtjansen/Documents/project-
matt/.git/
```

git status Tells You What's Changed

```
$ git status
On branch master
No commits yet
nothing to commit (create/copy files and use "git add" to track)
```

Git Workflow



https://git-scm.com/about/staging-area

Let's Change Something

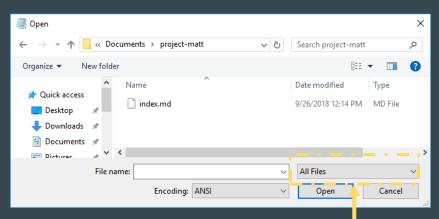
```
$ touch index.md
$ git status
On branch master
No commits yet
Untracked files:
  (use "git add <file>..." to include in what will be committed)
nothing added to commit but untracked files present (use "git add" to track)
```

git add Adds Changes to Your Staging Area

```
$ git add index.md
$ git status
On branch master
No commits yet
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file: index.md
```

Let's Change Another Thing

Add to index.md: # Hello, world!



```
index-Notepad — X

File Edit Format View Help

# Hello, world!
```

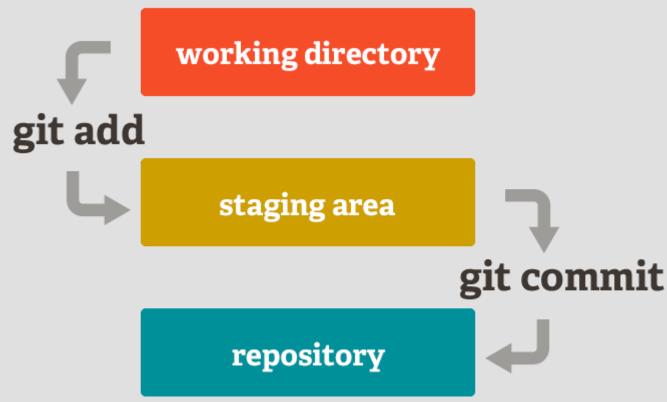
git add Adds Changes to Your Staging Area

```
$ git status
On branch master
No commits yet
Changes to be committed:
  (use "git rm --cached <file> <file>..." to unstage)
        new file: index.md
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)
```

git add Adds Changes to Your Staging Area

```
$ git add index.md
$ git status
On branch master
No commits yet
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file: index.md
```

Git Workflow



https://git-scm.com/about/staging-area

git commit Saves the Changes with Commentary

```
$ git commit -m 'Add index.md'
Counting objects: 3, done.
[master d6443d2] I added newfile.txt
  1 file changed, 0 insertions(+), 0 deletions(-)
  create mode 100644 newfile.txt

$ git status
On branch master
nothing to commit, working tree clean
```

git log Shows Your Local History of Commits

```
$ git log
commit a93520b0a05575204c4985376ec011a861dea372 (HEAD -> master,
origin/master)
Author: Matt Jansen <mtjansen@email.unc.edu>
Date: Wed Sep 26 12:18:07 2018 -0400

Add index.md
```

GitHub

Create a GitHub account

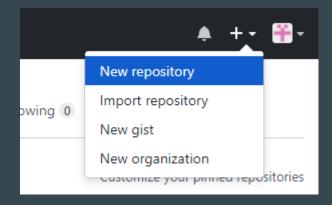
or

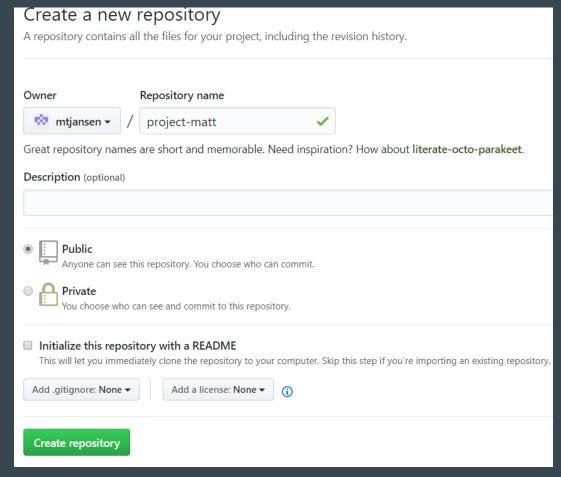
Sign in to your GitHub account





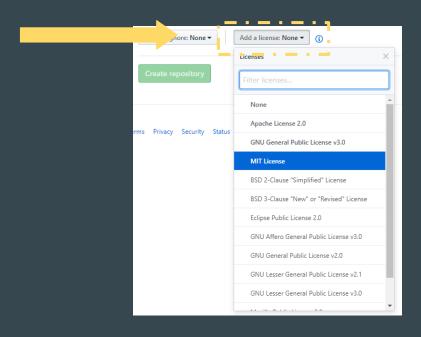
Create a new repository on GitHub





Choosing a License

Click (i) to read more about licenses.



Choose an open source license

An open source license protects contributors and users. Businesses and savvy developers won't touch a project without this protection.

Which of the following best describes your situation?



I need to work in a community.

Use the license preferred by the community you're contributing to or depending on. Your project will fit right in.

If you have a dependency that doesn't have a license, ask its maintainers to add a license.



I want it simple and permissive.

The MIT License is short and to the point. It lets people do almost anything they want with your project, including to make and distribute closed source versions

Babel, .NET Core, and Rails use the MIT License.



I care about sharing improvements.

The **GNU GPLv3** also lets people do almost anything they want with your project, *except* to distribute closed source versions.

Ansible, Bash, and GIMP use the GNU GPLv3

What if none of these work for me?

My project isn't software.

There are licenses for that

I want more choices.

More licenses are available

I don't want to choose a license.

Here's what happens if you don't.

git remote add origin Links our Local and Remote Repos

...or push an existing repository from the command line

```
git remote add origin https://github.com/mtjansen/project-matt.git
git push -u origin master
```



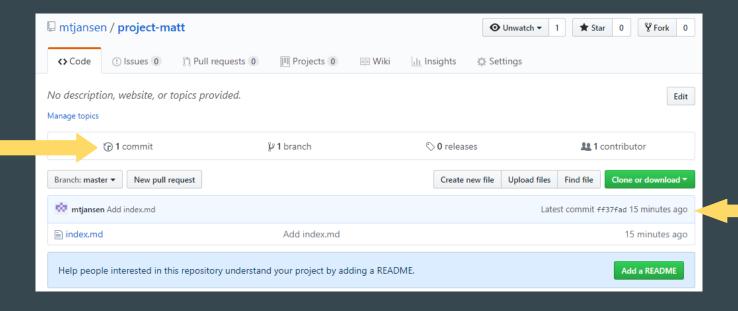
\$ git remote add origin https://github.com/mtjansen/project-matt.git

(Shift-Ins pastes in Git Bash)

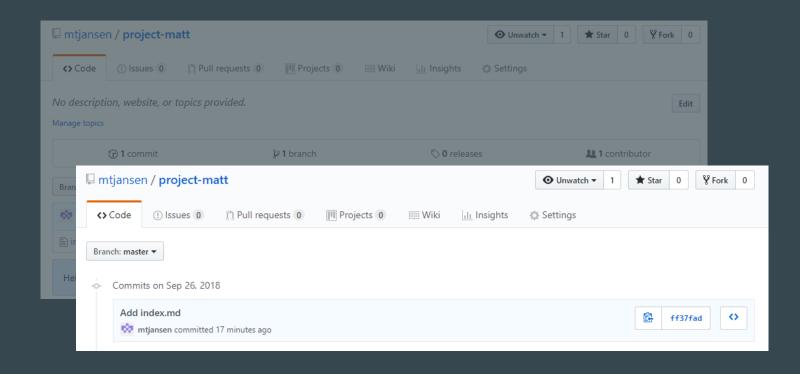
git push Sends Your Commits Back to GitHub

```
$ git push origin master
Enumerating objects: 3, done.
Counting objects: 100\% (3/3), done.
Writing objects: 100\% (3/3), 230 bytes | 230.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
                                                                    GitHub Login
To https://github.com/mtjansen/project-matt.git
                                                                              GitHub
   [new branch] master -> master
                                                                              Login
                                                                         mtiansen
                                                                         Password
                                                                           Don't have an account? Sign up
                                                                             Forgot your password?
```

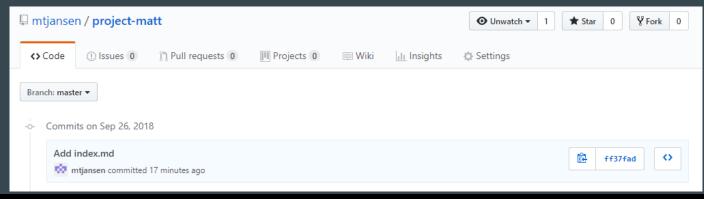
git push Sends Your Commits Back to GitHub



git push Sends Your Commits Back to GitHub



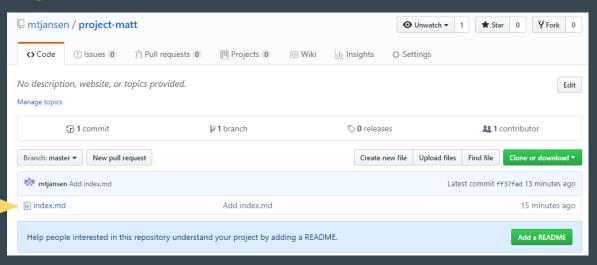
git log Shows Your Local History of Commits



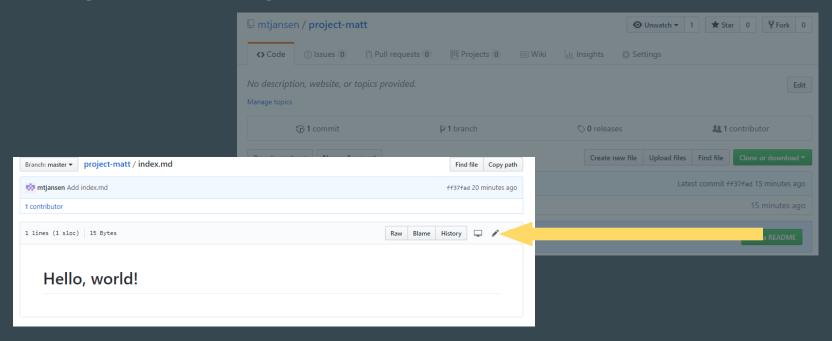
```
$ git log
commit a93520b0a05575204c4985376ec011a861dea372 (HEAD -> master,
origin/master)
Author: Matt Jansen <mtjansen@email.unc.edu>
Date: Wed Sep 26 12:18:07 2018 -0400
```

Add index.md

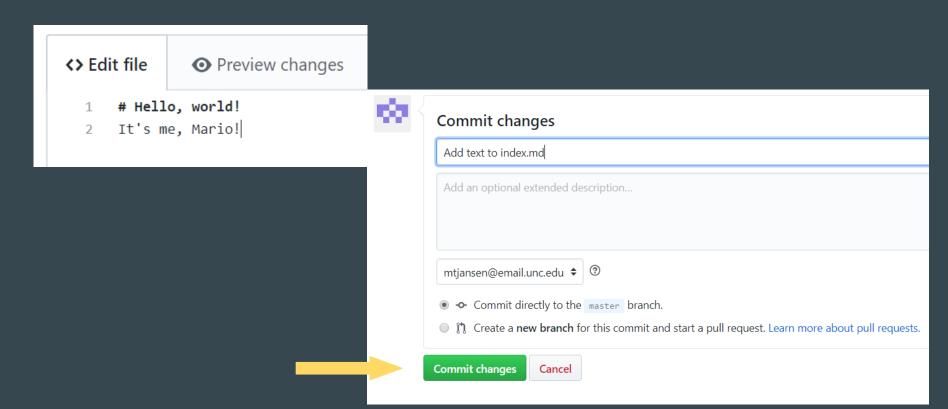
Let's Change Something Remotely



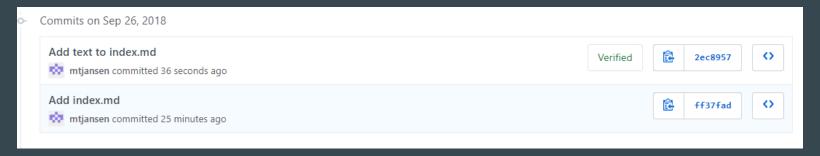
Let's Change Something Remotely



Let's Change Something Remotely



git pull Pulls Remote Changes into Your Local Repository



```
$ git log
commit a93520b0a05575204c4985376ec011a861dea372 (HEAD -> master,
origin/master)
Author: Matt Jansen <mtjansen@email.unc.edu>
Date: Wed Sep 26 12:18:07 2018 -0400

Add index.md
```

git pull Pulls Remote Changes into Your Local Repository

```
$ git pull origin master
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/mtjansen/project-matt
 * branch
         master -> FETCH HEAD
  ff37fad..2ec8957 master -> origin/master
Updating ff37fad..2ec8957
Fast-forward
index.md \mid 3 ++-
1 file changed, 2 insertions(+), 1 deletion(-)
```

git pull Pulls Remote Changes into Your Local Repository

```
$ git log
commit 2ec895774dbc69fd6bbfd16150287c7e20c443ca (HEAD -> master, origin/master)
Author: Matt Jansen <mtjansen@email.unc.edu>
Date: Wed Sep 26 12:42:26 2018 -0400
   Add text to index.md
commit ff37fada75f8550430d637f2fc8c308926d7e06e
Author: Matt Jansen <mtjansen@email.unc.edu>
Date: Wed Sep 26 12:18:07 2018 -0400
   Add index.md
$ git pull origin master
Already up-to-date.
```

Review!

```
git config user.email
git init
git status
git add filename
git commit -m "Something"
git log
```

git remote add origin https://github.com/username/repo-name.git

THIS IS GIT. IT TRACKS COLLABORATIVE WORK ON PROJECTS THROUGH A BEAUTIFUL DISTRIBUTED GRAPH THEORY TREE MODEL. COOL. HOU DO WE USE IT? NO IDEA. JUST MEMORIZE THESE SHELL COMMANDS AND TYPE THEM TO SYNC UP. IF YOU GET ERRORS, SAVE YOUR WORK ELSEWHERE, DELETE THE PROJECT, AND DOUNLOAD A FRESH COPY.

https://xkcd.com/1597/

git push origin master

git pull origin master

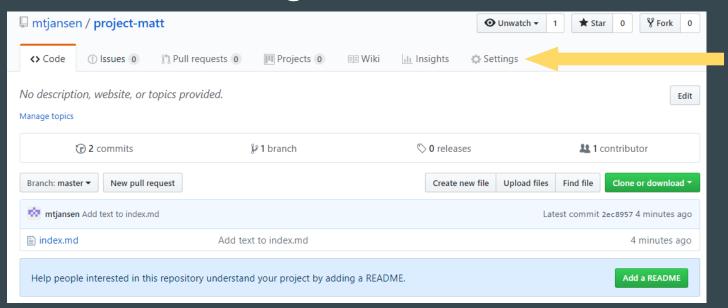
GitHub Pages!

GitHub Pages Is An Easy Way to Make a Collaborative Site

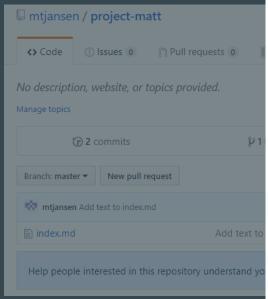
GitHub Pages allows anyone with a GitHub account to create a static website using:

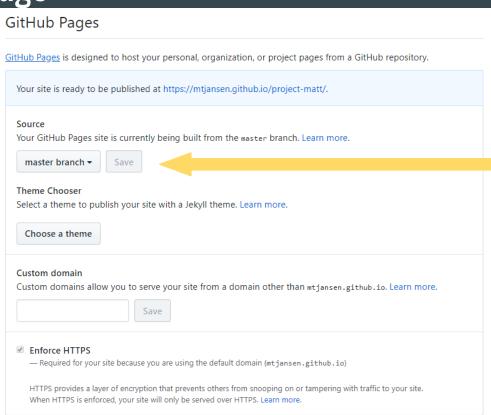
- HTML or Markdown
- Git!

Create a GitHub Page



Create a GitHub Page





What We're Starting With...

https://username.github.io/project-name/

project-matt

Hello, world!

It's me, Mario!

Copy an Existing Git Repo

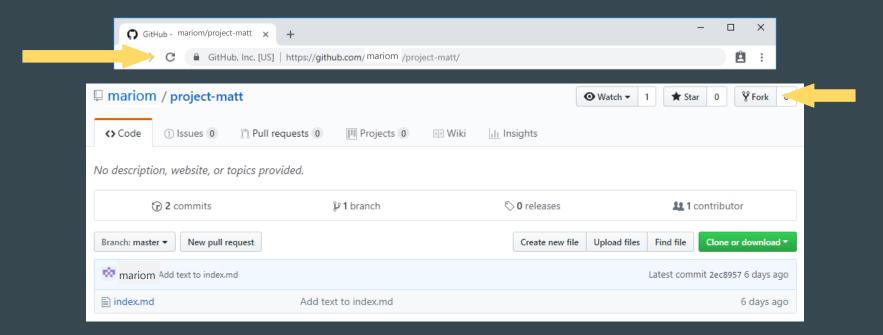
Editor:

- Fork neighbor's GitHub repo to create a remote copy you can edit
- Clone repo to have a local copy
- Modify, stage, commit. and push the change up to your GitHub repo
- Submit a pull request to your neighbor's repo

Repo Owner:

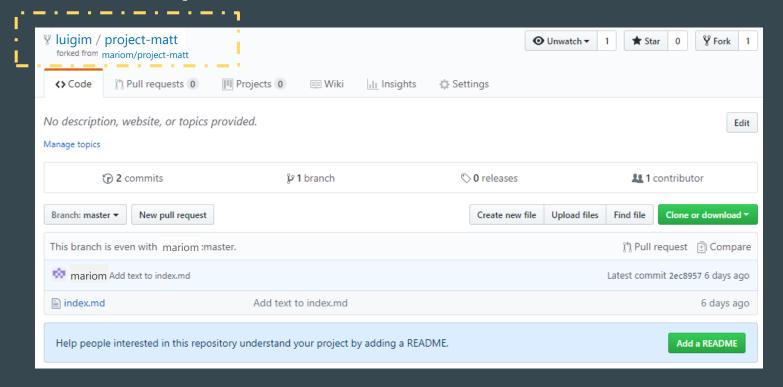
• Approve pull request and merge into original repo

GitHub Fork Copies Remote Projects on Github



https://github.com/mtjansen/project-matt/

GitHub Fork Copies Remote Projects on Github



git clone Copies an Existing Repository to Your Computer

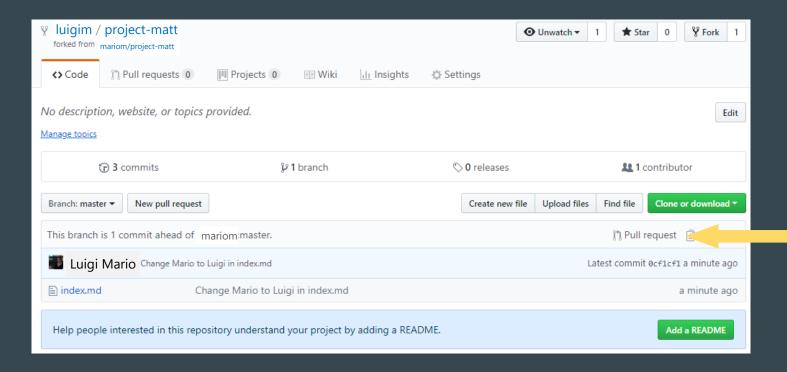
```
$ pwd
  cd ..
  git clone https://github.com/username/project-neighbor.git
                                                                               Find file
                                                                                       Clone or download ▼
                                                         Create new file
                                                                     Upload files
  cd project-neighbor
                                                               Clone with HTTPS ③
                                                                                               Use SSH
                                                               Use Git or checkout with SVN using the web URL.
                                                                                                 龣
                                                                https://github.com/luigim_/project-matt
                                                                 Open in Desktop
                                                                                       Download ZIP
```

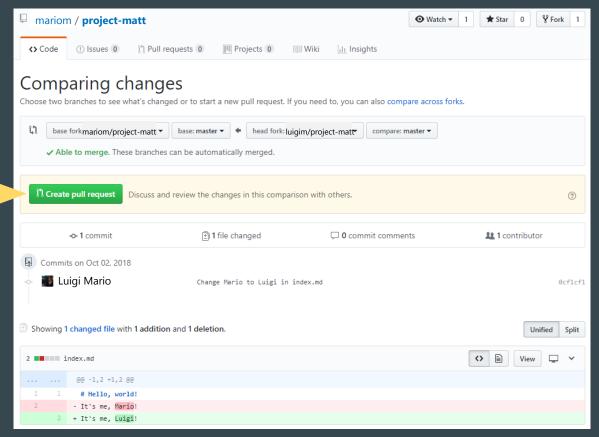
Exercise: Change Something

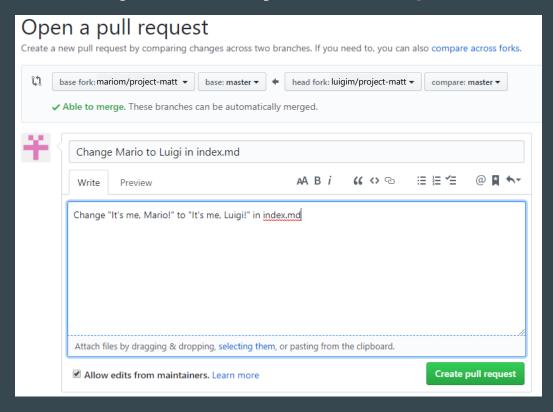
Stage the changes git add filename

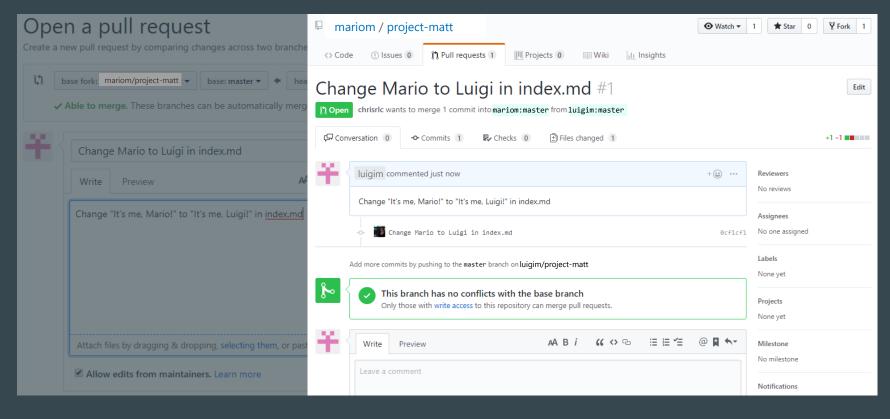
Commit the staged changes with a message git commit -m "Something"

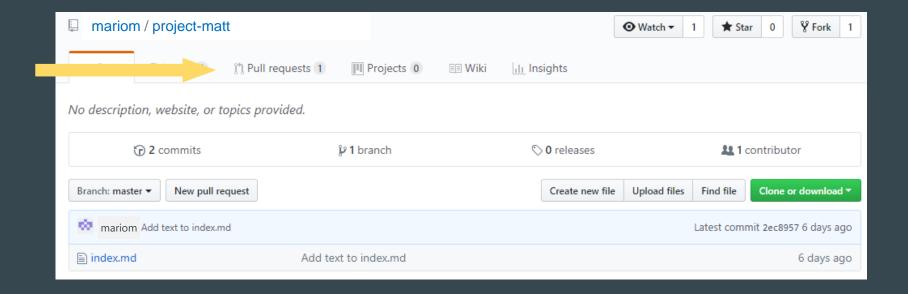
Push your changes up to your GitHub repo git push origin master

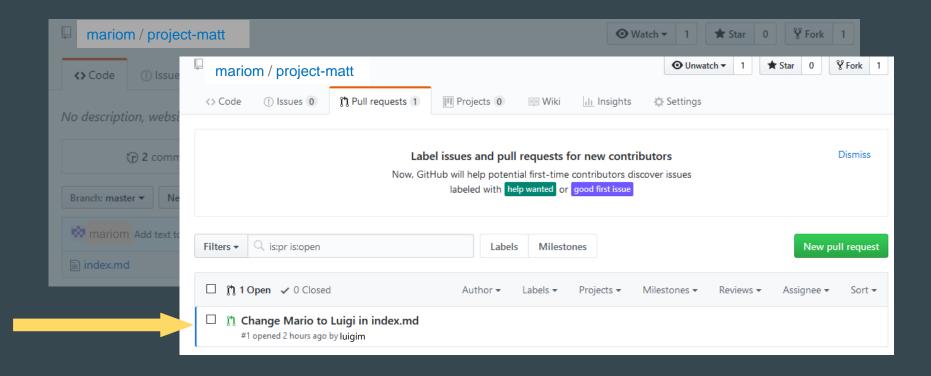


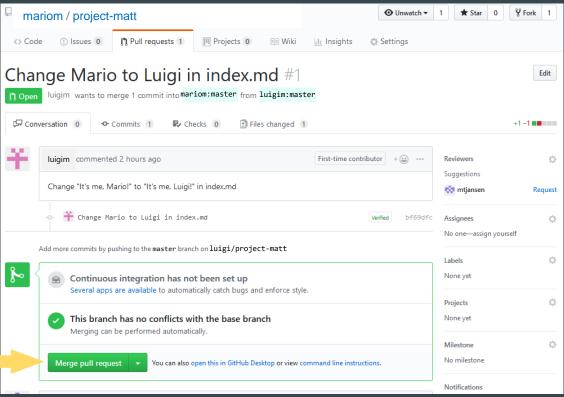


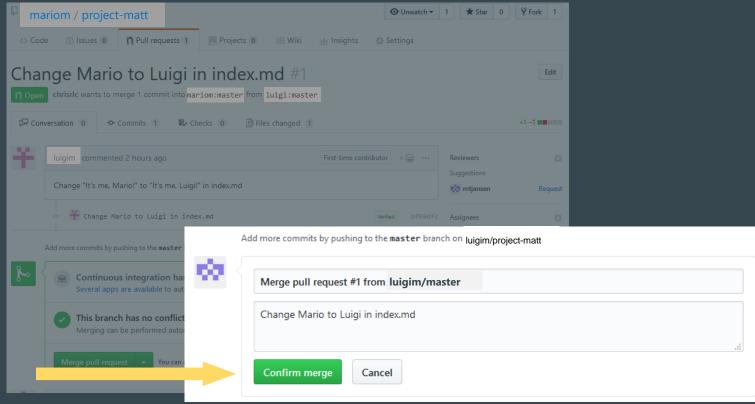












Success!

https://username.github.io/project-name/

project-matt

Hello, world!

It's me, Luigi!

Feedback Survey: http://unc.libsurveys.com/davishubfeedback