



OMIS 30: Intro to Programming (with Python)

Week 9, Class 1

Introduction to Programming
Instructor: Denis Vrdoljak



Learn programming with Python



Office Hours

Instructor	Days available
Yuan Wang (our TA)	M 2:30-3:30p, W 9-10a
Mike Davis (other section's instructor)	Tu 9:30-10:20a, Th 12-1p
Denis Vrdoljak	Tu 3:40-4:20p, W 5-6p Th 3:40-4:20p by appointment



Course Topics

- 1. Computer setup - intros
- 2. Shell - cd, mkdir, move, rename, copy, pwd, touch, echo, nano, vim
- 3. Grep, bash, scripts
- 4. Python Basics - print, input, math, PEMDAS
- 5. Pseudo-code, algorithm design, comments
- 6. Loops & Nested Loops
- 7. Moving files around, input, export
- 8. Dates, times, epoch, time-series
- 9. Arrays, lists, dicts, sets, etc.
- 10. And, or, If, elif, try, except
- 11. Functions
- 12. Strings, upper, lower, regex
- 13. Computation time, flops, sorting
- 14. JSON, iteritems
- 15. Pandas
- 16. Jupyter, virtual environments
- 17. Web-apps/web-pages
- 18. Web-scraping
- 19. Plotting, graphing
- 20. Git



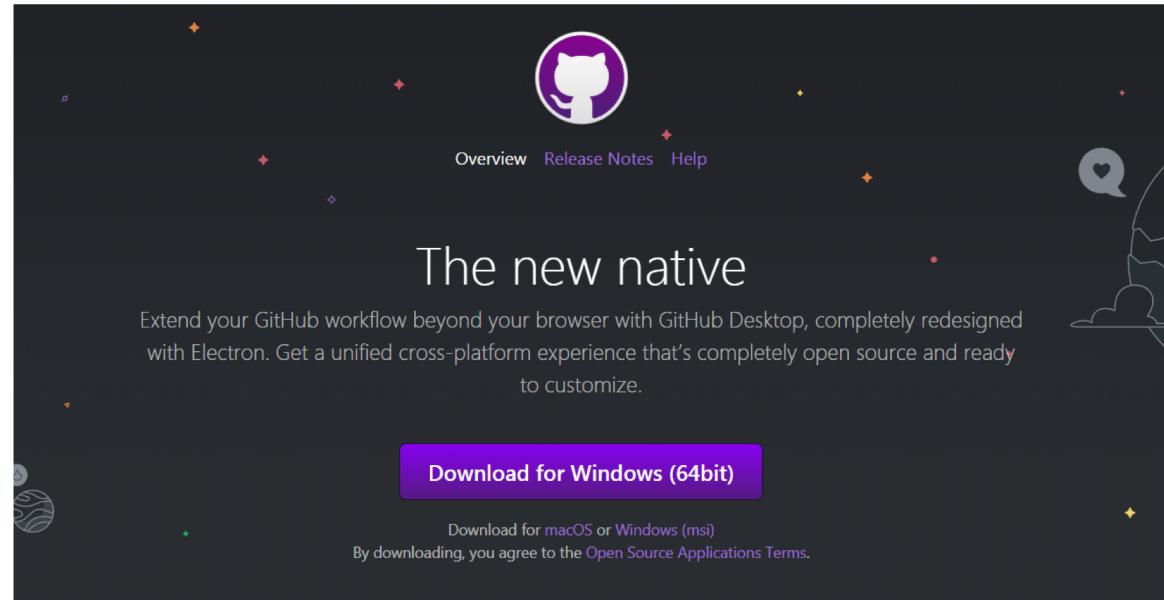
What is Git?

- Online collaboration platform
- Used for version control in software development
- Saves code to the cloud
- From a software engineering standpoint:
 - Multiple people can work on different sections (or branches)
 - When finished can be merged back into the 'main' program



Github Desktop

- Can be downloaded from: <https://desktop.github.com/>





Git functions:

- Repository or Repo - bucket/structure for git
- Clone (copy) an online repo
- Make a new local repo
- Add/Commit/Push that repo to github



Cloning a new Repo

- Go online to github.com and sign-up for an account:

The screenshot shows the GitHub homepage with a dark theme. The main heading "Built for developers" is displayed prominently. Below it, a paragraph describes GitHub as a development platform. A large, light-colored callout box on the right side contains fields for "Username", "Email", and "Password", along with a note about password requirements and a "Sign up for GitHub" button. A red arrow points from the top right towards the "Sign up" button.

GitHub, Inc. [US] | <https://github.com>

Features Business Explore Marketplace Pricing

Search GitHub

Sign in or Sign up

Built for developers

GitHub is a development platform inspired by the way you work. From [open source](#) to [business](#), you can host and review code, manage projects, and build software alongside 31 million developers.

Username
Pick a username

Email
you@example.com

Password
Create a password

Make sure it's more than 15 characters, or at least 8 characters, and including a number.

[Sign up for GitHub](#)

By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy statement](#). We'll occasionally send you account related emails.



Cloning a new Repo

- Navigate to: https://github.com/denisvrdoljak/OMIS30_Fall2018.git
- Click on Clone or Download

GitHub, Inc. [US] | https://github.com/denisvrdoljak/OMIS30_Fall2018

denisvrdoljak / OMIS30_Fall2018

Code Issues Pull requests Projects Wiki Insights

No description, website, or topics provided.

48 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

denisvrdoljak	8.1 slides	Latest commit 80595d6 a day ago
ClassesAndGames	OOP BlackJack Solution	4 days ago
example	week 7material	4 days ago
wk1	week 1, class 2	2 months ago
wk2	1.2 solution	4 days ago
wk3	wk3 materials	a month ago



Cloning a new Repo

- Should bring up a small window - click on the clipboard option

0 releases 1 contributor

Create new file Upload files Find file Clone or download ▾

Clone with HTTPS ⓘ Use SSH

Use Git or checkout with SVN using the web URL.

https://github.com/denisvradoljak/OMIS30_ 

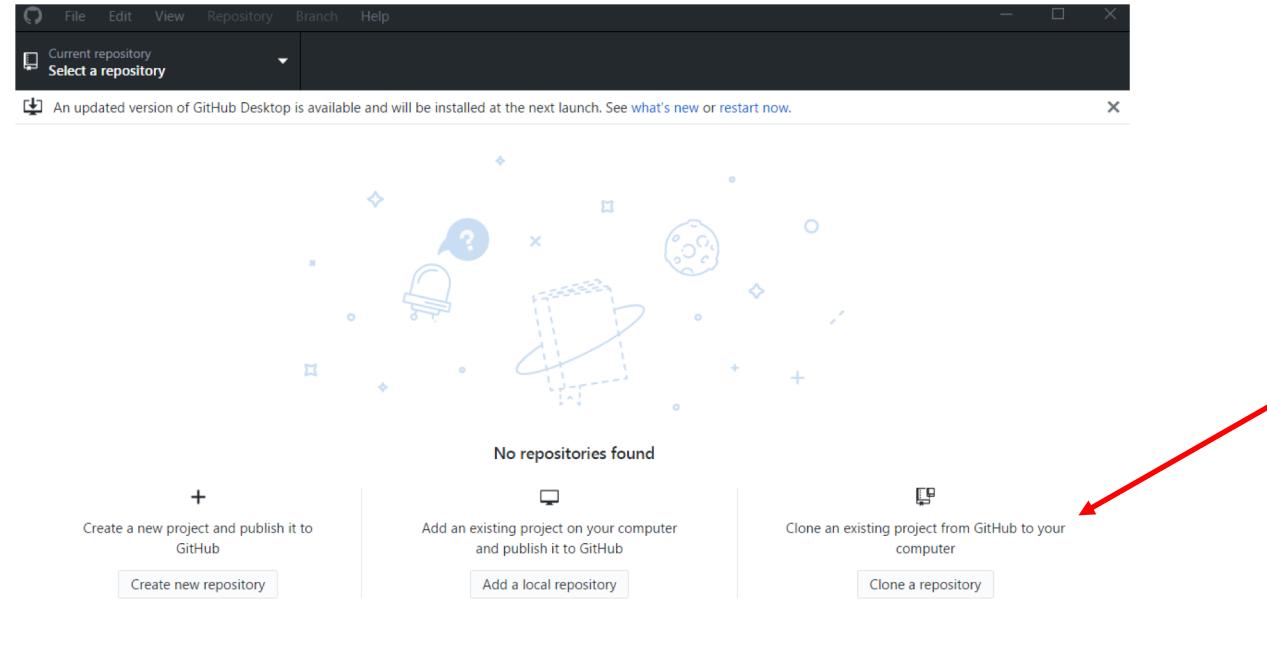
Open in Desktop Download ZIP

a month ago



Cloning a new Repo

- Startup github desktop - we want to Clone a repository

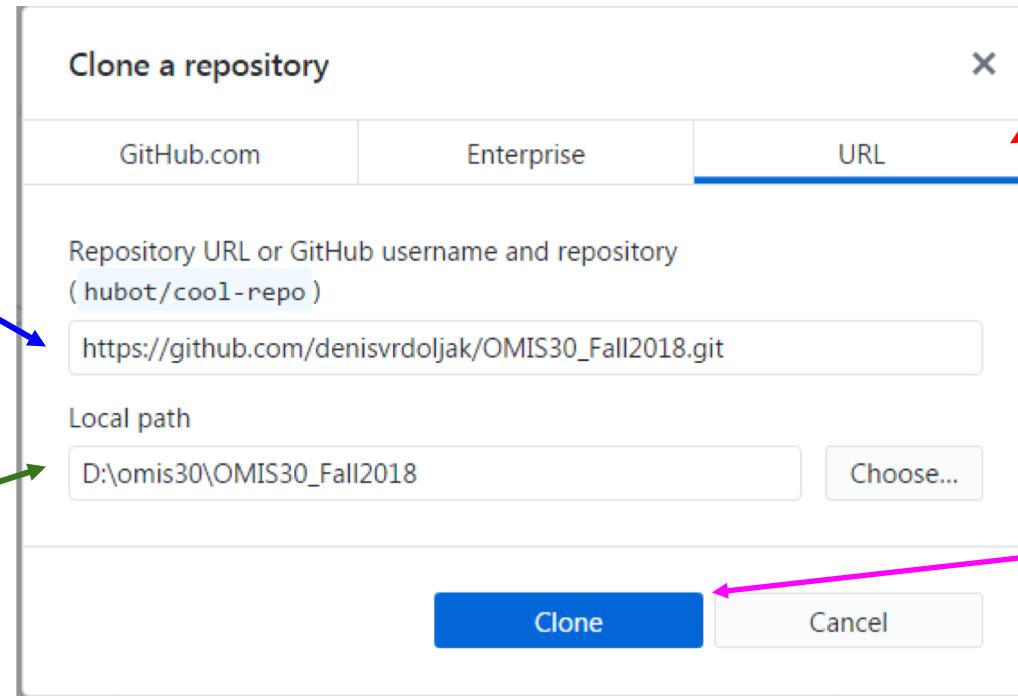


Cloning a new Repo

- Fill in the window like this:

2. Cut/paste the URL into here

3. Pick a directory for the REPO



1. Click on URL

4. Click Clone

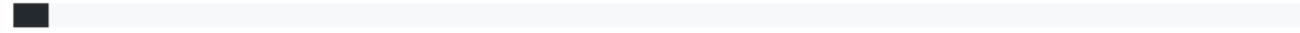


Cloning a new Repo

- Should look like this:
-



Cloning OMIS30_Fall2018

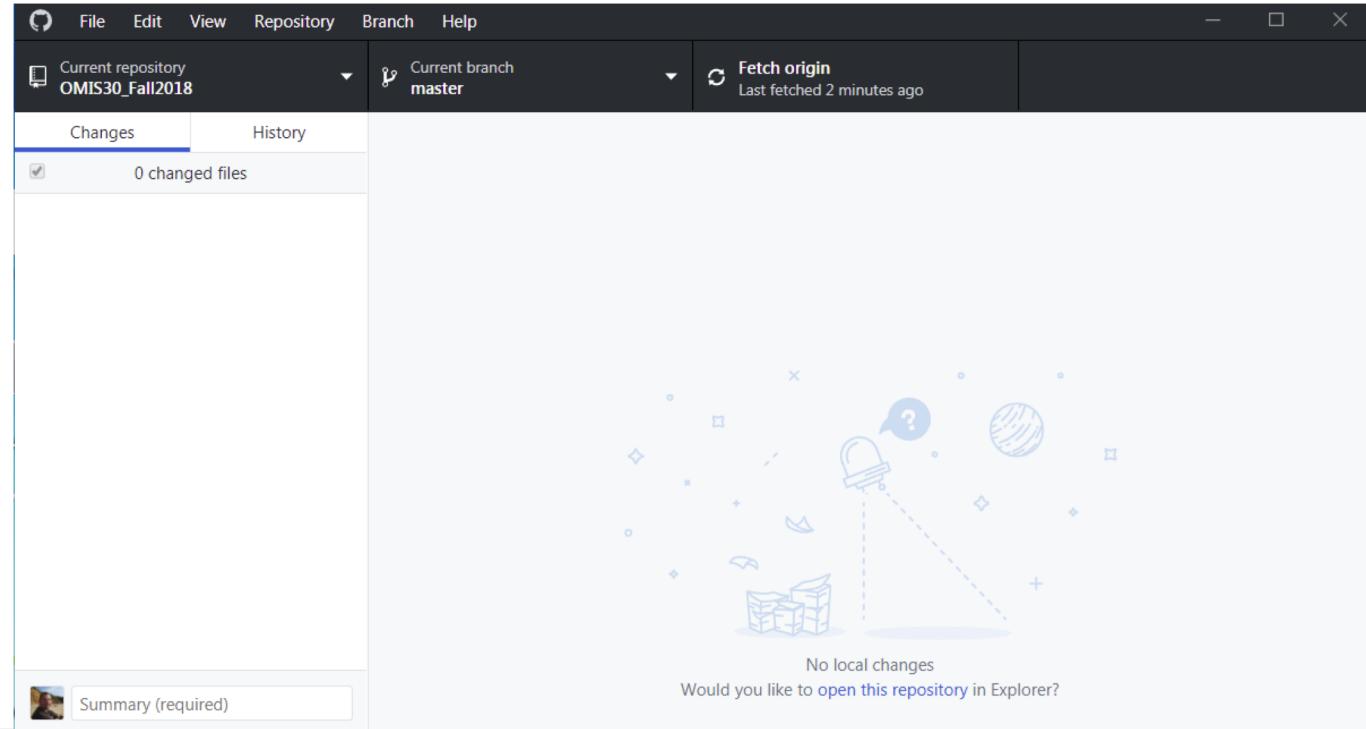


remote: Compressing objects: 27% (56/205)



Cloning a new Repo

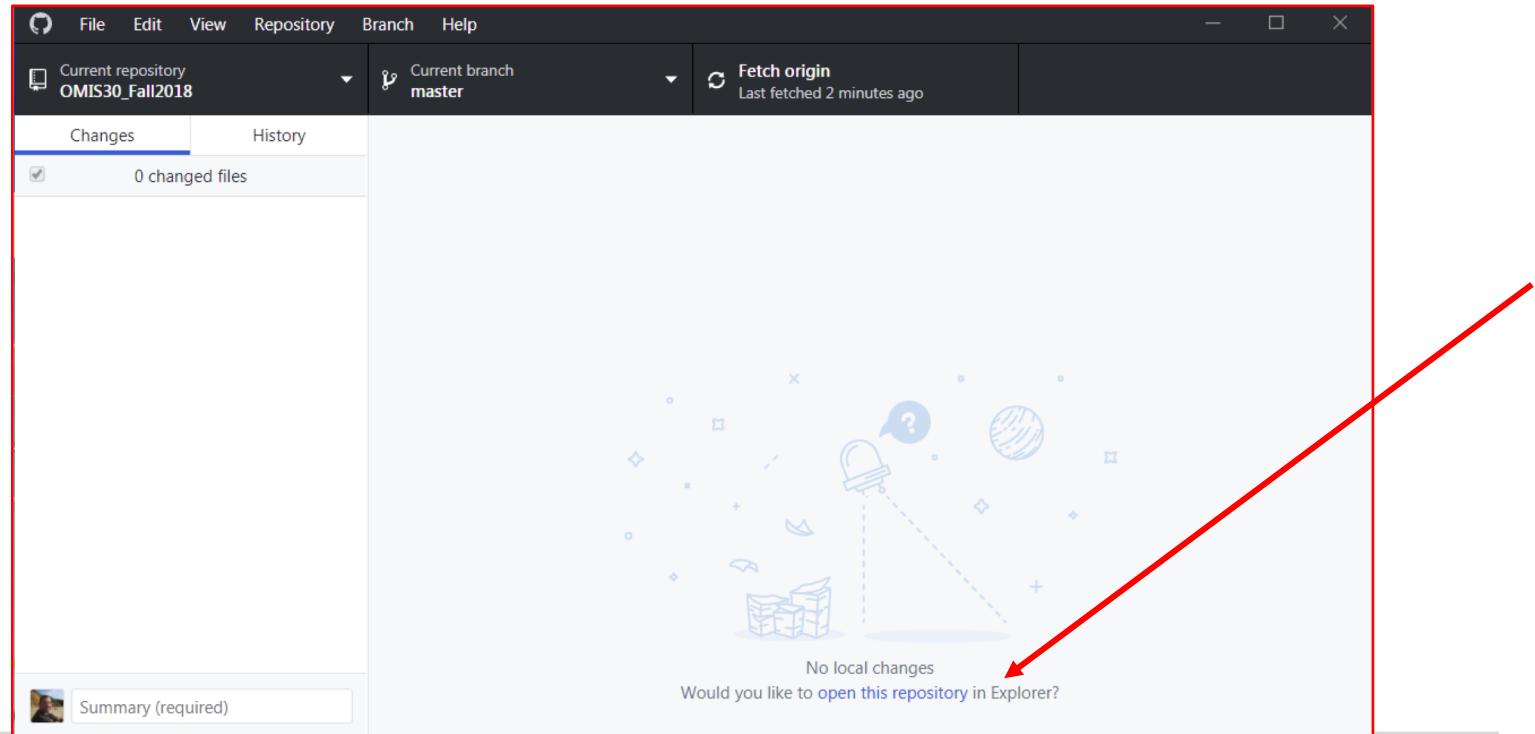
- Once done:





Cloning a new Repo

- Once done: (click on “open this repository”)





Cloning a new Repo

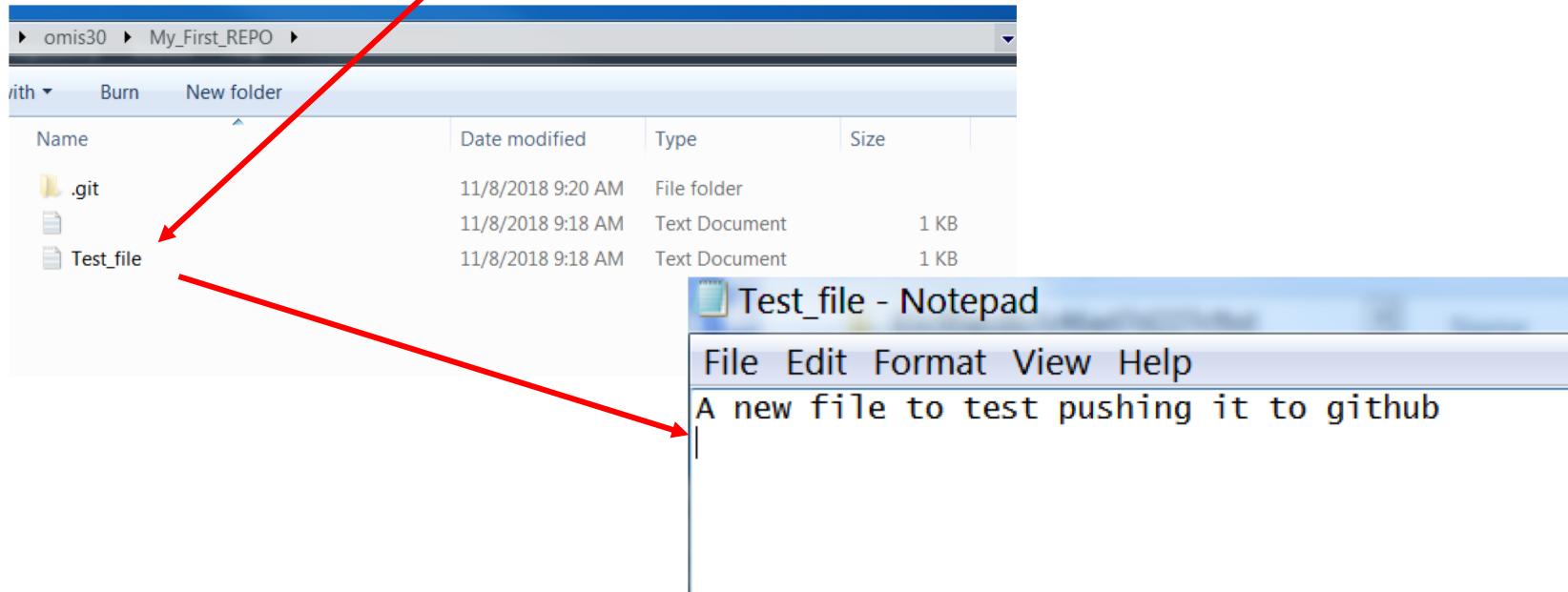
- Brings you to the local folder with all of the files in it

A screenshot of a Windows File Explorer window. The path bar shows "omis30 > OMIS30_Fall2018". The left pane shows a tree view of folders and files. The right pane is a detailed list view with columns for Name, Date modified, Type, and Size. A blue selection box highlights the "wk7" folder in the list view.

Name	Date modified	Type	Size
.git	11/7/2018 9:26 PM	File folder	
ClassesAndGames	11/7/2018 9:16 PM	File folder	
example	11/7/2018 9:16 PM	File folder	
wk1	11/7/2018 9:16 PM	File folder	
wk2	11/7/2018 9:16 PM	File folder	
wk3	11/7/2018 9:16 PM	File folder	
wk4	11/7/2018 9:16 PM	File folder	
wk5	11/7/2018 9:16 PM	File folder	
wk6	11/7/2018 9:16 PM	File folder	
wk7	11/7/2018 9:16 PM	File folder	
wk8	11/7/2018 9:16 PM	File folder	
AnacondaInstallation	11/7/2018 9:16 PM	Text Document	1 KB
OMIS 30 - Fall 2018 - Project 1	11/7/2018 9:16 PM	Adobe Acrobat D...	226 KB
OMIS 30 - Fall 2018 - Project 2	11/7/2018 9:16 PM	Adobe Acrobat D...	26 KB
OMIS 30 - Fall 2018 - Project 3	11/7/2018 9:16 PM	Adobe Acrobat D...	28 KB
OMIS 30 - Intro to Programming Syllabus	11/7/2018 9:16 PM	Adobe Acrobat D...	74 KB
README	11/7/2018 9:16 PM	Markdown File	59 KB

Adding a file to a Repo

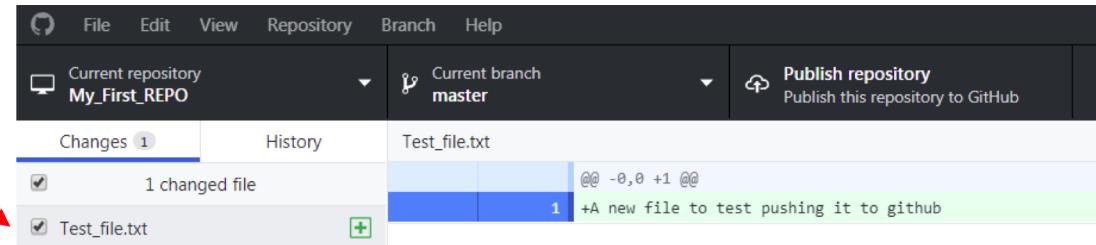
- Open the repo and add a new text file; add some text to the file and save it





Pushing your Repo to Github

- Back in github desktop - it should show the new file
 - If not you can click on the Current repository and it should refresh





Pushing your Repo to Github

This screen shows the modified file on the left and the modifications on the right

Modified File

The screenshot shows a GitHub commit interface. At the top, it displays the repository name "My_First_REPO" and the branch "master". Below this, there are tabs for "Changes" (with 1 change) and "History". The main area shows a single file named "Test_file.txt". A blue arrow points from the text "Modified File" to the "Changes" tab. A green arrow points from the text "Changes: Green = addition Red = deletion" to the commit message in the "Test_file.txt" row.

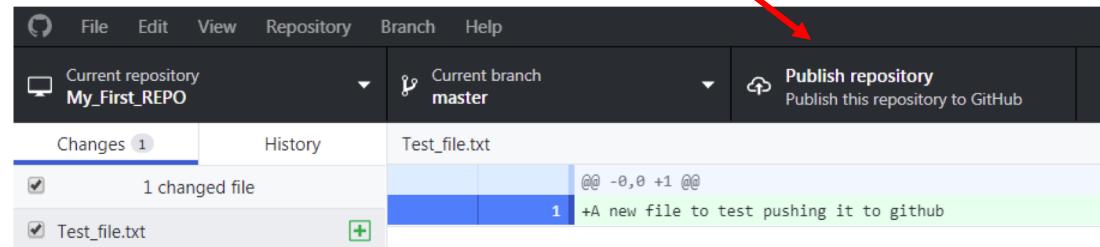
Test_file.txt	1	+A new file to test pushing it to github
Test_file.txt	1	+A new file to test pushing it to github

Changes:
Green = addition
Red = deletion



Pushing your Repo to Github

Click Publish repository





Pushing your Repo to Github

This information should already be filled out - click Publish repository again:

Publish repository ×

GitHub.com Enterprise

Name

Description

Keep this code private

Organization

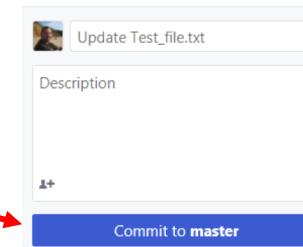
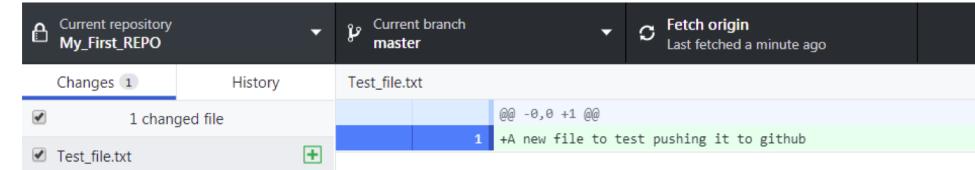
Publish repository Cancel



Pushing your Repo to Github

That makes the repo on github.com
BUT does not push any files to it
yet!

To do so in github desktop in the
bottom left hit the button Commit to
master



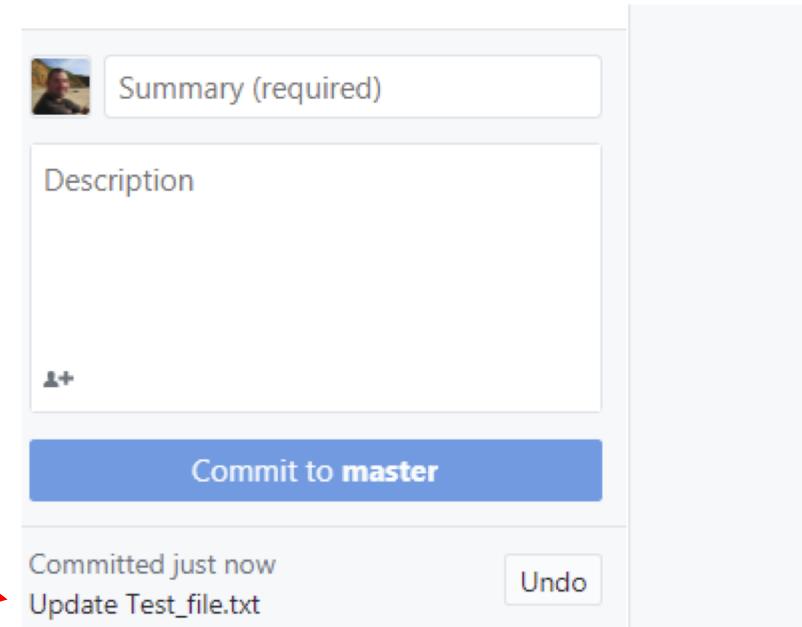


Pushing your Repo to Github

Bottom left should changed to:

Committed just now

Update Test_file.txt



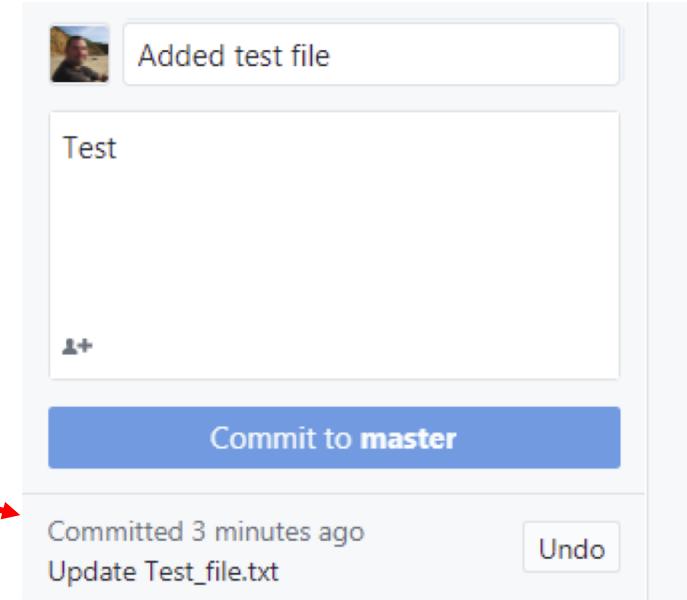


Pushing your Repo to Github

Bottom left should change to:

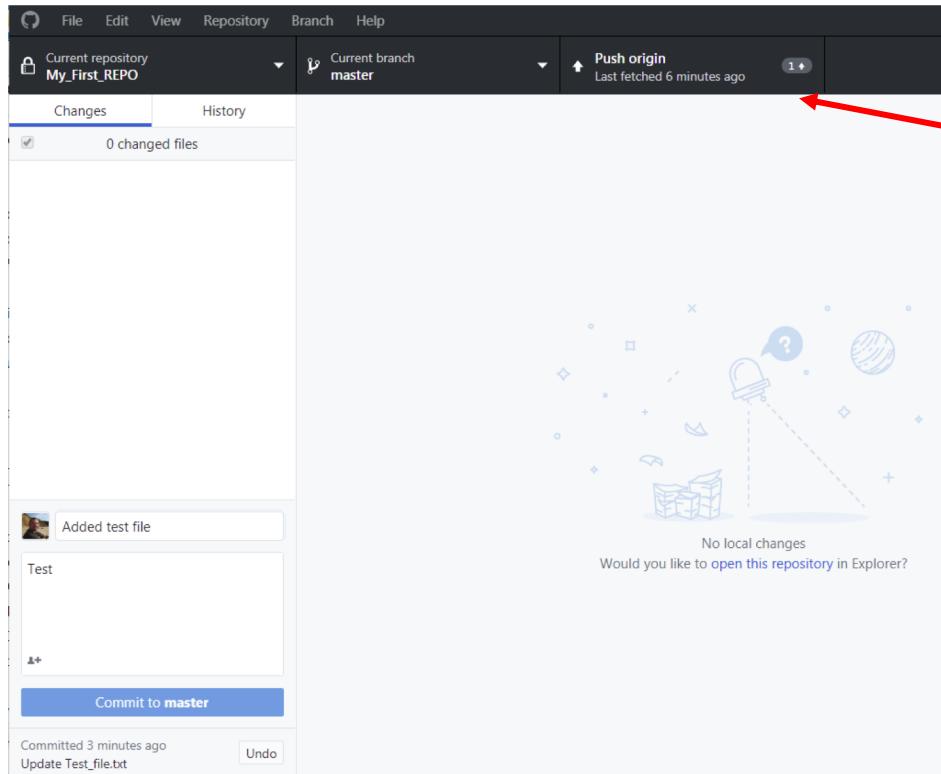
Committed just now

Update Test_file.txt





Pushing your Repo to Github



Click on Push origin to finalize pushing it to github



Pushing your Repo to Github

On github.com under Repositories, you should now see My_First_REPO

A screenshot of a GitHub repository page for "My_First_REPO". The page shows basic statistics: Overview, Repositories 6, Stars 0, Followers 2, Following 2. Below these are search and filter controls: "Find a repository...", "Type: All", "Language: All", and a green "New" button. The main content area displays the repository "My_First_REPO" which is private. It has a description "Test REPO for class" and was last updated "Updated a minute ago". A red arrow points from the left margin to the repository name "My_First_REPO". Another red arrow points from the left margin to the "Private" label next to the repository name.

Overview **Repositories 6** Stars 0 Followers 2 Following 2

Find a repository... Type: All ▾ Language: All ▾ New

My_First_REPO Private

Test REPO for class

Updated a minute ago



Pushing your Repo to Github

On github.com under Repositories, you should now see My_First_REPO

A screenshot of a GitHub repository page. At the top, there are navigation links: Overview, **Repositories 6**, Stars 0, Followers 2, and Following 2. Below these are search and filter controls: a search bar labeled "Find a repository...", dropdown menus for "Type: All" and "Language: All", and a green "New" button. The main content area shows a repository card for "My_First_REPO". The card includes the repository name in blue, a "Private" label, a description "Test REPO for class", and a timestamp "Updated a minute ago". A red arrow points from the left towards the repository name "My_First_REPO". Another red arrow points from the left towards the "My_First_REPO" link itself.



Pushing your Repo to Github

If you click on that repo - you can see the Test_file.txt in there!

Test REPO for class Edit

Manage topics

2 commits1 branch0 releases1 contributor

Branch: master ▾ New pull request Create new file Upload files Find file Clone or download ▾

Update Test_file.txt	Latest commit 1345ba3 8 minutes ago
.gitattributes	Initial commit 24 minutes ago
Test_file.txt	Update Test_file.txt 8 minutes ago

Add a README with an overview of your project. Add a README





Getting an updated file from Github

Let's make a new file on github and download it!

Click on Create new file

The screenshot shows a GitHub repository named "Test REPO for class". The repository has 2 commits, 1 branch, 0 releases, and 1 contributor. A red arrow points to the "Create new file" button in the top right corner of the main content area. Below the repository stats, there is a list of files and their commit history:

File	Commit Message	Time
Update Test_file.txt	Update Test_file.txt	Latest commit 1345ba3 8 minutes ago
.gitattributes	Initial commit	24 minutes ago
Test_file.txt	Update Test_file.txt	8 minutes ago

At the bottom, there is a call-to-action to "Add a README with an overview of your project." and a green "Add a README" button.



Getting an updated file from Github

Add a name for the file at the top.

My_First_REPO / new_file.txt or cancel

Add a line of text in the body.

The screenshot shows a GitHub commit dialog for a new file named "new_file.txt". The file content is "1 This is a new file to get an update from github!". Below the file content, there is a "Commit new file" section with fields for a commit message ("Create new_file.txt") and an optional extended description. At the bottom, there are two radio button options: "Commit directly to the master branch." (selected) and "Create a new branch for this commit and start a pull request." A green arrow points from the "new_file.txt" input field towards the "Commit new file" button.

Commit new file

Create new_file.txt

Add an optional extended description...

Commit directly to the master branch.

Create a new branch for this commit and start a pull request. Learn more about pull requests.

Commit new file Cancel

Click on Commit new file at the very bottom of the page



Getting an updated file from Github

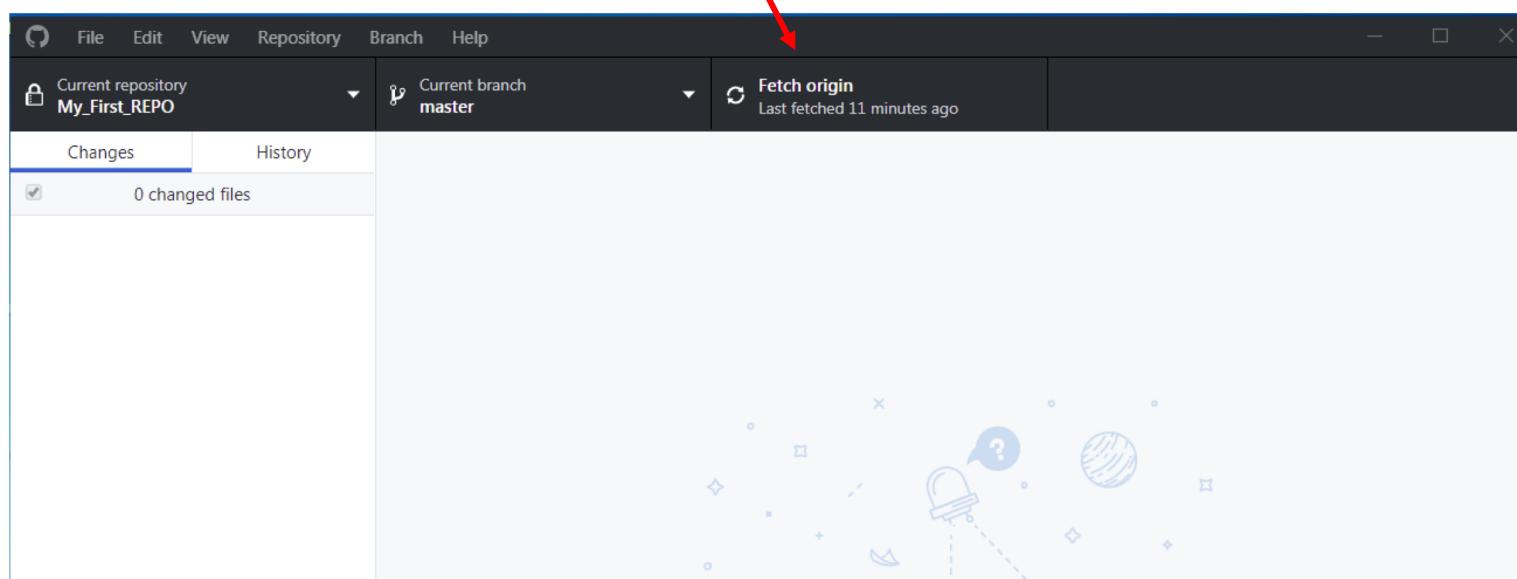
Your repo should look something like this (with 3 files in it):

.gitattributes	Initial commit	31 minutes ago
Test_file.txt	Update Test_file.txt	14 minutes ago
new_file.txt	Create new_file.txt	just now



Getting an updated file from Github

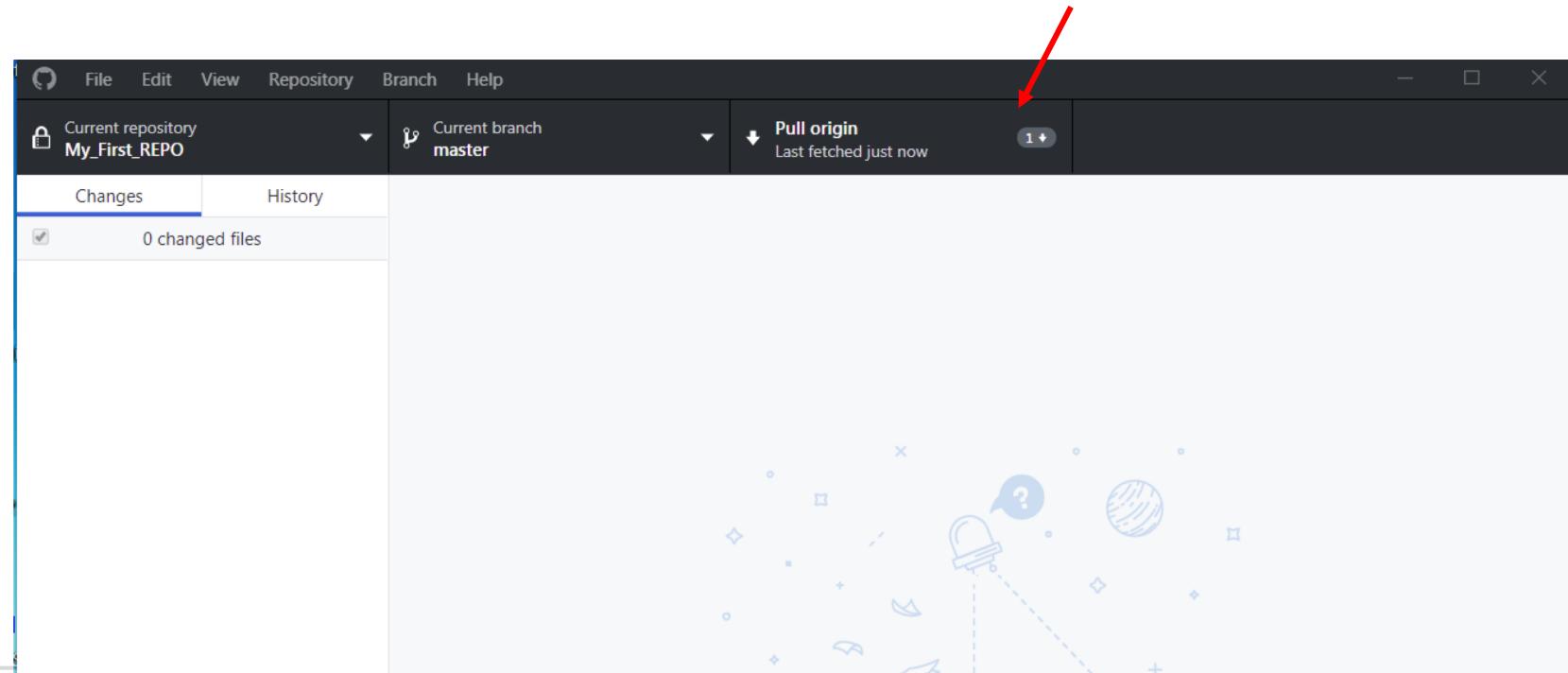
Back in github desktop - click Fetch Origin





Getting an updated file from Github

Should change to Pull origin and show 1 file needs pulling - Click Pull origin





Getting an updated file from Github

Click open this repository to if the files were downloaded

The screenshot shows a GitHub repository interface. At the top, there are three dropdown menus: 'Current repository' set to 'My_First_REPO', 'Current branch' set to 'master', and 'Fetch origin' with the status 'Last fetched just now'. Below these is a navigation bar with 'Changes' (selected) and 'History', and a checkbox indicating '0 changed files'. The main area displays a light blue background with a central icon of a lightbulb and code snippets, accompanied by the text 'No local changes' and a question 'Would you like to [open this repository](#) in Explorer?'. A large red arrow points from the bottom right towards this text. At the bottom left, there is a small thumbnail of a user profile and the text 'Added test file'.



Getting an updated file from Github

Looks like the new file is there!

Name	Date modified	Type	Size
.git	11/8/2018 9:54 AM	File folder	
	11/8/2018 9:18 AM	Text Document	1 KB
new_file	11/8/2018 9:53 AM	Text Document	1 KB
Test_file	11/8/2018 9:26 AM	Text Document	1 KB



Git Merge Conflicts

- If you get a merge conflict:
 - That means both you and someone else has made changes to the same file
 - Github cannot determine how to reconcile those changes
- Easiest way to ‘fix’:
 - Save the file with your changes somewhere else on your computer
 - Try to fetch the repo again
 - If the fetch works then you will have to manually enter your new changes in the updated file
 - Or just copy your file over the updated file and re-upload
- If that doesn’t work - can always delete the repo and re-clone
 - Again be careful to save your changed files somewhere else so not to lose those changes!



Homework 9.1

Read article of why learning to code is so hard, and write a response.
(Link and details in Camino)

Due Tue of Week 10



Homework 9.2

Create a team REPO. Submit you're team's REPO url.

Each person should submit this as their homework assignment.

Due Tue of Week 10



Appendix

- Reserved keywords in Python:
 - <https://pentangle.net/python/handbook/node52.html>
 - DO NOT USE THESE as VARIABLE NAMES!
- Built-in Functions:
 - <https://docs.python.org/3/library/functions.html>
 - Review/Reference Material:
 - <https://developers.google.com/edu/python/lists>
- Dos/Windows vs Unix/Linux:
 - [https://access.redhat.com/documentation/en-US/Red Hat Enterprise Linux/4/html/Step by Step Guide/ap-doslinux.html](https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/4/html/Step_by_Step_Guide/ap-doslinux.html)
 - You should be familiar with the basic commands for navigating around the file structure and modifying/creating files/folders. You should be aware of the harder to remember ones (like grep and vi) so you know what to Google when you need them!



Appendix

- Learning Python - O'reilly Books (5th Edition)
 - <https://github.com/MrAlex6204/Books/blob/master/Learning%20Python%2C%205th%20Edition.pdf>