
An Introduction to Git and Github

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Why?

"FINAL".doc



FINAL.doc!



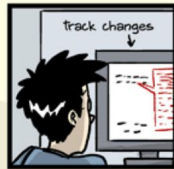
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corrections.10.##\$%WHYDID
ICOMETOGRADSCHOOL?????.doc

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What?

THIS IS GIT. IT TRACKS COLLABORATIVE WORK
ON PROJECTS THROUGH A BEAUTIFUL
DISTRIBUTED GRAPH THEORY TREE MODEL.

COOL. HOW 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 DOWNLOAD A FRESH COPY.



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- Why?
 - What?
 - Git
 - GitHub
 - How?
 - Basic
 - Advanced

What? - Git vs. GitHub

Git

- Distributed Version Control Software
- [Hg](#) and [SVN](#) are two popular alternatives

GitHub

- For a beginner, it's an online backup.
- For a professional, it's for collaborative software development.

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Jargon

- Git - Software installed on your system
- GitHub - Website to upload/share your code
- Repository - A fancy word for directory
- Commit - The building blocks of your file history
- Hash - A unique ID given to each commit

How?

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How? - Workflows

Basic Workflow

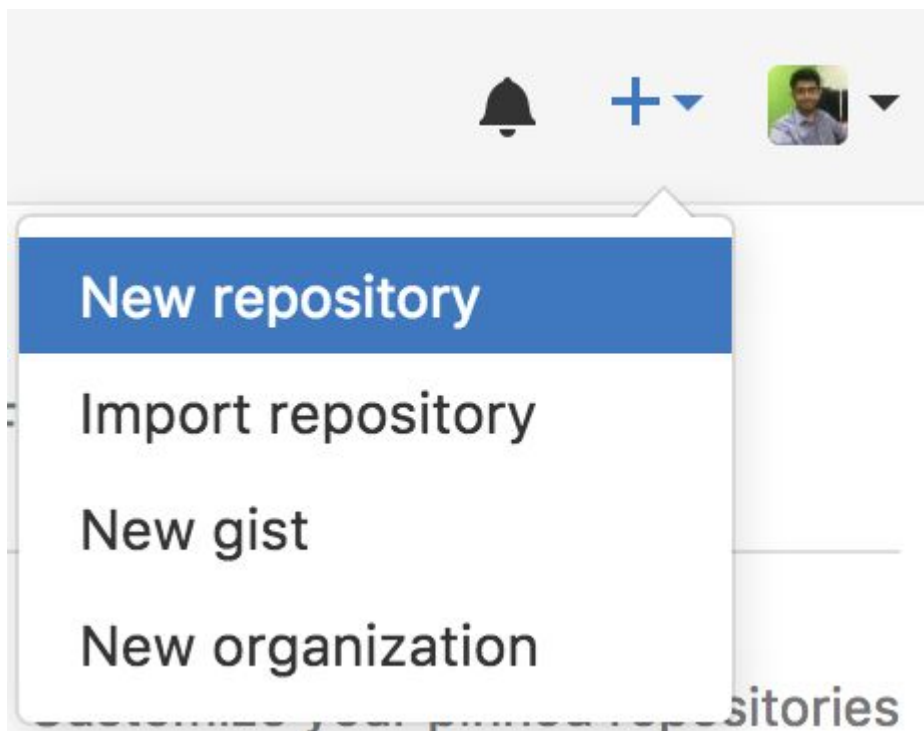
- Commands that you need to learn to get up and running.

Advanced Workflow

- Commands that let you work with others on the same repository.

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How? - Creating a GitHub repository



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Create a New Repository


GitHub, Inc. (US) | https://github.c | Work | Search

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner

Repository name

 rahulporuri


 /

learn_github ✓


Great repository names are short and memorable. Need inspiration? How about [studious-invention](#).

Description (optional)

A repository used to learn Git

☒  **Public**

Anyone can see this repository. You choose who can commit.

☐  **Private**

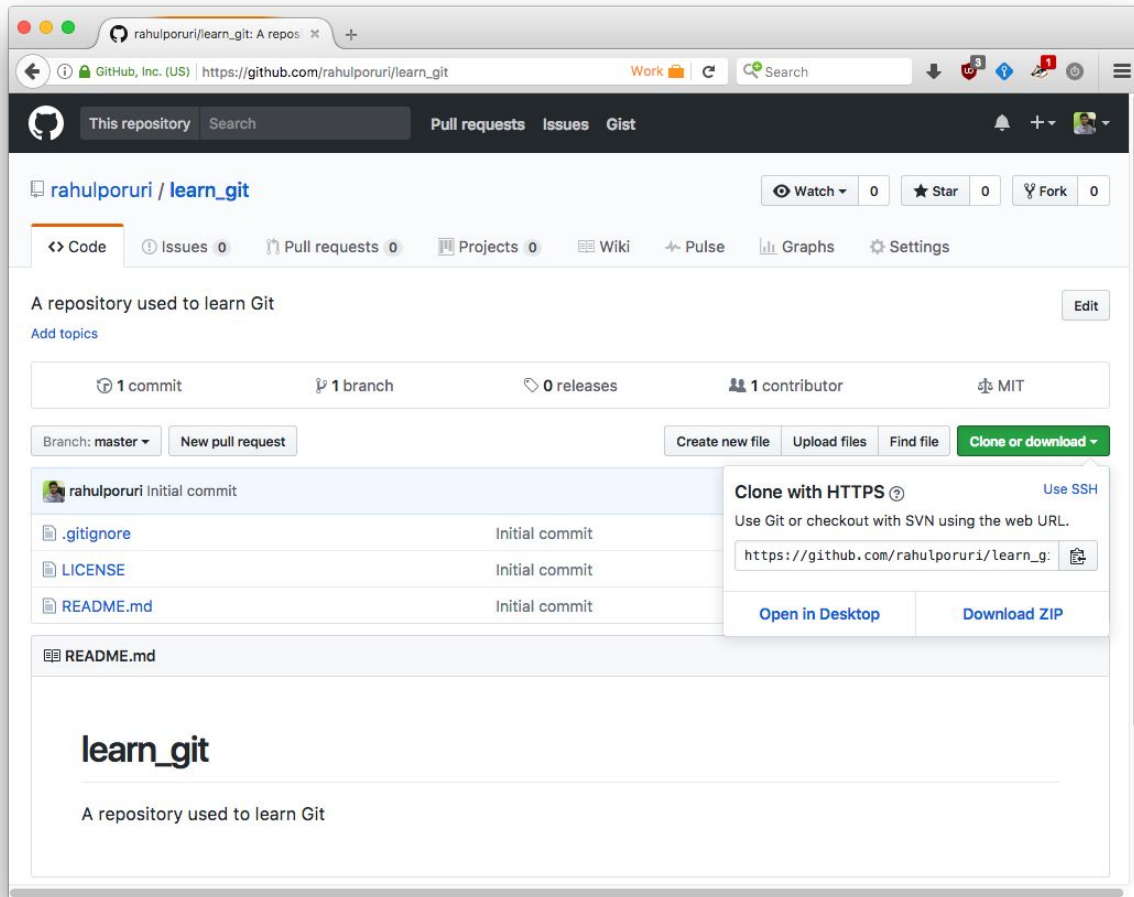
You choose who can see and commit to this repository.

☒ **Initialize this repository with a README**
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **Python**

Add a license: **MIT License** ⓘ

Create repository



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How? - Basic Workflow

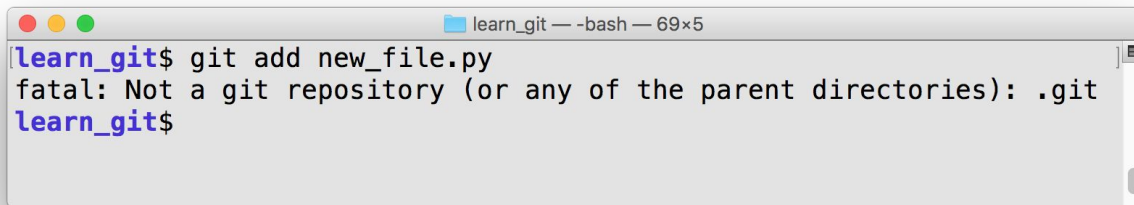
- `git clone url`
 - Download the GitHub repository to your system.
- `git add file-name`
 - Tell Git to start tracking the file.
- `git commit -m "write your message here"`
 - Create a Commit.
- `git push origin master`
 - Push local changes/commits to GitHub.

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#1 mistake - Not a Git repository

The repository needs to be initialized - Git needs to be told to track changes in this repository.



```
learn_git$ git add new_file.py
fatal: Not a git repository (or any of the parent directories): .git
learn_git$
```

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Fix the mistake using **git init**

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How? - Git add

- `git add file-name` moves file from the working directory into Git's staging area.
- Multiple files can be added at the same time using

```
git add file1 file2 file3
```

- Use `git status` to see the move from working directory (untracked changes) to staging area (tracked changes).
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How? - Exercise

- Add multiple files
- Go through all options for git add
- Unadd files

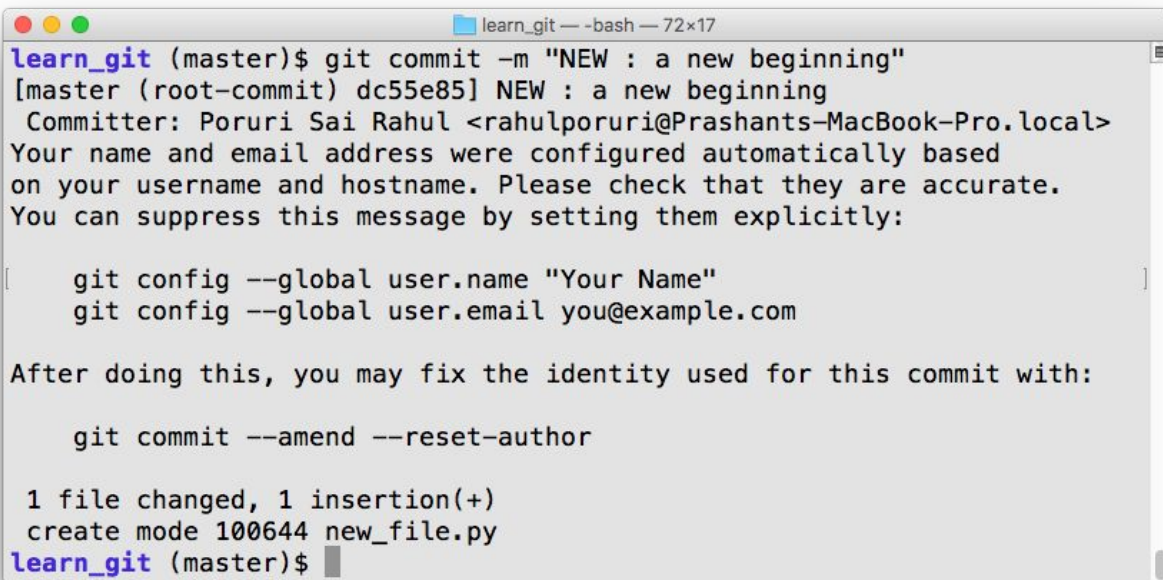
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#2 mistake - defaults aren't set

Git needs to know your contact information.



```
learn_git (master)$ git commit -m "NEW : a new beginning"
[master (root-commit) dc55e85] NEW : a new beginning
Committer: Poruri Sai Rahul <rahulporuri@Prashants-MacBook-Pro.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

1 file changed, 1 insertion(+)
create mode 100644 new_file.py
learn_git (master)$
```

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How? - Git commit

	COMMENT	DATE
○	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
○	ENABLED CONFIG FILE PARSING	9 HOURS AGO
○	MISC BUGFIXES	5 HOURS AGO
○	CODE ADDITIONS/EDITS	4 HOURS AGO
○	MORE CODE	4 HOURS AGO
○	HERE HAVE CODE	4 HOURS AGO
○	AAAAAAAAA	3 HOURS AGO
○	ADKFJSLKDFJSDKLFJ	3 HOURS AGO
○	MY HANDS ARE TYPING WORDS	2 HOURS AGO
○	HAAAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT
MESSAGES GET LESS AND LESS INFORMATIVE.

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How? - Git commit

- -m after git commit is called a flag.
- Another important flag is -h or --help. Git commit -h will display a lot of helpful information about the commit command. -h is universal. Git add -h. Git -h
- Whatever comes after -m is used as commit message
- There's also -a -m if you want to add all files changed and commit.

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What? - Exercise

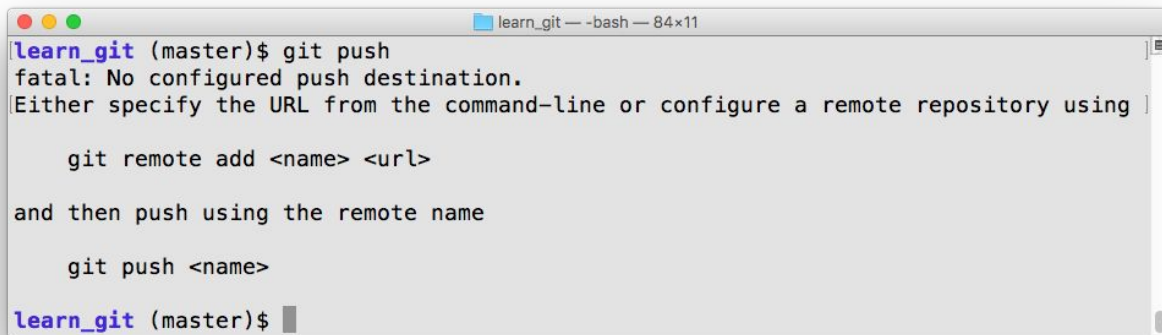
- Amend commits
- Look up all options for git commit
- Undo a commit

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#3 mistake - Origin hasn't been set

Git needs to be told what the origin is - where to push the changes to. The origin can be set to anything - a GitHub/GitLab/BitBucket repository or your own personal server.

A terminal window titled 'learn_git -- -bash -- 84x11' showing a 'fatal: No configured push destination' error. The window has a light gray background and a dark gray border. The text is in a monospaced font. The error message is in red, and the prompt is in blue. The user has entered 'git push' and the terminal has responded with the error. Below the error, there is a suggestion to use 'git remote add' and then 'git push'.

```
learn_git (master)$ git push
fatal: No configured push destination.
Either specify the URL from the command-line or configure a remote repository using

    git remote add <name> <url>

and then push using the remote name

    git push <name>

learn_git (master)$
```

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How? - Git push

- Set remote once - you dont have to do it again and again!
- What happens if we dont say origin master?
- What is master?
- Master is the main/default branch.
- Development using Git happens on branches. We can see branch information using git status. By default, we've been working on master branch all this time.

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How? - Git push

- Remote is GitHub URL. or GitLab URL.
- Or a local/personal server.
- There doesn't have to be a single remote.
- The default remote is usually referred to as origin. There can be as many remotes as you want.

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What? - Exercise

- Force push
- Look up options for git push

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Notes

- Every time you modify a file's contents, you need to add it, to be able to commit it.
 - Simply committing will do nothing and complain that there is nothing to commit
 - All files in a git repository belong to three categories - untracked files, tracked files but with changes not being committed and files with changes to be committed. See appendix.
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Helpful commands

- `git fork url`
- `git log`
- `git show commit-hash`
- `git commit --amend`
- `git reset HEAD^`
- `git diff file-name.ext`
- `git stash`
- Enable autocompletion and fancy prompt for Git.

```
learn_git (master)$ git log
```

```
1 commit dc55e858328a19efbee373e39cf85c3e9cdfe443
2 Author: Poruri Sai Rahul <rahulporuri@Prashants-MacBook-Pro.local>
3 Date: Sat Mar 25 12:52:48 2017 +0530
4
5     NEW : a new beginning
```

```
learn_git (master)$ git show dc55e858328a19efbee373e39cf85c3e9cdfe443
```

```
1 commit dc55e858328a19efbee373e39cf85c3e9cdfe443
2 Author: Poruri Sai Rahul <rahulporuri@Prashants-MacBook-Pro.local>
3 Date: Sat Mar 25 12:52:48 2017 +0530
4
5     NEW : a new beginning
6
7 diff --git a/new_file.py b/new_file.py
8 new file mode 100644
9 index 0000000..30a88de
10 --- /dev/null
11 +++ b/new_file.py
12 @@ -0,0 +1 @@
13 +a new beginning
```

```
learn_git (master)$
```