







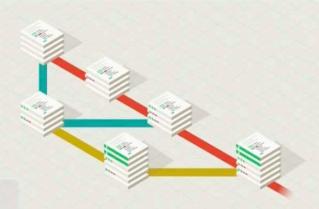




of git -- distributed-even-if-your-workflow-isnt

Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is easy to learn and has a tiny footprint with lightning fast performance. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like cheap local branching, convenient staging areas, and multiple workflows.



Q Search entire site...



About

The advantages of Git compared to other source control systems.



Documentation

Command reference pages, Pro Git book content, videos and other material.



Downloads

GUI clients and binary releases for all major platforms.



Community

Get involved! Bug reporting, mailing list, chat, development and more.



Pro Git by Scott Chacon and Ben Straub is available to read online for free. Dead tree versions are available on Amazon.com.

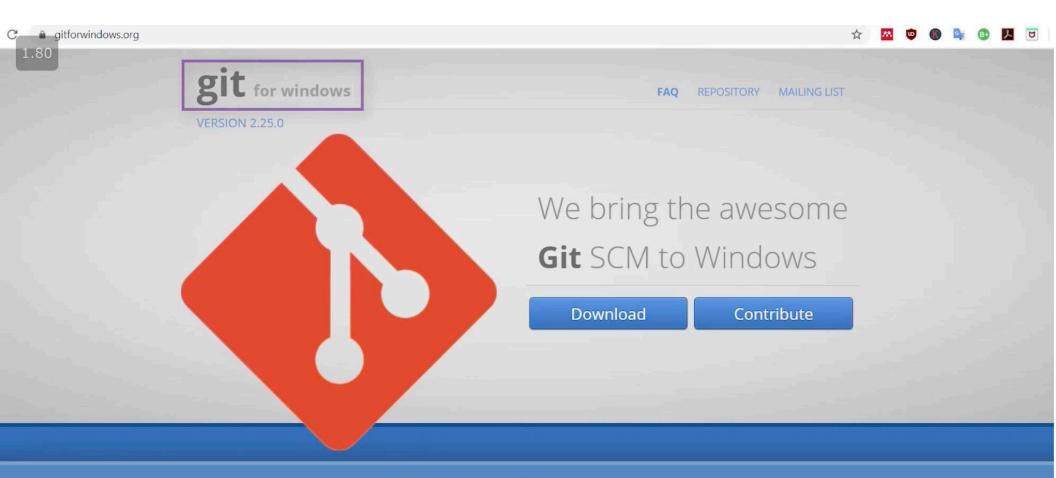






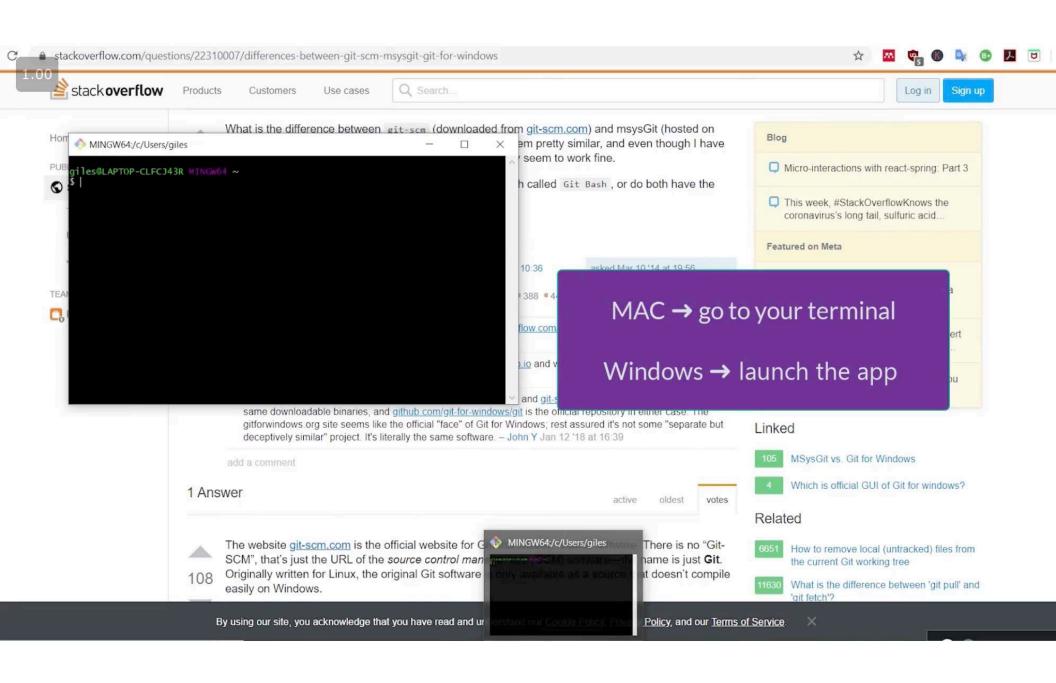






Tools & Features

Git for Windows focuses on offering a lightweight, native set of tools



```
giles@LAPTOP-CLFCJ43R MINGW64 ~
$ git config --global user.name "Your Name"
                                                                         Configure Git
giles@LAPTOP-CLFCJ43R MINGW64 ~
$ git config --global user.email "Yourname"domain.com"
giles@LAPTOP-CLFCJ43R MINGW64 ~
                                                                           1. Username
$ git config --global core.editor "notepad"
                                                                            2. E-mail
                                                                      3. Favourite text editor
giles@LAPTOP-CLFCJ43R MINGW64 ~
$ touch test.txt
                           Create and open file test.txt
giles@LAPTOP-CLFCJ43R MING
§ notepad test.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~
                                              Changing text editor configuration
$ git config --global core.editor "Atom"
giles@LAPTOP-CLFCJ43R MINGW64 ~
$ Atom test.txt
ailes@LAPTOP-CLFCJ43R MINGW64 ~
$ git config --list
diff.astextplain.textconv=astextplain
                                                See all the configuration
filter.lfs.clean=git-lfs clean -- %f
```

filter.lfs.smudge=git-lfs smudge -- %f

lter.lfs.process=git-lfs filter-process

```
giles@LAPTOP-CLFCJ43R MINGW64 ~
$ mkdir shop
  mkdir shop
giles@LAPTOP-CLFCJ43R MINGW64 ~
$ cd shop
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop
$ git init
Initialized empty Git repository in C:/Users/giles/shop/.git/
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ ls
                                                       No files yet.
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ 1s -A
.git/
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ cd .git
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop/.git (GIT_DIR!)
$ 1s -A
config description HEAD hooks/ info/ objects/ refs/
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop/.git (GIT_DIR!)
$ cd ..
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
                                                          Create a file
  touch lists.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master) $ ls list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
                                                           Remove a file
  rm lists.txt
```

Make a directory

Change the directory

Track this directory

Create a file

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
                                                   Clear screen.
$ clear
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ 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)
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git add list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git status
On branch master
No commits yet
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file: list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git commit -m "Create shopping list"
[master (root-commit) 027e390] Create shopping list
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git status
On branch master
nothing to commit, working tree clean
```

To track the file, we need to use "git add file name"

The "add" command tells Git to start tracking this particular file

1 This step is called "Staging"

Now we need to commit this file

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git log
commit 027e3900241aa87f02dffc613aaa9881e3584099 (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
        Sat Feb 1 14:46:15 2020 +0000
Date:
   Create shopping list
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
                                                  Open a file
notepad list.txt
list - Notepad
File Edit Format View Help
                                       Add some items to
Bananas
Oranges
                                             the list
Strawberries
Apples
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
 git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
no changes added to commit (use "git add" and/or "git commit -a")
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git diff
diff --git a/list.txt b/list.txt
index e69de29..e8e0963 100644
--- a/list.txt
                                b version has some items added.
+++ b/list.txt
@@ -0,0 +1,4 @@
+Bananas
+Oranges
+Strawberries
+Apples
No newline at end of file
```

log- tells us the history of commits for this file

Git knows that this file has been changed but it hasn't been told to save a snapshot of this yet

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git add list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
git status
On branch master
Changes to be committed:
 (use "git restore --staged <file>..." to unstage)
       modified: list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
git commit -m "Add fruit and vegetables"
[master 8bdeb9a] Add fruit and vegetables
1 file changed, 4 insertions(+)
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
git log
commit 8bdeb9a6fdc9e5f024d448095d27674ba6ee783d (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date: Sat Feb 1 14:51:39 2020 +0000
   Add fruit and vegetables
commit 027e3900241aa87f02dffc613aaa9881e3584099
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date: Sat Feb 1 14:46:15 2020 +0000
   Create shopping list
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
```

Let's revamp this file

```
giles@LABTOP-CLFCJ43R MINGW64 ~/shop (master)
 notepad list.txt
 list - Notepad
 File Edit Format View Help
 FRUIT AND VEGETABLES
                         We are not happy
 Bananas
Oranges
                         with the structure
Strawberries
 Apples
MEAT
DAIRY
 HOUSEHOLD
 git status
On branch master
Changes not staged for commit:

(use "git add <file>..." to update what will be committed)
                                                                                          We have these
                                                                                        different versions
  (use "git restore <file>..." to discard changes in working directory)
                                                                                          of the file in the
                                                                                             repository
no changes added to commit (use "git add" and/or "git commit -a")
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
 git add list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
                                                                   We use "add" to
 git status
                                                                     stage the file
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified: list.txt
                                                                                                     The descriptions
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
```

§ git commit -m "Restructure list: new headings for different categories of purchases" [master 3872c32] Restructure list: new headings for different categories of purchases

1 file changed, 15 insertions(+), 1 deletion(-)

need to be

detailed

```
ggiles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git log -1
commit 3872c32502a348efdc84df64ff451e69507cc896 (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
         Sat Feb 1 14:56:06 2020 +0000
Date:
     Restructure list: new headings for different categories of purchases
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
§ notepad list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git add list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:
                     list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git diff
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git diff --staged
diff --git a/list.txt b/list.txt
index 70de999..6103d4d 100644
--- a/list.txt
+++ b/list.txt
@@ -6,7 +6,7 @@ Strawberries
Apples
MEAT
+Sausages
```

Return most recent commit.

Applying changes to file and then add to staging area.

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git log
commit 940e8c355f146a2fcd88ef96439177de0b58815b (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
       Sat Feb 1 15:17:32 2020 +0000
Date:
   Sausages added to meat section
commit 3872c32502a348efdc84df64ff451e69507cc896
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
       Sat Feb 1 14:56:06 2020 +0000
Date:
   Restructure list: new headings for different categories of purchases
commit 8bdeb9a6fdc9e5f024d448095d27674ba6ee783d
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
       Sat Feb 1 14:51:39 2020 +0000
Date:
   Add fruit and vegetables
commit 027e3900241aa87f02dffc613aaa9881e3584099
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date:
       Sat Feb 1 14:46:15 2020 +0000
   Create shopping list
$ git diff 8bdeb9a list.txt
diff0--git a/list.txt b/list.txt
index e8e0963..6103d4d 100644
--- a/list.txt
+++ b/list.txt
@@ -1.4 +1.18 @@
+FRUIT AND VEGETABLES
Bananas
Oranges
Strawberries
No newline at end of file
```

Differences between versions

This is the head of all the changes that we've made

We just need to type the first digits of the commit identifier.

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git log
commit 940e8c355f146a2fcd88ef96439177de0b58815b (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date:
        Sat Feb 1 15:17:32 2020 +0000
    Sausages added to meat section
commit 3872c32502a348efdc84df64ff451e69507cc896
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date:
        Sat Feb 1 14:56:06 2020 +0000
   Restructure list: new headings for different categories of purchases
commit 8bdeb9a6fdc9e5f024d448095d27674ba6ee783d
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
        Sat Feb 1 14:51:39 2020 +0000
   Add fruit and vegetables
commit 027e3900241aa87f02dffc613aaa9881e3584099
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date:
        Sat Feb 1 14:46:15 2020 +0000
   Create shopping list
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop
                                           (master)
$ git checkout HEAD~3 list.txt
                                            Original version
Updated 1 path from b50a881
OP-CLFCJ43R MINGW64 ~/shop (master)
list.txt
OP-CLFCJ43R MINGW64 ~/shop (master)
kout HEAD~2 list.txt
                                            Version 2
path from d65b70c
OP-CLFCJ43R MINGW64 ~/shop (master)
list.txt
```

```
OP-CLFCJ43R MINGW64 ~/shop (master)
kout HEAD~1 list.txt
                          Version 3
path from Oa68aOd
OP-CLFCJ43R MINGW64 ~/shop (master)
list.txt
OP-CLFCJ43R MINGW64 ~/shop (master)
kout HEAD list.txt
                          Current version
path from 7b6e982
OP-CLFCJ43R MINGW64 ~/shop (master)
```

Let's go back to

the file as it was

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ notepad list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git add list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:
                  list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
 git reset list.txt
                                                             We have
Unstaged changes after reset:
        list.txt
                                                             changes
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git diff --staged
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git commit -m "Add content to Dairy"
[master f175af1] Add content to Dairy
 1 file changed, 6 insertions(+)
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git log
commit f175af1a5201e551e246616d96e19996a66671d3 (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
        Sat Feb 1 15:40:20 2020 +0000
Date:
    Add content to Dairy
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git reset HEAD~1 --soft
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
```

commit 940e8c355f146a2fcd88ef96439177de0b58815b (HEAD -> master)

Sat Feb 1 15:17:32 2020 +0000

Sausages added to meat section

Author: Giles <54141847+PythonJournalist@users.noreply.github.com>

What happens when we make a mistake?

unstaged those

What if we committed the wrong changes?



Use reset

 soft - removes the commit

 soft - doesn't change what happened in the staging area

Reset options:

- soft
- mixed
- hard

Sausages added to meat section

 mixed - removes the commit and also makes the changes unstaged

 mixed - doesn't change the file

giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
\$ git log
commit 940e8c355f146a2fcd88ef96439177de0b58815b (HEAD -> master)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date: Sat Feb 1 15:17:32 2020 +0000

 hard - removes the changes we've added to the file

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
§ git branch dairy
                                                    Create branch
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git branch
  dairy
  master
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git branch meat
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git branch
  dairy
  master
  meat
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git checkout dairy
                                                     Work on branch
Switched to branch 'dairy'
giles@LAPTOP-CLFCJ43R MINGW64 ~/s
                                             Open file and modify it
$ notepad list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (dairy)
$ git add list.txt
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (dairy)
                                                         Add & commit file
 git commit -m "update dairy"
[dairy b58e937] update dairy
1 file changed, 5 insertions(+), 1 deletion(-)
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (dairy)
$ ait loa
commit b58e937f248406a0f10136aeeef22fe244b30db6 (HEAD -> dairy)
Author: Giles <54141847+PythonJournalist@users.noreply.github.com>
Date:
        Sat Feb 1 15:57:53 2020 +0000
    update dairy
```

Different branches

The different versions of the file can be developed in parallel

```
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (meat)
$ git checkout master
Switched to branch 'master'

giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git merge meat
Updating 940e8c3..327fc07
Fast-forward
list.txt | 5 +++++
1 file changed, 5 insertions(+)

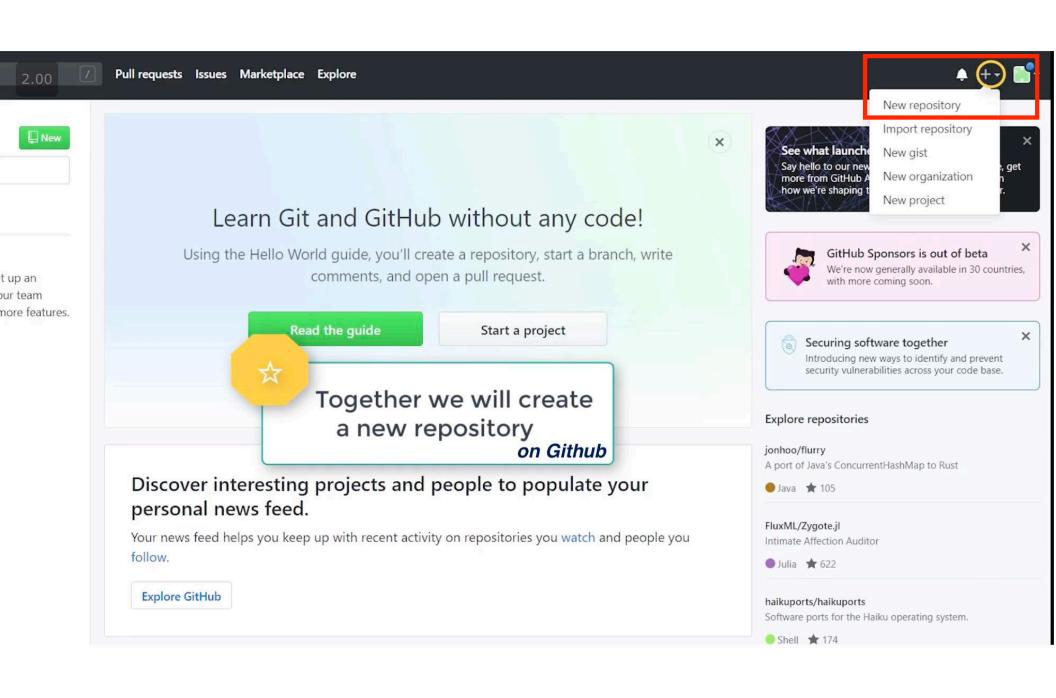
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ notepad list.txt

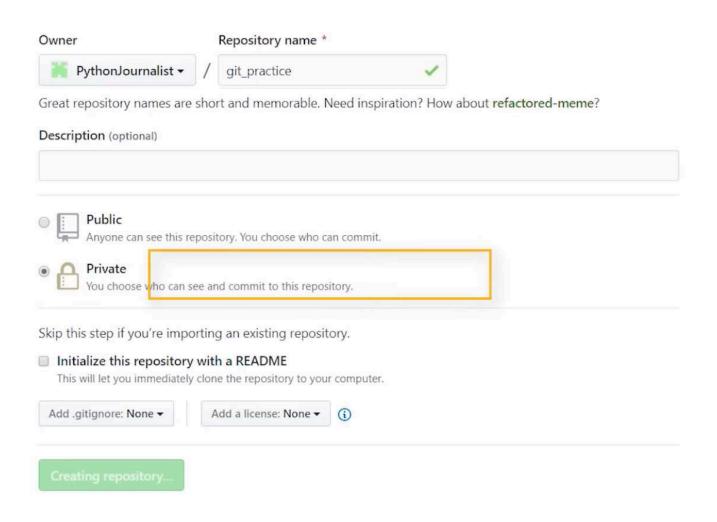
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ git merge dairy|

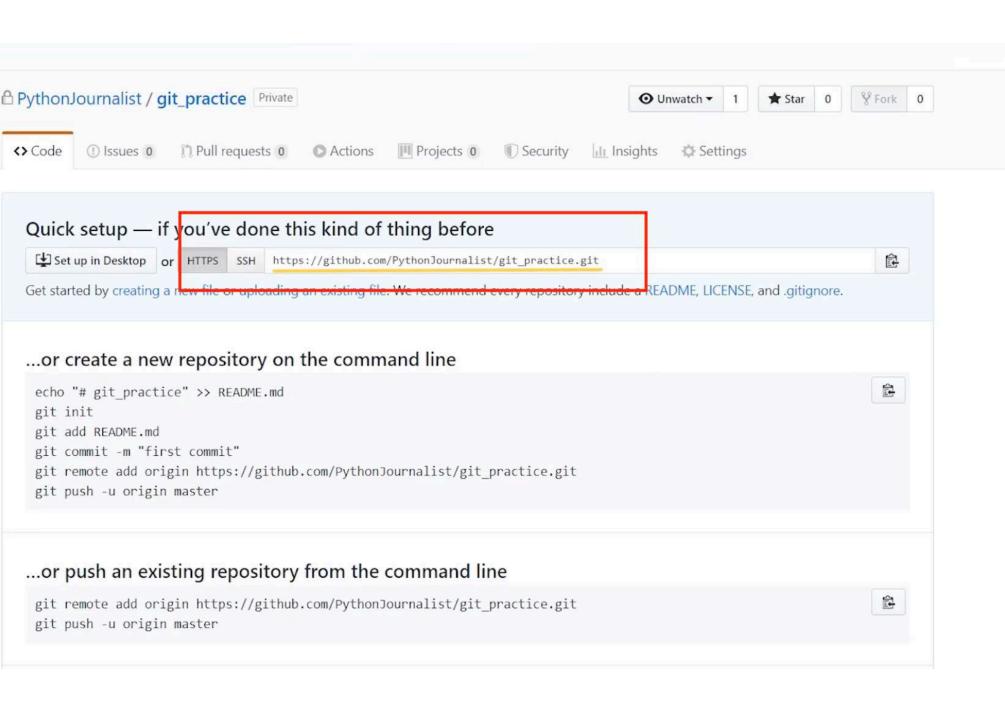
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
$ notepad list.txt
```

Merging files from different branches to the master branch









```
git remote add origin https://github.com/PythonJournalist/git_practice.git
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
git remote -v
origin https://github.com/PythonJournalist/git_practice.git (fetch)
origin https://github.com/PythonJournalist/git_practice.git (push)
giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)
git push origin master
Enumerating objects: 21, done.
Counting objects: 100% (21/21), done.
Delta compression using up to 8 threads
Compressing objects: 100% (12/12), done.
vriting objects: 100% (21/21), 1.87 KiB | 480.00 KiB/s, done.
Fotal 21 (delta 5), reused 0 (delta 0)
remote: Resolving deltas: 100% (5/5), done.
Fo https://github.com/PythonJournalist/git_practice.git
  [new branch]
                    master -> master
```

giles@LAPTOP-CLFCJ43R MINGW64 ~/shop (master)

We want to synchronize our local repository with the new repository on GitHub

We can push our repository to the remote repository

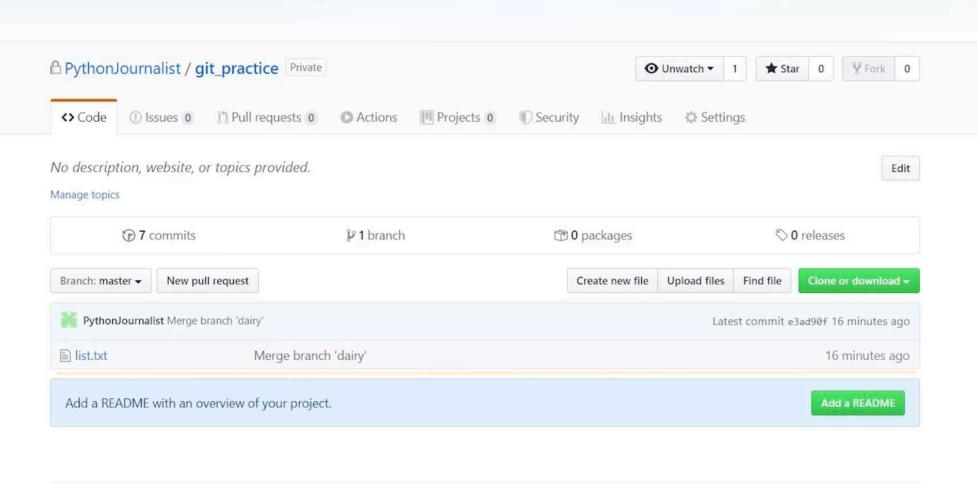
on GitHub

You will be asked

for your username

and password

Read the guide



A list of Medical imaging datasets.



• An additional, possibly overlapping list can be found at : https://github.com/beamandrew/medical-data

Multimodal databases

- Center for Invivo Microscopy (CIVM), Embrionic and Neonatal Mouse (H&E, MR)
 http://www.civm.duhs.duke.edu/devatlas/ user guide: http://www.civm.duhs.duke.edu/devatlas/UserGuide.pdf
- LONI image data archive https://ida.loni.usc.edu/services/Menu/IdaData.jsp?project=
- Radiology (Ultrasound, Mammographs, X-Ray, CT, MRI, fMRI, etc.)
- Collaborative Informatics and Neuroimaging Suite (COINS) https://portal.mrn.org/micis/index.php?subsite=dx