Using GIT

different version MAY WORK DIFFERENTLY

Create a Github Account

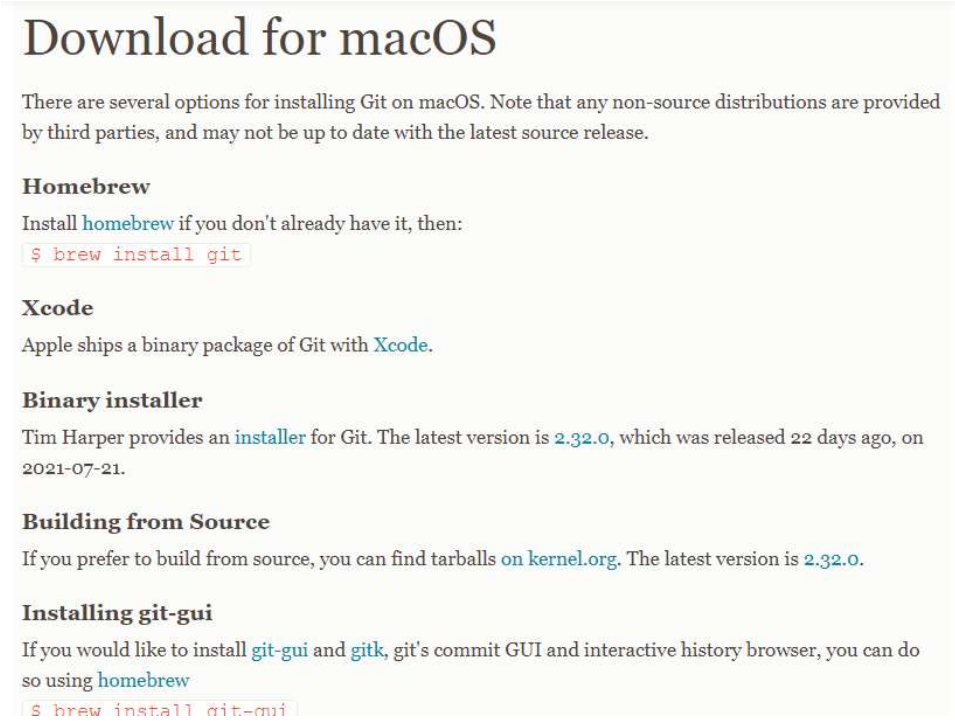
- Go to www.github.com
- Watch the Clip

Download and install Git (10 minutes)

https://git-scm.com/downloads

Windows (Watch the clip)

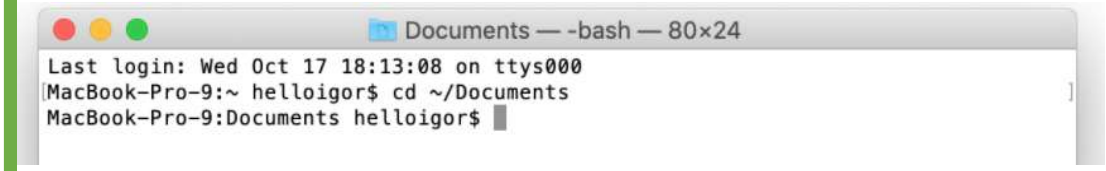
macOS



For Linux: https://git-scm.com/download/linux

macOS

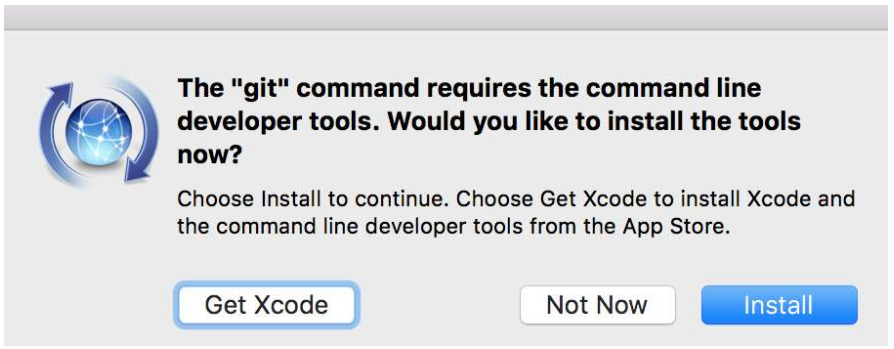
You may also open your Applications folder, then open Utilities and double-click on Terminal



Type in the command prompt

$ git version

This will launch the following message, click "Install":



https://macpaw.com/how-to/use-terminal-on-mac

setx HOME

setx HOME C:\Users\julianlin\GIT\GitHuan

Create SSH

pwd

```
julianlin@JULIANLIN- MINGW64 ~
$ pwd
/c/Users/julianlin
```

```
cd $HOME
mkdir .ssh
cd .ssh
```

```
cd $HOME
mkdir .ssh
cd .ssh
```

```
julianlin@JULIANLIN- MINGW64 ~/.ssh
$ pwd
/c/Users/julianlin/.ssh
```

Enter these

1. ssh-keygen -t rsa -C "git1@visualcomms.com"
2. ./git_id_rsa
3. Enter (passphrase empty)
4. Enter (again)

Result:

```
julianlin@JULIANLIN- MINGW64 ~/.ssh
$ ssh-keygen -t rsa -C "git1@visualcomms.com"
Generating public/private rsa key pair.
Enter file in which to save the key (/c/Users/julianlin/.ssh/id_rsa): ./git_id_rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in ./git_id_rsa
Your public key has been saved in ./git_id_rsa.pub
The key fingerprint is:
SHA256:WOblwf8Fah+qJJzmsq0TggSnr7XeIvMrW8F0vcRe8eU git1@visualcomms.com
The key's randomart image is:
+---[RSA 3072]----+
|        .   .    |
|. .  o   + o     |
| +. . + + = E .  |
|.o.. o B o o . . |
| oo.  + S . + . .|
|  +.. .. . . + o |
| o.. . .= . . o  |
|=.o.  o+ o .     |
|.B+o. o=o .      |
+----[SHA256]-----+
```

git config

git config -- list

git config -- global user.name “Julian Lin”

git config -- global user.email “Julian@sim.edu.sg”

git config – list

git help config

GIT HELP

MINGW64:/c/Users/julianlin/GIT/GitWendy/cloning/git-test

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git help
usage: git [--version] [--help] [-C <path>] [-c <name>=<value>]
           [--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
           [-p | --paginate | -P | --no-pager] [--no-replace-objects] [--bare]
           [--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
           [--super-prefix=<path>] [--config-env=<name>=<envvar>]
           <command> [<args>]

These are common Git commands used in various situations:

start a working area (see also: git help tutorial)
   clone             Clone a repository into a new directory
   init              Create an empty Git repository or reinitialize an existing one

work on the current change (see also: git help everyday)
   add               Add file contents to the index
   mv                Move or rename a file, a directory, or a symlink
   restore           Restore working tree files
   rm                Remove files from the working tree and from the index
   sparse-checkout   Initialize and modify the sparse-checkout

examine the history and state (see also: git help revisions)
   bisect            Use binary search to find the commit that introduced a bug
```

GIT INIT

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning
$ mkdir git-test

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning
$ cd git-test/

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test
$ git init
hint: Using 'master' as the name for the initial branch. This default branch na
me
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in C:/Users/julianlin/GIT/GitWendy/cloning/git
-test/.git/

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ ls -la
total 4
drwxr-xr-x 1 julianlin 1049089 0 Aug 13 19:50 ./
```

SIM GLOBAL EDUCATION

ember of the SIM Group

git status

- Type the following to see the current status of the folder
  - $ git status

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master

No commits yet

nothing to commit (create/copy files and use "git add" to track)

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$
```

notepad/vi/mate/ README.MD

MINGW64:/c/Users/julianlin/GIT/GitWendy/cloning/git-test

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ vi README.md
```

MINGW64:/c/Users/julianlin/GIT/GitWendy/cloning/git-test

```
# This is a readme file.

## This is heading 2

#### I am saving this
~
~
```

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ ls -la
total 9
drwxr-xr-x 1 julianlin 1049089  0 Aug 13 20:02 ./
drwxr-xr-x 1 julianlin 1049089  0 Aug 13 19:50 ../
drwxr-xr-x 1 julianlin 1049089  0 Aug 13 19:59 .git/
-rw-r--r-- 1 julianlin 1049089 70 Aug 13 20:02 README.md
```

Git Status: Change

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master

No commits yet

nothing to commit (create/copy files and use "git add" to track)

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$
```

- Note that README.md is untracked

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README.md

nothing added to commit but untracked files present (use "git add" to track)
```

Git ADD

- Add README.md for tracking, type
  - $ git add README.md
- Check the status again
  - $ git status

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git add README.md
warning: LF will be replaced by CRLF in README.md.
The file will have its original line endings in your working directory

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   README.md


julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
```

Git ADD

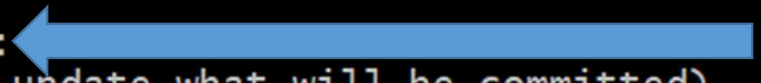
```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ cp README.md README2.md

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ vi README.md

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$
```

MINGW64:/c/Users/julianlin/GIT/G

```
# This is a readme file.

## This is heading 2

#### I am saving this

I am revising this
~
```

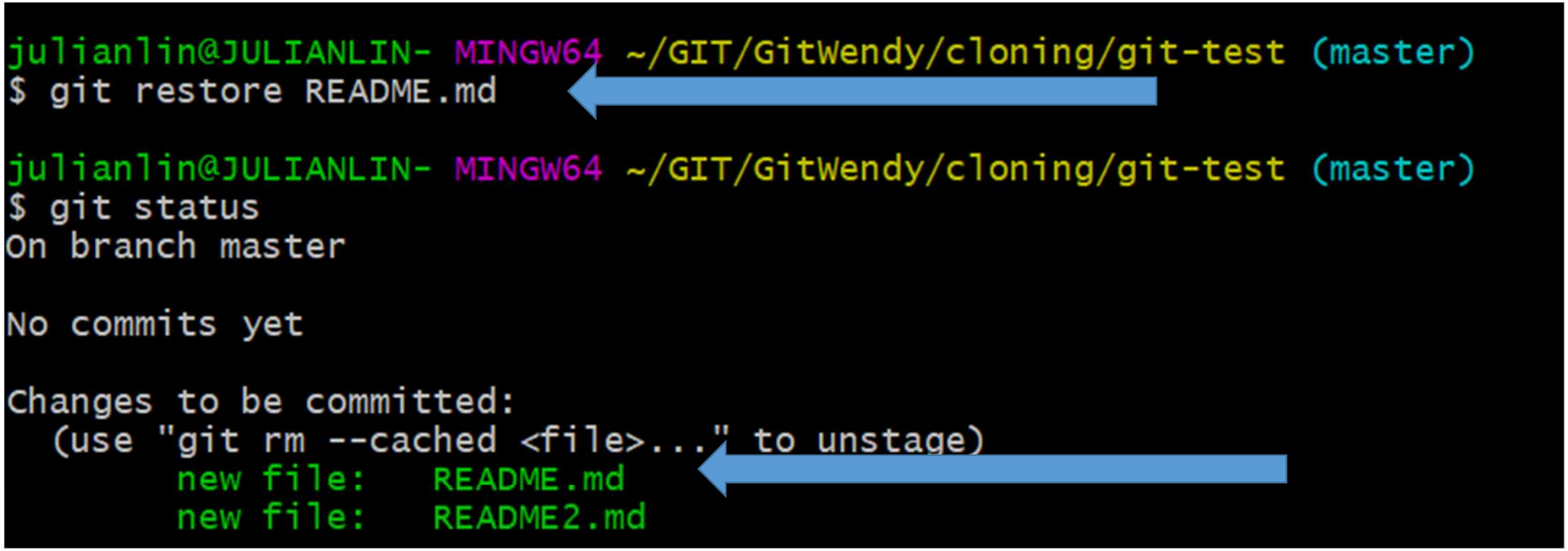
Git Status: Change

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   README.md

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)
        modified:   README.md

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README2.md
```



```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git add README2.md
warning: LF will be replaced by CRLF in README2.md.
The file will have its original line endings in your working directory

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   README.md
        new file:   README2.md

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)
        modified:   README.md
```

Git RESTORE



Git RESTORE

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ vi README.md
```

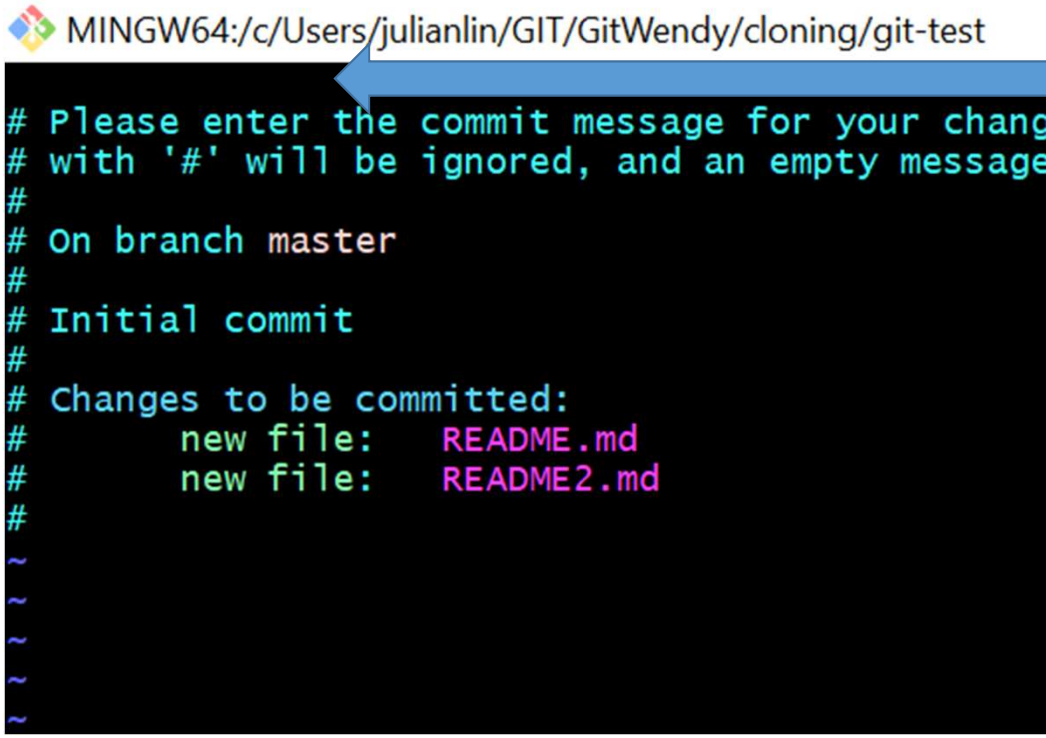
README.md has restored back

MINGW64:/c/Users/julianlin/GIT/GitWendy/cloning/git-test

```
# This is a readme file.

## This is heading 2

#### I am saving this
~
~
```

Git Commit

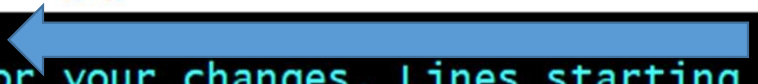
- Commit changes
  - $ git commit
  - Need to add in comments for the commit to take effect
  - In mac, the default editor is vi, it starts in command mode
    - Press “escape” and “i” to enter insert mode
    - Enter some comments
    - Press “escape” and “:x” to exit and save
  - Check the status again



Adding the -a option to the git commit command makes Git automatically stage every file that is already tracked before doing the commit, letting you skip the git add part.

MINGW64:/c/Users/julianlin/GIT/GitWendy/cloning/git-test

```
This is commiting two read files
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# On branch master
#
# Initial commit
#
# Changes to be committed:
#       new file:   README.md
#       new file:   README2.md
#
```



MINGW64:/c/Users/julianlin/GIT/GitWendy/cloning/git-test

```
julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git commit
[master (root-commit) a0e24a5] This is commiting two read files
 2 files changed, 10 insertions(+)
 create mode 100644 README.md
 create mode 100644 README2.md

julianlin@JULIANLIN- MINGW64 ~/GIT/GitWendy/cloning/git-test (master)
$ git status
On branch master
nothing to commit, working tree clean
```

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Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsev
Import a repository.

Owner * **Repository name** *

git1-visualcomms-com / git-test

Great repository names are short and memorable. Need inspiration? How about jubilant-adventure?

Description (optional)

Public
Anyone on the internet can see this repository. You choose who can commit.

Private
You choose who can see and commit to this repository.

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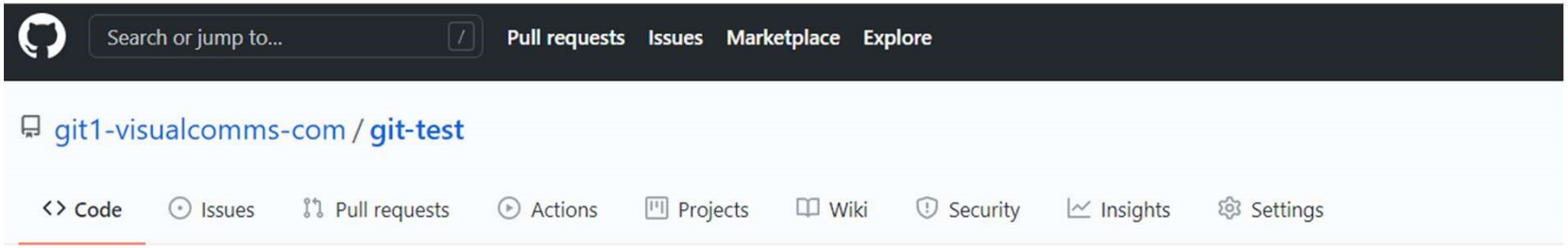

Quick setup — if you've done this kind of thing before

Set up in Desktop or HTTPS SSH `git@github.com:git1-visualcomms-com/git-test.git`

Get started by creating a new file or uploading an existing file. We recommend every repository include a README, LICENSE, and .gitignore.

...or create a new repository on the command line

```
echo "# git-test" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:git1-visualcomms-com/git-test.git
git push -u origin main
```

```
julianlin@JULIANLIN- MINGW64 ~/git-test (master)
$ git remote add origin git@github.com:git1-visualcomms-com/git-test.gi
```

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

```
git remote add origin git@github.com:git1-visualcomms-com/git-test.git
git branch -M main
git push -u origin main
```

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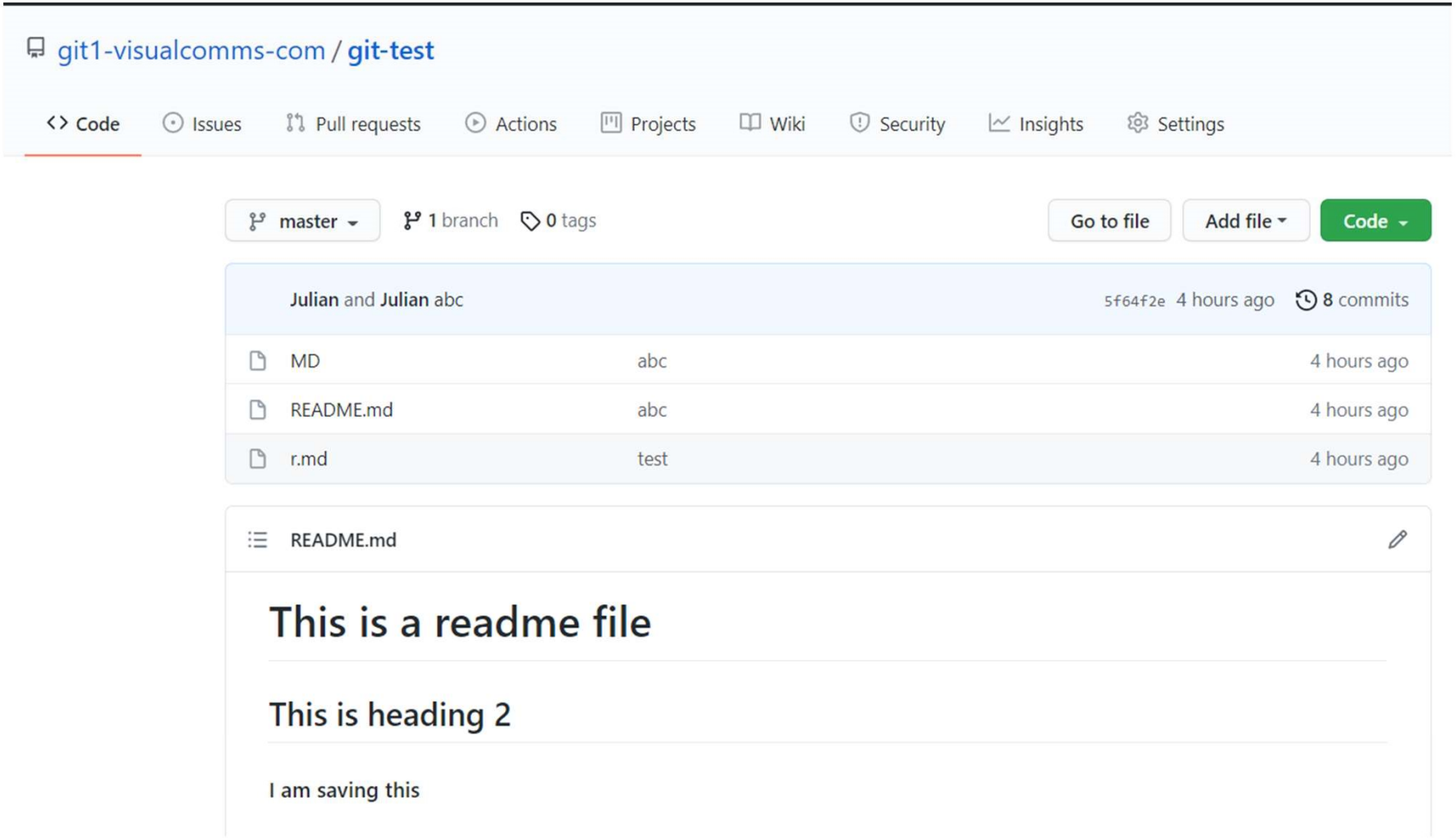
```
julianlin@JULIANLIN- MINGW64 ~/git-test (master)
$ git remote -v
git-test        git1@visualcomms.com (fetch)
git-test        git1@visualcomms.com (push)
origin  git@github.com:git1-visualcomms-com/git-test.git (fetch)
origin  git@github.com:git1-visualcomms-com/git-test.git (push)
```

```
julianlin@JULIANLIN- MINGW64 ~/git-test (master)
$ git push -u origin master
Enumerating objects: 17, done.
Counting objects: 100% (17/17), done.
Delta compression using up to 8 threads
Compressing objects: 100% (13/13), done
Writing objects: 100% (17/17), 1.48 KiB | 503.00 KiB/s, done.
Total 17 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), done.
To github.com:git1-visualcomms-com/git-test.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
```

-u upstream
Origin is the first one
We do not have branch so only master


git1-visualcomms-com / git-test
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
master
1 branch
0 tags
Go to file
Add file
Code
Julian and Julian abc
5f64f2e 4 hours ago
8 commits
MD abc 4 hours ago
README.md abc 4 hours ago
r.md test 4 hours ago
README.md
This is a readme file
This is heading 2
I am saving this

git log

- To see summary of work done, type
  - $ git log

```
julianlin@JULIANLIN- MINGW64 ~/git-test (master)
$ git log
commit 5f64f2e5ab169528ee293cab04ba46aff9904be0 (HEAD -> master, origin/master)
Author: Julian <Julian@test.com>
Date:   Fri Aug 13 20:46:06 2021 +0800

    abc

commit fe1eee602a45422c0fe647f640fee8ac3ce5aaf3
Author: Julian <Julian@test.com>
Date:   Fri Aug 13 20:42:39 2021 +0800

    test

commit 8942b79ae98e781822c7cf9c8fd2a30e39eb22ca
Author: Julian <Julian@test.com>
Date:   Fri Aug 13 20:41:17 2021 +0800
```

The 3 most recent commits:
$git log -3

$ git log --after "2014-02-01“

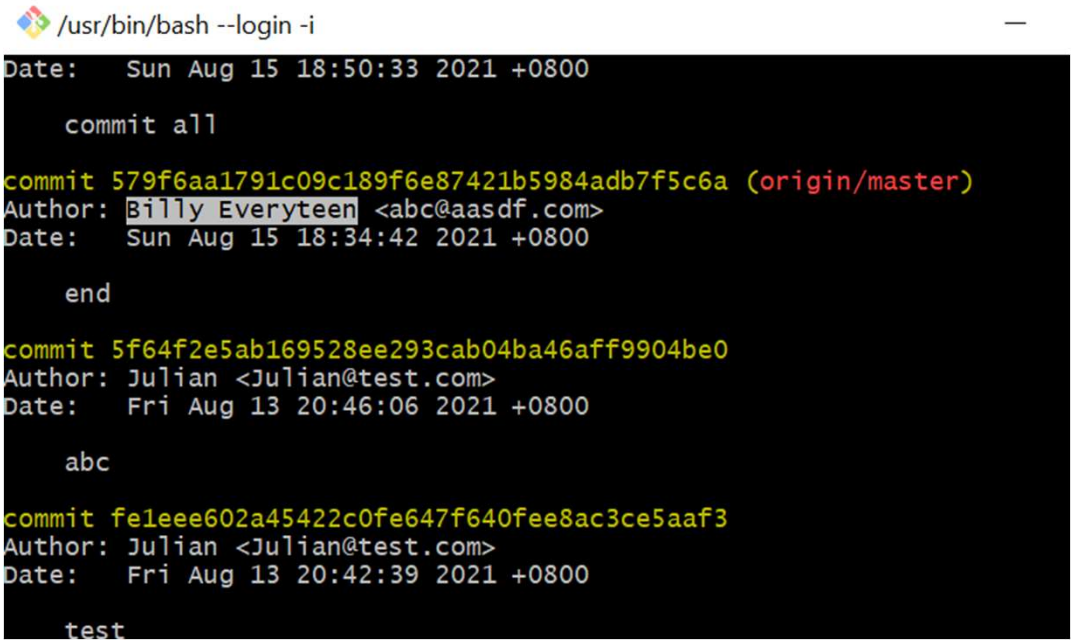
$ git log --before "2014-02-01"

View All Diff of Changes for Each Commit
$ git log -p

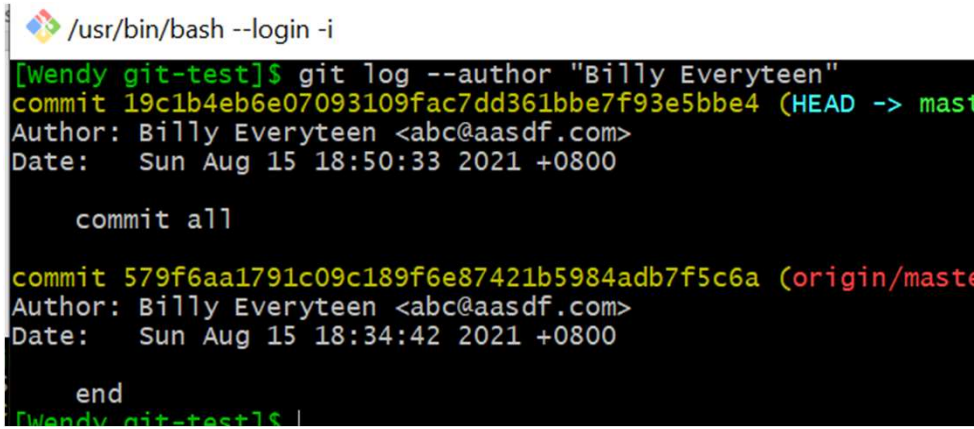
MORE : https://www.thegeekstuff.com/2014/04/git-log/

git log

git log --author <name>

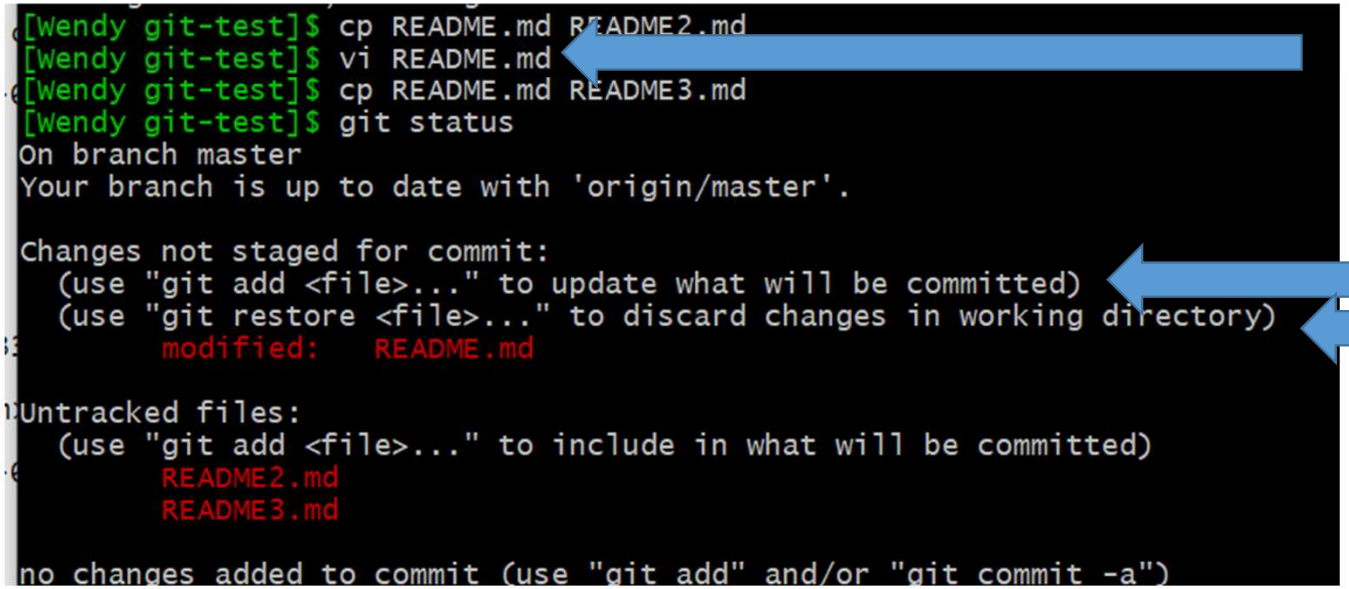


git log --author “Billy”



MORE : https://www.thegeekstuff.com/2014/04/git-log/

git restore (discarding changes in working directory)



$git restore README.md

This command will reverse the modification we did in “vi README.md”, restoring original file

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```
[Wendy git-test]$ cp README.md README2.md
[Wendy git-test]$ vi README.md
[Wendy git-test]$ cp README.md README3.md
[Wendy git-test]$ git status
On branch master
Your branch is up to date with 'origin/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)
        modified:   README.md

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README2.md
        README3.md

no changes added to commit (use "git add" and/or "git commit -a")
```

Changing untracked files would not change the git status

```
[Wendy git-test]$ vi README2.md
[Wendy git-test]$ git status
On branch master
Your branch is up to date with 'origin/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)
        modified:   README.md

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README2.md
        README3.md
```

Changing README2.md

git add . (adding all in the current directory to staging area)

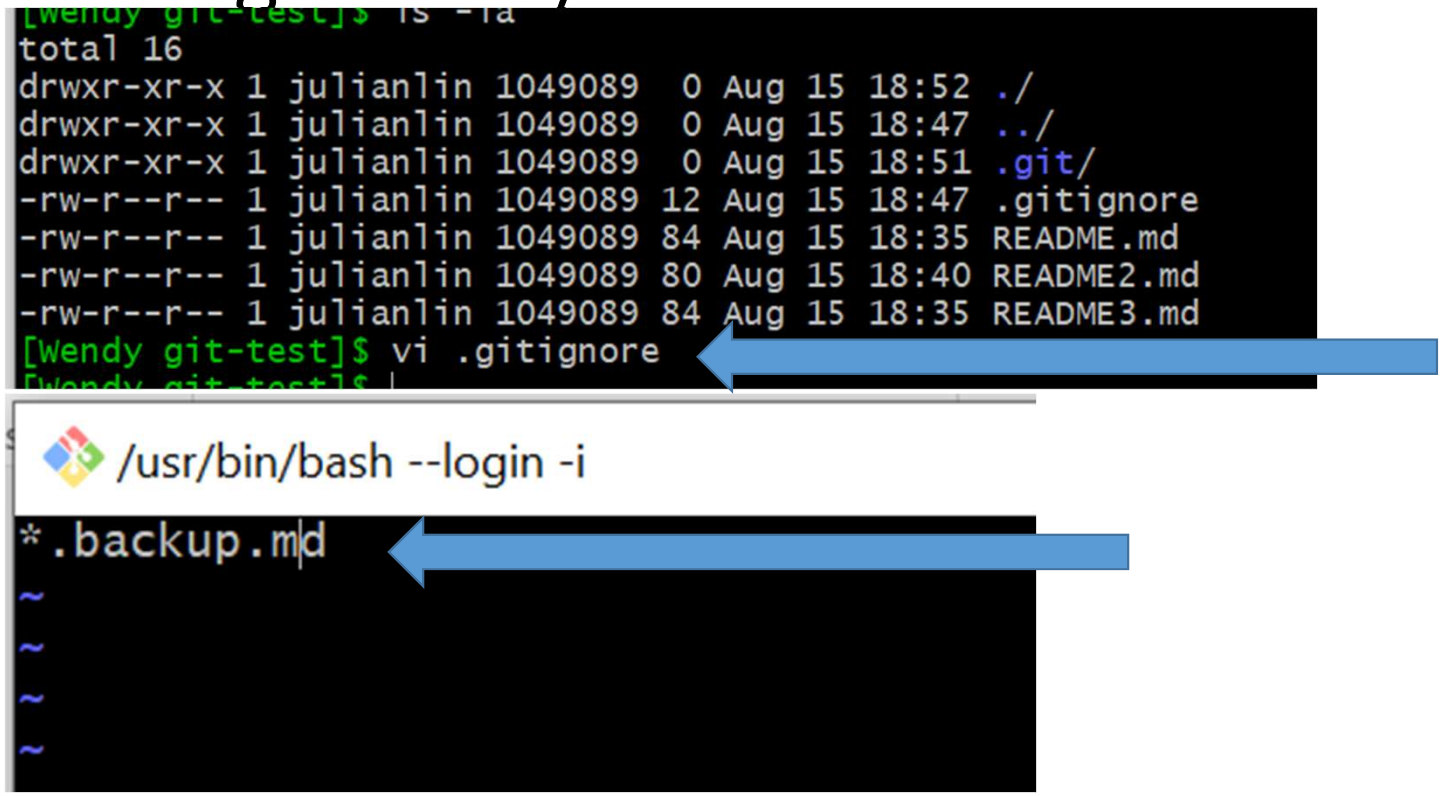
```
[Wendy git-test]$ git status
On branch master
Your branch is up to date with 'origin/master'.

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)
        modified:   README.md

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .gitignore
        README2.md
        README3.md

no changes added to commit (use "git add" and/or "git commit -a")
[Wendy git-test]$ git add .
warning: LF will be replaced by CRLF in .gitignore.
The file will have its original line endings in your working directory
[Wendy git-test]$
```

.gitignore (ignoring files i.e., it won't be asked to stage them)



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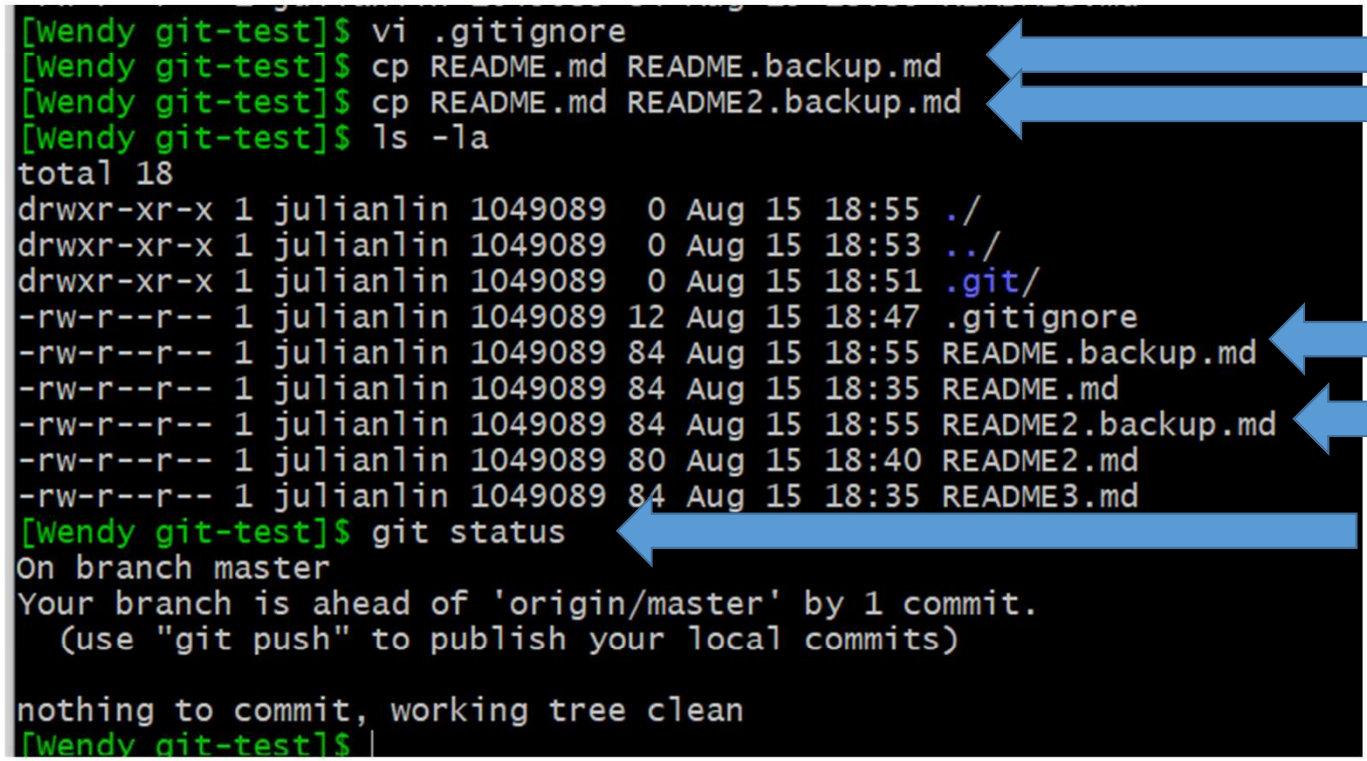
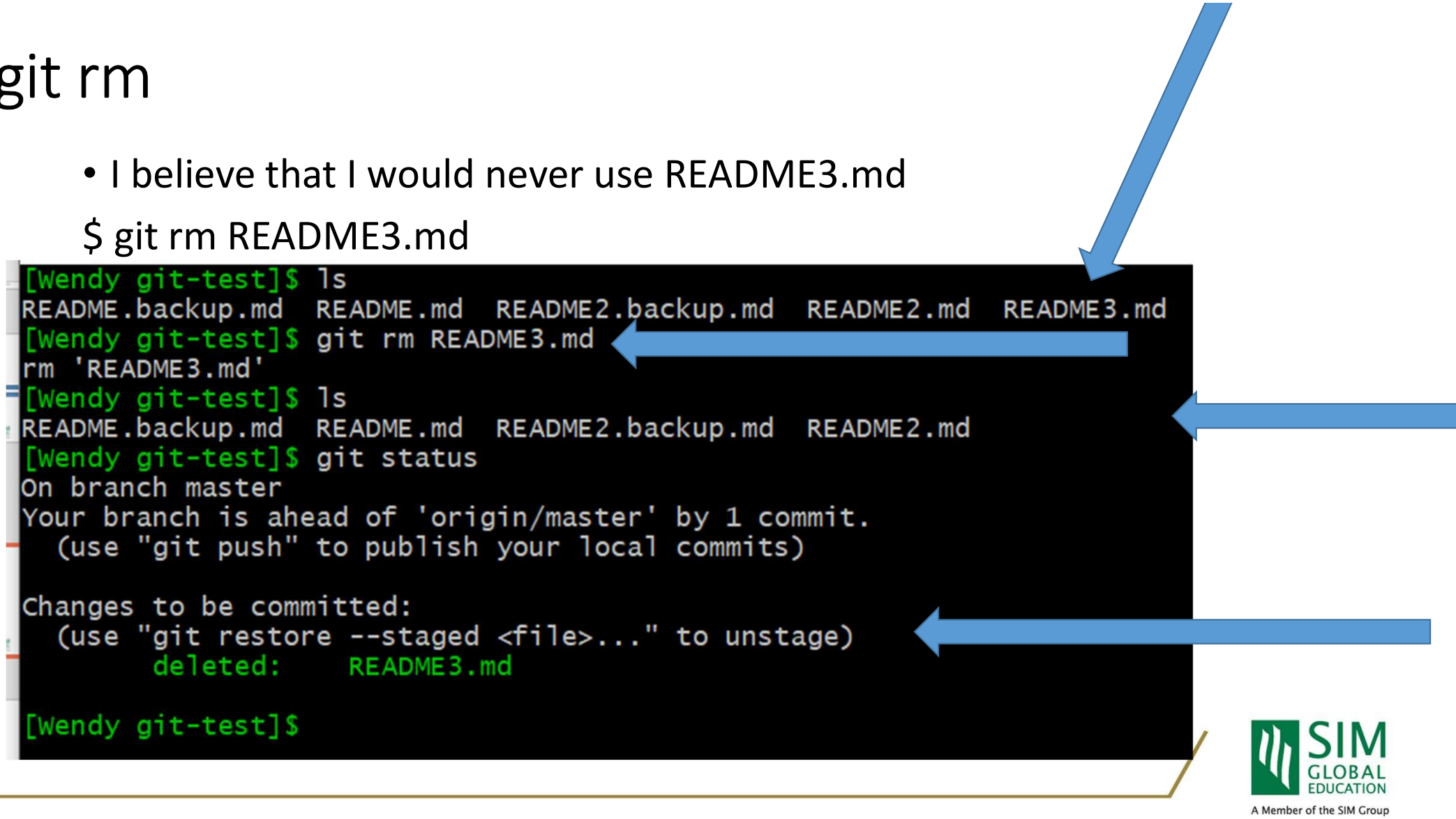
.gitignore (ignoring files i.e., it won't be asked to stage them)



git rm

- I believe that I would never use README3.md

$ git rm README3.md



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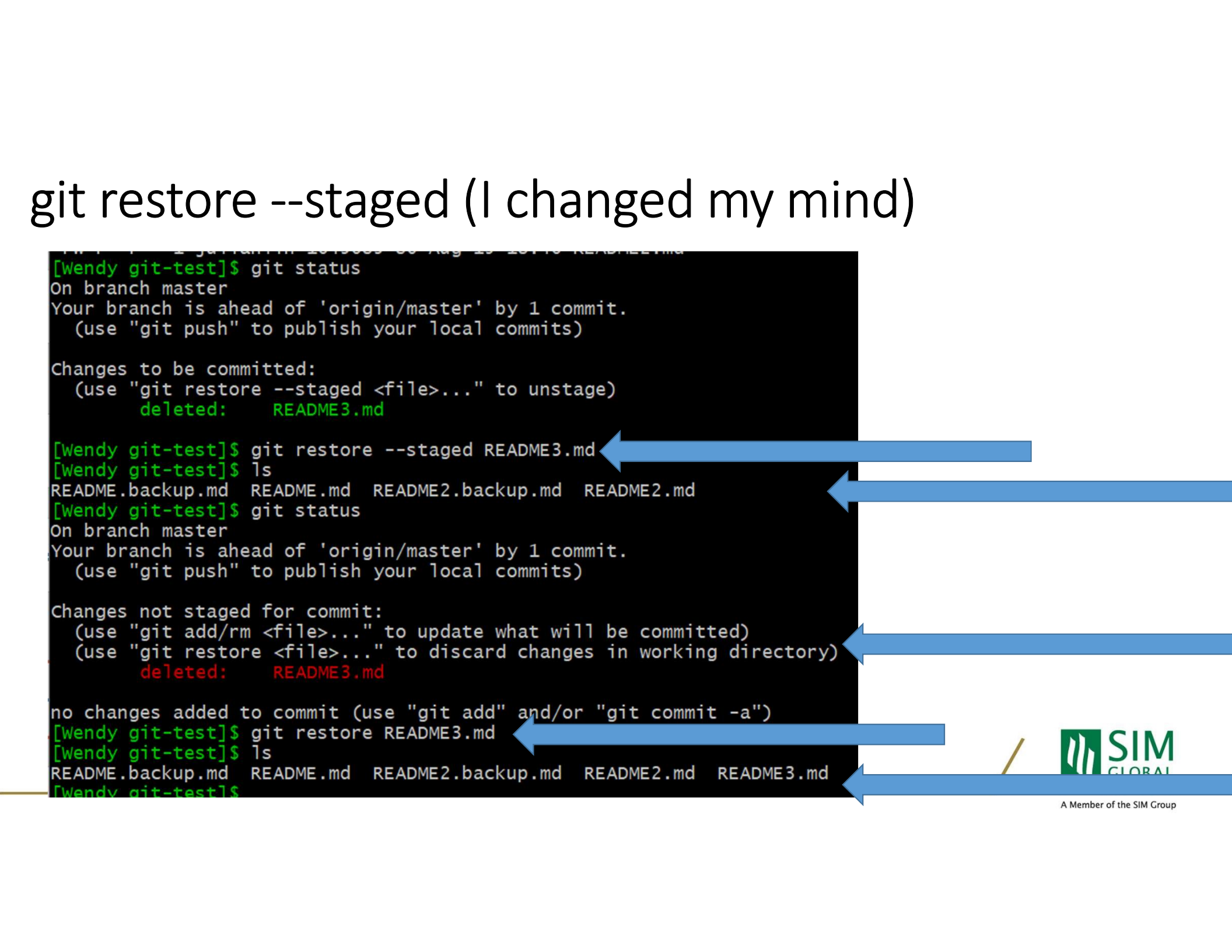
git restore --staged (I changed my mind)

```
[Wendy git-test]$ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        deleted:    README3.md

[Wendy git-test]$ git restore --staged README3.md
[Wendy git-test]$ ls
README.backup.md  README.md  README2.backup.md  README2.md
[Wendy git-test]$ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    README3.md

no changes added to commit (use "git add" and/or "git commit -a")
[Wendy git-test]$ git restore README3.md
[Wendy git-test]$ ls
README.backup.md  README.md  README2.backup.md  README2.md  README3.md
[Wendy git-test]$
```



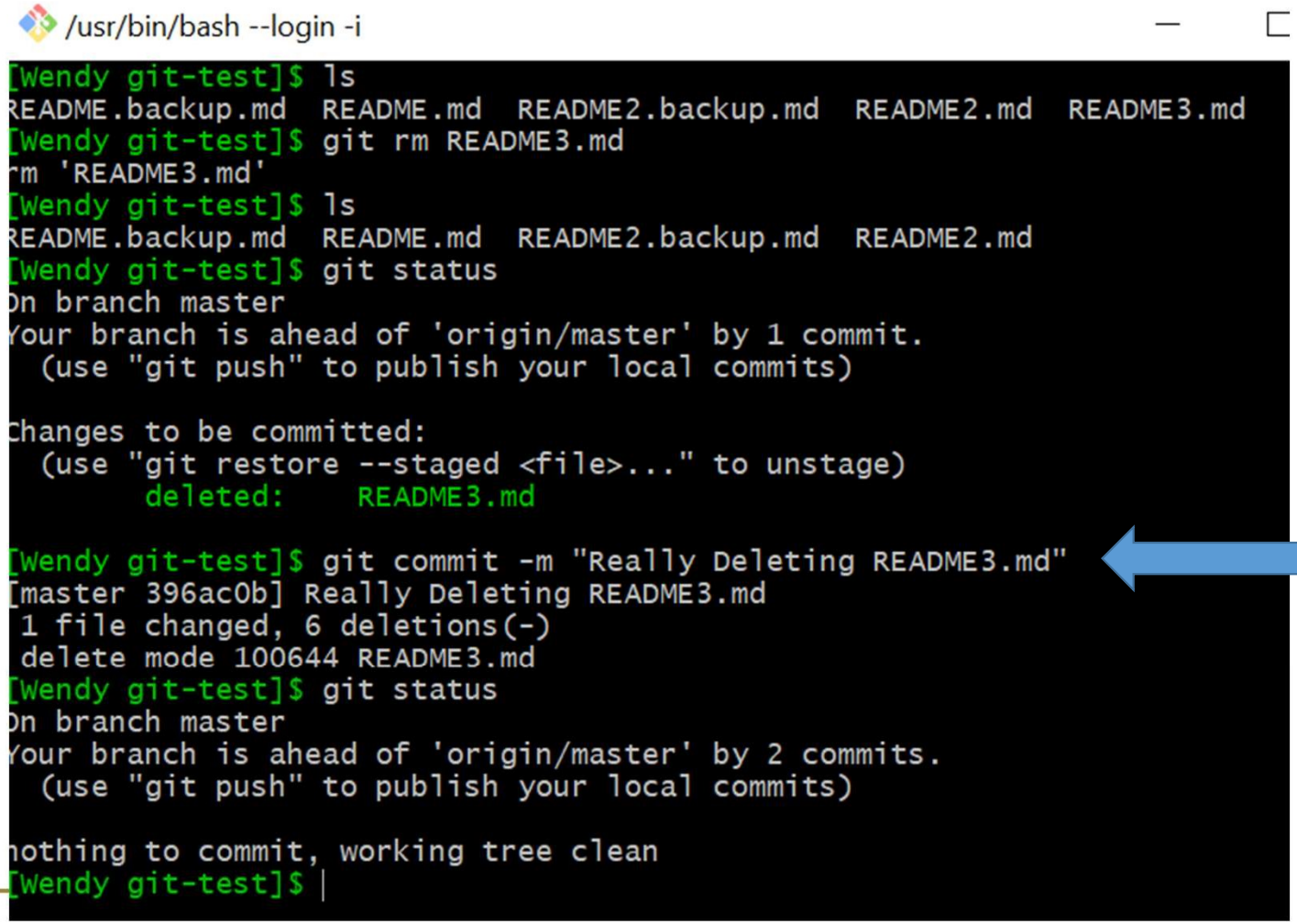
SIM GLOBAL

A Member of the SIM Group

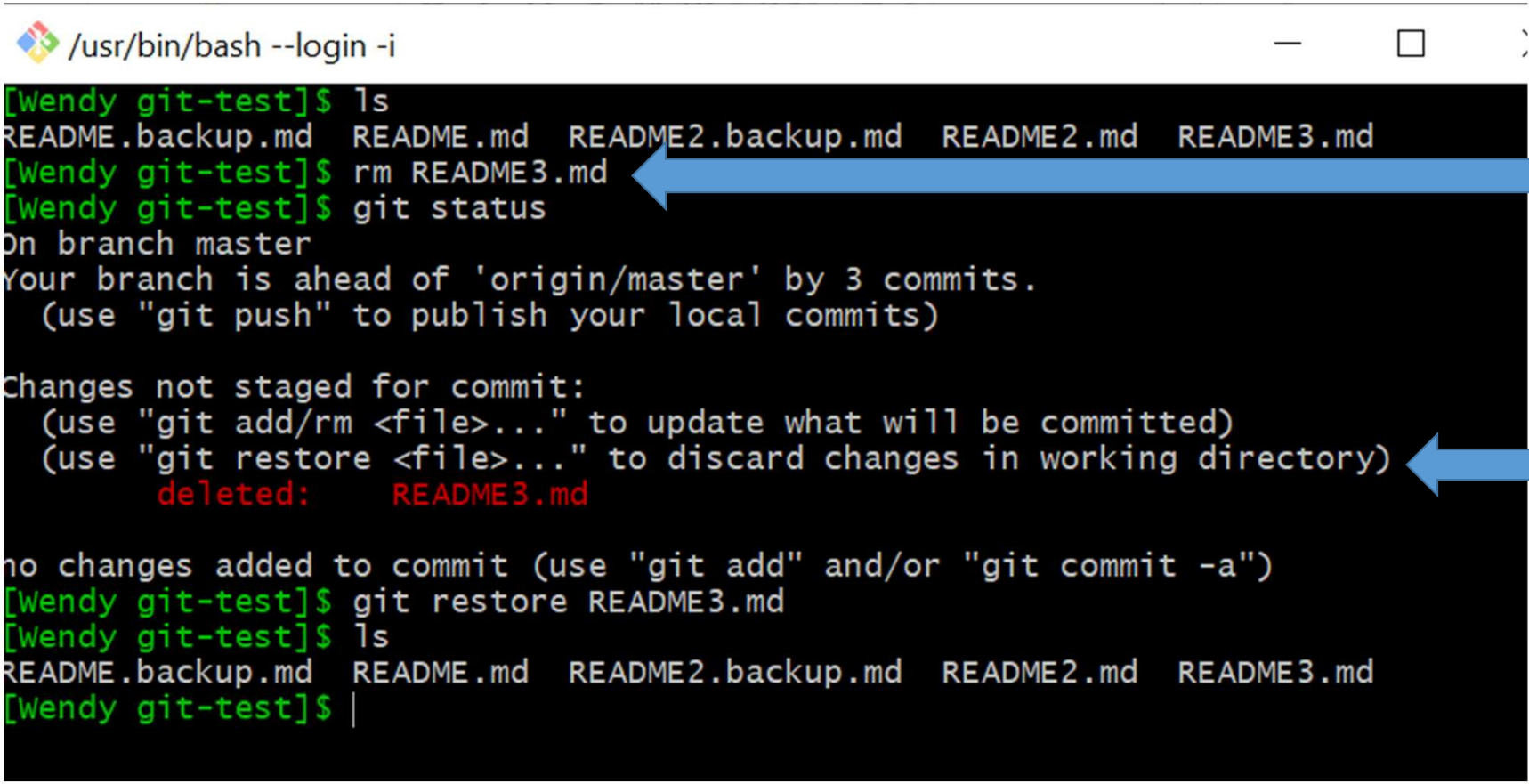
git rm (make up my mind)

- Make up my mind to delete README3.md

$ git rm README3.md



OS' rm



SIM GLOBAL EDUCATION
A Member of the SIM Group

OS' rm

```
[Wendy git-test]$ rm README3.md
[Wendy git-test]$ git status
On branch master
Your branch is ahead of 'origin/master' by 3 commits.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    README3.md

no changes added to commit (use "git add" and/or "git commit -a")
[Wendy git-test]$ git add README3.md
[Wendy git-test]$ git status
On branch master
Your branch is ahead of 'origin/master' by 3 commits.
  (use "git push" to publish your local commits)

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        deleted:    README3.md

[Wendy git-test]$ git commit -m "delete again"
[master c62f237] delete again
 1 file changed, 6 deletions(-)
 delete mode 100644 README3.md
[Wendy git-test]$
```

Moving Delete to Staging Area!

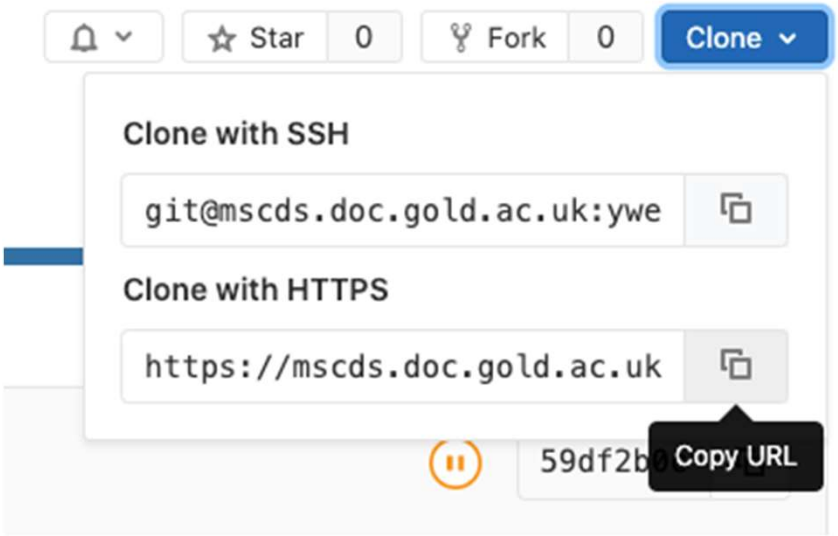
To Unstage it .. i.e., to restore it

We can then commit it!

SIM GLOBAL EDUCATION
A Member of the SIM Group

git clone

- clone
- Copy the clone URL from GitLab



- In command line type:
  - $ git clone <YOUR URL>

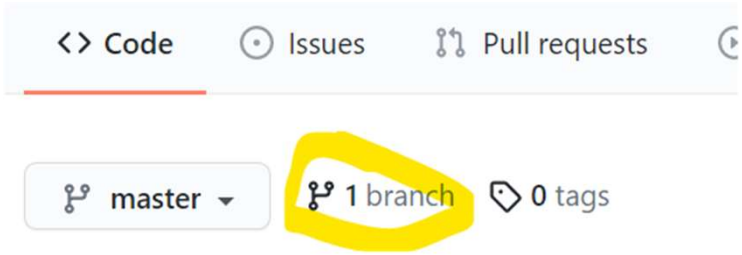
Exercise (10 minutes):

- Create three python files (test1.py, test2.py and test3.py) in the working directory
- Commit and push it to the server.

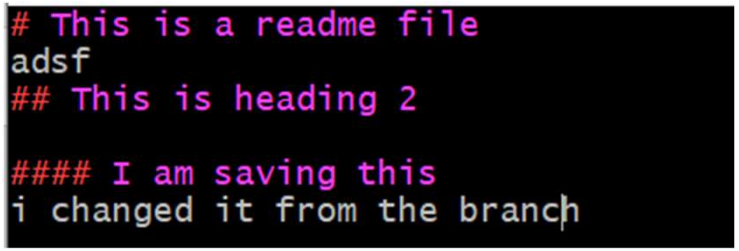
Branching

- In many VCS tools, this is a somewhat expensive process, often requiring you to create a new copy of your source code directory, which can take a long time for large projects.
- The way Git branches is incredibly lightweight, making branching operations nearly instantaneous, and switching back and forth between branches generally just as fast.
- Unlike many other VCSs, Git encourages workflows that branch and merge often, even multiple times in a day. Understanding and mastering this feature gives you a powerful and unique tool and can entirely change the way that you develop.
- More info: https://git-scm.com/book/en/v2/Git-Branching-Branches-in-a-Nutshell

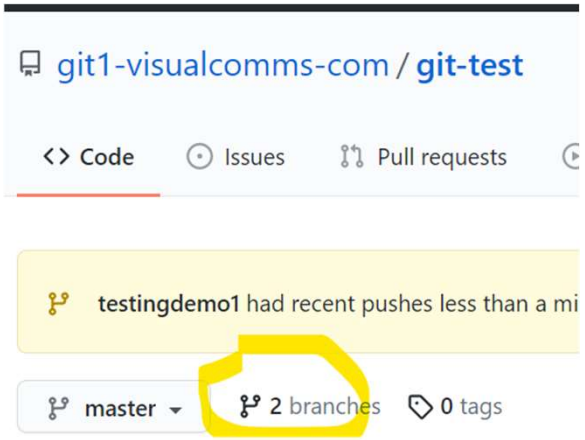
Branching



- Create a new branch
  - $git branch testingdemo1



- Switch to the new branch
  - $git checkout testingdemo1
  - Make some changes in the codes
  - Commit the changes
    - git commit -a
  - Push the changes to server (including the new branch)
    - $git push --set-upstream origin testingdemo1



Branching

```
[Wendy git-test]$ git status
On branch testingdemo1
Your branch is up to date with 'origin/testingdemo1'.

nothing to commit, working tree clean
[Wendy git-test]$
```

- Switch back to master branch
  - $git checkout master
  - Check that the codes in the folder is “switched” back to the old codes.

  - Try switching back and forth between these two branches and notice the changes in the changed code.

```
[Wendy git-test]$ git status
On branch testingdemo1
Your branch is up to date with 'origin/testingdemo1

nothing to commit, working tree clean
[Wendy git-test]$ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
```

```
nothing to commit, working tree clean
[Wendy git-test]$ vi README2.md
[Wendy git-test]$
```

```
# This is a readme file
adsf
## This is heading 2

#### I am saving this
I am MASTER
~
```

Branching

- In testingdemo1 branch
  - Add in a new file README4.md
  - Commit and push to server

```
[Wendy git-test]$ git checkout testingdemo1
Switched to branch 'testingdemo1'
Your branch is up to date with 'origin/testingdemo1'.
[Wendy git-test]$
[Wendy git-test]$
[Wendy git-test]$ vi README4.md
[Wendy git-test]$ git commit -a
On branch testingdemo1
Your branch is up to date with 'origin/testingdemo1'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        README4.md

nothing added to commit but untracked files present (use "git add" to track)
[Wendy git-test]$ git add README4.md
warning: LF will be replaced by CRLF in README4.md.
The file will have its original line ending in your working directory
[Wendy git-test]$ git commit -m "commit"
[testingdemo1 8a99905] commit
 1 file changed, 1 insertion(+)
 create mode 100644 README4.md
```

vi README4.md

git add README4.md

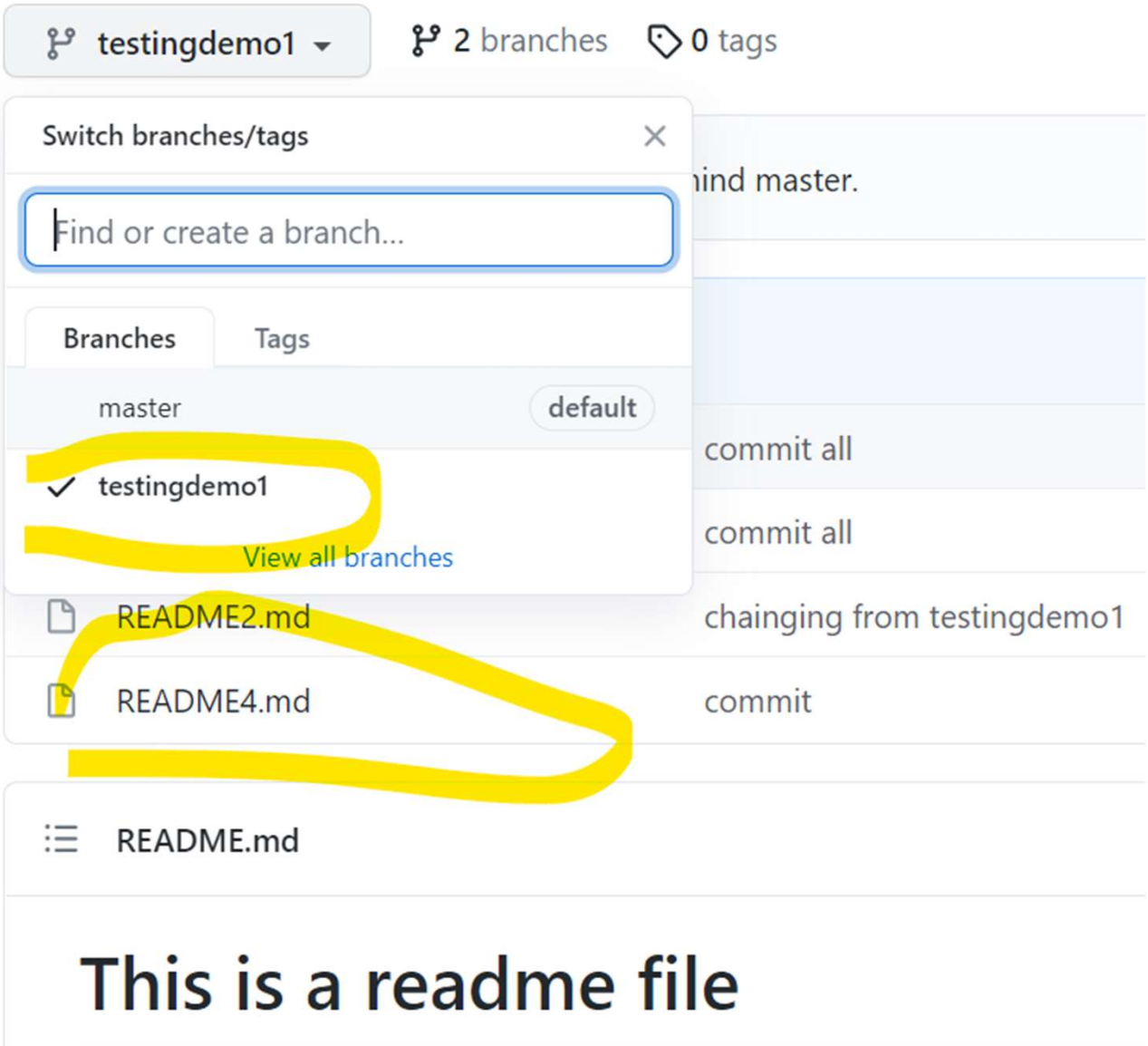
git commit

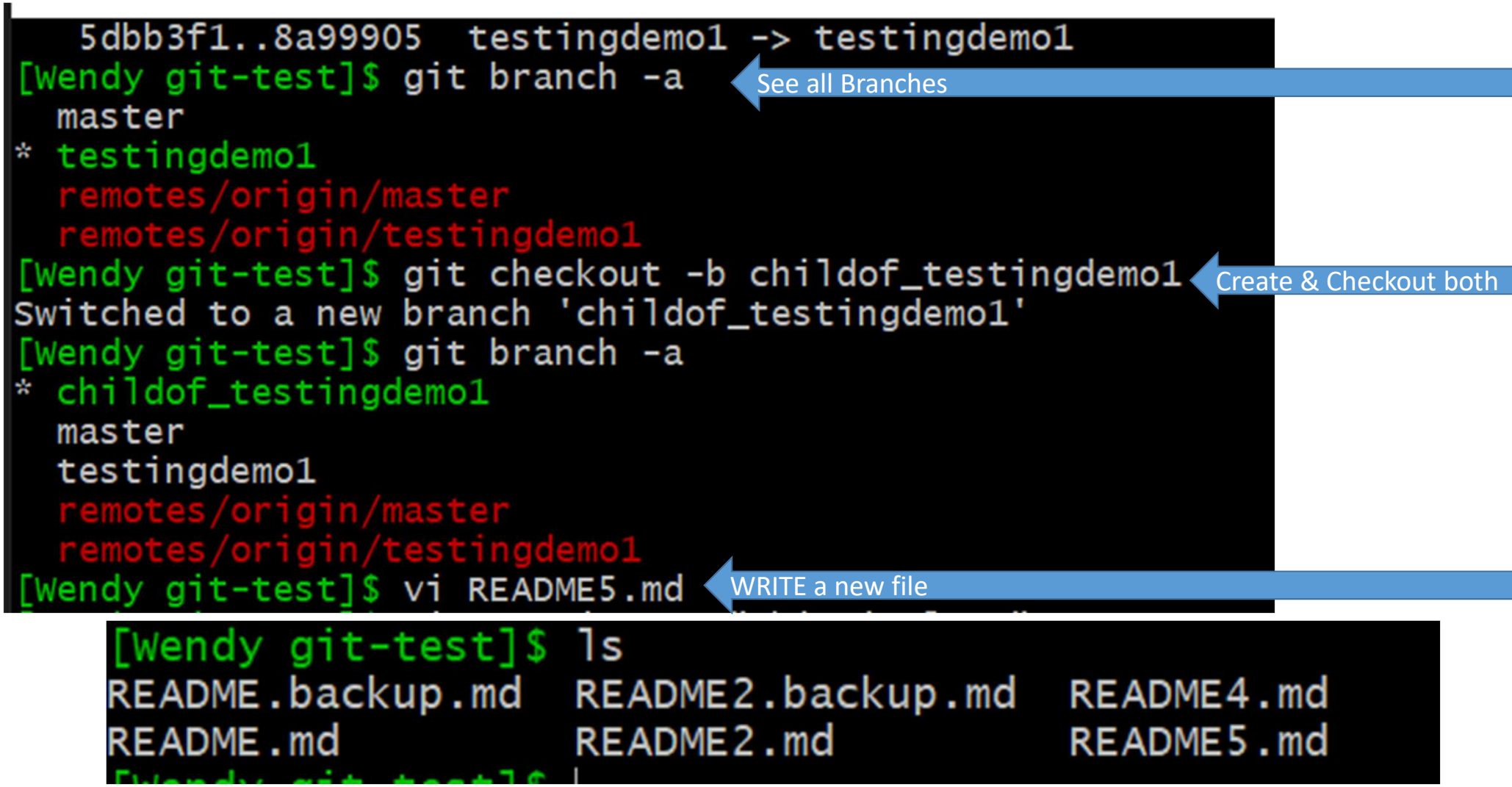
- Try switching back and forth between these two branches and notice the changes in the files content in the folder.

```
[Wendy git-test]$ ls -la
total 18
drwxr-xr-x 1 julianlin 1049089   0 Aug 16 00:26 ./
drwxr-xr-x 1 julianlin 1049089   0 Aug 16 00:26 ../
drwxr-xr-x 1 julianlin 1049089   0 Aug 16 00:26 .git/
-rw-r--r-- 1 julianlin 1049089  12 Aug 15 18:47 .gitignore
-rw-r--r-- 1 julianlin 1049089  84 Aug 15 18:55 README.backup.md
-rw-r--r-- 1 julianlin 1049089  84 Aug 15 18:35 README.md
-rw-r--r-- 1 julianlin 1049089  84 Aug 15 18:55 README2.backup.md
-rw-r--r-- 1 julianlin 1049089 108 Aug 16 00:26 README2.md
-rw-r--r-- 1 julianlin 1049089  19 Aug 16 00:26 README4.md
[Wendy git-test]$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)
[Wendy git-test]$ ls
README.backup.md  README.md  README2.backup.md  README2.md
```

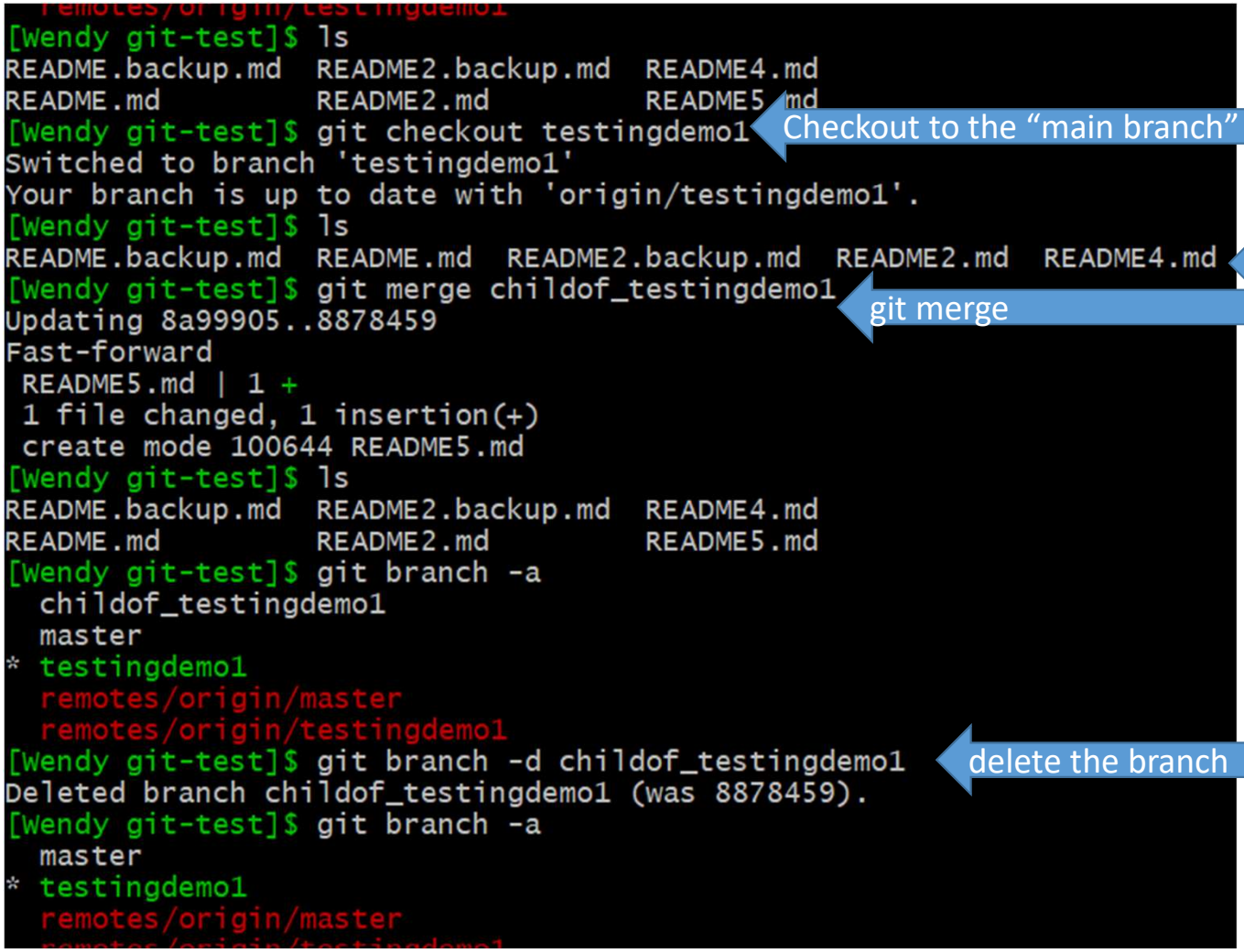
Checkout Master

NO file


testingdemo1
2 branches
0 tags
Switch branches/tags
Find or create a branch...
Branches
Tags
master
default
testingdemo1
View all branches
ind master.
commit all
commit all
README2.md
chainging from testingdemo1
README4.md
commit
README.md
This is a readme file


5dbb3f1..8a99905 testingdemo1 -> testingdemo1
[Wendy git-test]$ git branch -a
See all Branches
master
* testingdemo1
remotes/origin/master
remotes/origin/testingdemo1
[Wendy git-test]$ git checkout -b childof_testingdemo1
Create & Checkout both
Switched to a new branch 'childof_testingdemo1'
[Wendy git-test]$ git branch -a
* childof_testingdemo1
master
testingdemo1
remotes/origin/master
remotes/origin/testingdemo1
[Wendy git-test]$ vi README5.md
WRITE a new file

[Wendy git-test]$ ls
README.backup.md README2.backup.md README4.md
README.md README2.md README5.md

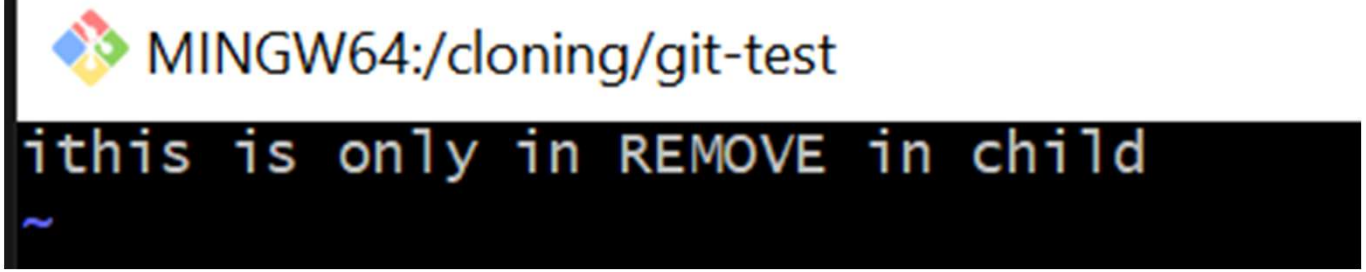


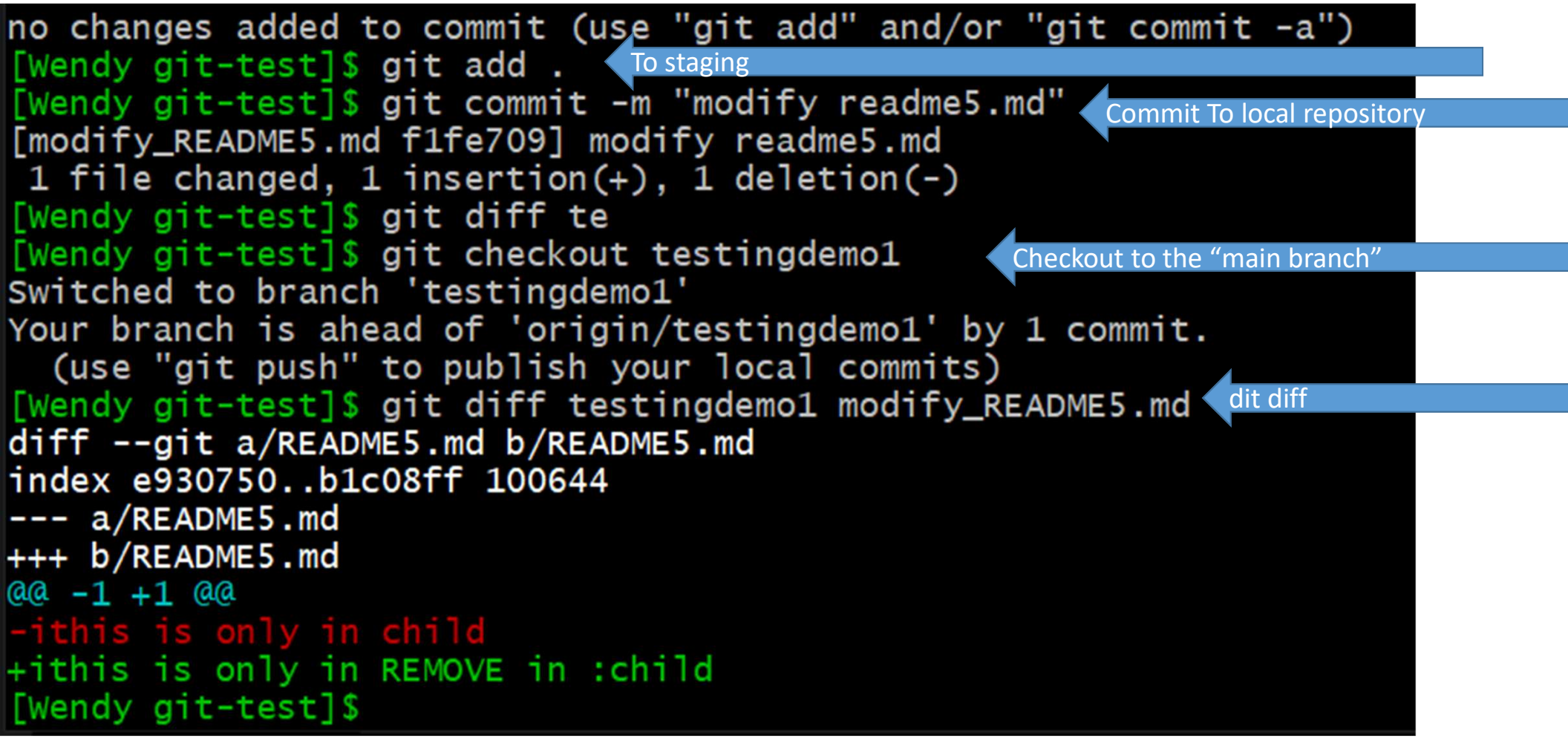
To delete $ git branch –d childof_testingdemo1

```
julianlin@JULIANLIN- MINGW64 /cloning/git-test (testingdemo1)
$ git branch -a
  master
* testingdemo1
  remotes/origin/master
  remotes/origin/testingdemo1

julianlin@JULIANLIN- MINGW64 /cloning/git-test (testingdemo1)
$ ls
README.backup.md   README2.backup.md   README4.md
README.md          README2.md          README5.md

julianlin@JULIANLIN- MINGW64 /cloning/git-test (testingdemo1)
$ git checkout -b modify_README5.md
Switched to a new branch 'modify_README5.md'

julianlin@JULIANLIN- MINGW64 /cloning/git-test (modify_README5.md)
$ vi README5.md

julianlin@JULIANLIN- MINGW64 /cloning/git-test (modify_README5.md)
$
```

Create another branch

Also EDIT README5.md




no changes added to commit (use "git add" and/or "git commit -a")
[Wendy git-test]$ git add .
To staging
[Wendy git-test]$ git commit -m "modify readme5.md"
Commit To local repository
[modify_README5.md f1fe709] modify readme5.md
1 file changed, 1 insertion(+), 1 deletion(-)
[Wendy git-test]$ git diff te
[Wendy git-test]$ git checkout testingdemo1
Checkout to the “main branch”
Switched to branch 'testingdemo1'
Your branch is ahead of 'origin/testingdemo1' by 1 commit.
(use "git push" to publish your local commits)
[Wendy git-test]$ git diff testingdemo1 modify_README5.md
dit diff
diff --git a/README5.md b/README5.md
index e930750..b1c08ff 100644
--- a/README5.md
+++ b/README5.md
@@ -1 +1 @@
-ithis is only in child
+ithis is only in REMOVE in :child
[Wendy git-test]$

$git diff

```
[Wendy git-test]$ git difftool testingdemo1 modify_README5.md

This message is displayed because 'diff.tool' is not configured.
See 'git difftool --tool-help' or 'git help config' for more details.
'git difftool' will now attempt to use one of the following tools:
opendiff kdiff3 tkdiff xxdiff meld kompare gvimdiff diffuse diffmerge ecmerge p4merge
 araxis bc codecompare smerge emerge vimdiff nvimdiff

Viewing (1/1): 'README5.md'
Launch 'vimdiff' [Y/n]?
```

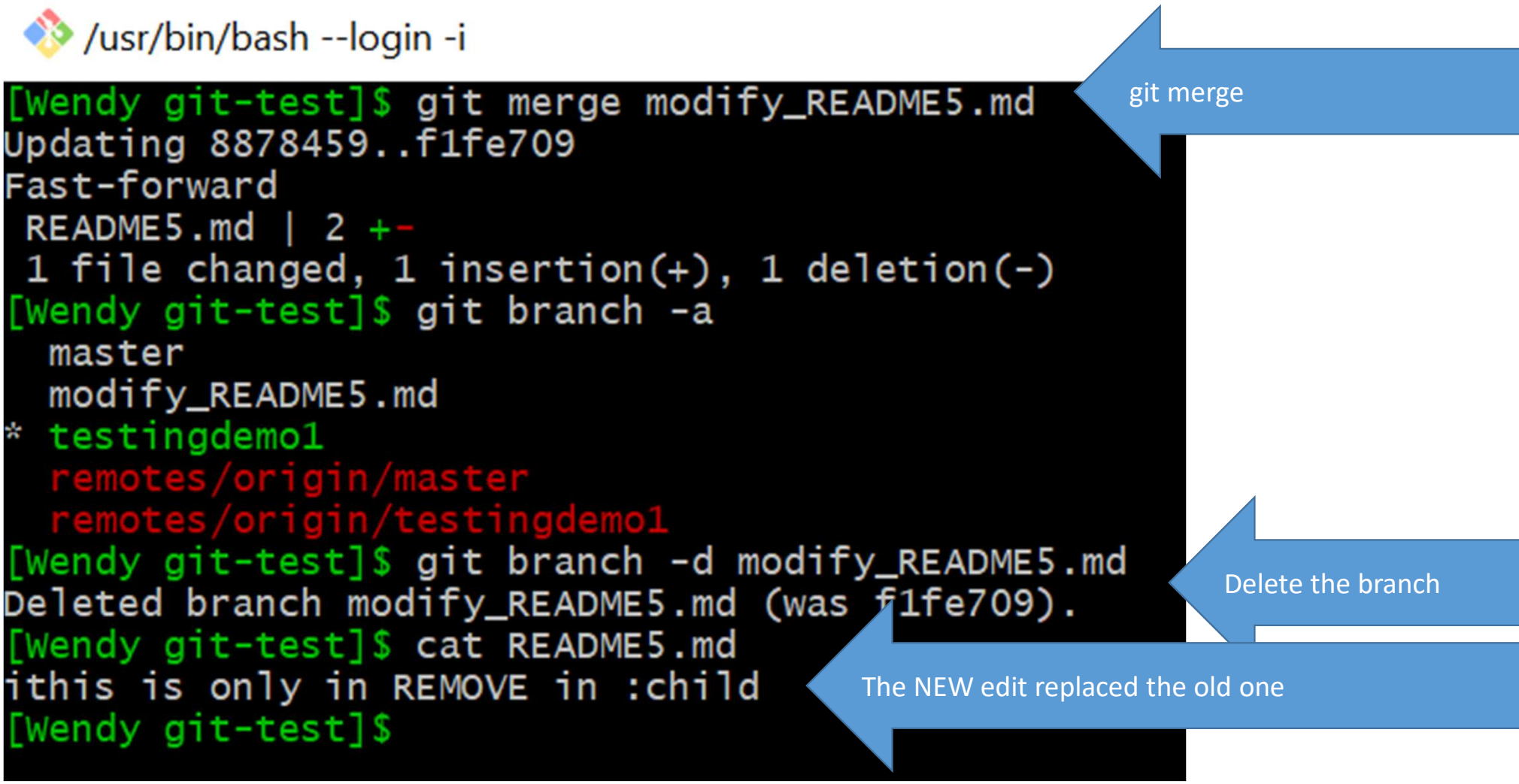
dit difftool

dit difftool

```
ithis is only in child                    ithis is only in REMOVE in :child
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
~                                         ~
E5.md[RO] [dos] (01:19 16/08/2021)1,1 All <E5.md[RO] [dos] (01:19 16/08/2021)1,1 All
```

ONLY the child change..
NO CONFLICT

```
/usr/bin/bash --login -i
[Wendy git-test]$ git merge modify_README5.md
Updating 8878459..f1fe709
Fast-forward
 README5.md | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
[Wendy git-test]$
```

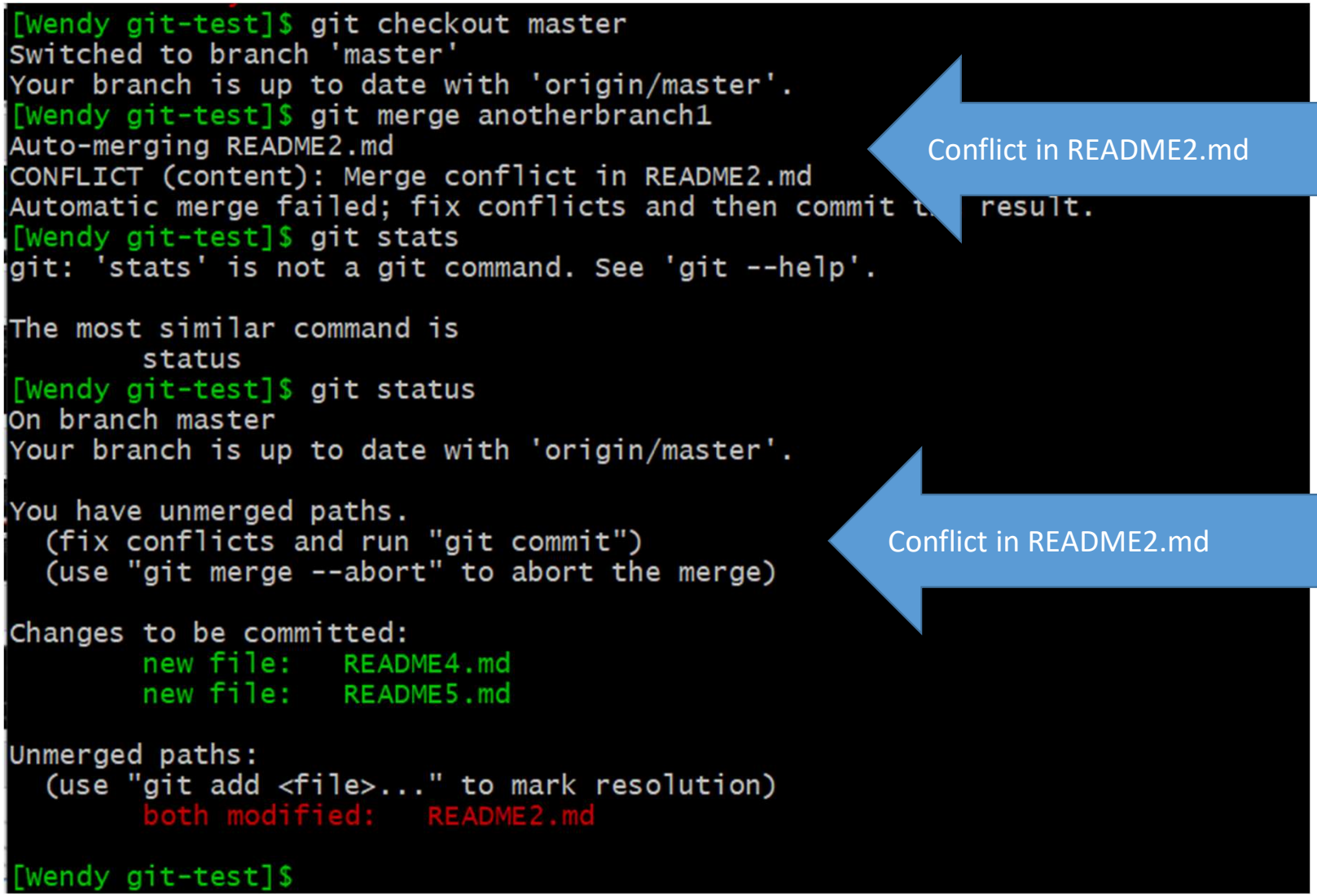

/usr/bin/bash --login -i
[Wendy git-test]$ git merge modify_README5.md
Updating 8878459..f1fe709
Fast-forward
 README5.md | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
[Wendy git-test]$ git branch -a
  master
  modify_README5.md
* testingdemo1
  remotes/origin/master
  remotes/origin/testingdemo1
[Wendy git-test]$ git branch -d modify_README5.md
Deleted branch modify_README5.md (was f1fe709).
[Wendy git-test]$ cat README5.md
ithis is only in REMOVE in :child
[Wendy git-test]$
git merge
Delete the branch
The NEW edit replaced the old one

Summary: Merging

- Make sure you are currently in master branch
  - $ git checkout master
- Merge testingdemo1 into master
  - $git merge testingdemo1
- Since the work in testingdemo1 is merged into master and is non longer required, we can delete the branch
  - $ git branch -d testingdemo1
- At this point of time, the server branch is not deleted yet, to delete:
  - $ git push origin --delete testingdemo1
- https://git-scm.com/book/en/v2/Git-Branching-Basic-Branching-and-Merging

Merging with conflict

- Create a new branch
  - $ git branch test
- In the test branch, add in a new line to one of the file
- In the master branch, add in another new line in the “same” file.
- In the master branch, try to merge test branch into master
  - You will encounter an error
  - See the status ($git status) to identify which file in conflict.
  - Open the conflict file and resolve those conflicts. (next slide)


[Wendy git-test]$ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
[Wendy git-test]$ git merge anotherbranch1
Auto-merging README2.md
CONFLICT (content): Merge conflict in README2.md
Automatic merge failed; fix conflicts and then commit t result.
[Wendy git-test]$ git stats
git: 'stats' is not a git command. See 'git --help'.
The most similar command is
status
[Wendy git-test]$ git status
On branch master
Your branch is up to date with 'origin/master'.
You have unmerged paths.
(fix conflicts and run "git commit")
(use "git merge --abort" to abort the merge)
Changes to be committed:
new file: README4.md
new file: README5.md
Unmerged paths:
(use "git add <file>..." to mark resolution)
both modified: README2.md
[Wendy git-test]$
Conflict in README2.md
Conflict in README2.md

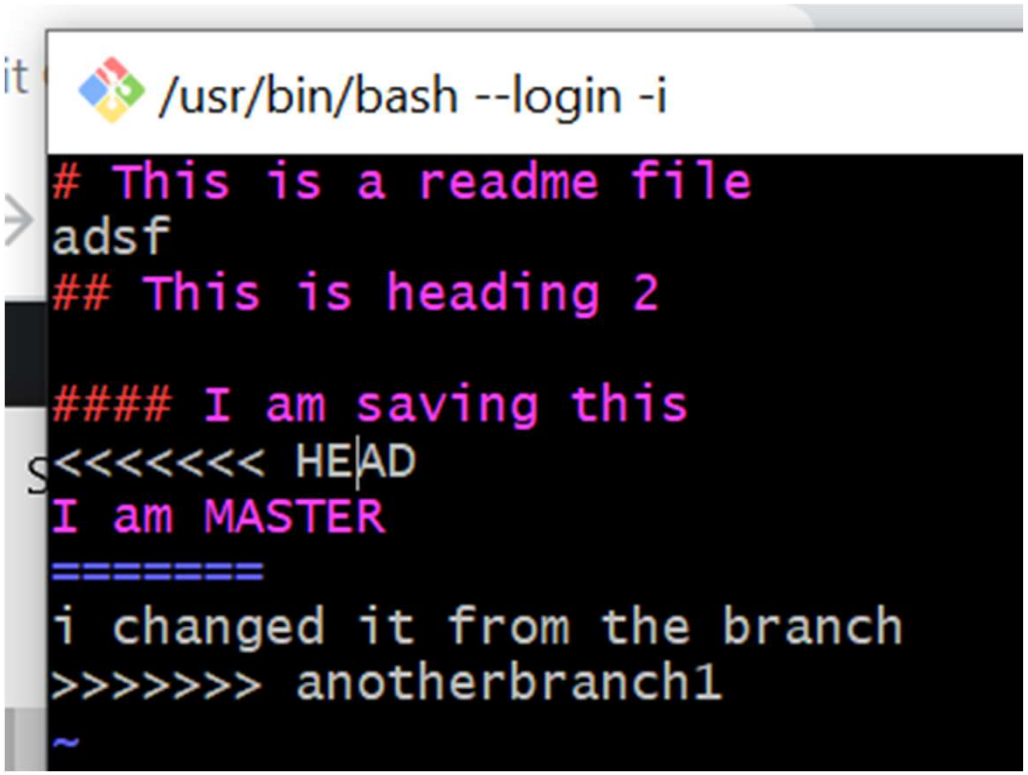
/usr/bin/bash --login -i

```
[Wendy git-test]$ git diff master testingdemo1
diff --git a/README2.md b/README2.md
index 98bafa4..1ed6c97 100644
--- a/README2.md
+++ b/README2.md
@@ -3,4 +3,4 @@ adsf
 ## This is heading 2

 #### I am saving this
-I am MASTER
+i changed it from the branch
diff --git a/README4.md b/README4.md
new file mode 100644
index 0000000..aa0e609
--- /dev/null
+++ b/README4.md
@@ -0,0 +1 @@
+ S  THI IS README4
diff --git a/README5.md b/README5.md
new file mode 100644
index 0000000..b1c08ff
--- /dev/null
+++ b/README5.md
@@ -0,0 +1 @@
+this is only in REMOVE in :child
[Wendy git-test]$ git difftool master testingdemo1

This message is displayed because 'diff.tool' is not configured.
See 'git difftool --tool-help' or 'git help config' for more details.
'git difftool' will now attempt to use one of the following tools:
opendiff kdiff3 tkdiff xxdiff meld kompare gvimdiff diffuse diffmerge ecmerge p4merge araxis bc codecompare sm
erge emerge vimdiff nvimdiff

Viewing (1/3): 'README2.md'
Launch 'vimdiff' [Y/n]? Y
2 files to edit
```

```
# This is a readme file
adsf
## This is heading 2

#### I am saving this
I am MASTER
```

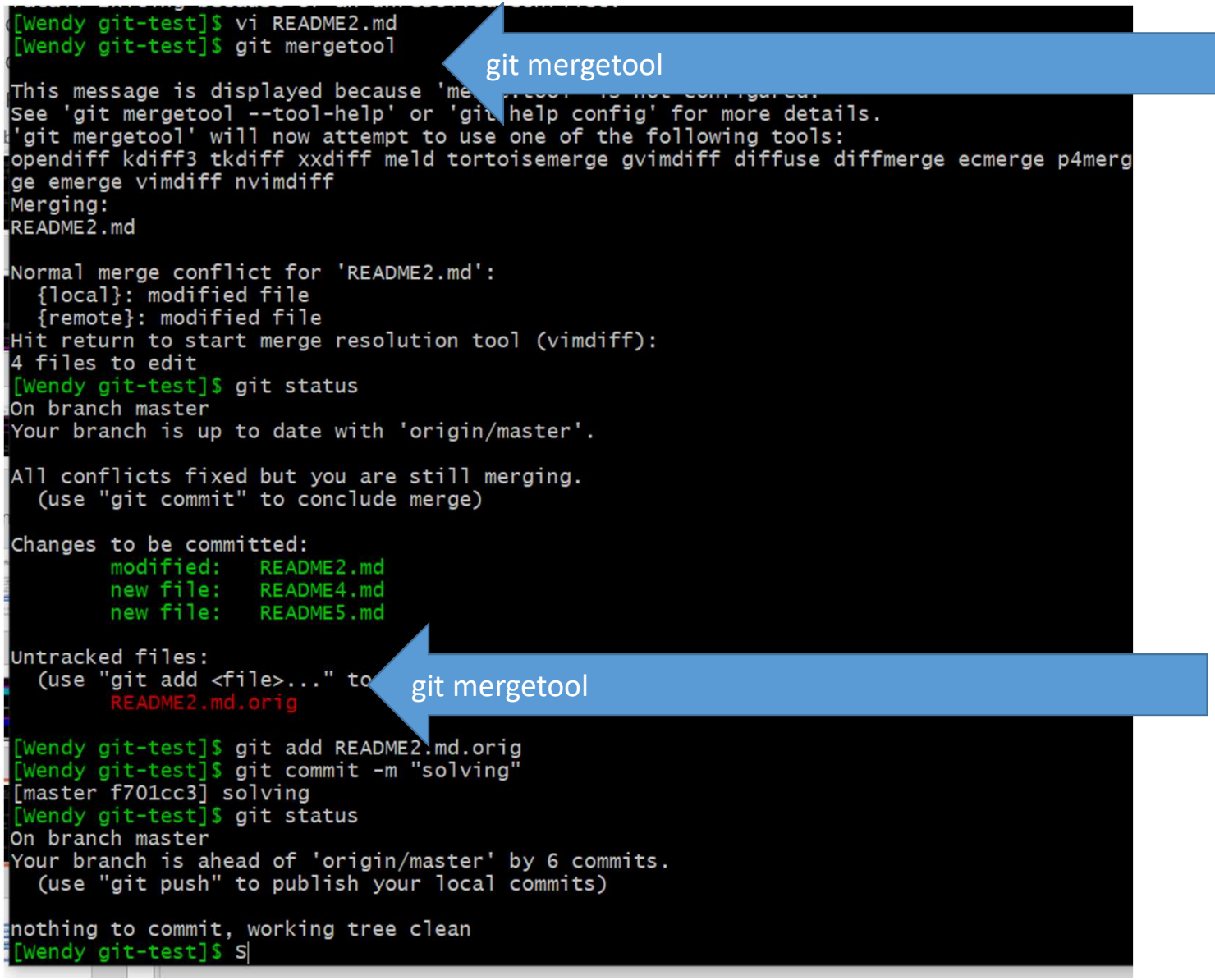
```
# This is a readme file
adsf
## This is heading 2

#### I am saving this
i changed it from the branch
```

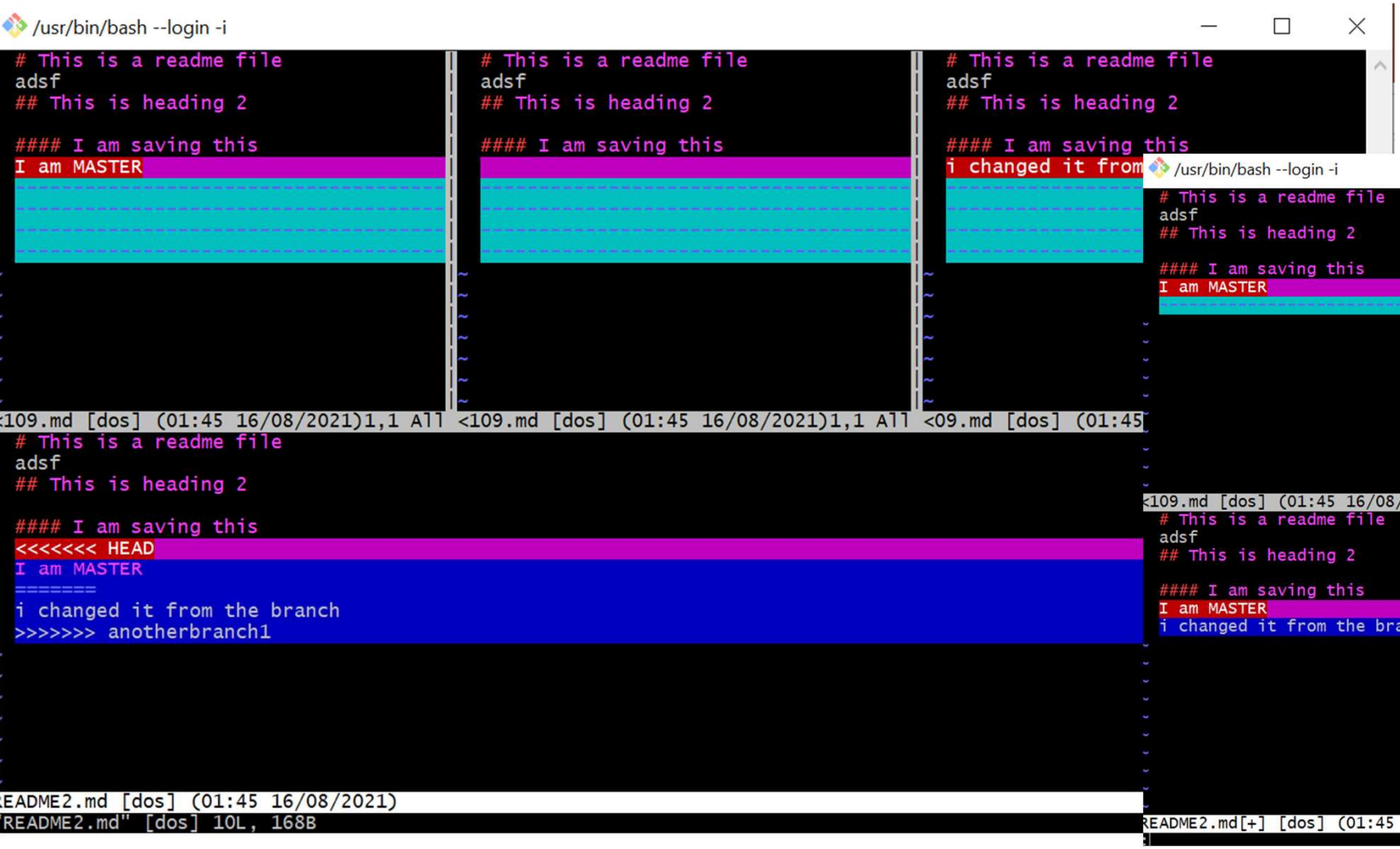
vi README2.md



Merging with conflict

- Resolve those conflicts
  - To see the beginning of the merge conflict in your file, search the file for the conflict marker <<<<<<<. When you open the file in your text editor, you'll see the changes from the HEAD or base branch after the line <<<<<<< HEAD. Next, you'll see =======, which divides your changes from the changes in the other branch, followed by >>>>>>> BRANCH-NAME.
  - https://docs.github.com/en/github/collaborating-with-issues-and-pull-requests/resolving-a-merge-conflict-using-the-command-line
- $ **git mergetool**
- After resolving the conflicts, commit the changes
- Push the changes to the server.
- Delete the branch.


[Wendy git-test]$ vi README2.md
[Wendy git-test]$ git mergetool
This message is displayed because 'me
See 'git mergetool --tool-help' or 'git help config' for more details.
'git mergetool' will now attempt to use one of the following tools:
opendiff kdiff3 tkdiff xxdiff meld tortoisemerge gvimdiff diffuse diffmerge ecmerge p4merg
ge emerge vimdiff nvimdiff
Merging:
README2.md
Normal merge conflict for 'README2.md':
{local}: modified file
{remote}: modified file
Hit return to start merge resolution tool (vimdiff):
4 files to edit
[Wendy git-test]$ git status
On branch master
Your branch is up to date with 'origin/master'.
All conflicts fixed but you are still merging.
(use "git commit" to conclude merge)
Changes to be committed:
modified: README2.md
new file: README4.md
new file: README5.md
Untracked files:
(use "git add <file>..." to
README2.md.orig
[Wendy git-test]$ git add README2.md.orig
[Wendy git-test]$ git commit -m "solving"
[master f701cc3] solving
[Wendy git-test]$ git status
On branch master
Your branch is ahead of 'origin/master' by 6 commits.
(use "git push" to publish your local commits)
nothing to commit, working tree clean
[Wendy git-test]$ S
git mergetool
git mergetool


/usr/bin/bash --login -i
This is a readme file
adsf
This is heading 2
I am saving this
I am MASTER
i changed it from
<109.md [dos] (01:45 16/08/2021)1,1 All
<09.md [dos] (01:45
<<<<<<< HEAD
I am MASTER
=======
i changed it from the branch
>>>>>>> anotherbranch1
README2.md [dos] (01:45 16/08/2021)
"README2.md" [dos] 10L, 168B
<109.md [dos] (01:45 16/08/2021)6,1 All
<9.md [dos] (01:45
README2.md[+] [dos] (01:45 16/08/2021)

```
[Wendy git-test]$ git add README2.md.orig
[Wendy git-test]$ git commit -m "solving"
[master f701cc3] solving
[Wendy git-test]$ git status
On branch master
Your branch is ahead of 'origin/master' by 6 commits.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
[Wendy git-test]$ cat README2.md
README2.md       README2.md.orig
[Wendy git-test]$ cat README2.md
# This is a readme file
adsf
## This is heading 2

#### I am saving this
I am MASTER
i changed it from the branch
[Wendy git-test]$ cat README2.md.orig
# This is a readme file
adsf
## This is heading 2

#### I am saving this
<<<<<<< HEAD
I am MASTER
=======
i changed it from the branch
>>>>>>> anotherbranch1
[Wendy git-test]$
```

References:

- https://education.github.com/git-cheat-sheet-education.pdf
- https://dev.to/kodekloud/devops-git-for-beginners-33bc
- https://kevinkotze.github.io/github-tut/exploring-history.html
- https://reproducible-science-curriculum.github.io/sharing-RR-Jupyter/01-sharing-github/

- https://mg.readthedocs.io/git-jupyter.html