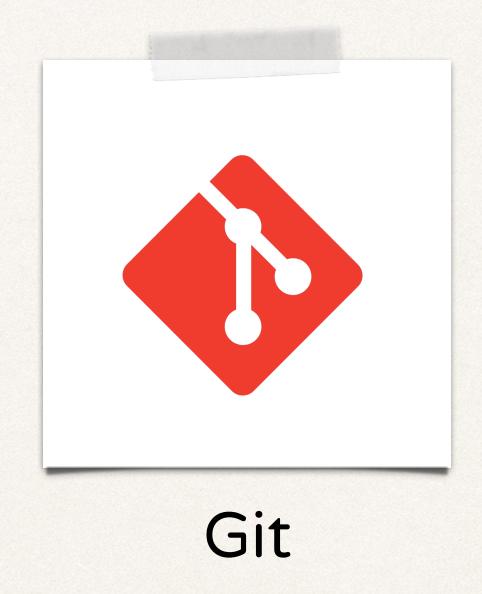
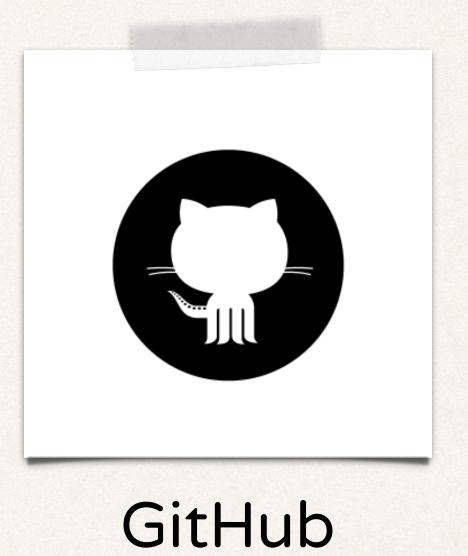
Basics of





Why this Webinar?

- You registered for Microsoft codefundo++
- Deadline to submit your idea is OCT 12TH, 23:59 IST
- Getting you started with Git & GitHub

Agenda

- What is Version Control?
- What is the difference between Git & GitHub?
- How to get Git running on your system
- How to get started with Git
- How to get started with GitHub

Origin

Who created Git?

Linus Torvalds

When?

2005

Why?

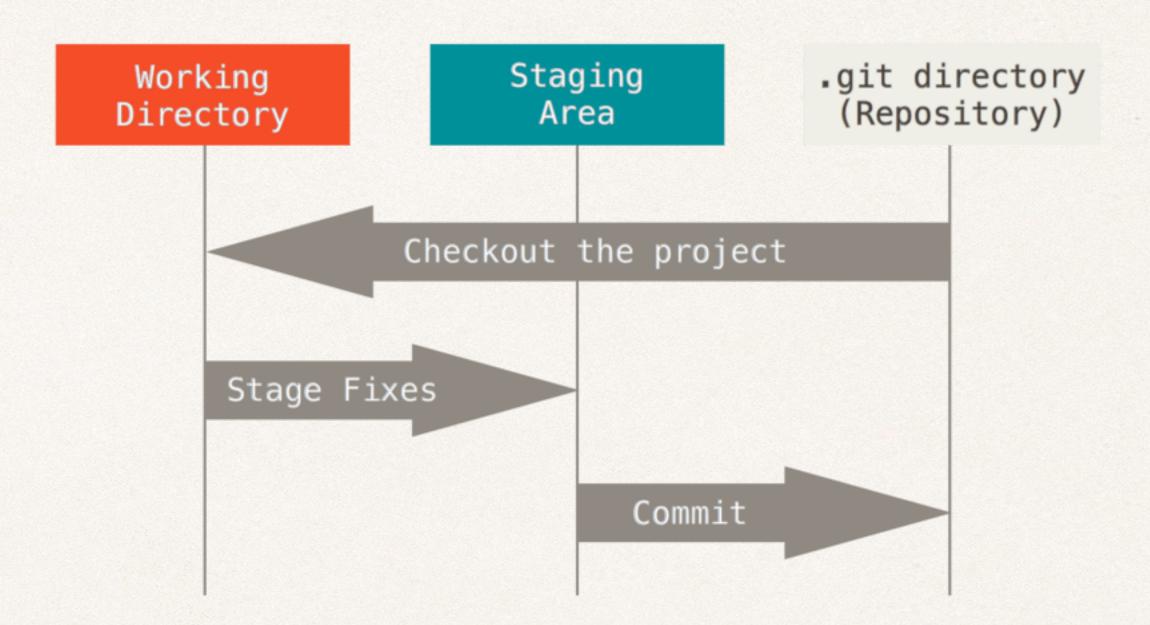
For development of the Linux kernel, with other kernel developers contributing to its initial development.

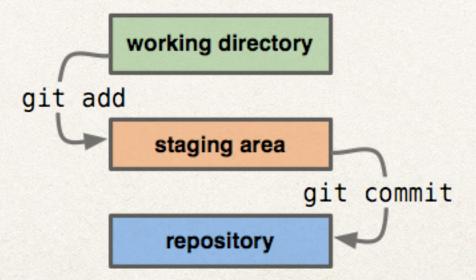
What does "Git" stand for?

Git in British English slang stands for a stupid or unpleasant person. Torvalds said: I'm an egotistical bastard, and I name all my projects after myself. First 'Linux', now 'git'. The man page describes git as "the stupid content tracker".



The Three Stages







git config --global user.name "Vivek Shangari"

```
acehacker — -bash — 67×15

Last login: Sat Oct 6 20:35:04 on ttys000

[acehacker ~ $ git config --global user.name "Vivek Shangari" |

[acehacker ~ $ git config --global user.email vivek@acehacker.com ]

acehacker ~ $ []
```

If you want to override this with a different name or email address for specific projects, you can run the command with the --global option when you're in that project.





Without --global when you are not in a Local Git Repository

```
Last login: Sun Oct 7 10:06:48 on ttys000
[acehacker ~ $ git config user.name "codefundo++"
fatal: not in a git directory acehacker ~ $ [
```





Check Your Settings

```
**acehacker — -bash — 67×22
[acehacker ~ $ git config --list
core.trustctime=false
credential.helper=osxkeychain
filter.media.required=true
filter.media.clean=git media clean %f
filter.media.smudge=git media smudge %f
user.name=Vivek Shangari
user.email=vivek@acehacker.com
user.phone=9880112117
user.team=ace hacker
user.color=black
filter.lfs.clean=git-lfs clean -- %f
filter.lfs.smudge=git-lfs smudge -- %f
filter.lfs.process=git-lfs filter-process.
filter.lfs.required=true
color.ui=auto
core.editor=subl -n -w
push.default=upstream
merge.conflictstyle=diff3
team.name=Ace Hacker
acehacker ~ $ 📙
```





Adding Custom Variables

```
[acehacker ~ $ git config --global user.team codefundo++ acehacker ~ $ [
```





Adding Custom Variables > When to use Quotes

```
nacehacker — -bash — 80×24
[acehacker ~ $ git config --global user.team codefundo++
[acehacker ~ $ git config --global user.team team codefundo++
[acehacker ~ $ git config --list
core.trustctime=false
credential.helper=osxkeychain
filter.media.required=true
filter.media.clean=git media clean %f
filter.media.smudge=git media smudge %f
user.name=Vivek Shangari
user.email=vivek@acehacker.com
user.phone=9880112117
user.team=team
user.color=black
user.name="Vivek
filter.lfs.clean=git-lfs clean -- %f
filter.lfs.smudge=git-lfs smudge -- %f
filter.lfs.process=git-lfs filter-process
filter.lfs.required=true
color.ui=auto
core.editor=subl -n -w
push.default=upstream
merge.conflictstyle=diff3
team.name=Ace Hacker
acehacker ~ $ 🗍
```





Getting Help

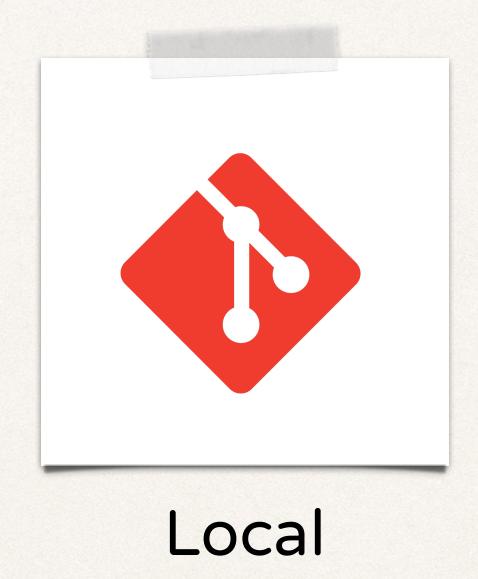
git help config

git config --help

man git-config



Repository

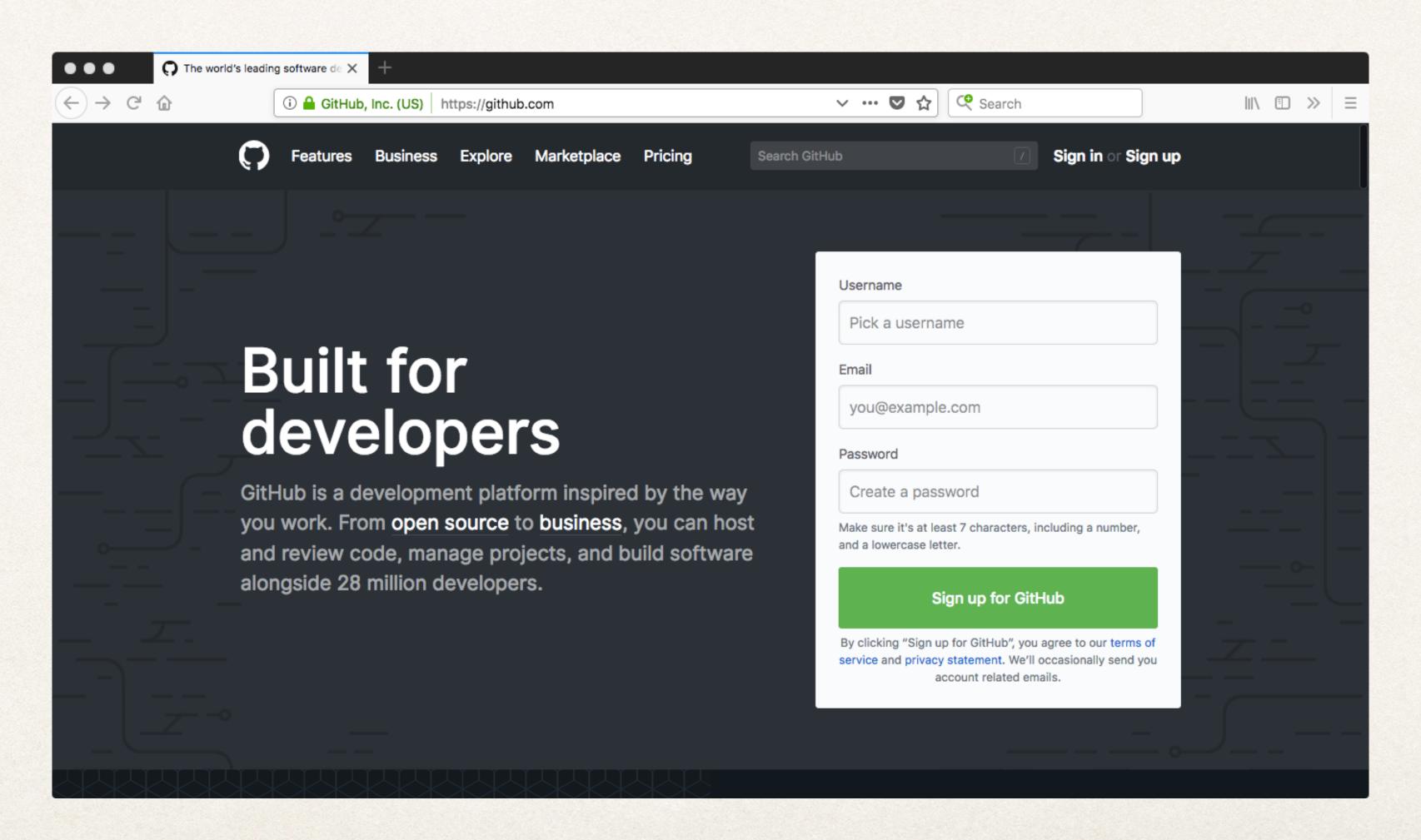




Remote/Central



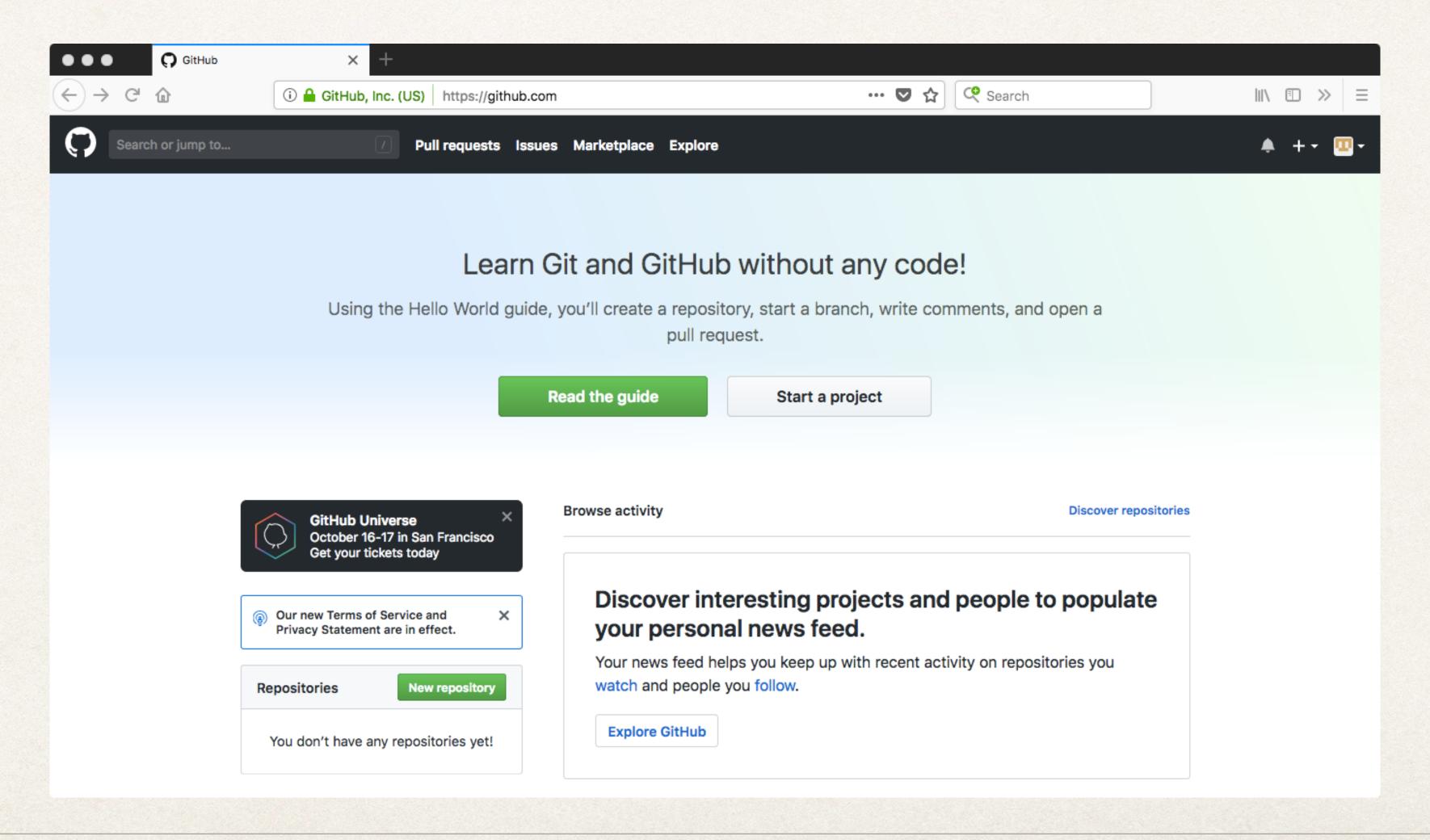
Create an Account on GitHub.com







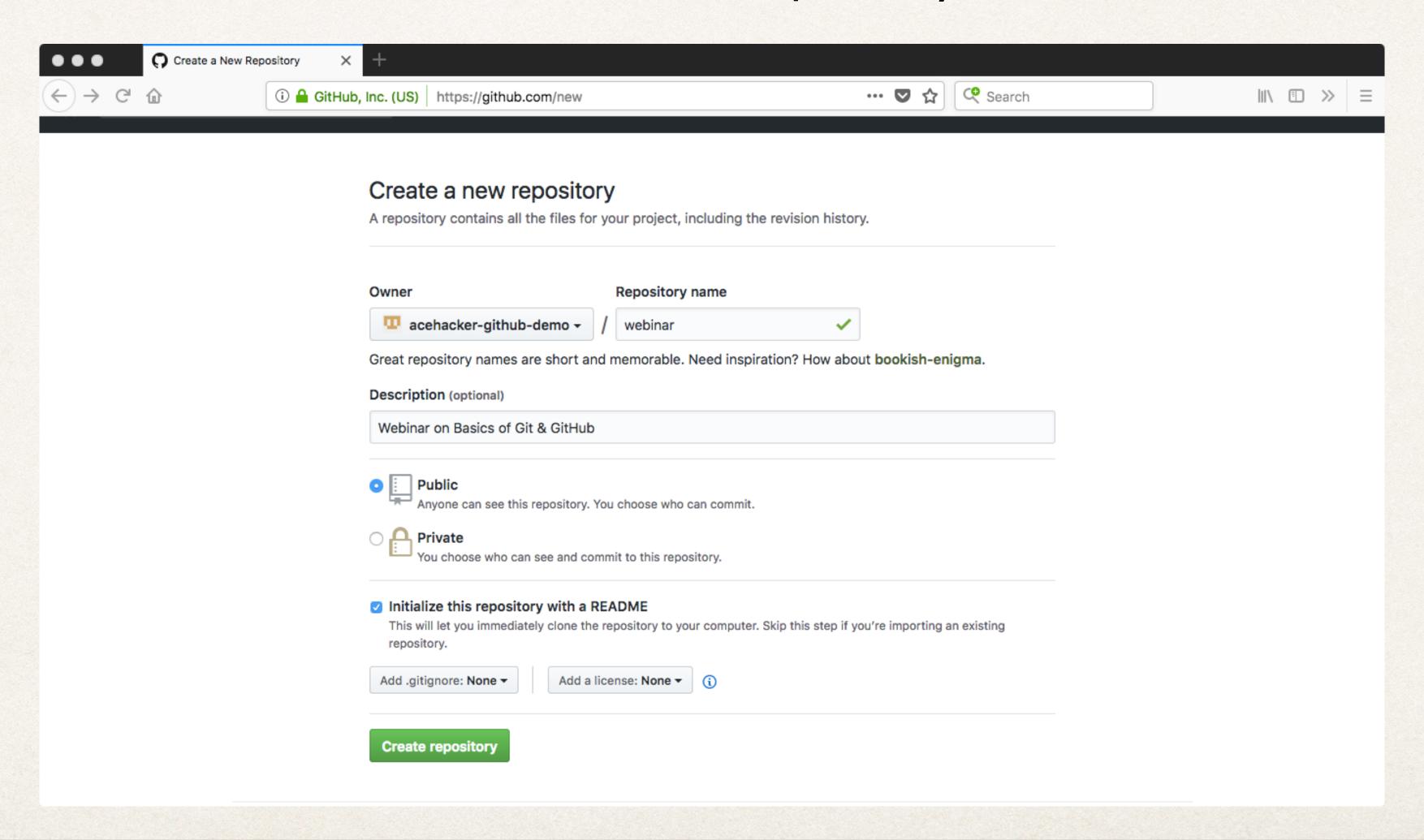
Start a project







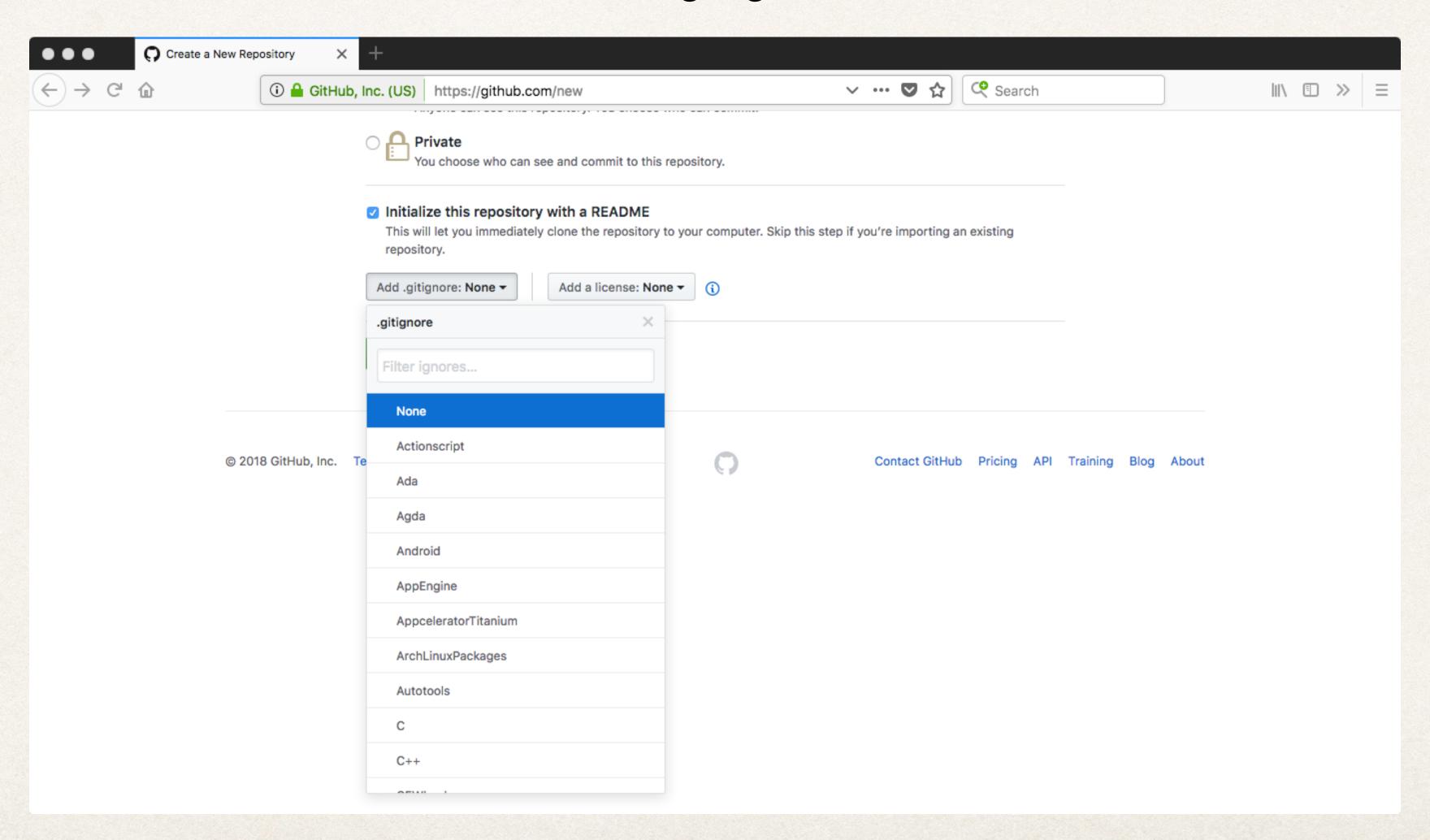
Create a new repository







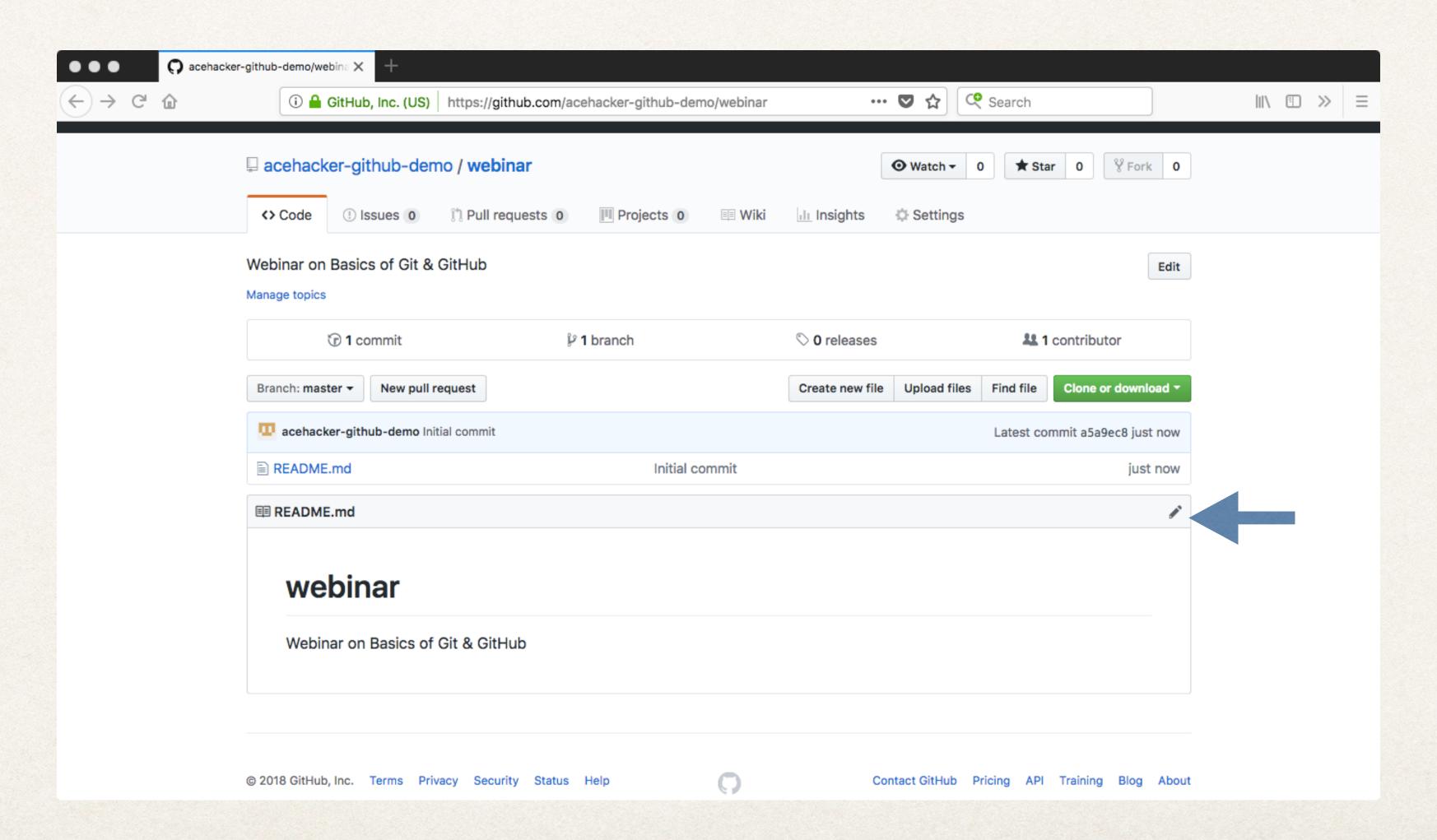
Add .gitignore







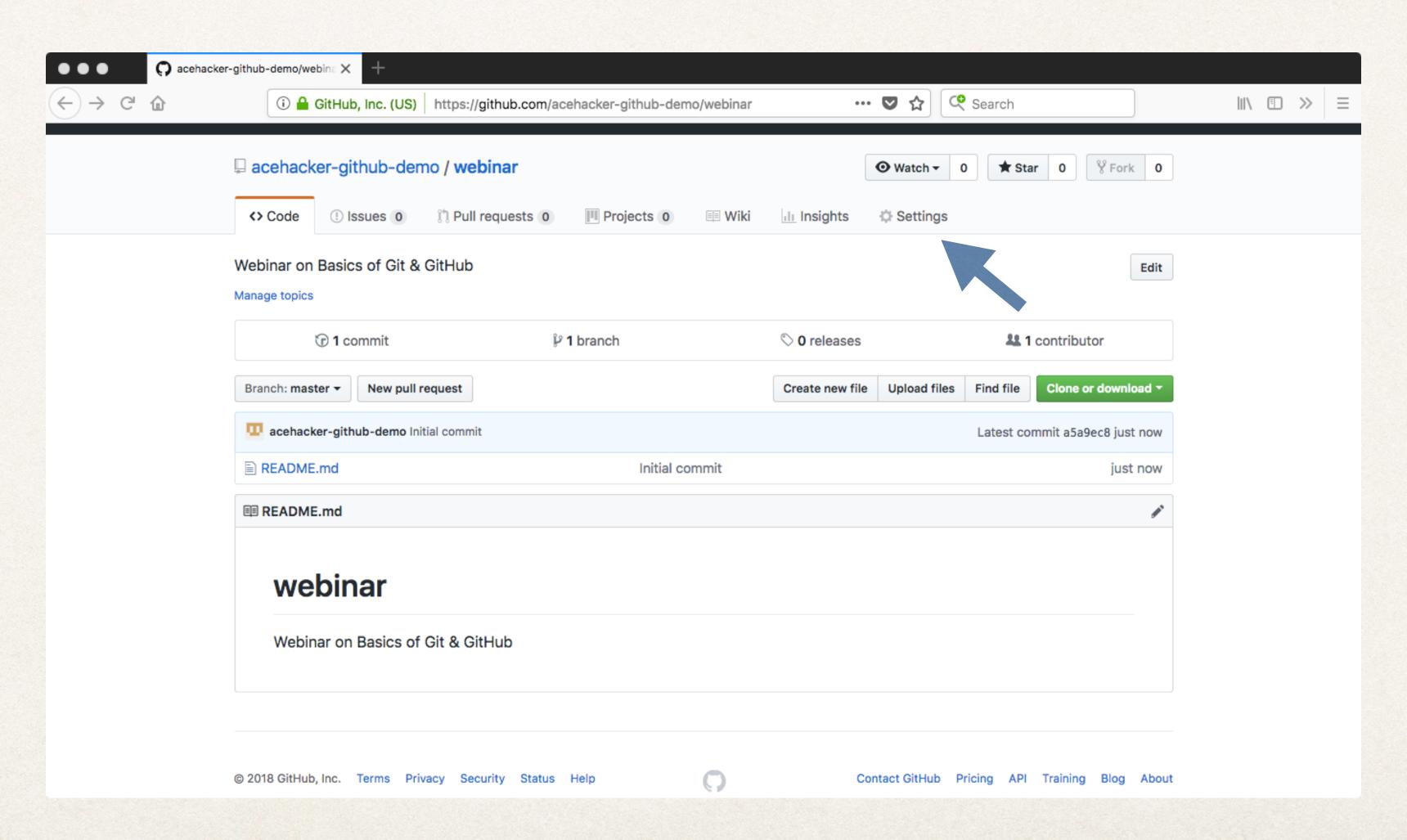
README.md







Add codefundopp as collaborator







Create folder for local repository





Go to local folder

```
• 0 0
                                   demo — -bash — 96×23
[acehacker ~ $ ls
Applications
                       Justinmind
                                                                      git-prompt.sh
                                              Pictures
Desktop
                       Library
                                              Public
                                                                      hotger
Documents
                       Movies
                                               git
Downloads
                                               git-completion.bash
                       Music
[acehacker ~ $ cd desktop
[acehacker desktop $ ls
                                               dev-build
Basics-Git-GitHub.key
                       Resources
Dock
                       demo
[acehacker desktop_$ cd demo
acehacker demo $ 🗌
```





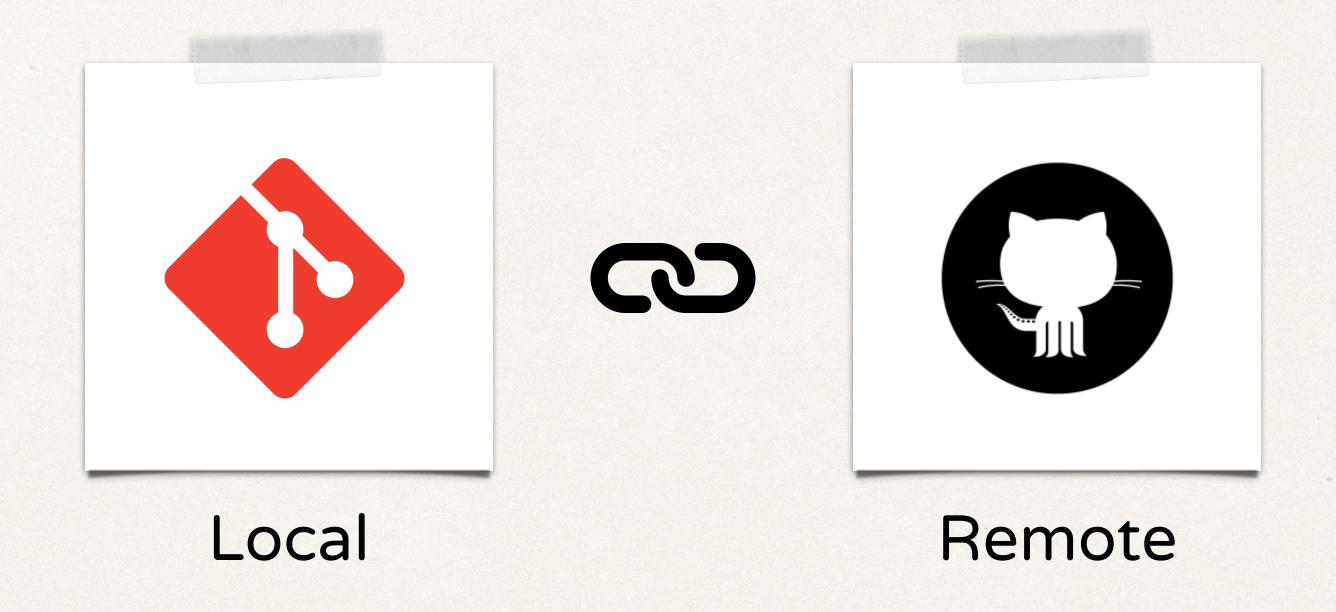
Git Local Repository git init

```
\bullet
                                          demo — -bash — 96×23
[acehacker demo $ git init
Initialized empty Git repository in /Users/acehacker/Desktop/demo/.git/acehacker (master #) demo $ [
```



Git

Sync Local & Remote Repository



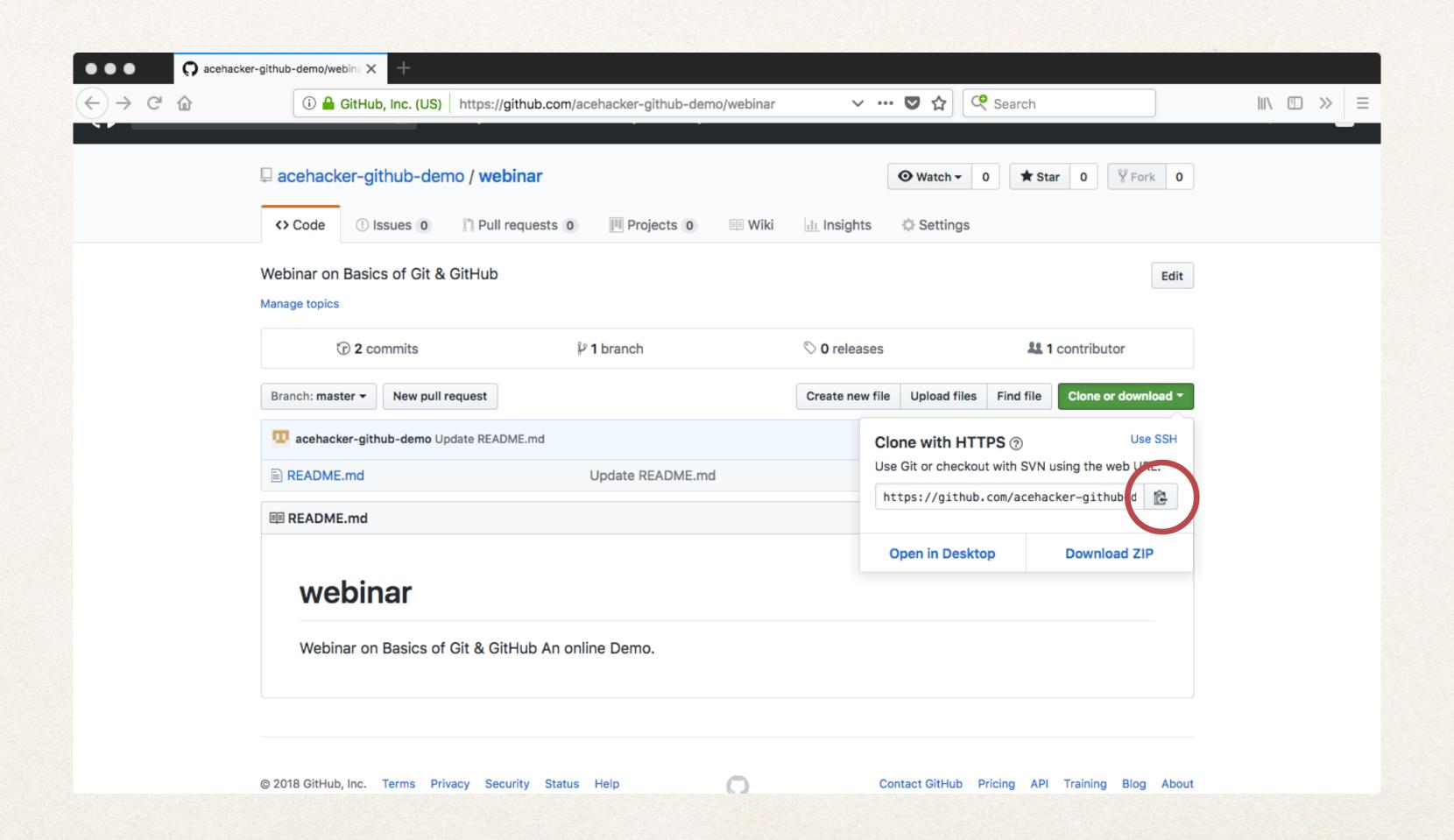


Sync Local & Remote Repository

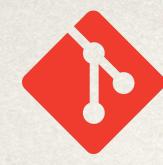
git remote add origin ""



How to find link







Sync Local & Remote Repository

git remote add origin "https://github.com/acehacker-github-demo/webinar.git"

```
• 0 0
                                         demo — -bash — 110×24
[acehacker (master #) demo $ git remote add origin "https://github.com/acehacker-github-demo/webinar.git"
acehacker (master #) demo $ 🗌
```



Pull files from Central Repository to Local Repository

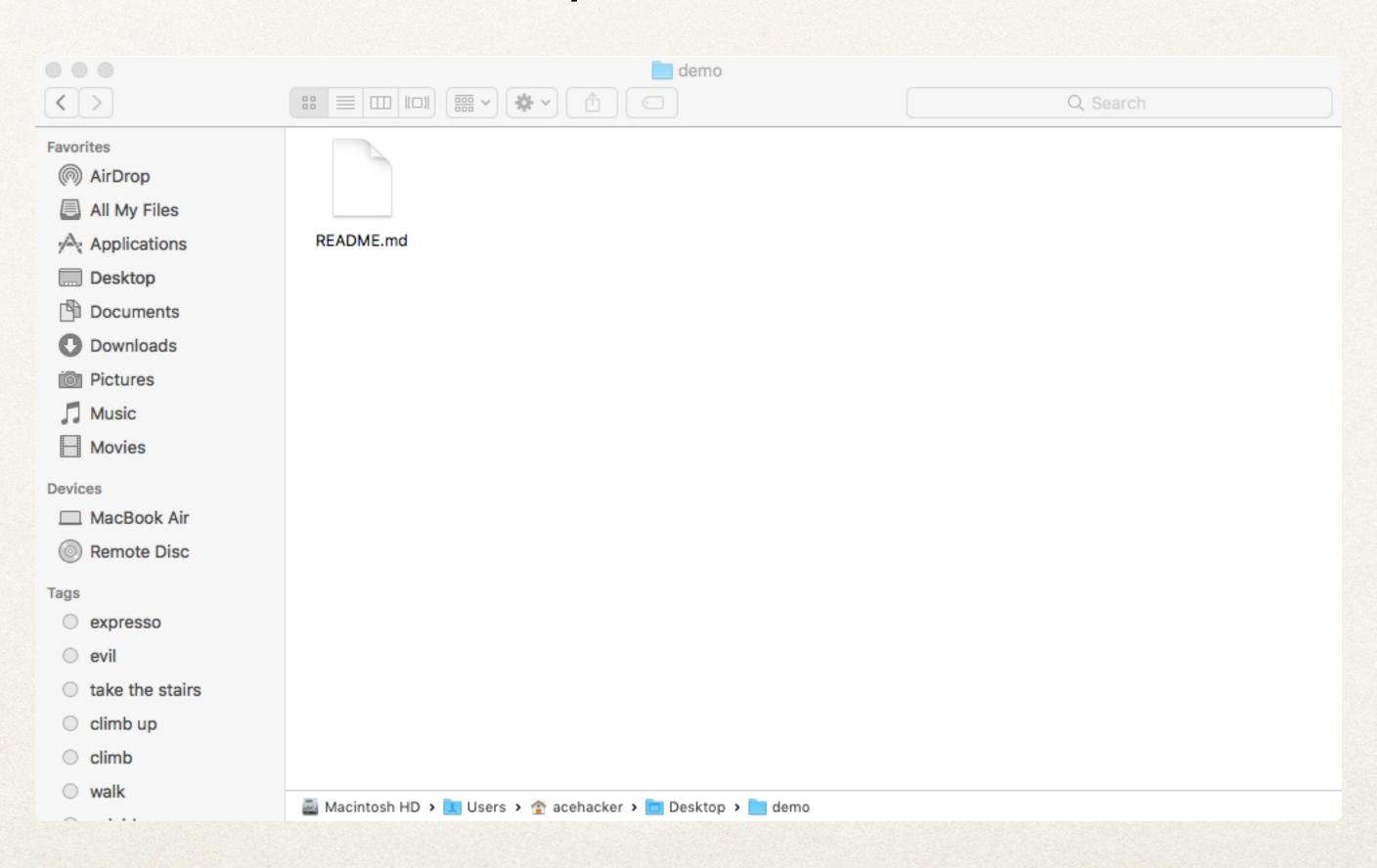
git pull origin master

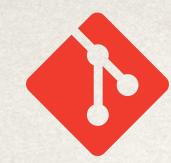
```
• 0 0
                                          demo — -bash — 110×24
[acehacker (master #) demo $ git pull origin master
 remote: Enumerating objects: 6, done.
 remote: Counting objects: 100% (6/6), done.
 remote: Compressing objects: 100% (3/3), done.
 remote: Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (6/6), done.
From https://github.com/acehacker-github-demo/webinar
 * branch
                     master -> FETCH_HEAD
 * [new branch]
                               -> origin/master
                     master
acehacker (master) demo $ 🗍
```



Check your local repository

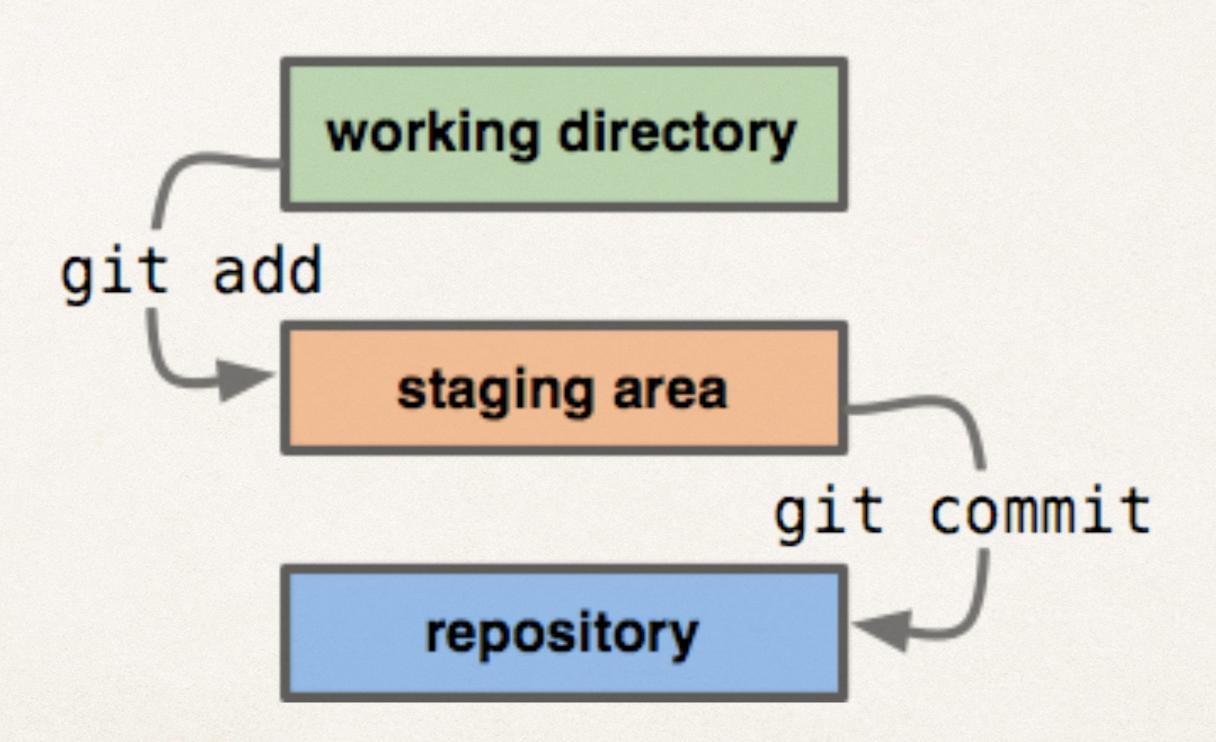
On your machine





How to make changes

Add changes to Staging Area (or Index) first.

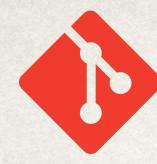


How to add to the Staging Area/Index

git add

Which files are there in the Index and which are not

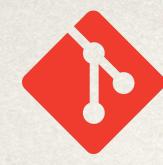
git status



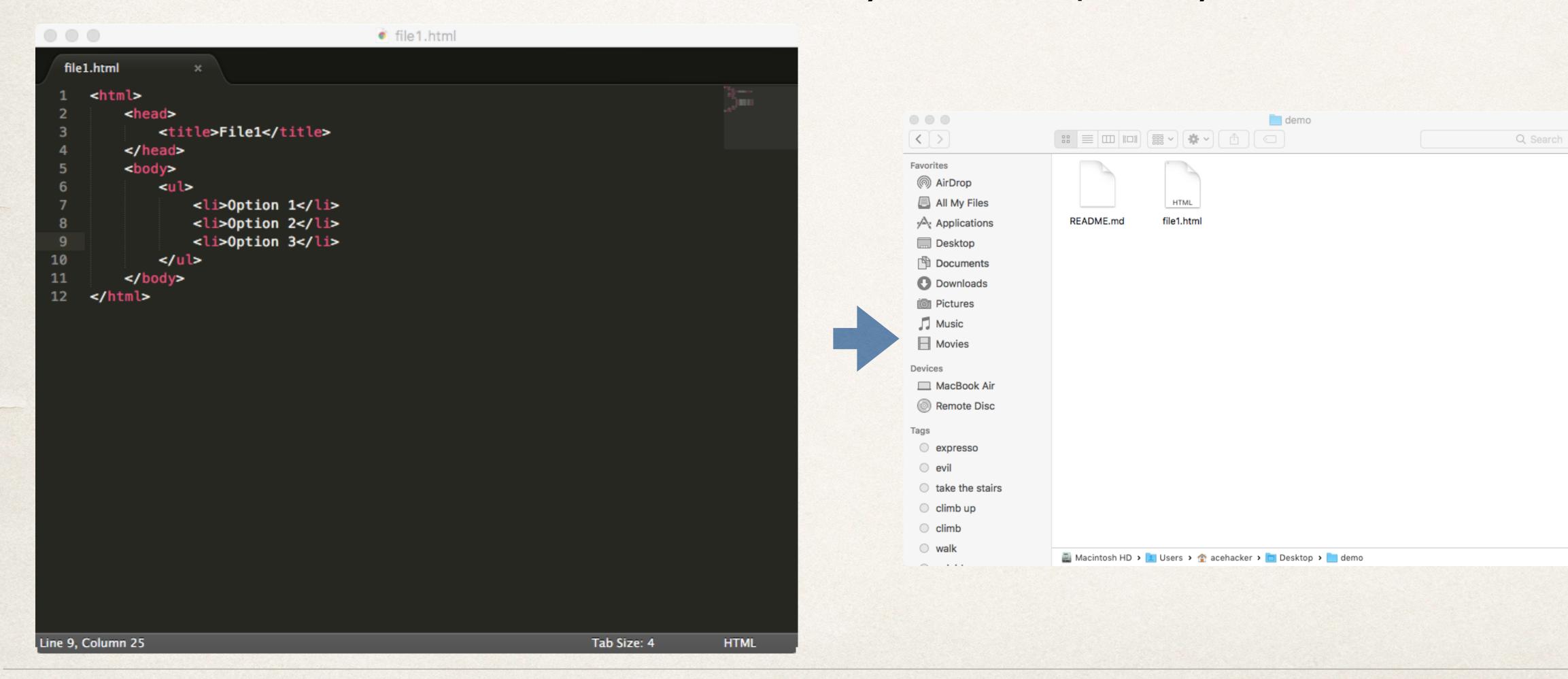
When there is nothing in the Staging Area to commit.

git status

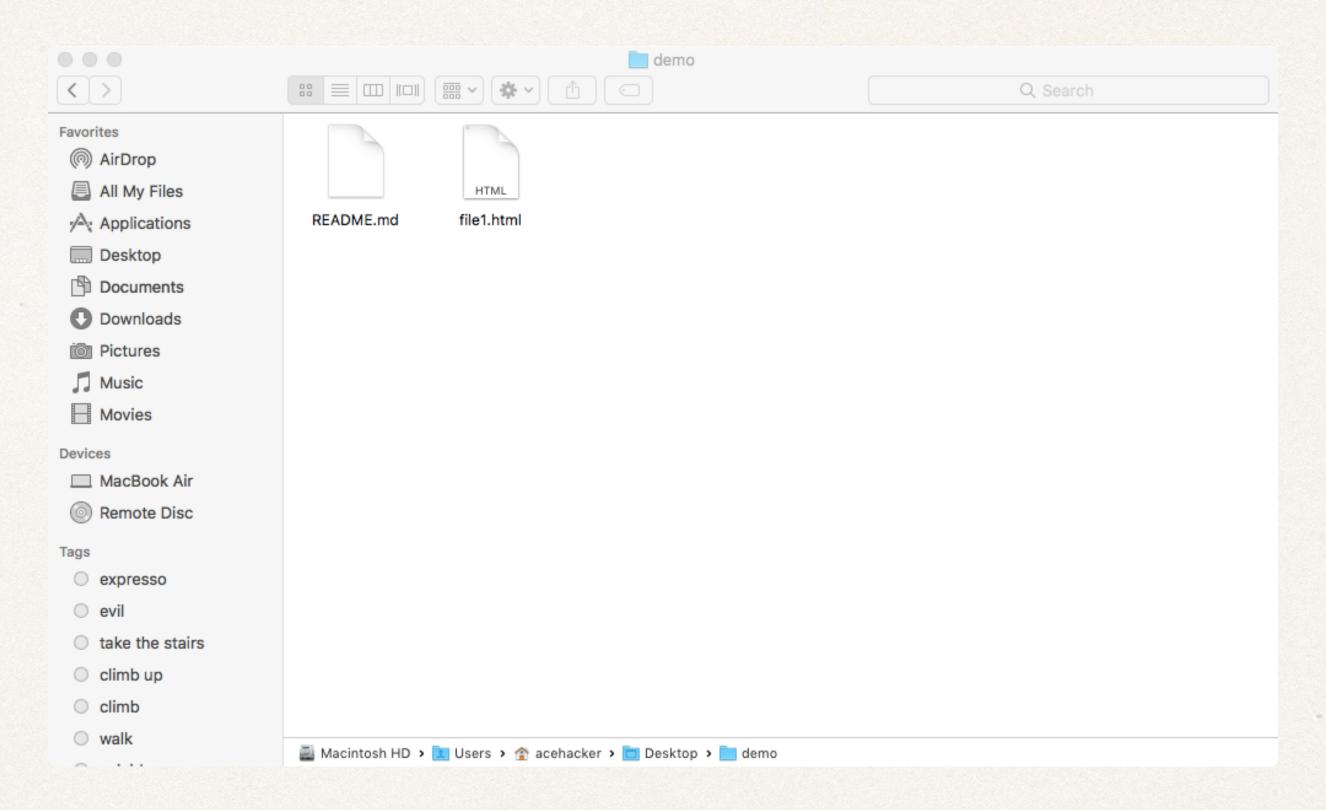
```
• 0 0
                            demo — -bash — 82×24
acehacker (master) demo $ git status
On branch master
nothing to commit, working_tree clean
acehacker (master) demo $ [
```



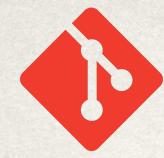
Create some files in your local repository





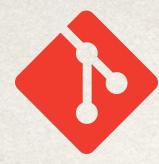


- The file you just created is in your workspace.
- It is not in the Staging Area/Index yet because you.



See for yourself git status

```
• • •
                             demo — -bash — 82×24
[acehacker (master) demo $ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file1.html
nothing added to commit but untracked files present (use "git add" to track)
acehacker (master) demo $ 🗌
```



Add this file to the Staging Area

git add

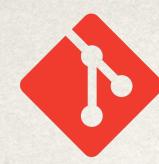
```
• • •
                             demo — -bash — 82×24
[acehacker (master) demo $ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file1.html
nothing added to commit but untracked files present (use "git add" to track)
[acehacker (master) demo $ git add file1.html
acehacker (master +) demo $ 🔲
```



Check the Status again

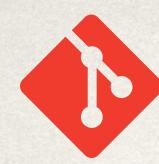
git status

```
• •
                            demo — -bash — 82×24
[acehacker (master +) demo $ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)
        new file: file1.html
acehacker (master +) demo $ 🗌
```



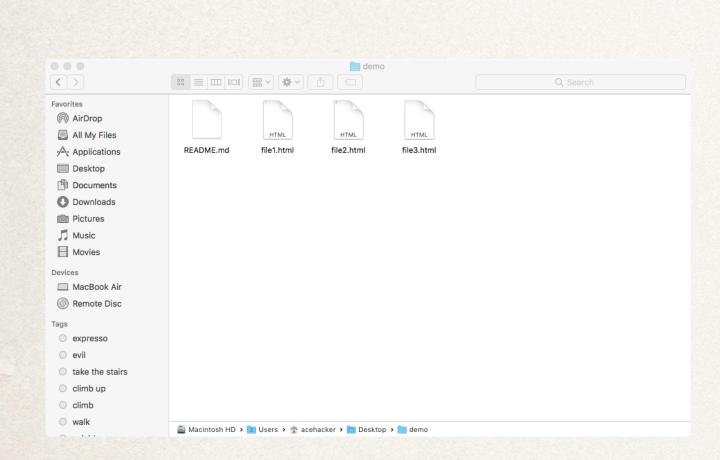
Now you can commit to Git local repository git commit -m "<message>"

```
demo — -bash — 82×24
[acehacker (master +) demo $ git commit -m "adding first commit to local repo"
 [master 9790e8d] adding first commit to local repo
 1 file changed, 12 insertions(+)
 create mode 100644 file1.html
acehacker (master)demo 💲 🗌
```



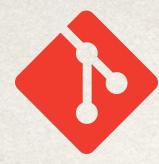
How to commit multiples at once

Add some more files to your local folder





```
file2.html
  file2.html
                                                                       file3.html
  1 <html>
                                        file3.html
                                        1 <html>
           <title>File2</title>
        </head>
                                                 <title>File3</title>
        <body>
                                              </head>
                                              <body>
               Option 1
                                                 Option 2
               Option 3
                                                 Option 4
                                              </body>
               Option 5
                                          </html>
        </body>
    </html>
Line 1, Column 1
                                      Line 1, Column 1
                                                                                             Tab Size: 4
                                                                                                          HTML
```



How to commit multiples at once

See Git Status with git status

```
• 0 0
                             demo — -bash — 82×24
[acehacker (master) demo $ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file2.html
        file3.html
nothing added to commit but untracked files present (use "git add" to track)
acehacker (master) demo $ [
```



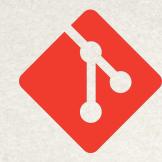
What happens if you modify existing file?

```
file1.html
  file1.html
     <html>
         <head>
            <title>File1</title>
         </head>
         <body>
            Option 1
               Option 2
                Option 3
            11
         </body>
 12
         <footer>
 13
         </footer>
 14 </html>
Line 13, Column 5 - Field 1 of 2
                                                         Tab Size: 4
                                                                       HTML
```



Check with git status

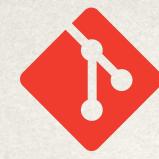
```
• 0 0
                             demo — -bash — 82×24
[acehacker (master *) demo $ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)
        modified: file1.html
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        file2.html
        file3.html
no changes added to commit (use "git add" and/or "git commit -a")
acehacker (master *) demo $ 🗌
```



Add all these files to Staging Area all at one

git add -A

```
. . .
                                       demo — -bash — 82×24
[acehacker (master *) demo $ git add -A acehacker (master +) demo $ [
```



Check the Git Status again

git status

```
• 0 0
                            demo — -bash — 82×24
[acehacker (master +) demo $ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)
                  file1.html
        modified:
        new file:
                  file2.html
                  file3.html
        new file:
acehacker (master +) demo $
```



How to commit all at once

git commit -a -m "<message>"

```
• • •
                             demo — -bash — 82×24
[acehacker (master +) demo $ git commit -a -m "commiting multiple files at one go"
[master a463913] committing multiple files at one go
 3 files changed, 26 insertions(+)
 create mode 100644 file2.html
 create mode 100644 file3.html
acehacker (master) demo $ 📗
```



How does Git logs all these changes?

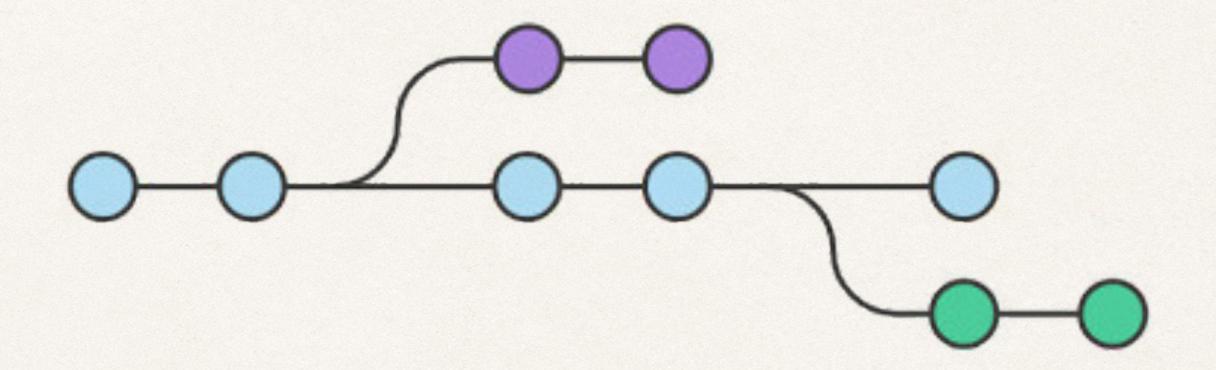
git log

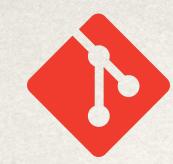
```
• • •
                                      demo — -bash — 101×31
[acehacker (master) demo $ git log
commit a463913aa3be134c40de31c237c7d8c93c04e7a5
Author: "Vivek <vivek@acehacker.com>
Date: Sun Oct 7 13:19:31 2018 +0530
    commiting multiple files at one go
commit 9790e8d6ac58b8e713452788b96255ff8f0eb1f8
Author: "Vivek <vivek@acehacker.com>
Date: Sun Oct 7 13:01:33 2018 +0530
    adding first commit to local repo
commit 31426b5ca7b64ff165e2ae2ad801d5f4869f25a0
Author: acehacker-github-demo <43922993+acehacker-github-demo@users.noreply.github.com>
Date: Sun Oct 7 11:47:59 2018 +0530
    Update README.md
commit a5a9ec8ea7beb07285d90fba42dad70685c555fe
Author: acehacker-github-demo <43922993+acehacker-github-demo@users.noreply.github.com>
Date: Sun Oct 7 11:36:26 2018 +0530
    Initial commit
acehacker (master)demo 💲 🗌
```



Non-Linear Development with

Branching





Non-Linear Development
Branching

Two types of Branching:

Local Branches

Remote Tracking Branches



How to create branches

git branch

branch name>

```
• 0 0
                                                  demo — -bash — 101×31
[acehacker (master) demo $ git branch dept1 acehacker (master) demo $ []
```



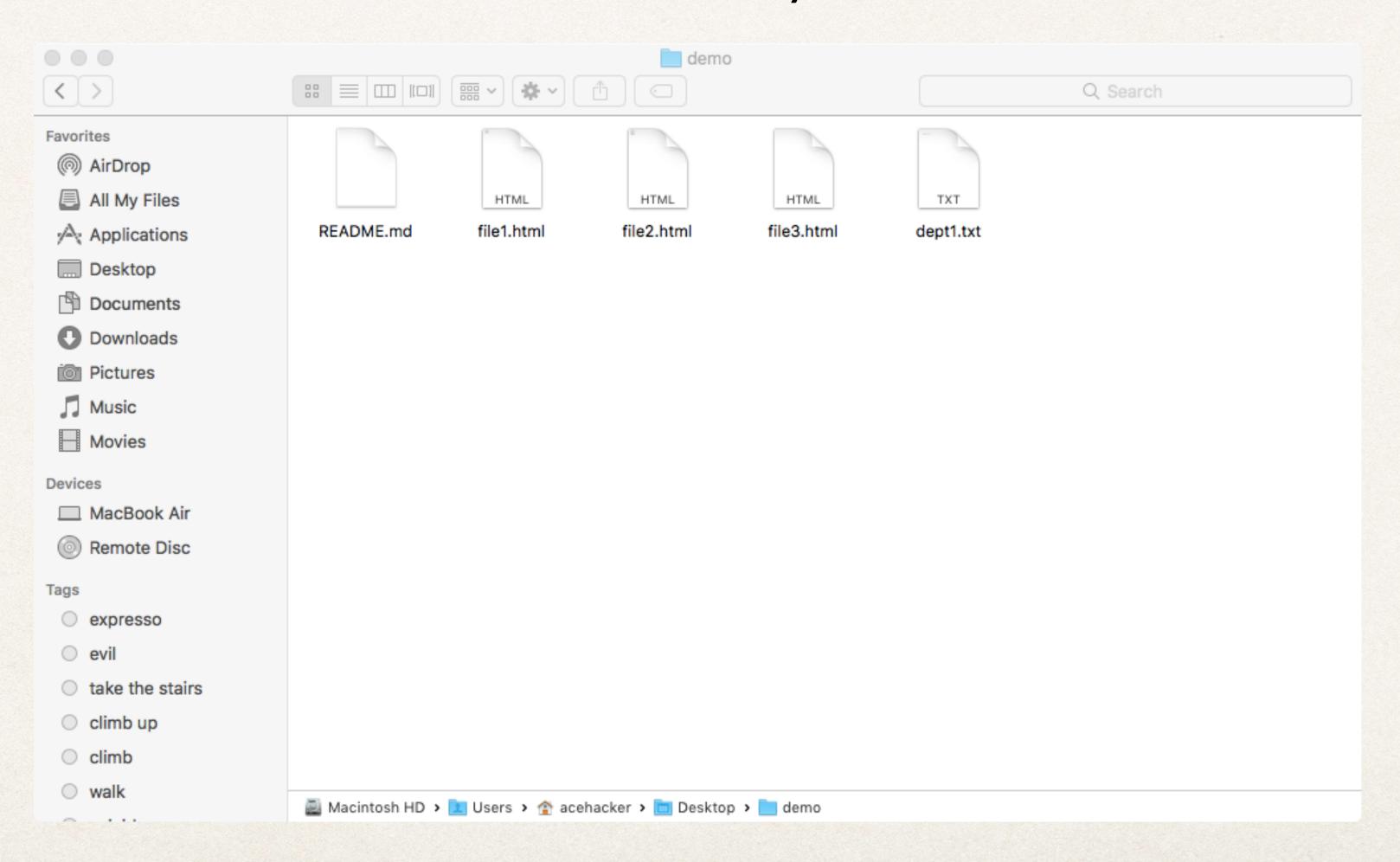
Switch branches

git checkout
 /branch name>

```
• 0 0
                                            demo — -bash — 101×31
[acehacker (master) demo $ git branch dept1
[acehacker (master) demo $ git checkout dept1
Switched to branch 'dept1' acehacker (dept1) demo $ [
```



Create some new files - may be text files this time





How does your Git Status looks now?

git status

```
• 0 0
                                         demo — -bash — 101×31
[acehacker (dept1) demo $ git status
On branch dept1
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) acehacker (dept1) demo $ [
```



Add this file to the Staging Area

git add

```
• • •
                                          demo — -bash — 101×31
[acehacker (dept1) demo $ git status
On branch dept1
 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)
[acehacker (dept1) demo $ git add dept1.txt
acehacker (dept1 +) demo $ [
```



You now need to commit this file

git commit -m "<message>"

```
• • •
                                      demo — -bash — 101×31
[acehacker (dept1) demo $ git status
On branch dept1
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)
[acehacker (dept1) demo $ git add dept1.txt
[acehacker (dept1 +) demo $ git commit -m "committing dept1.txt to branch dept1"
[dept1 03f3b28] committing dept1.txt to branch dept1
1 file changed, 1 insertion(+)
create mode 100644 dept1_txt
acehacker (dept1) demo $ [
```



Remember that you are making changes in a branch.

See all files in the branch with 1s

```
demo — -bash — 101×31
README.md dept1.txt acehacker (dept1) demo $ [
                                      file1.html
                                                         file2.html
                                                                           file3.html
```



Now move back to the master branch. git checkout master

See all files in master with 1s

```
demo — -bash — 101×31
                                                              file3.html
                               file1.html
                                               file2.html
[acehacker (dept1) demo $ git checkout master
[acehacker (master) demo $ ls
                                               file3.html
                               file2.html
               file1.html
acehacker (master) demo $ [
```



Merging

git merge

branch name>

```
• • •
                                      demo — -bash — 101×31
[acehacker (master) demo $ git merge dept1
Updating a463913..03f3b28
Fast-forward
dept1.txt | 1 +
1 file changed, 1 insertion(+)
 create mode 100644 dept1.<u>t</u>xt
acehacker (master) demo $ [
```



Merging

List out the files in master with 1s to see file in branch show up here

```
• • •
                                     demo — -bash — 101×31
[acehacker (master) demo $ git merge dept1
Updating a463913..03f3b28
Fast-forward
 dept1.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 dept1.txt
[acehacker (master) demo $ ls
                                                              file3.html
                                               file2.html
README.md
               dept1.txt
                               file1.html
acehacker (master) demo 💲 🗌
```



Remember that whatever you do in your branch will not reflect in master until you merge it. Try making some changes in the branch now.

Go back to the branch using git checkout

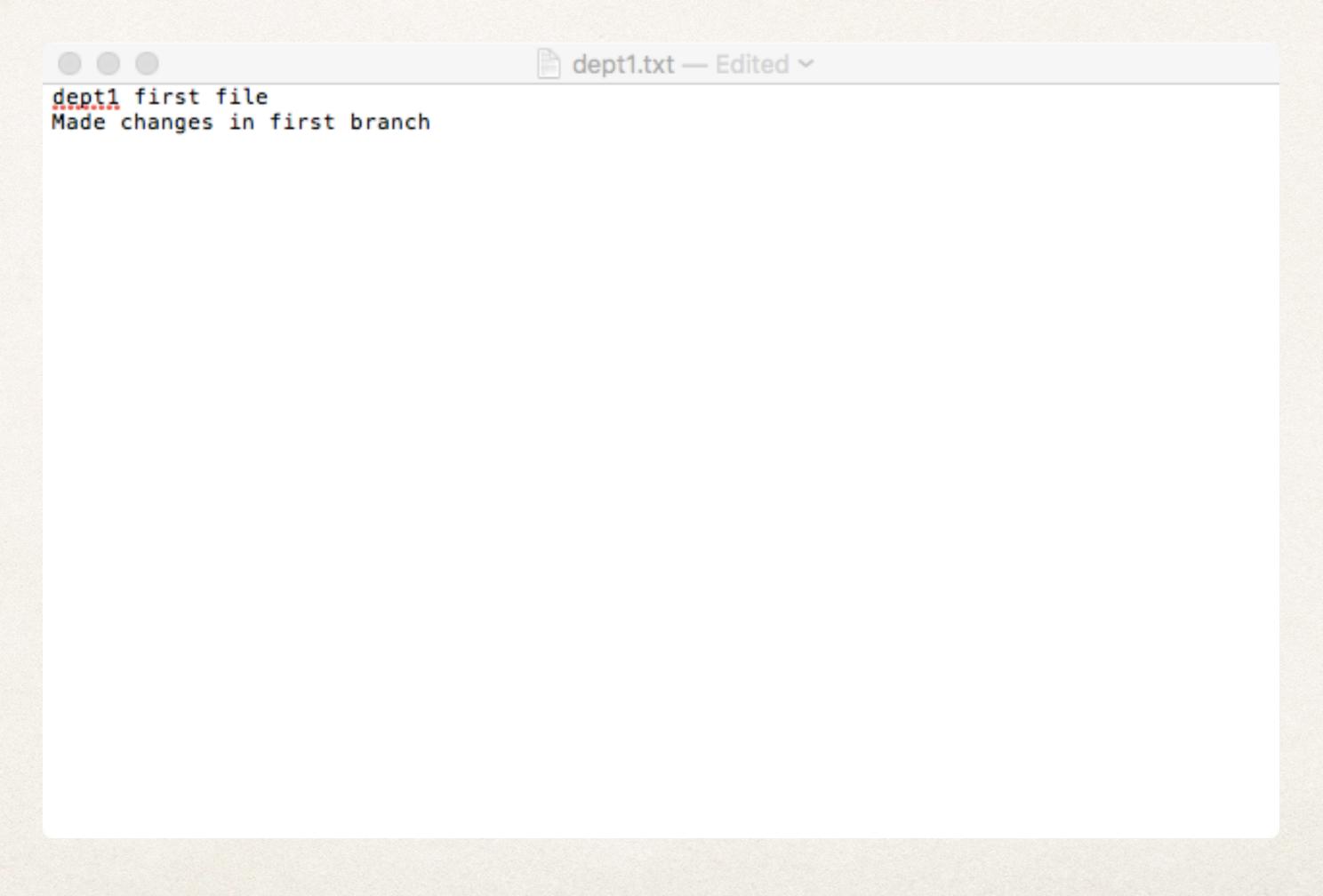
 to the branch using git checkout

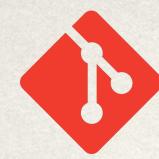
 branch name>

```
demo — -bash — 101×31
acehacker (master) demo $ git merge dept1
 Updating a463913..03f3b28
Fast-forward
 dept1.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 dept1.txt
acehacker (master) demo 💲 ls
                                file1.html
                                                file2.html
                                                                file3.html
                dept1.txt
acehacker (master) demo $ git checkout dept1
Switched to branch 'dept1'
acehacker (dept1) demo 💲 🗌
```



Go to your folder and make changes to the file in branch.





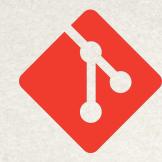
Check Git Status with git status

```
• 0 0
                                     demo — -bash — 101×31
[acehacker (dept1 *) demo $ git status
On branch dept1
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)
        modified: dept1.txt
no changes added to commit (use "git add" and/or "git commit -a")
acehacker (dept1 *) demo $ 📗
```



Because this is already a tracked file, you can commit directly without explicitly running the git add command. git commit at this stage will do it for you.

```
demo — -bash — 101×31
[acehacker (dept1 *) demo $ git status
On branch dept1
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)
no changes added to commit (use "git add" and/or "git commit -a")
[acehacker (dept1 *) demo $ git commit -a -m "modified dept1.txt"
[dept1 62e4cc1] modified dept1.txt
 1 file changed, 2 insertions(+), 1 deletion(-)
acehacker (dept1) demo $ 🔲
```



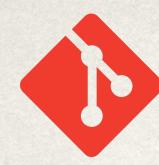
Check Git Status with git status

```
• • •
                                      demo — -bash — 101×31
[acehacker (dept1 *) demo $ git status
On branch dept1
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)
        modified: dept1.txt
no changes added to commit (use "git add" and/or "git commit -a")
[acehacker (dept1 *) demo $ git commit -a -m "modified dept1.txt"
[dept1 62e4cc1] modified dept1.txt
 1 file changed, 2 insertions(+), 1 deletion(-)
[acehacker (dept1) demo $ git status
On branch dept1
nothing to commit, working tree clean
acehacker (dept1) demo $ 🛮
```



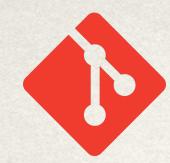
Also check content of the file you just committed using cat

```
• 0 0
                                      demo — -bash — 101×31
[acehacker (dept1 *) demo $ git status
On branch dept1
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)
        modified: dept1.txt
no changes added to commit (use "git add" and/or "git commit -a")
[acehacker (dept1 *) demo $ git commit -a -m "modified dept1.txt"
[dept1 62e4cc1] modified dept1.txt
 1 file changed, 2 insertions(+), 1 deletion(-)
[acehacker (dept1) demo $ git status
On branch dept1
nothing to commit, working tree clean
[acehacker (dept1) demo $ cat dept1.txt
dept1 first file
Made changes in first branchacehacker (dept1) demo $ 🗌
```

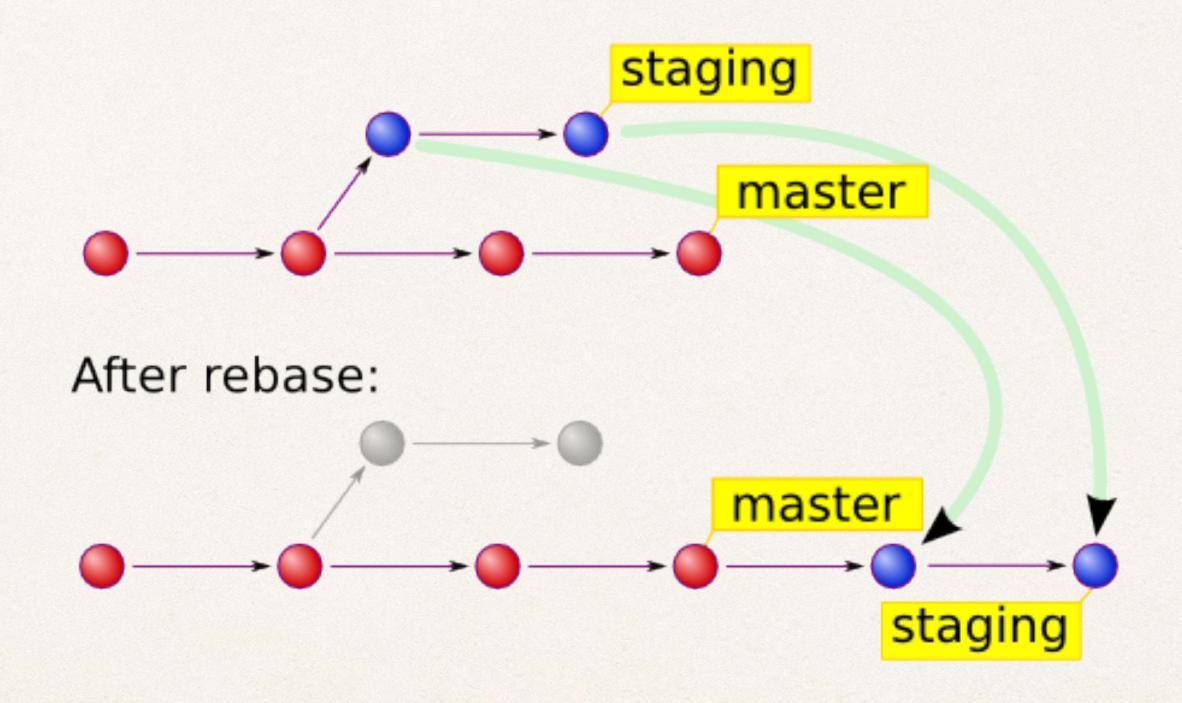


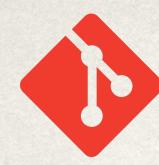
Remember that you have not merged this file after making changes. Switch back to master using git checkout master and see the difference in the files using cat.

```
• 0 0
                                       demo — -bash — 101×31
[acehacker (dept1 *) demo $ git status
On branch dept1
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)
no changes added to commit (use "git add" and/or "git commit -a")
[acehacker (dept1 *) demo $ git commit -a -m "modified dept1.txt"
[dept1 62e4cc1] modified dept1.txt
1 file changed, 2 insertions(+), 1 deletion(-)
[acehacker (dept1) demo $ git status
On branch dept1
nothing to commit, working tree clean
[acehacker (dept1) demo $ cat dept1.txt
dept1 first file
[Made changes in first branchacehacker (dept1) demo $ git checkout master
Switched to branch 'master'
[acehacker (master) demo $ cat dept1.txt
dept1 first fileacehacker (master) demo $ [
```



Linear sequence of commits - Rebasing





Rebasing
Switch to the branch.

Go to your folder and create some new files.

These files will be untracked, so you will need to use git add -A
Then commit using git commit -a -m "<message>"

```
demo — -bash — 101×31
[acehacker (master) <mark>demo $ git checkout dept1</mark>
Switched to branch 'dept1'
acehacker (dept1) demo $ git add -A
[acehacker (dept1 +) demo $ git commit -a -m "committing for rebasing"
[dept1 68f55dd] committing for rebasing
2 files changed, 2 insertions(+)
 create mode 100644 dept2.txt
 create mode 100644 dept3.txt
acehacker (dept1) demo $ [
```



Rebasing

See the files in the branch using 1s.

Switch to the master and see the files there using 1s.

```
demo — -bash — 101×31
                                                  file3.html
                                 file1.html
                 dept2.txt
                                 file2.html
                dept3.txt
acehacker (dept1) <mark>demo $ git checkout master</mark>
acehacker (master) demo 💲 ls
                                 file1.html
                dept1.txt
                                                  file2.html
                                                                   file3.html
acehacker (master) demo $ [
```



Rebasing Rebase from the master using git rebase
 branch name>

```
• 0 0
                                      demo — -bash — 101×31
[acehacker (master) demo $ git checkout dept1
Switched to branch 'dept1'
[acehacker (dept1) demo $ git rebase master
Current branch dept1 is up to date.
[acehacker (dept1) demo $ git checkout master
Switched to branch 'master'
[acehacker (master) demo $ git rebase dept1
First, rewinding head to replay your work on top of it...
Fast-forwarded master to dept1.
[acehacker (master) demo $ ls
                               file1.html
                                               file3.html
               dept2.txt
README.md
               dept3.txt
dept1.txt
                                file2.html
acehacker (master) demo $ [
```

Attend the next Webinar on Oct 14, 2018
at
15:00 IST

More details here: https://codefundo.io