

CS445 - Collaborative Git

Practice with all the local repository commands from the slides:

1. `git init`

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

Windows PowerShell
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PS C:\Duyen's Github\duyen.tran_CS445.github.io> git init
Reinitialized existing Git repository in C:/Duyen's Github/duyen.tran_CS445.github.io/.git/
PS C:\Duyen's Github\duyen.tran_CS445.github.io> 
```

2. `git status`

```

  v DUYEN.TRAN_CS445.GITH...
    v myFiles
      .gitignore  U
      JS test1.js
      JS test2.js  U

```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Duyen's Github\duyen.tran_CS445.github.io> git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    myFiles/
    test2.js

nothing added to commit but untracked files present (use "git add" to track)
PS C:\Duyen's Github\duyen.tran_CS445.github.io> 
```

3. `git diff`

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Duyen's Github\duyen.tran_CS445.github.io> git diff
diff --git a/test2.js b/test2.js
index c0ae5bb..c55f212 100644
--- a/test2.js
+++ b/test2.js
@@ -1,3 +1,7 @@
 function sum( a, b) {
     return a + b;
+}
+
+function mult(a, b) {
+    return a * b;
+}
\ No newline at end of file
PS C:\Duyen's Github\duyen.tran_CS445.github.io> 
```

4. Create `.gitignore` file, and notice how it works

The screenshot shows the VS Code interface. In the Explorer, the `myFiles` folder is expanded, showing `.gitignore`, `test1.js`, and `test2.js`. The `.gitignore` file is open in the editor, containing the text `test1.js`. The terminal shows the output of `git status` on the `main` branch. It indicates that there are no commits yet and that `test2.js` is an untracked file. The prompt is `PS C:\Duyen's Github\duyen.tran_CS445.github.io>`.

```
EXPLORER  ...  config  .gitignore U X  JS test2.js U  JS test1.js

OPEN EDITORS
  config .git
  X .gitignore... U
  JS test2.js U
  JS test1.js myFiles

DUYEN.TRAN_CS445.GITH...
  myFiles
    .gitignore U
    JS test1.js
    JS test2.js U

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Duyen's Github\duyen.tran_CS445.github.io> git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    myFiles/
    test2.js

nothing added to commit but untracked files present (use "git add" to track)
PS C:\Duyen's Github\duyen.tran_CS445.github.io>
```

5. `git add`

The screenshot shows the VS Code interface after running `git add test2.js`. The Explorer shows `test2.js` with an 'A' (Added) status. The terminal shows the output of `git status` after adding the file. It indicates that `test2.js` is now staged for commit. The prompt is `PS C:\Duyen's Github\duyen.tran_CS445.github.io>`.

```
DUYEN.TRAN_CS445.GITH...
  myFiles
    .gitignore U
    JS test1.js
    JS test2.js A

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Duyen's Github\duyen.tran_CS445.github.io> git add test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git status
On branch main

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   test2.js

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

PS C:\Duyen's Github\duyen.tran_CS445.github.io>
```

6. `git commit`

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
(use "git branch --unset-upstream" to fixup)

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   myFiles/.gitignore
        new file:   myFiles/test2.js
        deleted:    test2.js

PS C:\Duyen's Github\duyen.tran_CS445.github.io> git commit -m "first time committed"
[main b212bd7] first time committed
 3 files changed, 8 insertions(+), 3 deletions(-)
 create mode 100644 myFiles/.gitignore
 create mode 100644 myFiles/test2.js
 delete mode 100644 test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git status
On branch main
Your branch is based on 'origin/main', but the upstream is gone.
  (use "git branch --unset-upstream" to fixup)

nothing to commit, working tree clean
PS C:\Duyen's Github\duyen.tran_CS445.github.io> 
```

7. `git commit -amend` (updating the last commit)

```
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git log --oneline
93c4221 (HEAD -> main) added one more console log statement
ba4000e log
25989e0 commit test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git commit --amend -m "removed one console log statement out of test2.js" --allow-empty
[main e17e5bd] removed one console log statement out of test2.js
Date: Tue Nov 1 17:18:31 2022 -0500
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git log --oneline
e17e5bd (HEAD -> main) removed one console log statement out of test2.js
ba4000e log
25989e0 commit test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> 
```

8. `git log`

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git log
commit b212bd7404d0e83a94159da0013886764ad6a8ea (HEAD -> main)
Author: duylentth <duyen.tran@miu.edu>
Date: Tue Nov 1 17:02:44 2022 -0500

    first time committed

commit 25989e086ce83c93ea12d9464cac96603f7dc0cd
Author: duylentth <duyen.tran@miu.edu>
Date: Mon Oct 31 22:44:43 2022 -0500

    commit test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> 
```

10. `git tag`

```
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git tag -a "v1" -m "version 1" ba4000e
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git tag
v1
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git log --oneline
e17e5bd (HEAD -> main) removed one console log statement out of test2.js
ba4000e (tag: v1) log
25989e0 commit test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> █
```

11. `git branch`

```
PS C:\Duyen's Github\duyen.tran_CS445.github.io\myFiles> git branch
* main
PS C:\Duyen's Github\duyen.tran_CS445.github.io\myFiles> git branch "salary"
PS C:\Duyen's Github\duyen.tran_CS445.github.io\myFiles> git branch
* main
  salary
PS C:\Duyen's Github\duyen.tran_CS445.github.io\myFiles> █
```

12. `git checkout`

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Duyen's Github\duyen.tran_CS445.github.io\myFiles> git checkout salary
Switched to branch 'salary'
A       myFiles/test 3.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io\myFiles> █
```

13. `git merge`

```
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git merge salary
Updating e17e5bd..07a6d93
Fast-forward
 myFiles/test 3.js | 2 ++
 1 file changed, 2 insertions(+)
 create mode 100644 myFiles/test 3.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> git log --oneline
07a6d93 (HEAD -> main, salary) committed test3.js onto salary branch
e17e5bd removed one console log statement out of test2.js
ba4000e (tag: v1) log
25989e0 commit test2.js
PS C:\Duyen's Github\duyen.tran_CS445.github.io> █
```

Create a conflict and solve the conflict

```
5 test1.js
1  alert("Hi");
   Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
2  <<<<<<< HEAD (Current Change)      Merge conflict marker encountered.
3  console.log("abc");
4  ===== Merge conflict marker encountered.
5  console.log("Hello...");
6  >>>>>>> salary (Incoming Change)    Merge conflict marker encountered.
7
```

14. Undo changes from a certain commit `git revert`

This command line "git revert head" => the file test1.js will be deleted

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

1 file changed, 1 insertion(+)
create mode 100644 test1.js
~\Desktop\CS445-Lab\exercises > [master] git status
On branch master
nothing to commit, working tree clean
~\Desktop\CS445-Lab\exercises > [master] git log
commit 7a6f3aecaaffc69db3b034513c1105bc05c4d3d7 (HEAD -> master)
Author: duyentth <duyen.tran@miu.edu>
Date:   Wed Nov 2 13:06:40 2022 -0500

    Added test1.js on master first time
~\Desktop\CS445-Lab\exercises > [master] git revert head
[master 7ac7271] Revert "Added test1.js on master first time"
1 file changed, 1 deletion(-)
delete mode 100644 test1.js
~\Desktop\CS445-Lab\exercises > [master] git log --oneline
7ac7271 (HEAD -> master) Revert "Added test1.js on master first time"
7a6f3ae Added test1.js on master first time
~\Desktop\CS445-Lab\exercises > [master] git status
On branch master
nothing to commit, working tree clean
~\Desktop\CS445-Lab\exercises > [master]
```

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Revert with hash

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
~\Desktop\CS445-Lab\exercises > @master git log --oneline
f3473d4 (HEAD -> master) added test3.js
f329174 added test2.js on master branch
7ac7271 Revert "Added test1.js on master first time"
7a6f3ae Added test1.js on master first time
~\Desktop\CS445-Lab\exercises > @master git revert f329174
[master ef066f4] Revert "added test2.js on master branch"
1 file changed, 1 deletion(-)
delete mode 100644 test2.js
~\Desktop\CS445-Lab\exercises > @master git log --oneline
ef066f4 (HEAD -> master) Revert "added test2.js on master branch"
f3473d4 added test3.js
f329174 added test2.js on master branch
7ac7271 Revert "Added test1.js on master first time"
7a6f3ae Added test1.js on master first time
~\Desktop\CS445-Lab\exercises > @master
```

15. Erase commits with `git reset`

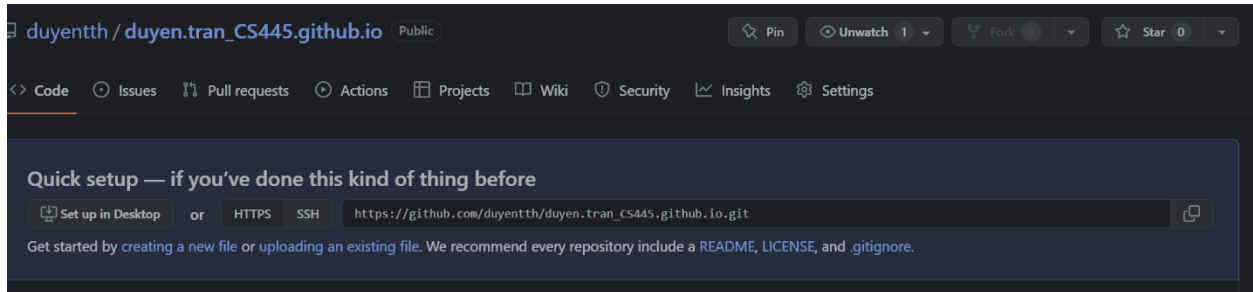
```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
~\Desktop\CS445-Lab\exercises > @master git log --oneline
ef066f4 (HEAD -> master) Revert "added test2.js on master branch"
f3473d4 added test3.js
f329174 added test2.js on master branch
7ac7271 Revert "Added test1.js on master first time"
7a6f3ae Added test1.js on master first time
~\Desktop\CS445-Lab\exercises > @master git reset f329174
Unstaged changes after reset:
D test2.js
~\Desktop\CS445-Lab\exercises > @master ?1 -1 git status
On branch master
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:    test2.js

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        test3.js

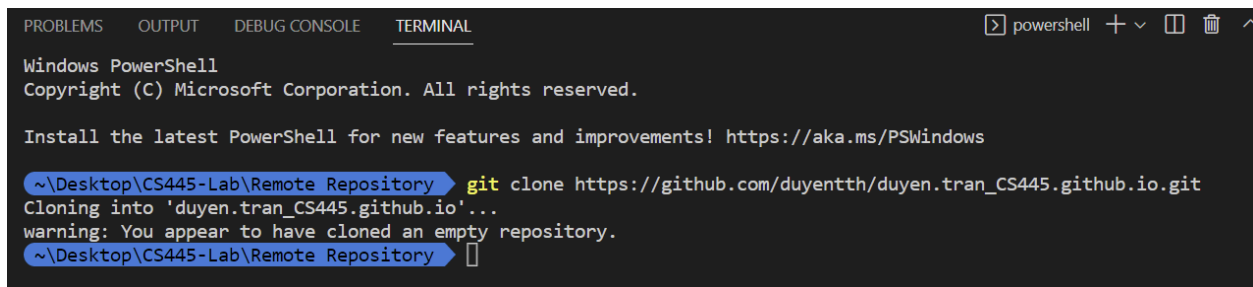
no changes added to commit (use "git add" and/or "git commit -a")
~\Desktop\CS445-Lab\exercises > @master ?1 -1 git add .
```

Practice with all the remote repository commands from the slides:

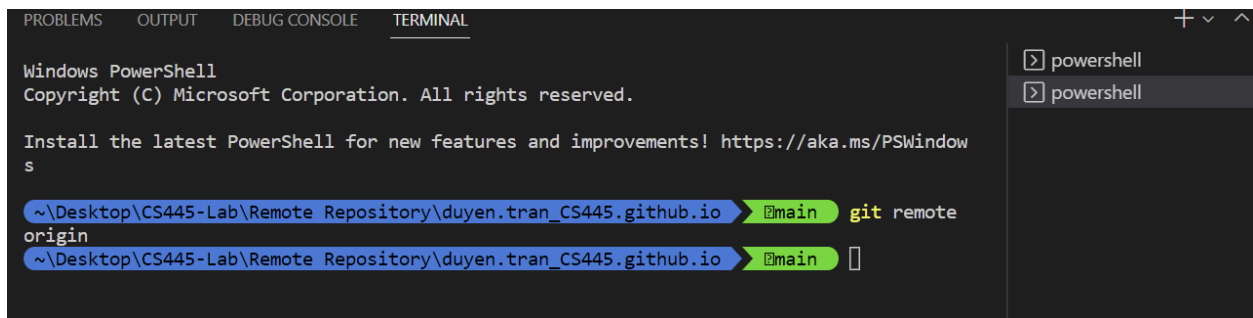
1. Create a remote repository



2. `git clone`



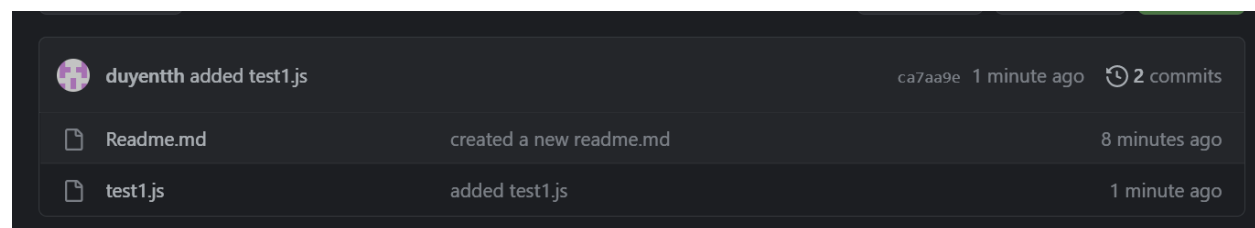
3. `git remote`



4. `git push`

Push test1.js into remote repository from local repository

```
nothing to commit, working tree clean
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > git push origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 303 bytes | 303.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/duyentth/duyen.tran_CS445.github.io.git
  3f427bb..ca7aa9e  main -> main
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io >
```



A screenshot of a GitHub commit history page. At the top, it shows a commit by 'duyentth' titled 'added test1.js' with commit hash 'ca7aa9e' and '2 commits' ago. Below this, a table lists the files changed in the commit:

File	Change	Time
Readme.md	created a new readme.md	8 minutes ago
test1.js	added test1.js	1 minute ago

5. `git fetch`

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > git remote
origin
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > git fetch origin main
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 694 bytes | 38.00 KiB/s, done.
From https://github.com/duyentth/duyen.tran_CS445.github.io
 * branch          main      -> FETCH_HEAD
    94856ac..08dc989  main      -> origin/main
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > git merge origin/main
Updating 94856ac..08dc989
Fast-forward
  Readme.md | 2 +-
  1 file changed, 1 insertion(+), 1 deletion(-)
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io >
```


6. `git pull`

```
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~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > @main git remote
origin
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > @main git pull or
igin main
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 622 bytes | 103.00 KiB/s, done.
From https://github.com/duyentth/duyen.tran_CS445.github.io
* branch          main      -> FETCH_HEAD
* [new branch]     main      -> origin/main
~\Desktop\CS445-Lab\Remote Repository\duyen.tran_CS445.github.io > @main
```

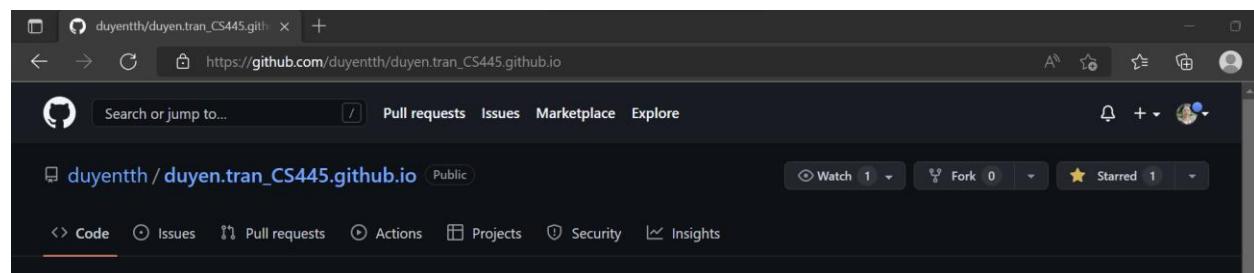
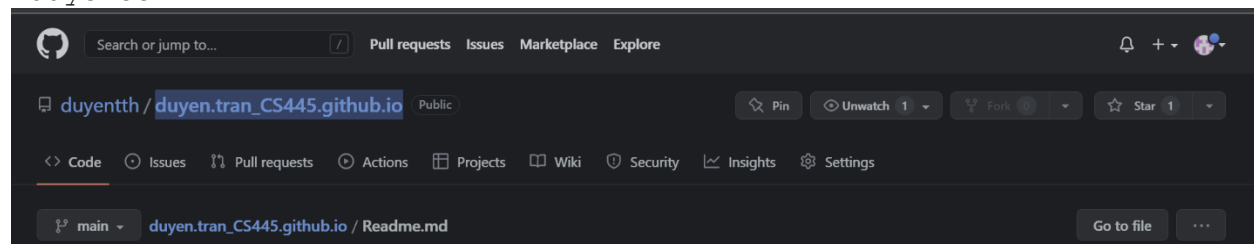
Practice with all the third party repositories commands from the slides:

Assume we are working with the following upstream:

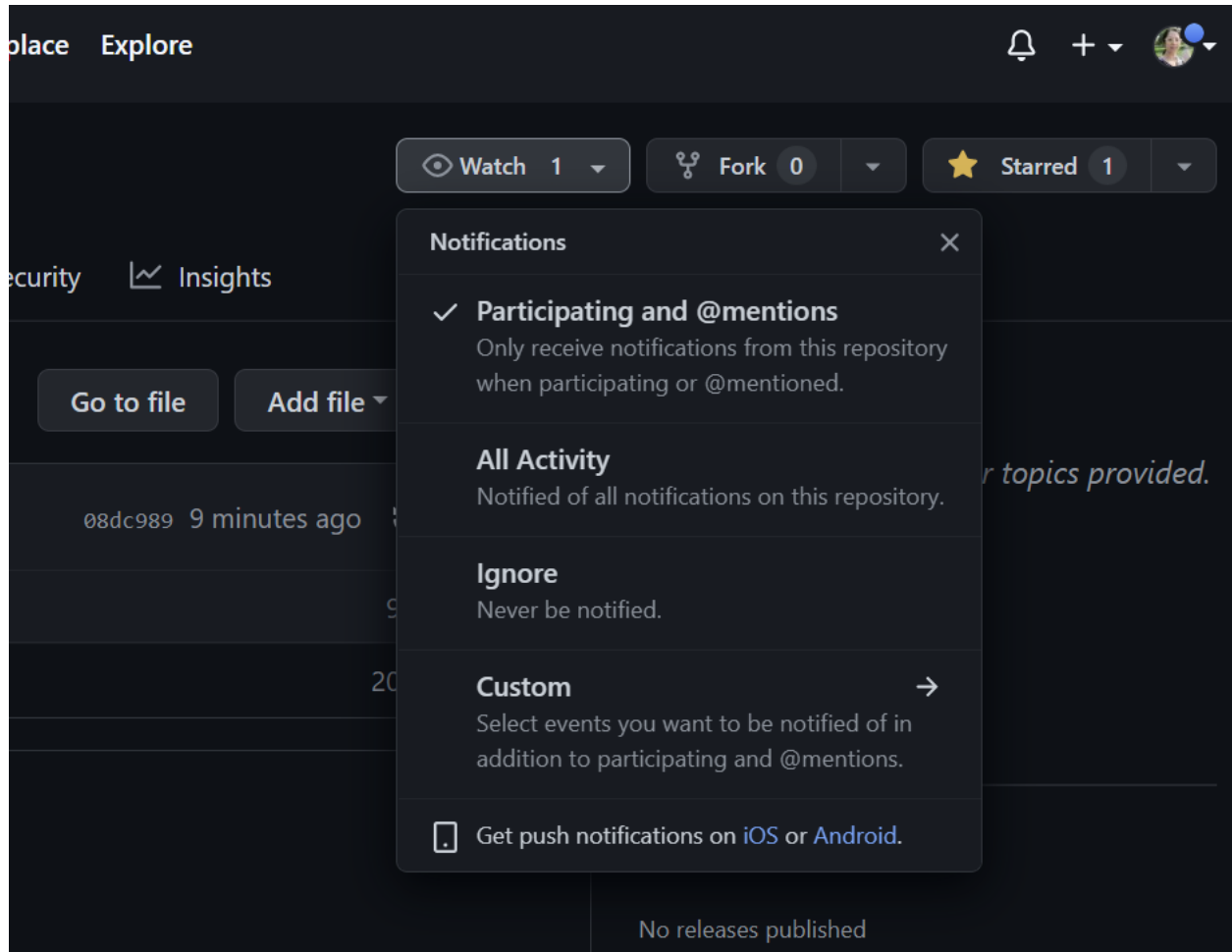
`https://github.com/bellaxing/cs445-labs`

1. Star the repository

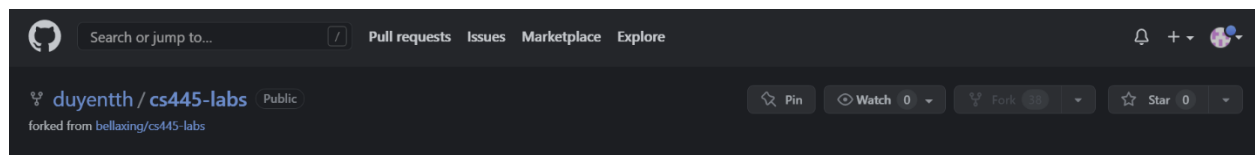
Login with user "duyen82" to star the repository that belong to user "duyentth"



2. Watch the repository for any changes



3. Fork the repository



4. Clone your forked repository into your local machine

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
Windows PowerShell
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~\Desktop\CS445-Lab\Remote Repository\forkedRepo > git clone https://github.com/duyen82/cs445-labs.git
Cloning into 'cs445-labs'...
remote: Enumerating objects: 231, done.
remote: Counting objects: 100% (73/73), done.
remote: Compressing objects: 100% (40/40), done.
remote: Total 231 (delta 40), reused 28 (delta 25), pack-reused 158
Receiving objects: 100% (231/231), 108.17 KiB | 1.66 MiB/s, done.
Resolving deltas: 100% (84/84), done.
~\Desktop\CS445-Lab\Remote Repository\forkedRepo > 
```

5. Create a new topic branch using `studentId-studentName` format, For example: 610001-JohnSmith

Create a new branch named "100022-DuyenTran"

```
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > git branch 100022-DuyenTran
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > git branch
100022-DuyenTran
* main
```

6. Checkout your new branch

```
* main
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > git checkout 100022-DuyenTran
Switched to branch '100022-DuyenTran'
```

7. Add a new file with your name, example: `hello.js`

```
Switched to branch '100022-DuyenTran'
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > git status
On branch 100022-DuyenTran
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    hello.js

nothing added to commit but untracked files present (use "git add" to track)
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > git add .
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > git status
On branch 100022-DuyenTran
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   hello.js
```

8. Commit the changes

```

~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > 100022-DuyenTran +1 git commit -m "commit hello.js"
[100022-DuyenTran 4969465] commit hello.js
1 file changed, 1 insertion(+)
create mode 100644 hello.js
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > 100022-DuyenTran git status
On branch 100022-DuyenTran
nothing to commit, working tree clean

```

9. Merge your `studentId-studentName` branch with the main branch

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > 100022-DuyenTran git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > main git merge 100022-DuyenTran
Updating 1c32ce1..4969465
Fast-forward
 hello.js | 1 +
1 file changed, 1 insertion(+)
create mode 100644 hello.js
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > main

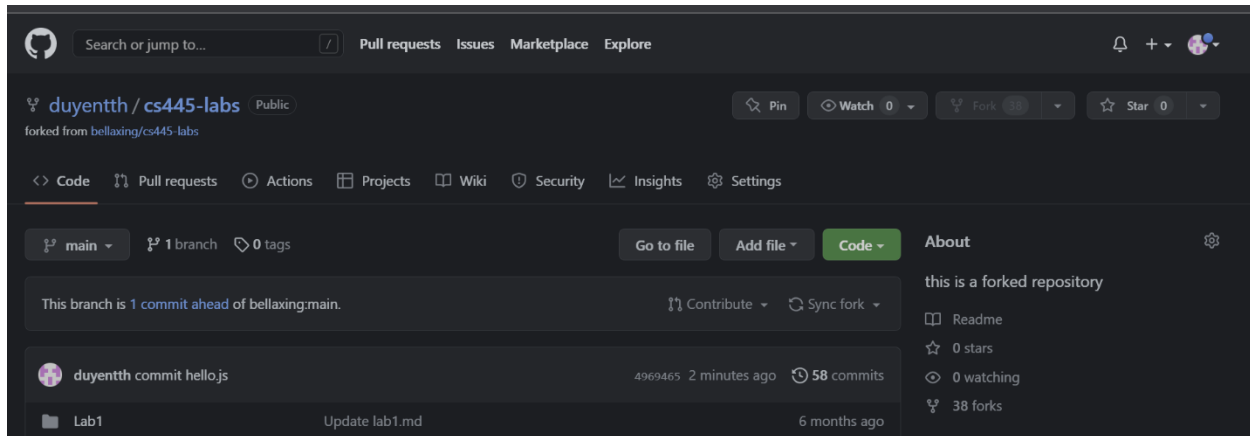
```

10. Push your changes to the remote repo

```

create mode 100644 hello.js
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > main git remote
origin
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > main git push origin
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 288 bytes | 288.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/duyentth/cs445-labs.git
1c32ce1..4969465 main -> main
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > main

```



11. Create a new Pull Request to the upstream repo

```
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > @main git remote -v
origin https://github.com/duyentth/cs445-labs.git (fetch)
origin https://github.com/duyentth/cs445-labs.git (push)
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > @main git remote add upstream https://github.com/bellaxing/cs445-labs
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > @main git remote -v
origin https://github.com/duyentth/cs445-labs.git (fetch)
origin https://github.com/duyentth/cs445-labs.git (push)
upstream https://github.com/bellaxing/cs445-labs (fetch)
upstream https://github.com/bellaxing/cs445-labs (push)
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > @main git push upstream
remote: Permission to bellaxing/cs445-labs.git denied to duyentth.
fatal: unable to access 'https://github.com/bellaxing/cs445-labs/': The requested URL returned error: 403
~\Desktop\CS445-Lab\Remote Repository\forked\cs445-labs > @main
```

