

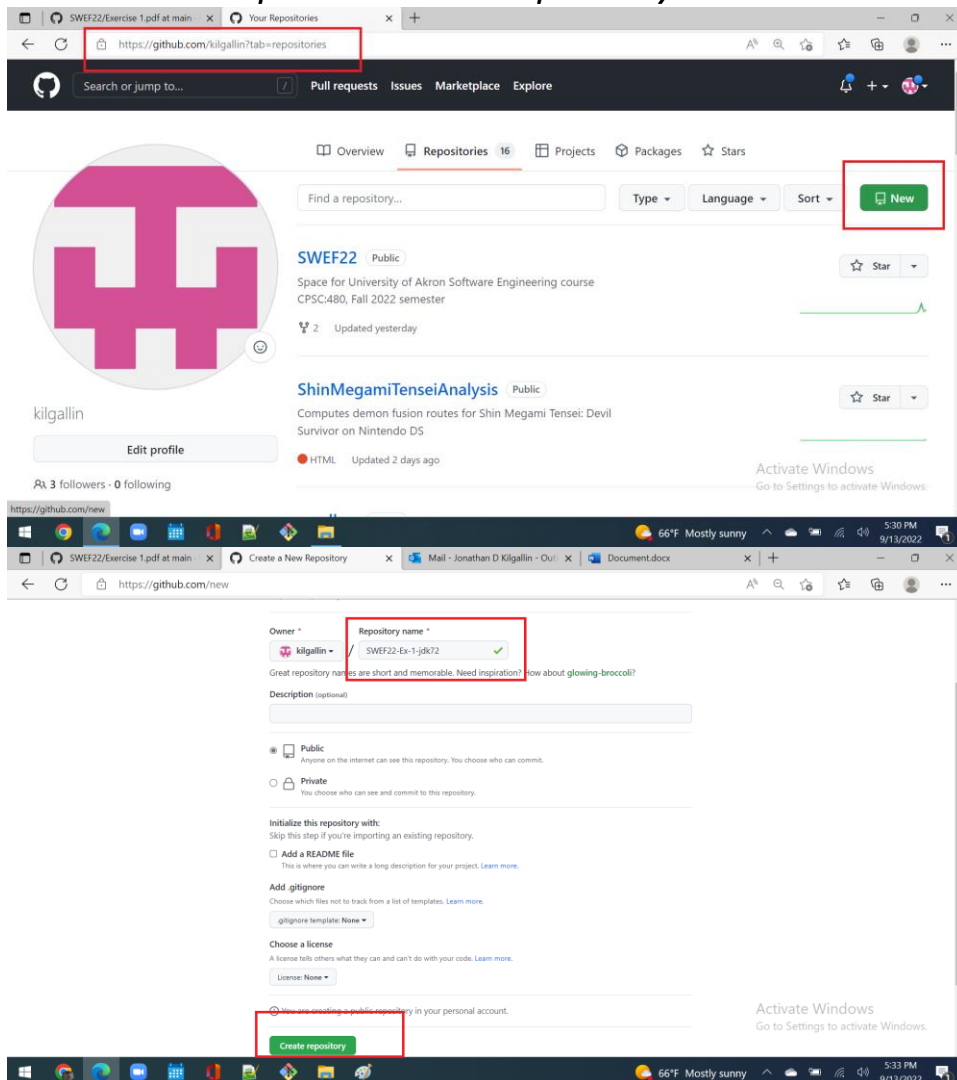
CPSC:480 Software Engineering Exercise 1

Complete this exercise in pairs with the student next to you. *Steps in Italics are completed on GitHub, others on local machine using git.*

Note: In this walkthrough, GitHub user "kilgallin" UAid jsk72, is the primary user completing these steps, and GitHub user "JDKeyfactor" repo "SWEF22-Ex-1-otherJDK" is simulating the partner.

Part I – Initialization

1. Open laptop with Git installed and create parent directory for projects (e.g. C:\Users\me\github).
2. *Create a public GitHub repository named "SWEF22-Ex-1-<UAid>".*



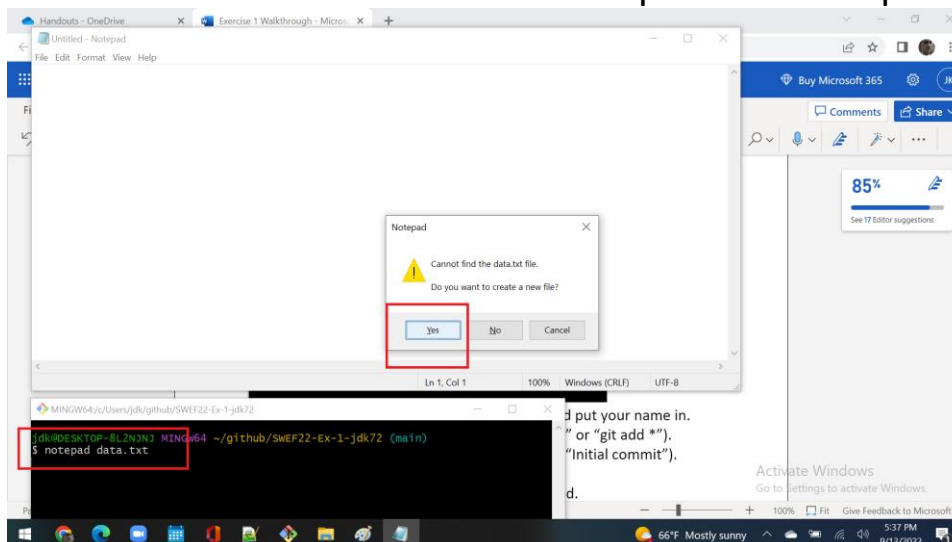
3. Open git command line and go to project parent directory.

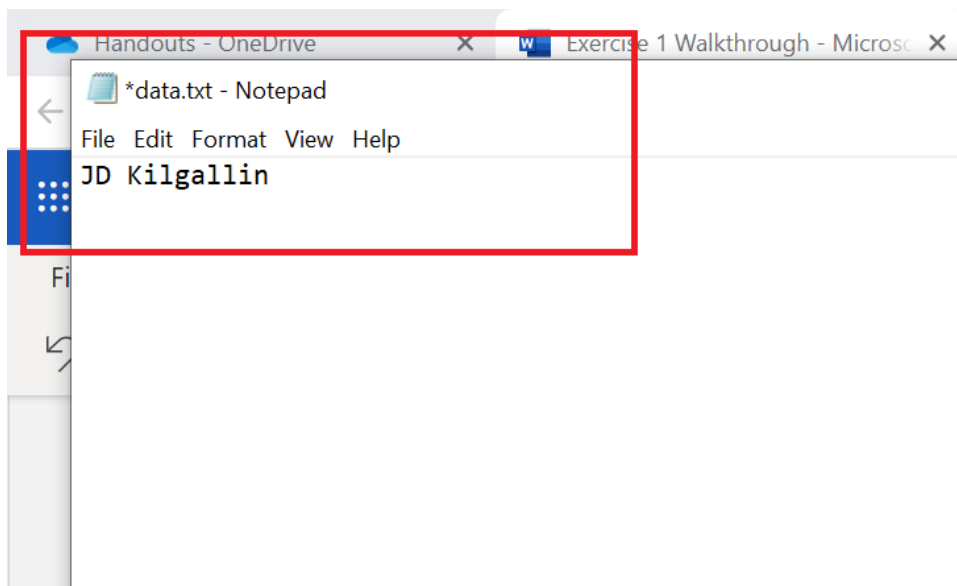
```
jdk@DESKTOP-8L2N3N3 MINGW64 /  
$ cd /c/Users/jdk/github/  
  
jdk@DESKTOP-8L2N3N3 MINGW64 ~/github  
$
```

4. Clone a local copy ("git clone https://github.com/<user>/SWEF22-Ex-1-<UAid>") and make sure you're in the repository directory.

```
jdk@DESKTOP-8L2N3N3 MINGW64 ~/github  
$ git clone https://github.com/kilgallin/SWEF22-Ex-1-jdk72  
Cloning into 'SWEF22-Ex-1-jdk72'...  
warning: You appear to have cloned an empty repository.  
  
jdk@DESKTOP-8L2N3N3 MINGW64 ~/github  
$ cd SWEF22-Ex-1-jdk72/  
  
jdk@DESKTOP-8L2N3N3 MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)  
$ |
```

5. Create file "data.txt" in local repo folder and put your name in.





6. Add to files tracked by Git (“git add data.txt” or “git add *”).

MINGW64:/c/Users/jdk/github/SWEF22-Ex-1-jdk72

```
jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ notepad data.txt

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git add data.txt

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git status
On branch main

No commits yet

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

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ |
```

7. Create an initial commit (“git commit -a -m “Initial commit”).

MINGW64:/c/Users/jdk/github/SWEF22-Ex-1-jdk72

```
jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git commit -a -m "Initial commit"
[main (root-commit) bd75643] Initial commit
1 file changed, 1 insertion(+)
create mode 100644 data.txt

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ 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
```

8. Push change to GitHub (“git push”).

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git push
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 225 bytes | 225.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/kilgallin/SWEF22-Ex-1-jdk72
* [new branch]      main -> main

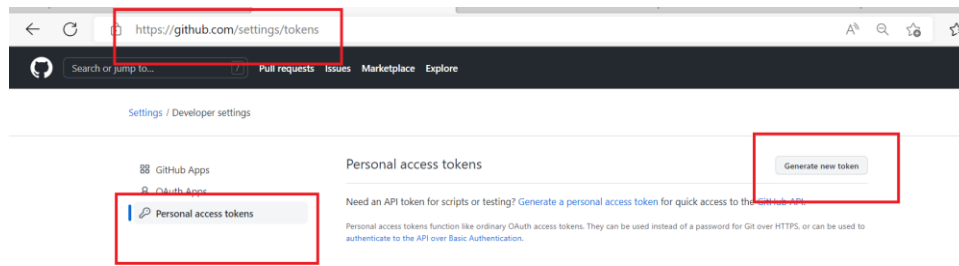
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$
```

9. Set author and GitHub credentials as needed.

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git config --global user.name "JDK"

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git config --global user.email
jd.kilgallin@gmail.com
```

*Note: If you get an error about passwords not being supported, as seems to be the case on Apple OS X, do the following:
Click your profile in the top-right of the GitHub page and go to “Settings”. Find “Developer Settings” in the far bottom left. Select “Personal Access Tokens” and click “Generate new token”*



Enter a name (e.g. “class”) and check the box next to repo, then click “Generate Token” at the bottom.

New personal access token

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).

Note

class

What's this token for?

Expiration *

30 days

The token will expire on Thu, Oct 13 2022

Select scopes

Scopes define the access for personal tokens. [Read more about OAuth scopes](#).

<input checked="" type="checkbox"/> repo	Full control of private repositories
<input checked="" type="checkbox"/> repo:status	Access commit status
<input checked="" type="checkbox"/> repo_deployment	Access deployment status
<input checked="" type="checkbox"/> public_repo	Access public repositories
<input checked="" type="checkbox"/> repo:invite	Access repository invitations
<input checked="" type="checkbox"/> security_events	Read and write security events
<input type="checkbox"/> workflow	Update GitHub Action workflows

Copy the value shown and enter it as your password in Git

Some of the scopes you've selected are included in other scopes. Only the minimum set of necessary scopes has been saved.

Settings / Developer settings

Personal access tokens

Generate new token Remove all

Tokens you have generated that can be used to access the GitHub API.

Make sure to copy your personal access token now. You won't be able to see it again!

ghp_32j4t7hEE16Bjnk0z523D56toR1211t8p Delete

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to authenticate to the API over Basic Authentication.

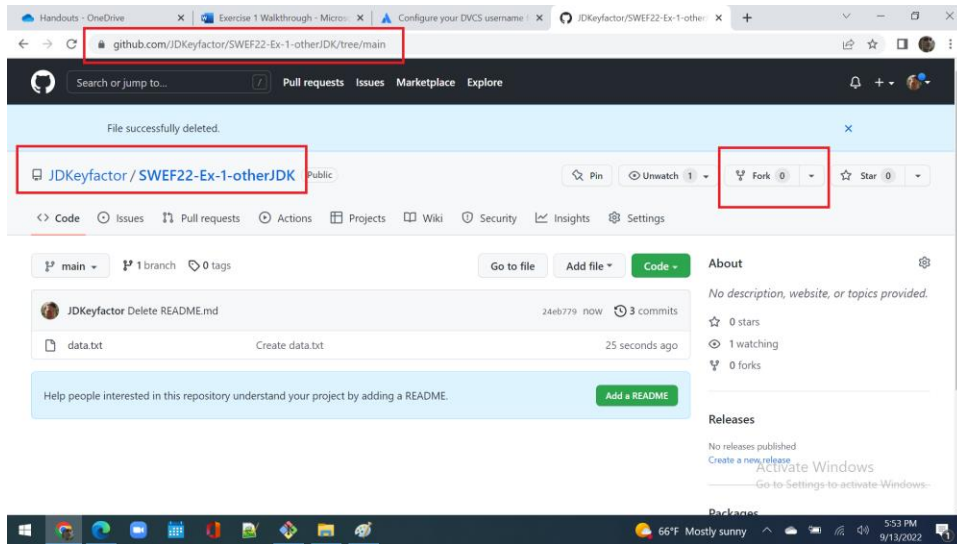
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Activate Windows
Go to Settings to activate Windows.

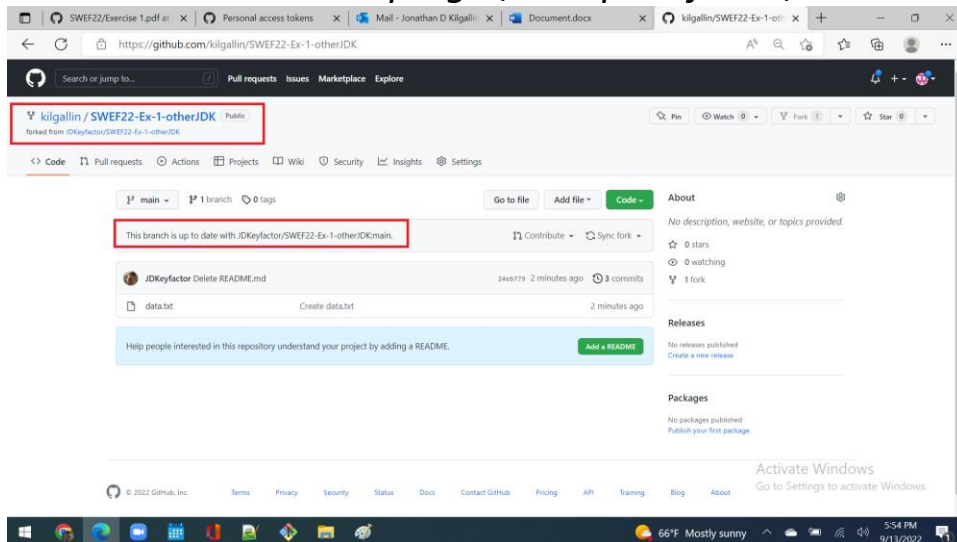
66°F Mostly sunny 5:46 PM 9/11/2022

Part II – Collaboration

1. Open a browser to `https://github.com/<partner-username>/SWEF22-Ex-1-<partner-UAid>` while logged in to your account.



2. Click “Fork” in top right, accept defaults, and click “Create fork”.



3. On your machine, go back to github directory, outside of repo

MINGW64/c/Users/jdk/github

```
jdk@DESKTOP-8L2NJNJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ cd ..

jdk@DESKTOP-8L2NJNJ MINGW64 ~/github
$ |
```

4. Create local copy of fork (“git clone https://github.com/<your-username>/SWEF22-Ex-1-<partner-UAid>”) and go in new repo.

*Note: Make sure you clone **your fork**, and don’t clone your partner’s repo directly, as you won’t be able to push.*

```

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github
$ git clone https://github.com/kilgallin/SWEF22-Ex-1-otherJDK
Cloning into 'SWEF22-Ex-1-otherJDK'...
remote: Enumerating objects: 8, done.
remote: Counting objects: 100% (8/8), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 8 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (8/8), done.

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github
$ cd SWEF22-Ex-1-otherJDK/

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$

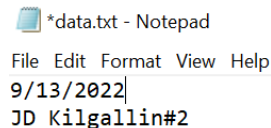
```

5. Edit data.txt and add today's date **above** partner's name.

```

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ notepad data.txt

```



*data.txt - Notepad

File Edit Format View Help

9/13/2022

JD Kilgallin#2

6. Commit and push to your fork on GitHub.

*Note: If you get error 403, check that you cloned **your fork***

```

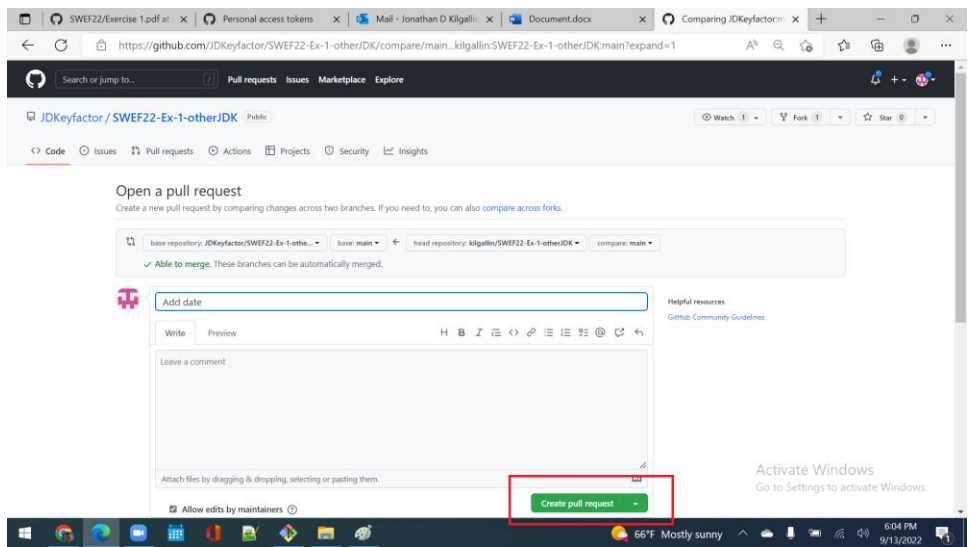
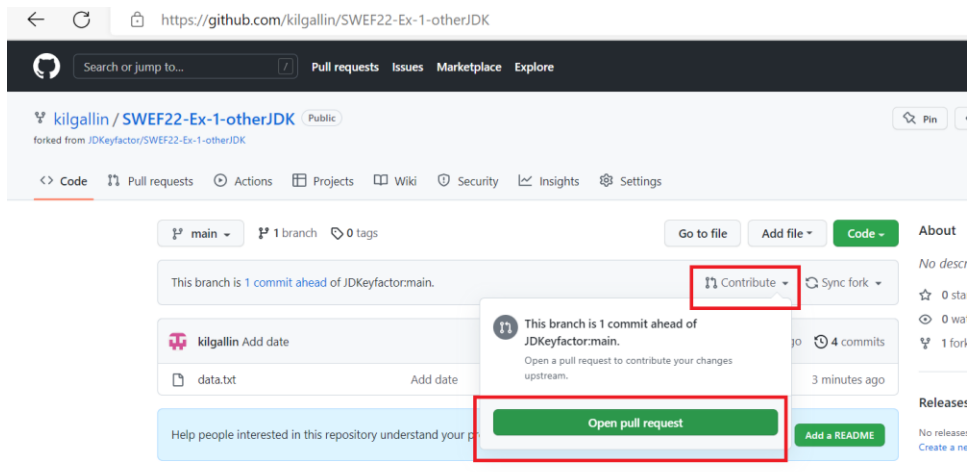
jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ git commit -a -m "Add date"
[main c313350] Add date
1 file changed, 1 insertion(+)

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 263 bytes | 263.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/kilgallin/SWEF22-Ex-1-otherJDK
24eb779..c313350 main -> main

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$

```

7. Open your fork in a browser and click on "Open pull request" under "Contribute", then "Create pull request".



8. Wait for your partner to complete step 7 before starting step 9.
9. Go to your own repo, click "Pull requests" tab, find and open your partner's PR, and click "Merge pull request", then "Confirm".

Handouts - OneDrive | Exercise 1 Walkthrough - Micro... | Configure your DVCS username | Add date by kilgallin - Pull Request

github.com/DKeyfactor/SWEF22-Ex-1-otherJDK/pull/1

Add date #1

Open kilgallin wants to merge 1 commit into DKeyfactor:main from kilgallin:main

Conversation 0 | Commits 1 | Checks 0 | Files changed 1 | +1 -0

kilgallin commented 41 seconds ago First-time contributor

No description provided.

Add date c313358

Add more commits by pushing to the main branch on kilgallin/SWEF22-Ex-1-otherJDK.

Require approval from specific reviewers before merging
Ensure specific people or teams approve pull requests before they're merged into your main branch. Add rule X

Continuous integration has not been set up
GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

This branch has no conflicts with the base branch
Merging can be performed automatically.

Merge pull request

Reviews
No reviews
Still in progress? Convert to draft

Assignees
No one—assign yourself

Labels
None yet

Projects
None yet

Milestone
No milestone

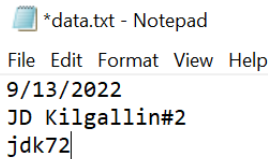
Development

66°F Mostly sunny 6:08 PM 9/13/2022

Part III – Conflicts

1. On your local machine, “git pull” **both** repos to current state.
2. Edit data.txt in both repos’ copies and add your UAid at bottom.

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ notepad data.txt
```



*data.txt - Notepad

File Edit Format View Help

9/13/2022
JD Kilgallin#2
jdk72

3. Commit & push the change **only** to your fork of *partner's* repo.

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

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:   data.txt

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

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ git commit -a -m "Add uaid"
[main 9ebf3cd] Add uaid
1 file changed, 1 insertion(+)

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 268 bytes | 268.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/kilgallin/SWEF22-Ex-1-otherJDK
   c313350..9ebf3cd  main -> main

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-otherJDK (main)
$
```

4. Issue another PR to your partner & accept the one they issue you.
5. Wait for your partner to complete step 4 before starting step 6.
6. Go to **your** repo, commit your local change and try to push.

```

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ notepad data.txt

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git commit -a -m "Add uaid"
[main bc87d63] Add uaid
1 file changed, 1 insertion(+)

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git push
To https://github.com/kilgallin/SWEF22-Ex-1-jdk72
 ! [rejected]        main -> main (fetch first)
error: failed to push some refs to 'https://github.com/kilgallin/SWEF22-Ex-1-jdk72'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$

```

7. Note the failure, then git pull to download the commits on GitHub that come from your partner's pull request.

```

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git pull
remote: Enumerating objects: 6, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (4/4), 1.24 KiB | 63.00 KiB/s, done.
From https://github.com/kilgallin/SWEF22-Ex-1-jdk72
   3e5bd80..4a178a0  main      -> origin/main
Auto-merging data.txt
CONFLICT (content): Merge conflict in data.txt
Automatic merge failed; fix conflicts and then commit the result.

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main|MERGING)
$ |

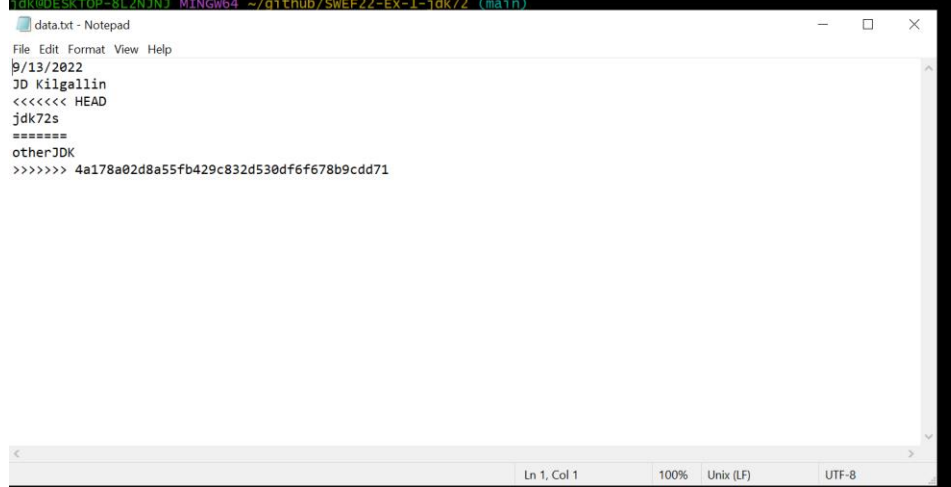
```

8. Open data.txt and view the conflict to be resolved. Edit the file to contain your UAid, then your partner's.

```

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ notepad data.txt

```



```

data.txt - Notepad
File Edit Format View Help
9/13/2022
JDK Kilgallin
<<<<<< HEAD
jdk72s
=====
otherJDK
>>>>>> 4a178a02d8a55fb429c832d530df6f678b9cdd71

```

```

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main|MERGING)
$ notepad data.txt

```

```
data.txt - Notepad
File Edit Format View Help
9/13/2022
JD Kilgallin
jdk72
otherJDK
```

9. Commit the merge and push to GitHub.

```
jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main|MERGING)
$ git status
On branch main
Your branch and 'origin/main' have diverged,
and have 1 and 2 different commits each, respectively.
(use "git pull" to merge the remote branch into yours)

You have unmerged paths.
(fix conflicts and run "git commit")
(use "git merge --abort" to abort the merge)

Unmerged paths:
(use "git add <file>..." to mark resolution)
    both modified:   data.txt

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

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main|MERGING)
$ git commit -a -m "Resolve merge"
[main 056edeb] Resolve merge

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git push
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (6/6), 548 bytes | 274.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/kilgallin/SWEF22-Ex-1-jdk72
   4a178a0..056edeb  main -> main

jdk@DESKTOP-8L2N3NJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$
```

Part IV – Branching

1. Create branch in your repo named "part-4" ("git branch part-4").

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git branch part-4
```

2. Set the new branch as the active branch (“git checkout part-4”).

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git checkout part-4
Switched to branch 'part-4'

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (part-4)
$ git branch
  main
* part-4
```

3. Rename data.txt to authors.txt (“git mv data.txt authors.txt”).

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (part-4)
$ git mv data.txt authors.txt
```

4. Commit the change to this branch (**do not push**).

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (part-4)
$ git commit -a -m "Rename file"
[part-4 4d3c193] Rename file
1 file changed, 0 insertions(+), 0 deletions(-)
rename data.txt => authors.txt (100%)
```

5. Switch to main branch (“git checkout main”) and note that the file is again called data.txt.

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (part-4)
$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git branch
* main
  part-4

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ ls
data.txt
```

6. Add your favorite Pokémon (eg “Pikachu”) at the end of data.txt.

```
data.txt - Notepad
File Edit Format View Help
9/13/2022
JD Kilgallin
jdk72
otherJDK
Charizard|
```

```
<
Ln 5, Col 10
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ notepad data.txt
```

7. Commit the change (do not push).

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git commit -a -m "Add pokemon"
[main 7a7d670] Add pokemon
1 file changed, 1 insertion(+), 1 deletion(-)
```

8. Merge part-4 branch ("git merge part-4").

```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git merge part-4
Merge made by the 'ort' strategy.
 data.txt => authors.txt | 0
1 file changed, 0 insertions(+), 0 deletions(-)
rename data.txt => authors.txt (100%)
```

Note: Git will open its default text editor prompting you to enter a commit message for the merge. The default is likely vim, a UNIX text editor that's popular but has a learning curve. You can accept the auto-generated commit message and close the editor by typing ":wq" and pressing enter. This should show at the bottom of the screen as you type You can read this as ":" = run command, "wq" = Write+Quit, and enter to execute. If this shows up in the editor instead, "-- INSERT --" is

```
MINGW64/c/Users/jdk/github/SWEF22-Ex-1-jdk72
Merge branch 'part-4'
# Please enter a commit message to explain why this merge is necessary,
# especially if it merges an updated upstream into a topic branch.
#
# Lines starting with '#' will be ignored, and an empty message aborts
# the commit.
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
```

- ```
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 3 commits.
 (use "git push" to publish your local commits)

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: authors.txt

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

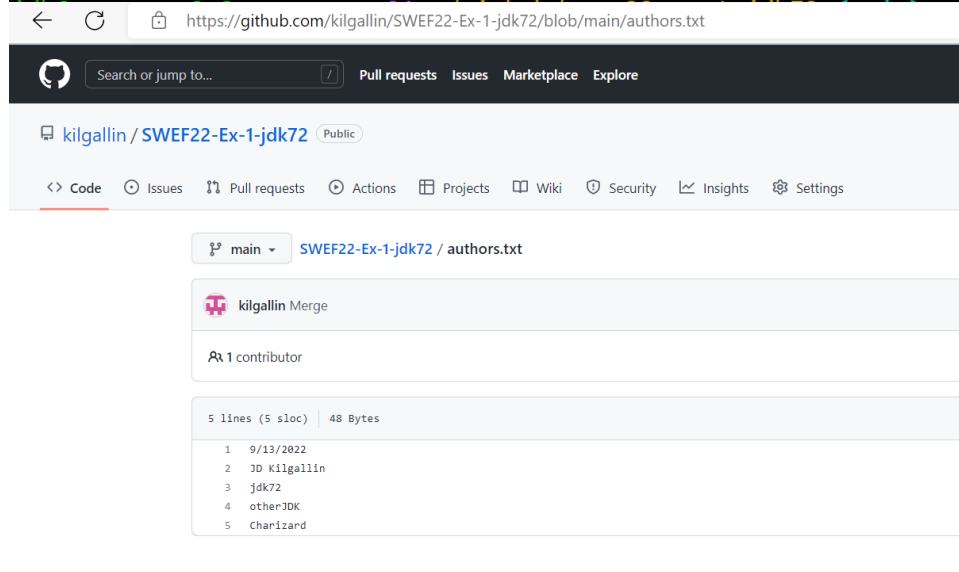
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git commit -a -m "Merge"
[main 4924293] Merge
 1 file changed, 1 insertion(+), 1 deletion(-)

jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ git push
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 4 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (10/10), 932 bytes | 466.00 KiB/s, done.
Total 10 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/kilgallin/SWEF22-Ex-1-jdk72
 056deb..4924293 main -> main

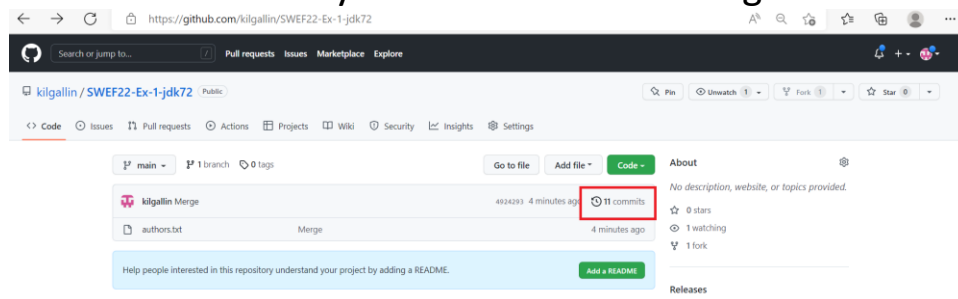
jdk@DESKTOP-8L2NJNI MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$
```

```
jdk@DESKTOP-8L2NJJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ ls
authors.txt

jdk@DESKTOP-8L2NJJ MINGW64 ~/github/SWEF22-Ex-1-jdk72 (main)
$ cat authors.txt
9/13/2022
JD Kilgallin
jdk72
otherJDK
Charizard
```



After this step, your repo should have the file “authors.txt” (and nothing else except possibly a README.md if you created it at the beginning) with content like the above. If you go to “Commits” you should see a history similar to the following.





https://github.com/kilgallin/SWEF22-Ex-1-jdk72/commits/main

Commits on Sep 13, 2022

| Commit Message                              | Author      | Time Ago       | Commit Hash |
|---------------------------------------------|-------------|----------------|-------------|
| Merge                                       | kilgallin   | 3 minutes ago  | 4924293     |
| Merge branch 'part-4'                       | kilgallin   | 9 minutes ago  | e2f18b4     |
| Add pokemon                                 | kilgallin   | 10 minutes ago | 7a70670     |
| Rename file                                 | kilgallin   | 13 minutes ago | 4d3c193     |
| Resolve merge                               | kilgallin   | 15 minutes ago | 056ed0b     |
| Add uaid                                    | kilgallin   | 19 minutes ago | bc87d63     |
| Merge pull request #2 from JDKeyfactor/main | JDKeyfactor | 20 minutes ago | 4a178a0     |
| Update data.txt                             | JDKeyfactor | 21 minutes ago | c797644     |
| Merge pull request #1 from JDKeyfactor/main | kilgallin   | 35 minutes ago | 3e5b080     |
| Update data.txt                             | JDKeyfactor | 35 minutes ago | 20a6b0b     |
| Initial commit                              | kilgallin   | 1 hour ago     | b075643     |

If you go to “Insights->Network”, you should see something like this. It may vary slightly depending on how you and your partner committed changes. But it should show three merges: two from pull requests and one from a branch merge.


https://github.com/kilgallin/SWEF22-Ex-1-jdk72/network

kilgallin / SWEF22-Ex-1-jdk72 Public

Code Issues Pull requests Actions Projects Wiki Security **Insights** Settings

Network graph

Timeline of the most recent commits to this repository and its network ordered by most recently pushed to.

| Owners    | Network                                                                             |
|-----------|-------------------------------------------------------------------------------------|
| kilgallin |  |