Pull, Fork and Branch

Hamid Semiyari

What is Git pull?

If you are working on a project and collaborating with other people, you need to sync with remote repositories. Git Pull is a command used to update the local version of a repository from a remote repository. So, the first step is to 'fetch the remote repository and update the current local working branch (currently checked out branch) (i.e. HEAD is pointed at). After the content is downloaded, your local branch is compared to the remote-tracking branch and receives the new commits so it can catch up to the current state of the remote branch.

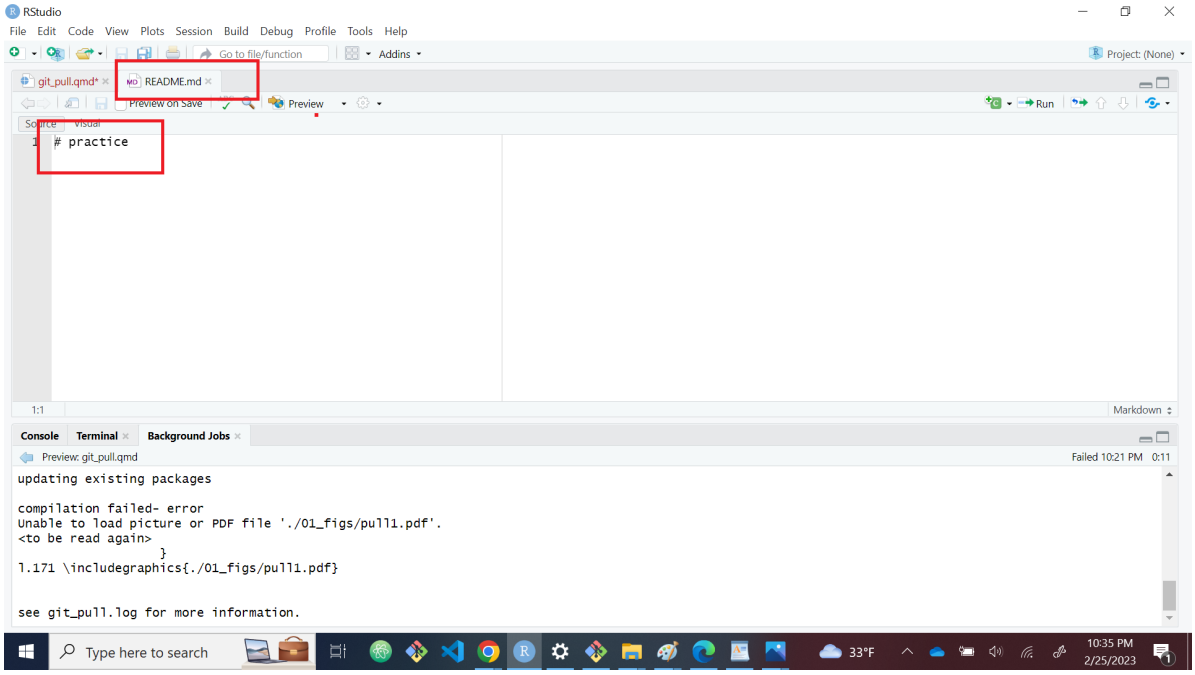
So `git pull` is a combination of `git fetch` and `git merge`. - Git Fetch: It is the process of updating your remote -tracking branches.

- Git Merge: It is used to merge the received commits into a local branch.
- Git Pull: It is a shortcut and do both `git fetch` and `git pull`. When you perform `git pull`, Git preforms `git fetch` which downloads all the changes from your remote to your local repository. Then immediately performs a `git merge` which then applies those changes to your local repository.
- You need to run `git pull` at least once a day. Without running `git pull` your local repository will never be updated with changes from the remote. That's why `git pull` is one of the most used Git commands.
- **Question:** What is git rebase?

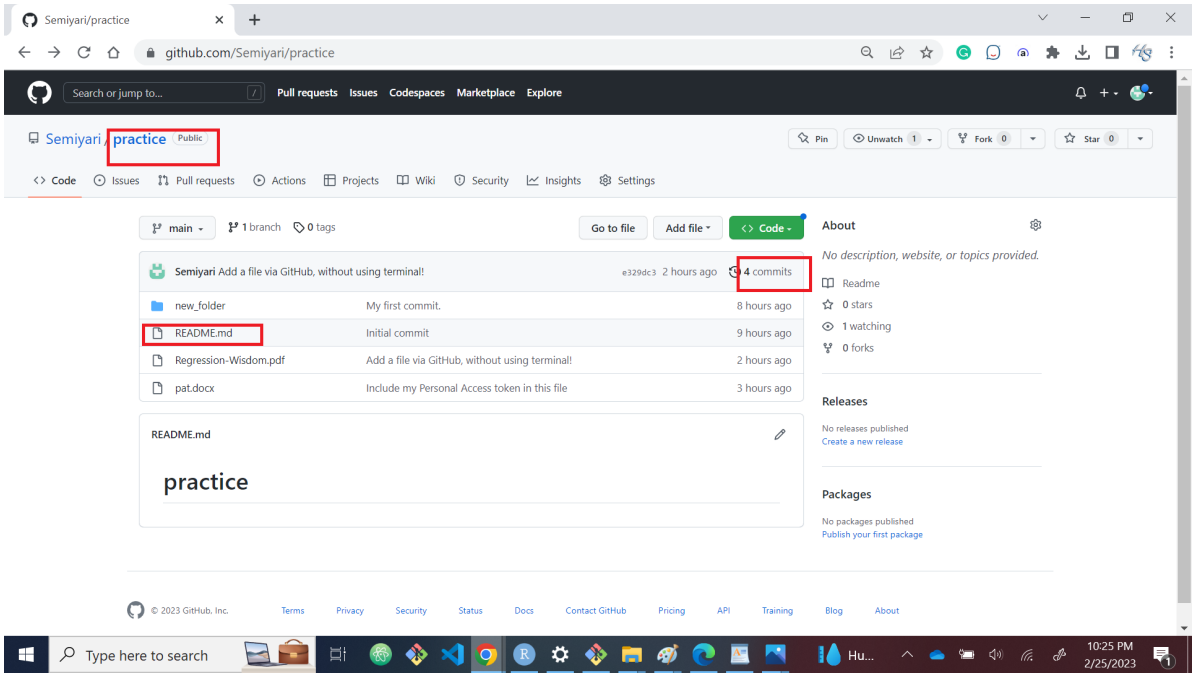
Rebase is one of two Git utilities that specializes in integrating changes from one branch onto another. The other change integration utility is git merge. Merge is always a forward moving change record. Alternatively, rebase has powerful history rewriting features.

Pull

Assume some one in our team has done some changes to the file `README.md` and push it to the `practice` repository. I have opened README.md and add a line. Why? Just to mimic that someone has changed the file and push it there. In my local machine the file README.md has only one line and it is `# practice`)



- Here are the steps that I took to imitate the action of a push file to the repository by a team member.


Semiyari/practice
github.com/Semiyari/practice
Search or jump to...
Pull requests
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Explore
Semiyari / practice
Public
Pin
Unwatch 1
Fork 0
Star 0
Code
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Wiki
Security
Insights
Settings
main
1 branch
0 tags
Go to file
Add file
Code
Semiyari Add a file via GitHub, without using terminal!
e329dc3 2 hours ago
4 commits
new_folder
My first commit.
8 hours ago
README.md
Initial commit
9 hours ago
Regression-Wisdom.pdf
Add a file via GitHub, without using terminal!
2 hours ago
pat.docx
Include my Personal Access token in this file
3 hours ago
README.md
practice
About
No description, website, or topics provided.
Readme
0 stars
1 watching
0 forks
Releases
No releases published
Create a new release
Packages
No packages published
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10:25 PM
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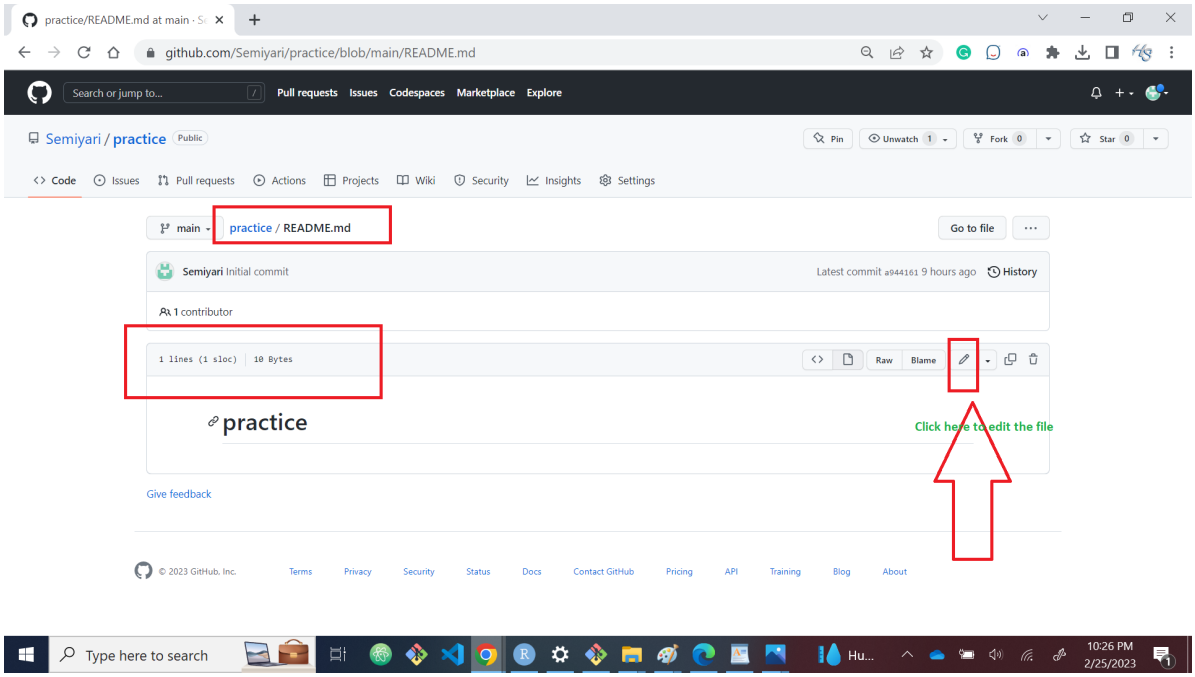
practice/README.md at main
github.com/Semiyari/practice/blob/main/README.md
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Pull requests
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Pin
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Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
main
practice / README.md
Go to file
Semiyari Initial commit
Latest commit a944161 9 hours ago
History
1 contributor
1 lines (1 sloc)
10 Bytes
Raw
Blame
practice
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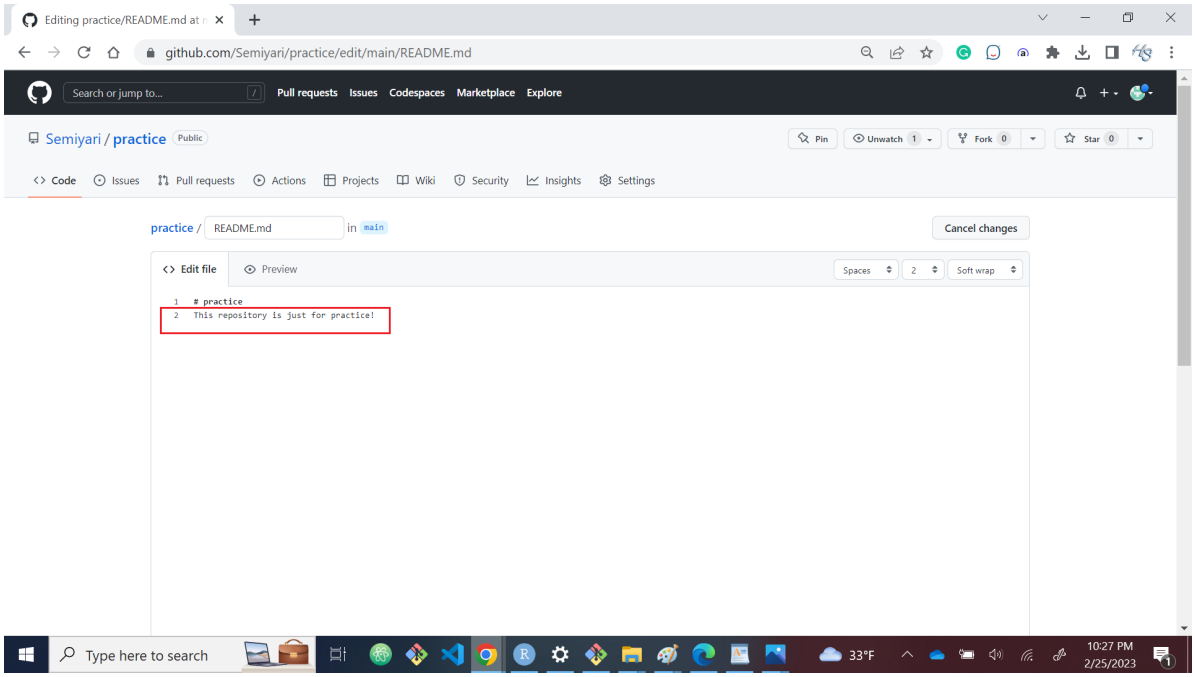
Editing practice/README.md at
github.com/Semiyari/practice/edit/main/README.md
Search or jump to...
Pull requests
Issues
Codespaces
Marketplace
Explore
Semiyari / practice
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Pin
Unwatch 1
Fork 0
Star 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
practice / README.md in main
Cancel changes
Edit file
Preview
Spaces
2
Soft wrap
1 # practice
2 This repository is just for practice!
Type here to search
33°F
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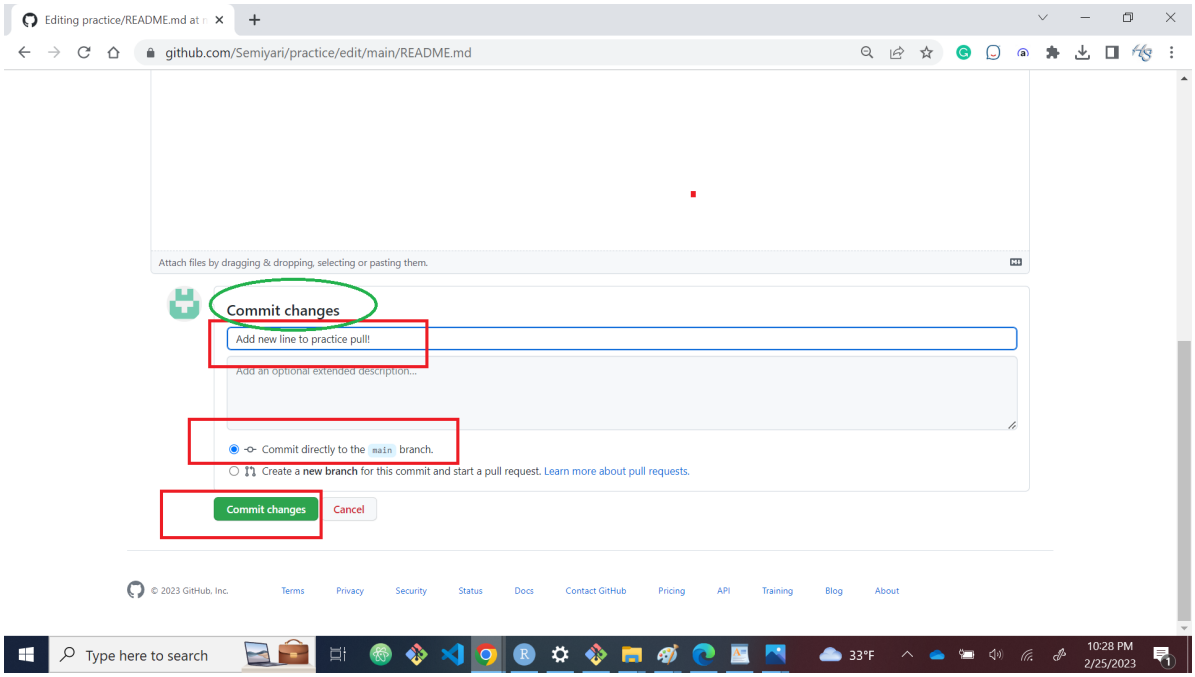
2/25/2023


Editing practice/README.md at
github.com/Semiyari/practice/edit/main/README.md
Attach files by dragging & dropping, selecting or pasting them.
Commit changes
Add new line to practice pull!
Add an optional extended description...
Commit directly to the main branch.
Create a new branch for this commit and start a pull request. Learn more about pull requests.
Commit changes
Cancel
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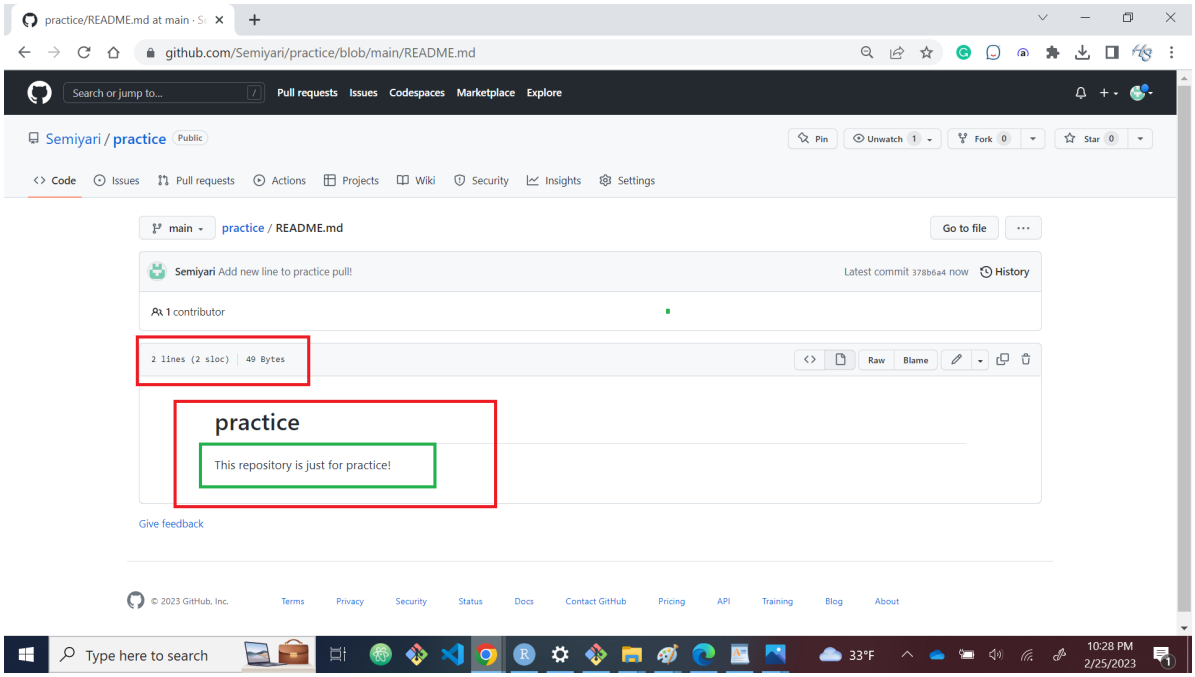
practice/README.md at main
github.com/Semiyari/practice/blob/main/README.md
Search or jump to...
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Issues
Codespaces
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Explore
Semiyari / practice
Public
Pin
Unwatch 1
Fork 0
Star 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
main
practice / README.md
Go to file
Semiyari Add new line to practice pull!
Latest commit 378b6a4 now
History
1 contributor
2 lines (2 sloc) | 49 Bytes
Raw
Blame
practice
This repository is just for practice!
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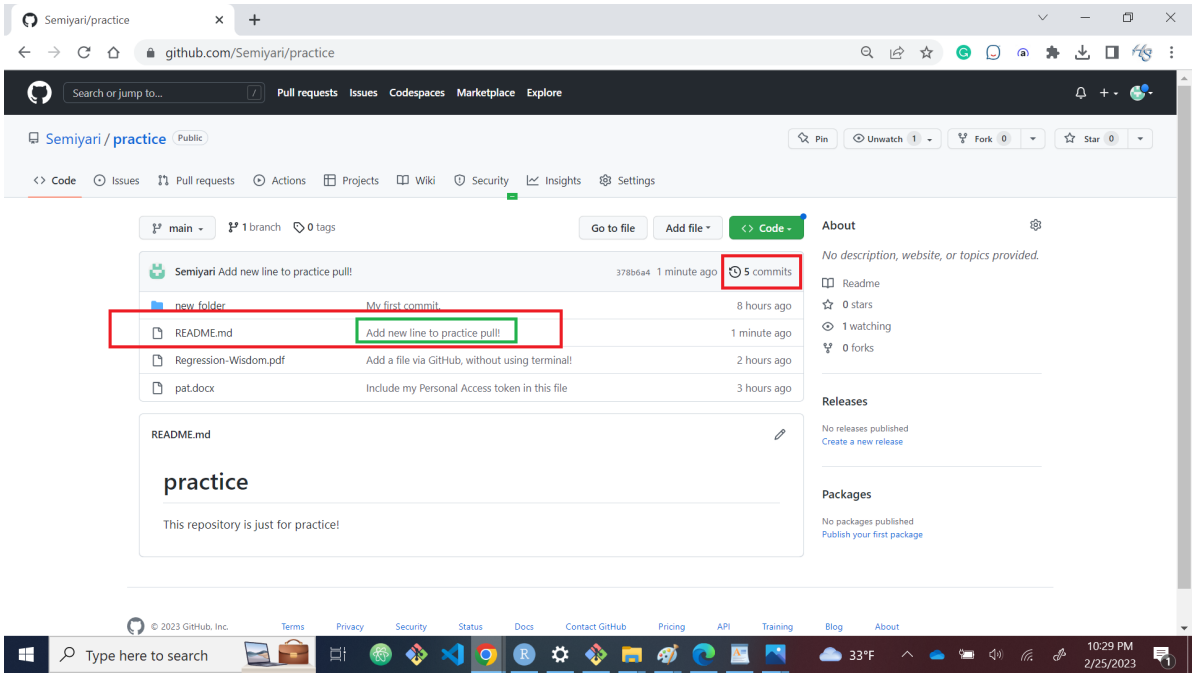
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Explore
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Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
main
1 branch
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Go to file
Add file
Code
Semiyari Add new line to practice pull!
378b6a4 1 minute ago
5 commits
new_folder
My first commit.
8 hours ago
README.md
Add new line to practice pull!
1 minute ago
Regression-Wisdom.pdf
Add a file via GitHub, without using terminal!
2 hours ago
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practice
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Readme
0 stars
1 watching
0 forks
Releases
No releases published
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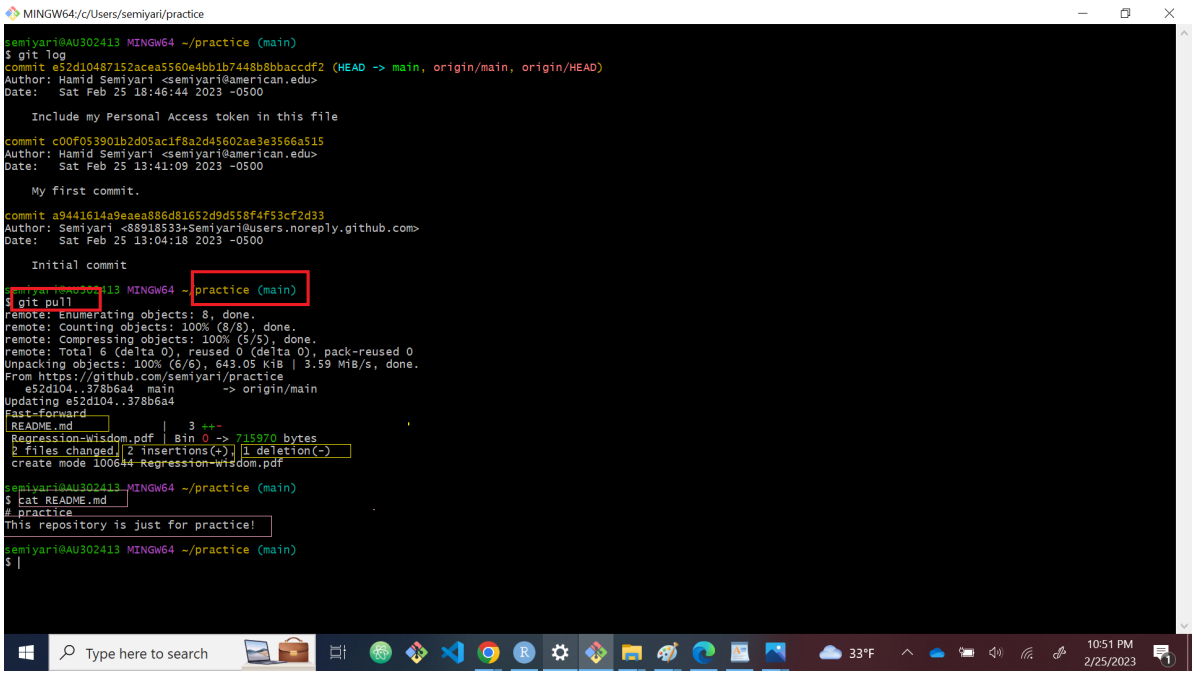
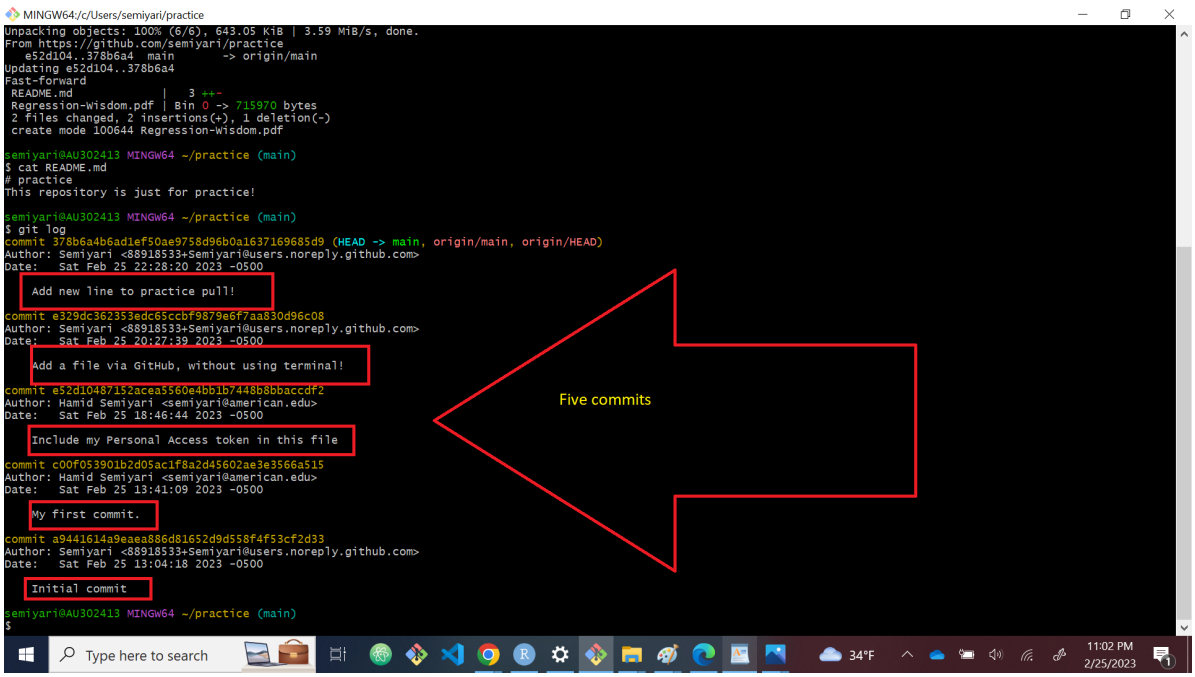
Pull A file

- Recently a team member has done some changes to a file and push it into the remote repository and we want to download that file with all of its history.
- Step 1. Open Terminal make sure you are in correct directory. I want to be on `practice`. If I am not there, then I just type `cd ~/practice`.
- Step 2. Type `git pull`. You are done, but if you want to check your work, go to the next step.

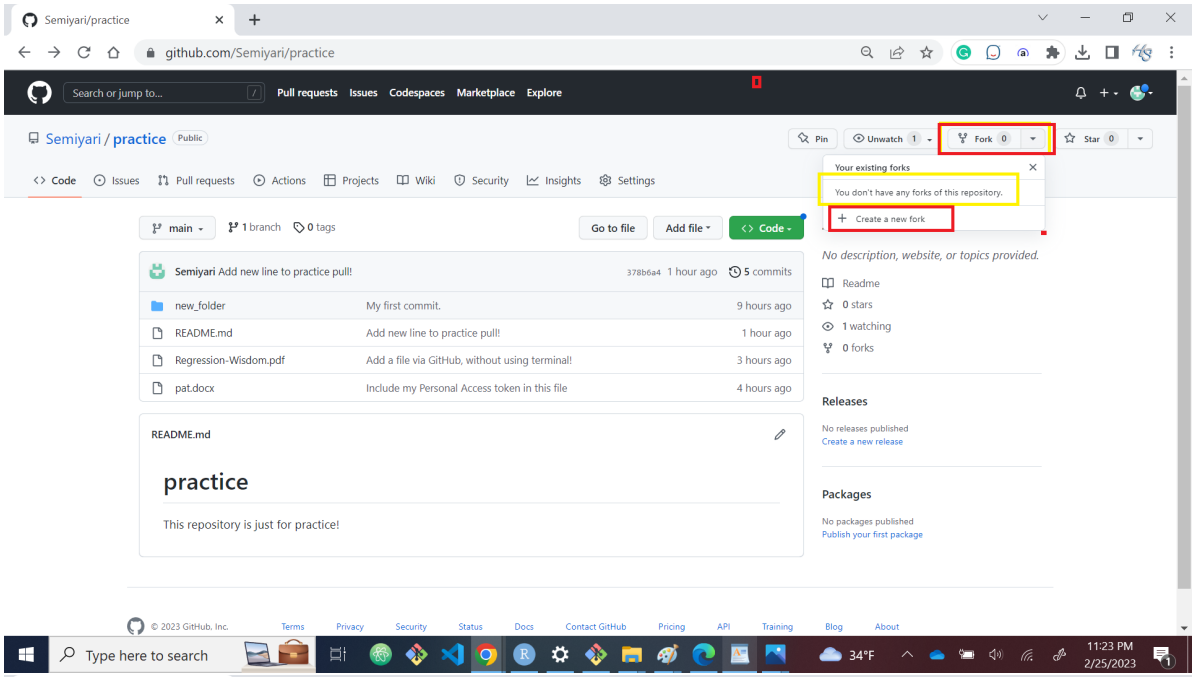


- Step 3. Type `cat README.md` to see the content of the file.



What is a fork?

- It means copying a repository. But it is different than "cloning".
  - When you fork a Repository, you create a *copy* of the original repository (upstream repository) but the repository remains *on your GitHub account.*
  - when you clone a repository, the repository is *copied on to your local machine* with the help of Git. ## How to Fork a Repository?
- There is no git fork command, if you're working with a standard Git installation.
- You can fork any repository by clicking the fork button in the upper right corner of a repo page.


Semiyari/practice
github.com/Semiyari/practice
Search or jump to...
Pull requests
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Public
Pin
Unwatch 1
Fork 0
Star 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Your existing forks
You don't have any forks of this repository.
Create a new fork
main
1 branch
0 tags
Go to file
Add file
Code
Semiyari Add new line to practice pull!
378b6a4 1 hour ago
5 commits
new_folder
My first commit.
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3 hours ago
pat.docx
Include my Personal Access token in this file
4 hours ago
README.md
practice
This repository is just for practice!
No description, website, or topics provided.
Readme
0 stars
1 watching
0 forks
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package
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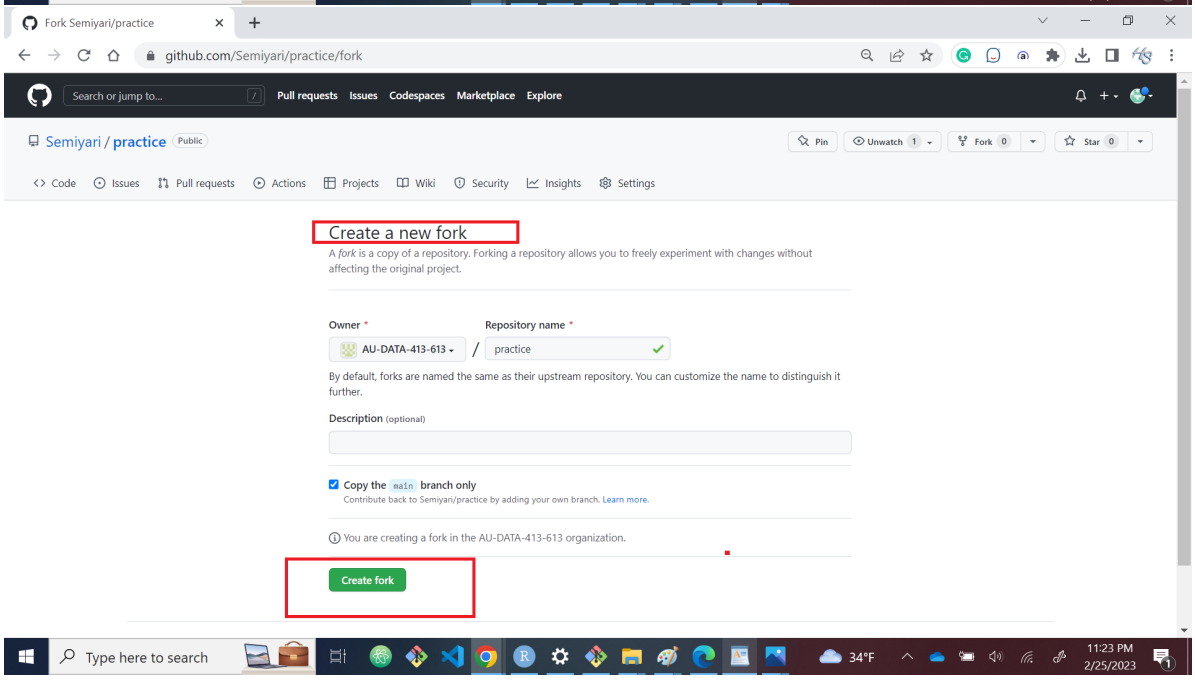

Fork Semiyari/practice
github.com/Semiyari/practice/fork
Search or jump to...
Pull requests
Issues
Codespaces
Marketplace
Explore
Semiyari / practice
Public
Pin
Unwatch 1
Fork 0
Star 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Create a new fork
A fork is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project.
Owner *
Repository name *
AU-DATA-413-613
/
practice
By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.
Description (optional)
Copy the main branch only
Contribute back to Semiyari/practice by adding your own branch. Learn more.
You are creating a fork in the AU-DATA-413-613 organization.
Create fork
Type here to search
34°F
11:23 PM
2/25/2023

Branching

- Git doesn't store data as a series of changesets or differences, but instead as a series of snapshots.
  When you make a commit, Git stores a commit object that contains a pointer to the snapshot of the content you staged. This object also contains the author's name and email address, the message that you typed, and pointers to the commit or commits that directly came before this commit (its parent or parents): zero parents for the initial commit, one parent for a normal commit, and multiple parents for a commit that results from a merge of two or more branches.
- Branches allow you to work on different parts of a project without impacting the main branch.
- When the work is complete, a branch can be merged with the main project.
- You can even switch between branches and work on different projects without them interfering with each other.
  - We are working on our local repository and we do not want to mess with the main project. Let's add something to our `new_folder\hw1.txt`.
  - Let's see what we have inside of the file `hw1.txt`

```
cat new_folder/hw1.txt
```

  - Create a branch

```
git branch branch1
```

  - Let us check if the branch has created

```
git branch
```

  It returns

  branch_1

  - main

  but the `*` beside `main` specifies that we are currently on that branch.
  The prompt says, I am in main branch:

  semiyari@AU302413 MINGW64 ~/practice (main)

  - `checkout` is the command used to check out a branch. Moving us from the current branch, to the one specified at the end of the command:

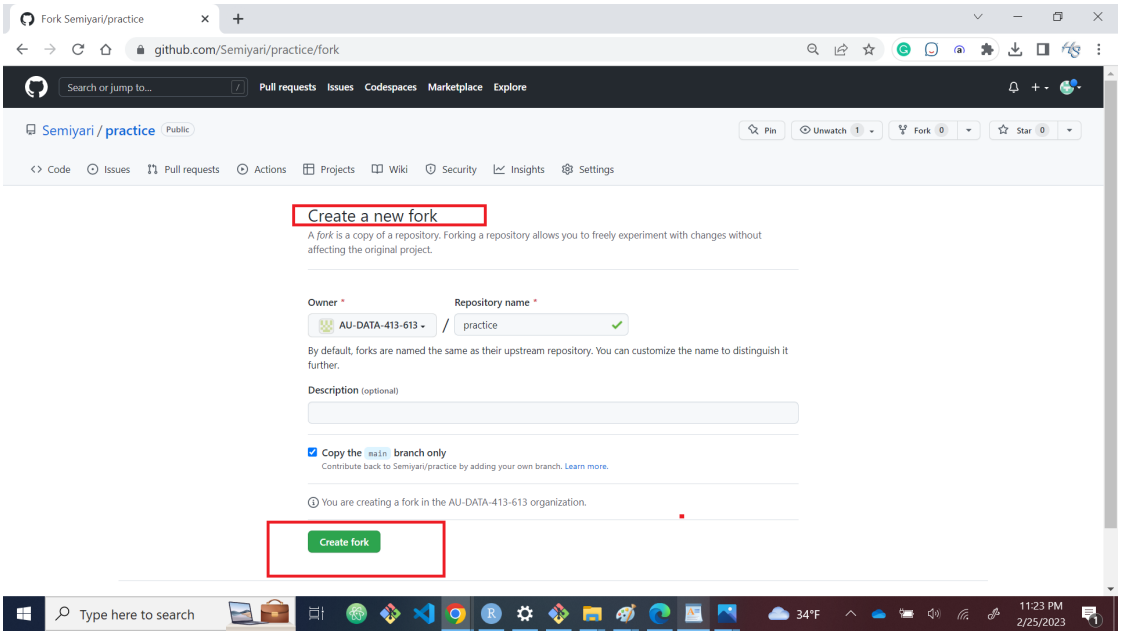
```
git checkout branch_1
```

It returns the following line

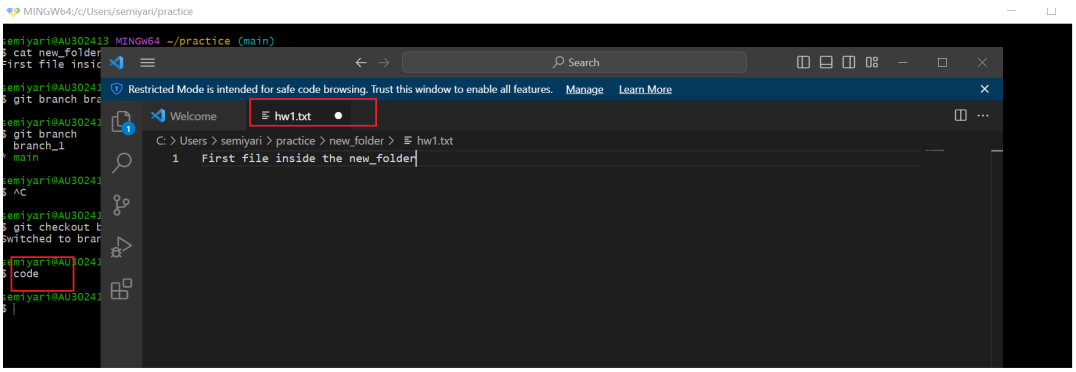
Switched to branch ‘branch_1’

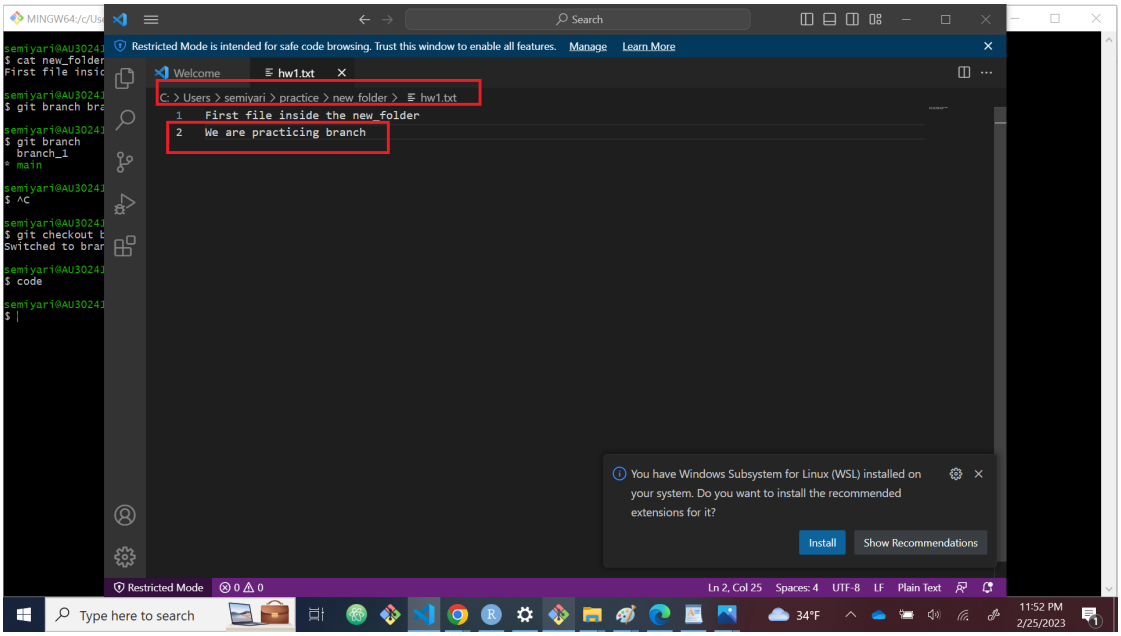
Now the prompt says

semiyari@AU302413 MINGW64 ~/practice (branch_1)



– Open the text editor and make some changes to the file `hw1.txt`


MINGW64:/c/Users/semiyari/practice
semiyari@AU302413 MINGW64 ~/practice (main)
$ cat new_folder
First file insi
$ git branch bra
$ git branch
branch_1
* main
$ ^C
$ git checkout b
Switched to brar
$ code
Search
Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More
Welcome
hw1.txt
C: > Users > semiyari > practice > new_folder > hw1.txt
1 First file inside the new_folder


Search
Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More
Welcome
hw1.txt
C: > Users > semiyari > practice > new_folder > hw1.txt
1 First file inside the new_folder
2 We are practicing branch
You have Windows Subsystem for Linux (WSL) installed on your system. Do you want to install the recommended extensions for it?
Install
Show Recommendations
Restricted Mode
Ln 2, Col 25
Spaces: 4
UTF-8
LF
Plain Text
Type here to search
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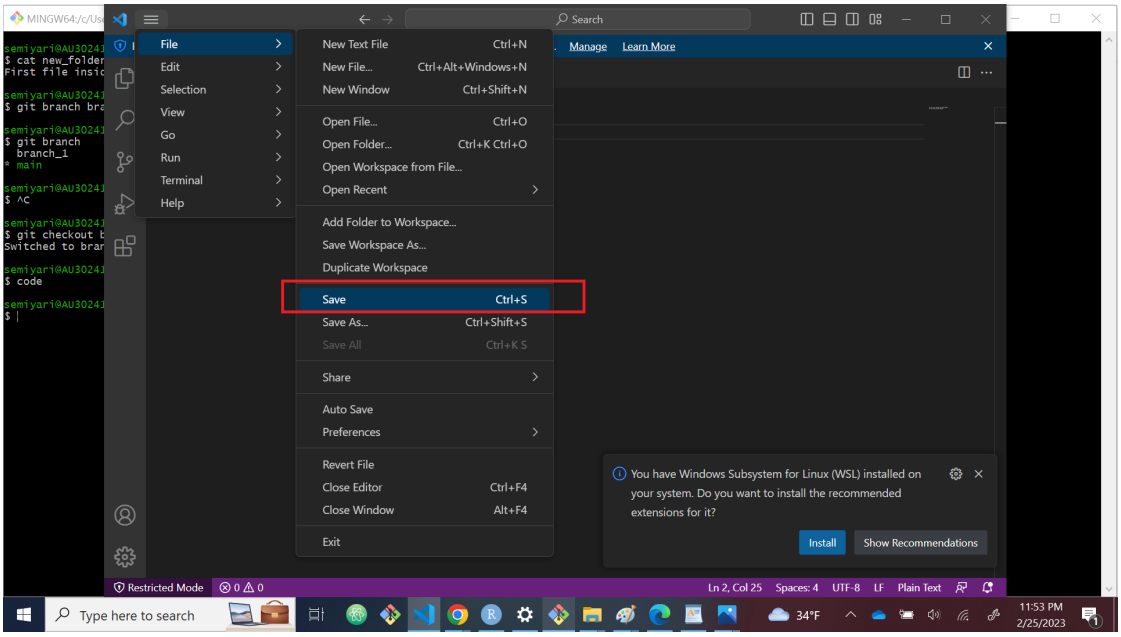
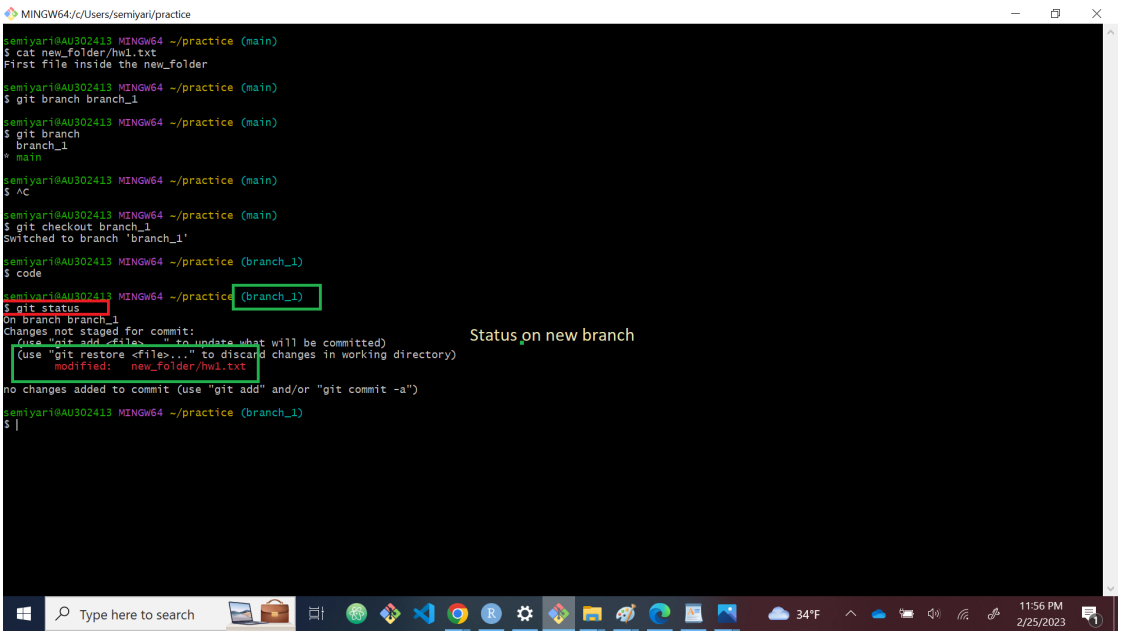
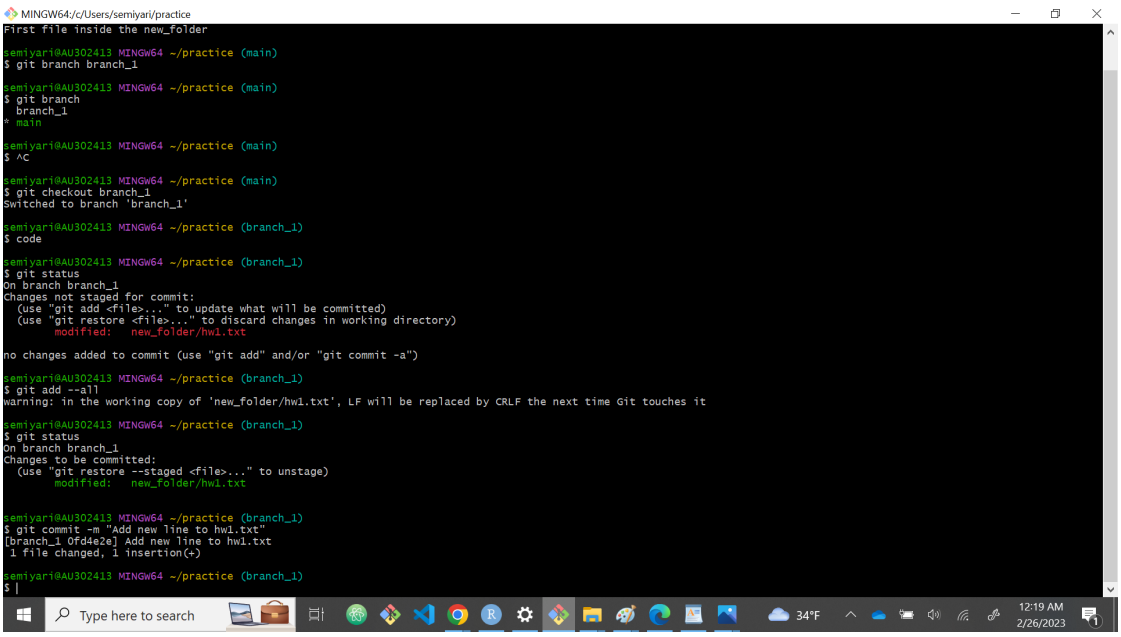


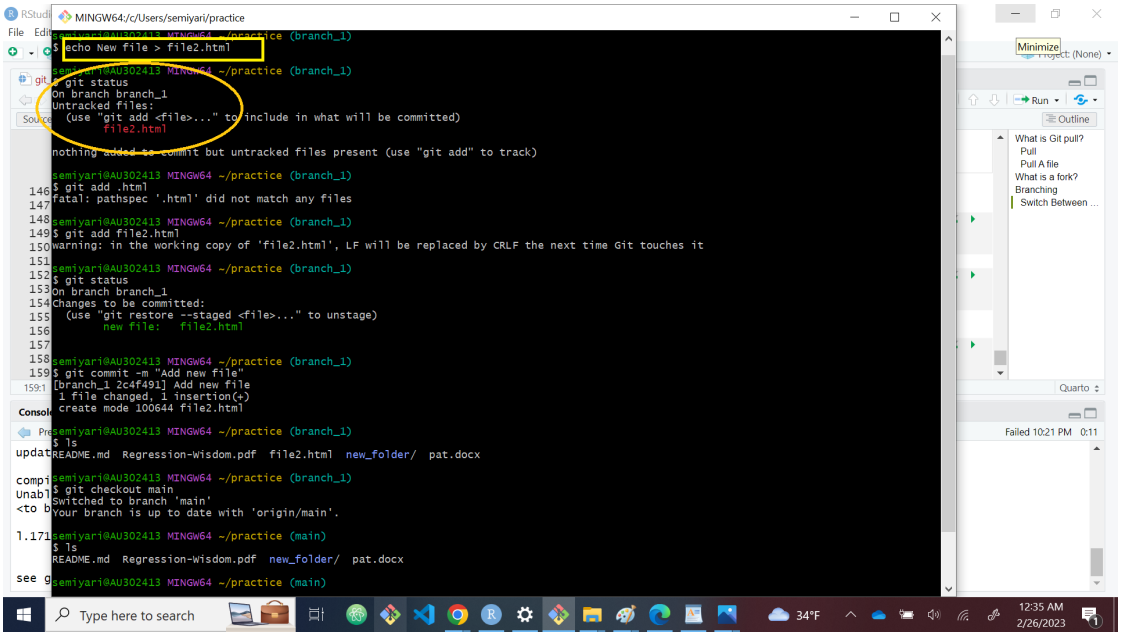
– Check the status of this current branch



– we need to add the file to the Staging area for this branch and commit the file. At the end we get the status of the branch.



– Let's add a new file in this branch `file2.txt`



Switch Between Branches

We are currently on the branch branch_1. Let's list the files in the current directory:

```
ls
```

It returns

README.md Regression-Wisdom.pdf file2.html new_folder/ pat.docx

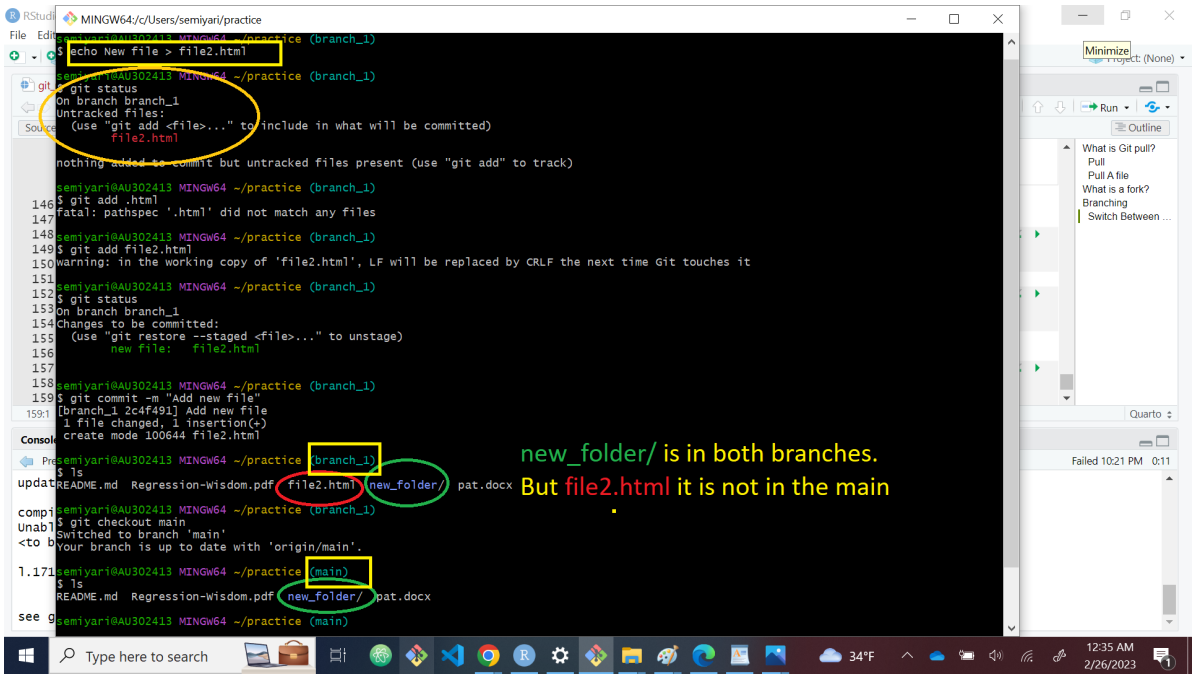
- Now, let's see what happens when we change branch to main

```
git checkout main
```

```
ls
```

It returns

README.md Regression-Wisdom.pdf new_folder/ pat.docx



Merge branches We are done with our work in our new branch and we now want to merge to the main so the changes that we have done to the files can be accessible to everyone. - We want to merge to main, so we need to make sure we are in the main branch. Use `git branch` to see if you are where you should be. Then use the following

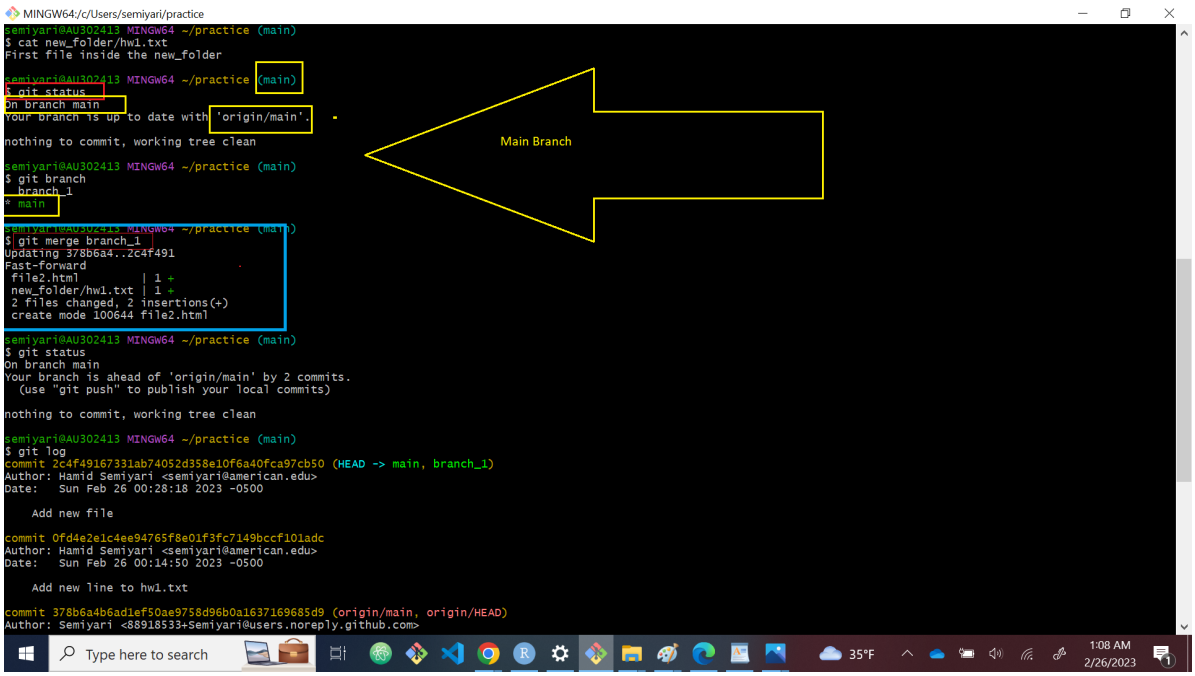
```
git merge <branch_that_need_to_be_merged>
```

In this case

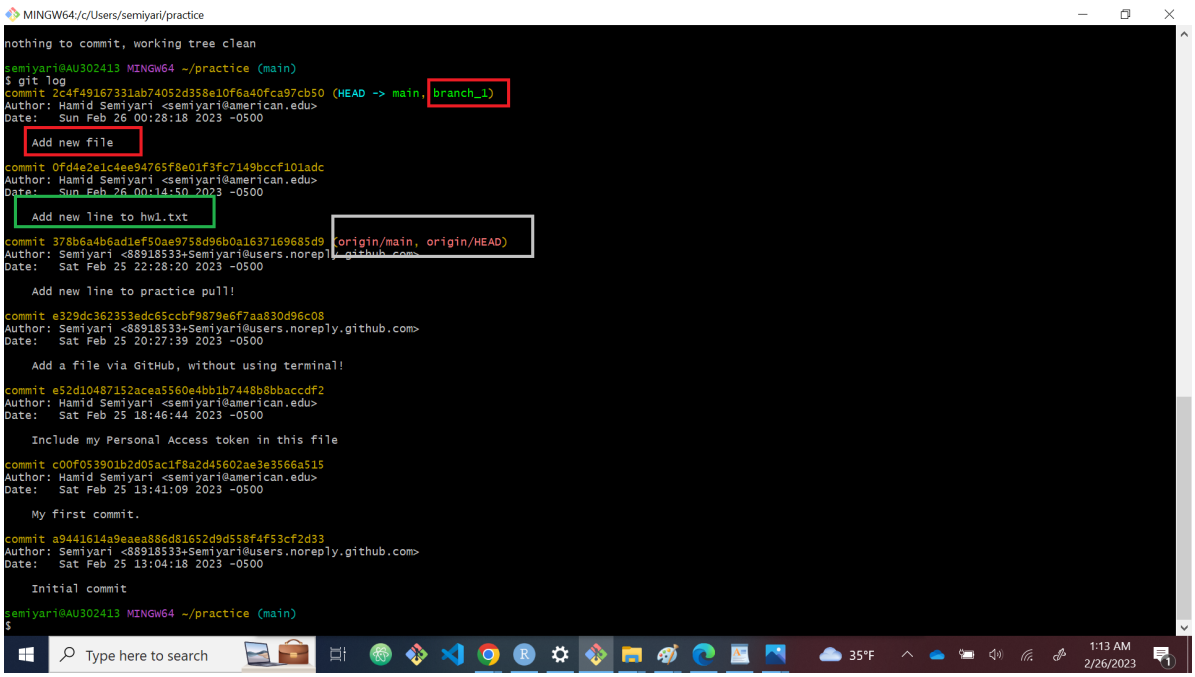
```
git merge branch_1
```

- Check the status

```
git status
```



- Use `git log` to see if you have everything.



- Use `git push` to publish your local commits

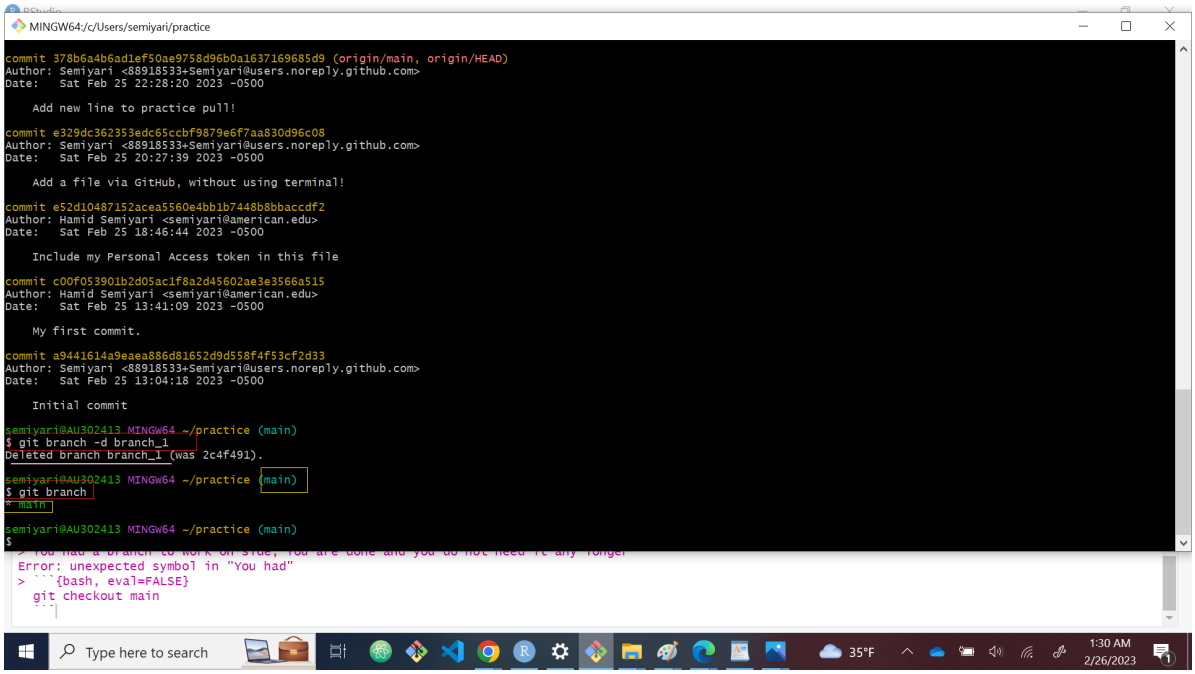
Delete a Branch

You had a branch to work on side, You are done and you do not need it any longer

```
git branch -d branch_1
```

You may then check by following code to see if the branch has been deleted.

```
git branch
```


MINGW64:/c/Users/semiyari/practice
commit 378b6a4b6ad1ef50ae9758d96b0a1637169685d9 (origin/main, origin/HEAD)
Author: Semiyari <88918533+Semiyari@users.noreply.github.com>
Date: Sat Feb 25 22:28:20 2023 -0500
Add new line to practice pull!
commit e329dc362353edc65ccbf9879e6f7aa830d96c08
Author: Semiyari <88918533+Semiyari@users.noreply.github.com>
Date: Sat Feb 25 20:27:39 2023 -0500
Add a file via GitHub, without using terminal!
commit e52d10487152acea5560e4bb1b7448b8bbaccdf2
Author: Hamid Semiyari <semiyari@american.edu>
Date: Sat Feb 25 18:46:44 2023 -0500
Include my Personal Access token in this file
commit c00f053901b2d05ac1f8a2d45602ae3e3566a515
Author: Hamid Semiyari <semiyari@american.edu>
Date: Sat Feb 25 13:41:09 2023 -0500
My first commit.
commit a9441614a9eaea886d81652d9d558f4f53cf2d33
Author: Semiyari <88918533+Semiyari@users.noreply.github.com>
Date: Sat Feb 25 13:04:18 2023 -0500
Initial commit
semiyari@AU302413 MINGW64 ~/practice (main)
$ git branch -d branch_1
Deleted branch branch_1 (was 2c4f491).
semiyari@AU302413 MINGW64 ~/practice (main)
$ git branch
* main
semiyari@AU302413 MINGW64 ~/practice (main)
$
Error: unexpected symbol in "You had"
> ```{bash, eval=FALSE}
git checkout main
Type here to search
35°F
1:30 AM
2/26/2023