



Lab 03

Lab Title: Working with Git History, Stashing, and Reverting Commits

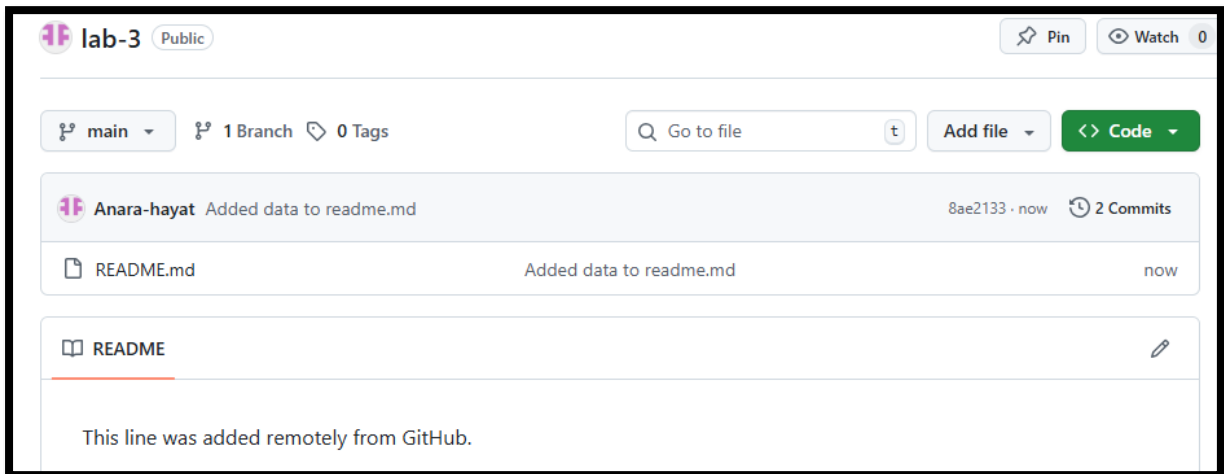
Submitted to: Engr. Muhammad Shoaib

Submitted by: Anara Hayat

Reg#No: 2023-BSE-008

Task 1 – Handling Local and Remote Commit Conflicts (Pull vs Pull --rebase)

1. Open your repository on GitHub and edit the README.md file directly in the browser.



2. On your local machine, open the same repository folder.

- Edit the same README.md file locally
- Stage and commit your changes

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (master)
$ git init
Initialized empty Git repository in C:/Users/anara/Desktop/Codes/Labs/lab-3/.git/

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (master)
$ touch README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (master)
$ echo "This line was added locally" >README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (master)
$ git add README.md
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (master)
$ git commit -m "Local update to README.md"
[master (root-commit) ceb1159] Local update to README.md
1 file changed, 1 insertion(+)
create mode 100644 README.md
```

3. Try to push

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git remote add origin https://github.com/Anara-hayat/lab-3.git

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
To https://github.com/Anara-hayat/lab-3.git
 ! [rejected]        main -> main (fetch first)
error: failed to push some refs to 'https://github.com/Anara-hayat/lab-3.git'
hint: Updates were rejected because the remote contains work that you do not
hint: have locally. This is usually caused by another repository pushing to
hint: the same ref. If you want to integrate the remote changes, use
hint: 'git pull' before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

```

4.To fix this, pull the latest changes from remote:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git pull origin main --allow-unrelated-histories --no-rebase
From https://github.com/Anara-hayat/lab-3
 * branch                main          -> FETCH_HEAD
Auto-merging README.md
CONFLICT (add/add): Merge conflict in README.md
Automatic merge failed; fix conflicts and then commit the result.

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|MERGING)
$ cat README.md
<<<<<<< HEAD
this line is added locally
=====
This line was added remotely from GitHub.
>>>>>>> 3ccaccc783793c7286e2c555668df3d4491e7a03

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|MERGING)
$ code .

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|MERGING)
$ git add README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|MERGING)
$ cat README.md

this line is added locally
This line was added remotely from GitHub.

```

5.Push again:

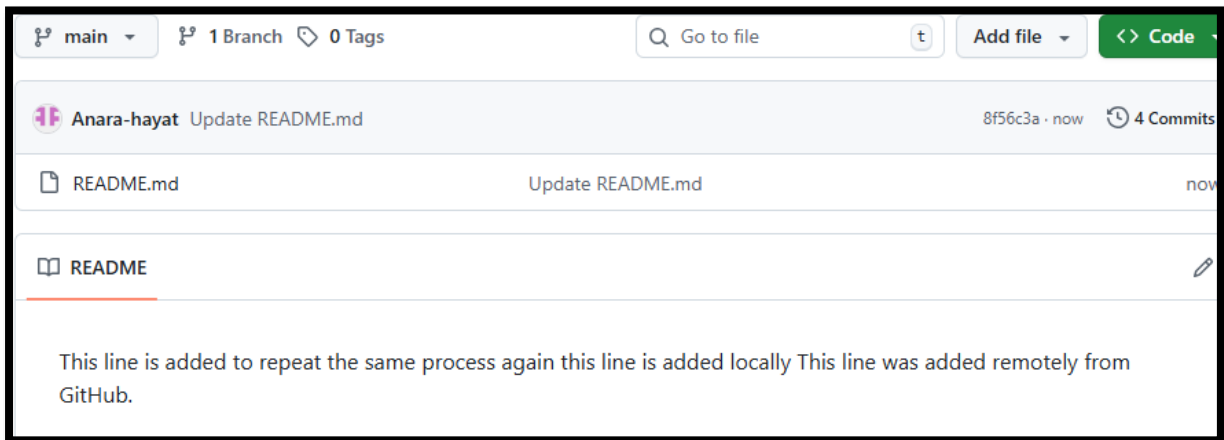
```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|MERGING)
$ git commit -m "committing after git pull --no-rebase"
[main d0902bf] committing after git pull --no-rebase

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push -u origin main
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (6/6), 571 bytes | 142.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Anara-hayat/lab-3.git
 3ccaccc..d0902bf  main -> main
branch 'main' set up to track 'origin/main'.

```

6. Now repeat the same process, but this time use rebase instead of merge



```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "this line is added locally to repeat the above process" > README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add README.md
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Added Another line locally"
[main 390753e] Added Another line locally
1 file changed, 1 insertion(+), 3 deletions(-)

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git remote add origin https://github.com/Anara-hayat/lab-3.git
error: remote origin already exists.

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
To https://github.com/Anara-hayat/lab-3.git
! [rejected]        main -> main (fetch first)
error: failed to push some refs to 'https://github.com/Anara-hayat/lab-3.git'
hint: Updates were rejected because the remote contains work that you do not
hint: have locally. This is usually caused by another repository pushing to
hint: the same ref. If you want to integrate the remote changes, use
hint: 'git pull' before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
```

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|REBASE 1/1)
$ git rebase --abort

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git pull --rebase --allow-unrelated-histories origin main
From https://github.com/Anara-hayat/lab-3
 * branch          main          -> FETCH_HEAD
Auto-merging README.md
CONFLICT (content): Merge conflict in README.md
error: could not apply 390753e... Added Another line locally
hint: Resolve all conflicts manually, mark them as resolved with
hint: "git add/rm <conflicted_files>", then run "git rebase --continue".
hint: You can instead skip this commit: run "git rebase --skip".
hint: To abort and get back to the state before "git rebase", run "git rebase -
abort".
hint: Disable this message with "git config set advice.mergeConflict false"
Could not apply 390753e... # Added Another line locally

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|REBASE 1/1)
$ code .

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|REBASE 1/1)
$ git add README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|REBASE 1/1)
$ git rebase --continue
[detached HEAD 613b3e8] Added Another line locally
 1 file changed, 4 insertions(+)
Successfully rebased and updated refs/heads/main.

```

Push:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 405 bytes | 202.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Anara-hayat/lab-3.git
 8f56c3a..613b3e8  main -> main

```



Task 2 – Creating and Resolving Merge Conflicts Manually Steps

1. On GitHub (remote), open your README.md file and change an existing line.

2. Commit your change with the message: *Remote conflicting change*



3. On your local machine, edit the same line in the same file but make a different change

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ cat README.md
<<<<<<< HEAD
This line is added to repeat the same process again
this line is added locally
This line was added remotely from GitHub.
=====
this line is added locally to repeat the above process
>>>>>>> 390753e (Added Another line locally)

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ code .

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "This line was updated locally at the same time" >> README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ cat readme.md
<<<<<<< HEAD
This line is added to repeat the same process again
this line is added locally
This line was added remotely from GitHub.
this line is added locally to repeat the above process
>>>>>>> 390753e (Added Another line locally)
This line was updated locally at the same time
```

4. Stage and commit your local change:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add readme.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Local conflicting change"
On branch main
Your branch is behind 'origin/main' by 1 commit, and can be fast-forwarded.
(use "git pull" to update your local branch)

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

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

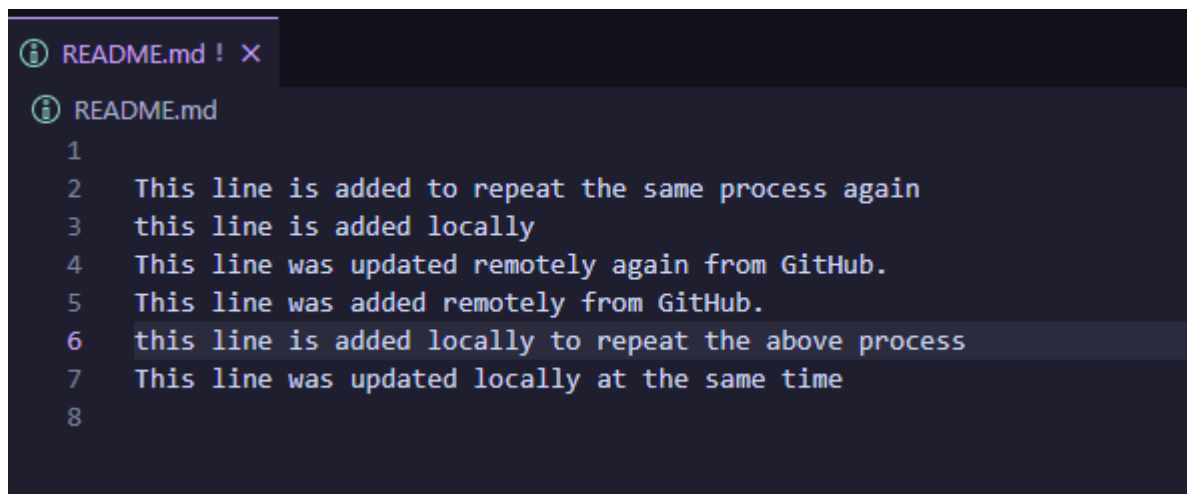
5. Try to push:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push -u origin main
To https://github.com/Anara-hayat/lab-3.git
 ! [rejected]        main -> main (non-fast-forward)
error: failed to push some refs to 'https://github.com/Anara-hayat/lab-3.git'
hint: Updates were rejected because the tip of your current branch is behind
hint: its remote counterpart. If you want to integrate the remote changes,
hint: use 'git pull' before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
```

6. Pull with rebase to bring in remote changes:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git pull --rebase origin main
error: cannot pull with rebase: You have unstaged changes.
error: Please commit or stash them.
```

7. Open the README.md file in your editor — you'll see conflict markers like this



```
1
2 This line is added to repeat the same process again
3 this line is added locally
4 This line was updated remotely again from GitHub.
5 This line was added remotely from GitHub.
6 this line is added locally to repeat the above process
7 This line was updated locally at the same time
8
```

8. After fixing the file, mark the conflict as resolved and continue the rebase

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|REBASE 1/1)
$ git add README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main|REBASE 1/1)
$ git rebase --continue
[detached HEAD df55b79] Local conflicting change
1 file changed, 2 insertions(+), 1 deletion(-)
Successfully rebased and updated refs/heads/main.
```

9. Finally, push your changes:


```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push -u origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 354 bytes | 354.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Anara-hayat/lab-3.git
   a7bd261..df55b79  main -> main
branch 'main' set up to track 'origin/main'.

```

Task 3 – Managing Ignored Files with .gitignore and Removing Tracked Files

1. Create a new folder named textfiles inside your repository

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ mkdir textfiles

```

2. Inside the textfiles folder, create three text files

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ touch a.txt b.txt c.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ ls
a.txt  b.txt  c.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ echo "File A contenrr" >a.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ eco "File B content" >b.txt
bash: eco: command not found

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ echo "File B content" >b.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ echo "File C content" >c.txt

```

3. Add and commit the new directory


```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ git add .
warning: in the working copy of 'textfiles/a.txt', LF will be replaced by CRLF t
he next time Git touches it
warning: in the working copy of 'textfiles/b.txt', LF will be replaced by CRLF t
he next time Git touches it
warning: in the working copy of 'textfiles/c.txt', LF will be replaced by CRLF t
he next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ git commit -m "Added textfiles directory with three files"
[main a2fbe26] Added textfiles directory with three files
3 files changed, 3 insertions(+)
create mode 100644 textfiles/a.txt
create mode 100644 textfiles/b.txt
create mode 100644 textfiles/c.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3/textfiles (main)
$ git push origin main
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (6/6), 468 bytes | 234.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Anara-hayat/lab-3.git
df55b79..a2fbe26 main -> main

```

4. Now, create a .gitignore file in the root of your repository:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ touch .gitignore

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "textfiles/*" >.gitignore

```

5. Add and commit the .gitignore file:

```

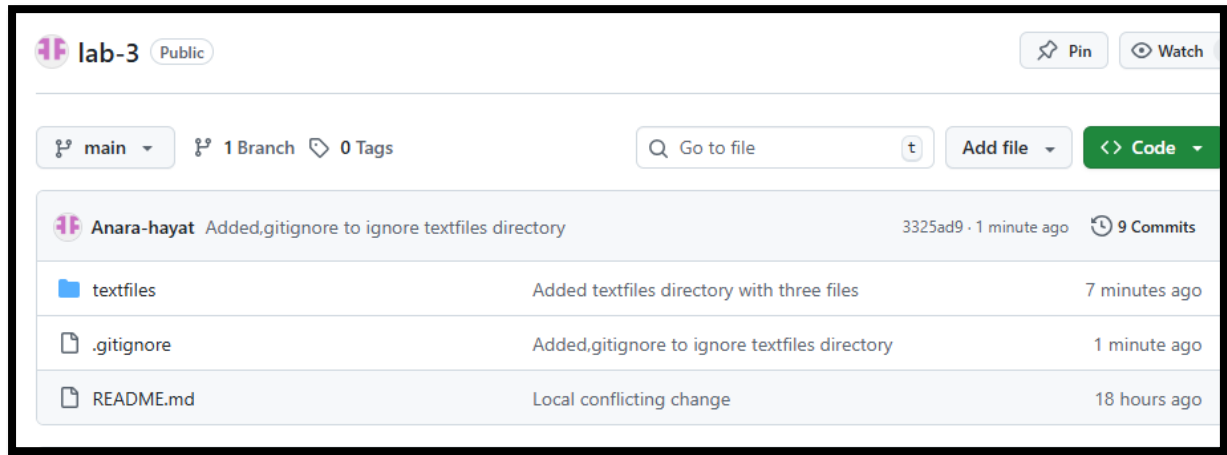
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add .gitignore
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the n
xt time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Added,gitignore to ignore textfiles directory"
[main 3325ad9] Added,gitignore to ignore textfiles directory
1 file changed, 1 insertion(+)
create mode 100644 .gitignore

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 353 bytes | 353.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Anara-hayat/lab-3.git
a2fbe26..3325ad9 main -> main

```

6.Go to GitHub and check your repository — notice that the textfiles directory is still visible on the remote.



7.To remove already tracked files from Git (but not from your local system), run

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git rm -r --cached textfiles
rm 'textfiles/a.txt'
rm 'textfiles/b.txt'
rm 'textfiles/c.txt'
```

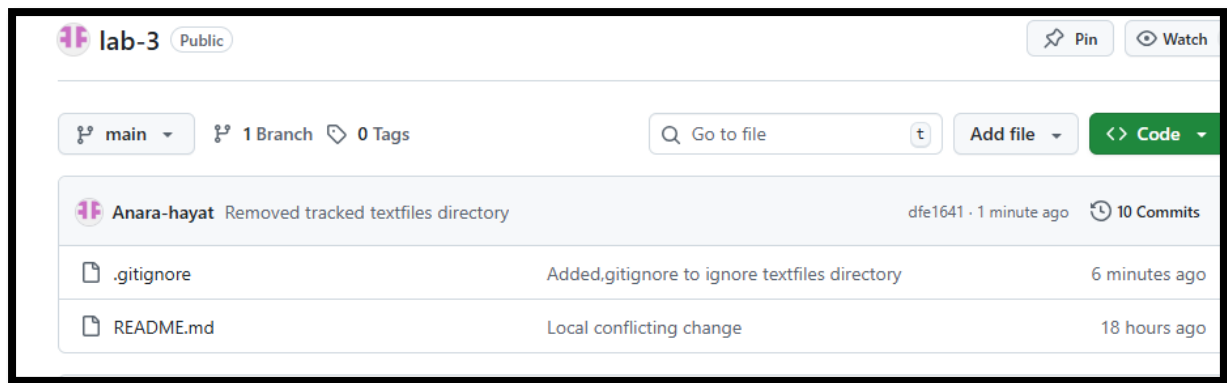
8.Commit and push again:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add .

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Removed tracked textfiles directory"
[main dfe1641] Removed tracked textfiles directory
3 files changed, 3 deletions(-)
delete mode 100644 textfiles/a.txt
delete mode 100644 textfiles/b.txt
delete mode 100644 textfiles/c.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 246 bytes | 246.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Anara-hayat/lab-3.git
3325ad9..dfe1641 main -> main
```

9.Check your GitHub repository again — the textfiles folder should now be deleted remotely.



Task 4 – Create Temporary Changes and Use git stash

1.Create a feature-branch

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git checkout -b feature-branch
Switched to a new branch 'feature-branch'
```

2.Modify any file (for example, README.md) by adding a few test lines

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ echo "These lines are added in feature-branch" >>README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git add README.md
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git commit -m "Changes the README.md file."
[feature-branch 1b7a9bb] Changes the README.md file.
1 file changed, 1 insertion(+)
```

3.Modify any file (for example, README.md) by adding a few new lines

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ echo "These few lines are again added by feature-branch into readme.md" >>README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
These lines are added in feature-branch
These few lines are again added by feature-branch into readme.md
```

4.Without committing or stashing the changes, try to switch to another branch:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git checkout main
error: Your local changes to the following files would be overwritten by checkout:
t:
    README.md
Please commit your changes or stash them before you switch branches.
Aborting
```

5.To fix this, stash your changes:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git stash
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it
Saved working directory and index state WIP on feature-branch: 1b7a9bb Changes to the README.md file.
```

6.Try switching branches again — it should now work:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
```

7.Return to your previous branch (for example, feature-branch):

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git checkout feature-branch
Switched to branch 'feature-branch'
```

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
These lines are added in feature-branch
```

8.Check your working directory status:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git status
On branch feature-branch
nothing to commit, working tree clean
```

9.Now restore your stashed changes:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git stash pop
On branch feature-branch
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
Dropped refs/stash@{0} (83cb5eef0304efbe0a0cb77fd65ab19333f8d435)

```

10. Confirm that your previous edits are back in the file.

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
These lines are added in feature-branch
These few lines are again added by feature-branch into readme.md

```

Task 5 – Checkout a Specific Commit Using git log

1. View commit history:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git log --oneline
1b7a9bb (HEAD -> feature-branch) Changes the README.md file.
dfe1641 (origin/main, origin/HEAD, main) Removed tracked textfiles directory
3325ad9 Added, gitignore to ignore textfiles directory
a2fbe26 Added textfiles directory with three files
df55b79 Local conflicting change
a7bd261 Remote Conflicting change
613b3e8 Added Another line locally
8f56c3a Update README.md
d0902bf committing after git pull --no-rebase
3ccaccc Remote update to README
ea6c5ed (origin/master, master) Local update to README

```

2. Copy any previous commit hash (e.g., a1b2c3d).

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git rev-parse HEAD
1b7a9bb2cdda699d2efb338094dc3f5b3a0b3fd2

```

3. Checkout that commit:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (feature-branch)
$ git checkout 1b7a9bb2cdda699d2efb338094dc3f5b3a0b3fd2
M       README.md
Note: switching to '1b7a9bb2cdda699d2efb338094dc3f5b3a0b3fd2'.

You are in 'detached HEAD' state. You can look around, make experimental
changes and commit them, and you can discard any commits you make in this
state without impacting any branches by switching back to a branch.

If you want to create a new branch to retain commits you create, you may
do so (now or later) by using -c with the switch command. Example:

    git switch -c <new-branch-name>

Or undo this operation with:

    git switch -

Turn off this advice by setting config variable advice.detachedHead to false

HEAD is now at 1b7a9bb Changes the README.md file.

```

4.To return to your main branch:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 ((1b7a9bb...))
$ git checkout main
error: Your local changes to the following files would be overwritten by checkout:
       README.md
Please commit your changes or stash them before you switch branches.
Aborting

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 ((1b7a9bb...))
$ git stash
Saved working directory and index state WIP on (no branch): 1b7a9bb Changes the README.md file.

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 ((1b7a9bb...))
$ git checkout main
Previous HEAD position was 1b7a9bb Changes the README.md file.
Switched to branch 'main'
Your branch is up to date with 'origin/main'.

```

Task 6 – Resetting Commits (Soft vs Hard Reset) (With Verification Steps)

1.Add a new line in any file and commit it:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "Another line s added to readme.md for resetting commits" >>README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add README.md
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Added test line"
[main a8de50f] Added test line
1 file changed, 1 insertion(+)

```

2.Add another change and commit again:


```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "Again added test line in readme.md" >>README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add README.md
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Second test line"
[main ae99dd7] Second test line
1 file changed, 1 insertion(+)

```

3.View the history before reset:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git log --oneline
ae99dd7 (HEAD -> main) Second test line
a8de50f Added test line
dfe1641 (origin/main, origin/HEAD) Removed tracked textfiles directory
3325ad9 Added,gitignore to ignore textfiles directory
a2fbe26 Added textfiles directory with three files
df55b79 Local conflicting change
a7bd261 Remote Conflicting change
613b3e8 Added Another line locally
8f56c3a Update README.md
d0902bf committing after git pull --no-rebase
3ccaccc Remote update to README
ea6c5ed (origin/master, master) Local update to README

```

4.Check file contents for both changes:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
Another line s added to readme.md for resetting commits
Again added test line in readme.md

```

5.Perform a soft reset (keeps changes in working directory):

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git reset --soft HEAD~1

```

6.Check commit history after soft reset:


```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git log --oneline
a8de50f (HEAD -> main) Added test line
dfe1641 (origin/main, origin/HEAD) Removed tracked textfiles directory
3325ad9 Added .gitignore to ignore textfiles directory
a2f5be26 Added textfiles directory with three files
df55b79 Local conflicting change
a7bd261 Remote Conflicting change
613b3e8 Added Another line locally
8f56c3a Update README.md
d0902bf committing after git pull --no-rebase
3ccaccc Remote update to README
ea6c5ed (origin/master, master) Local update to README

```

7. Verify changes in the file:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
Another line s added to readme.md for resetting commits
Again added test line in readme.md

```

8. Check git status:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

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

```

9. Perform commit

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Second test commit"
[main f2e4558] Second test commit
 1 file changed, 1 insertion(+)

```

10. Perform a hard reset (discards changes completely)

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git reset --hard HEAD~1
HEAD is now at a8de50f Added test line

```

11. Check commit history after hard reset:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git log --oneline
a8de50f (HEAD -> main) Added test line
dfe1641 (origin/main, origin/HEAD) Removed tracked textfiles directory
3325ad9 Added,gitignore to ignore textfiles directory
a2f5be26 Added textfiles directory with three files
df55b79 Local conflicting change
a7bd261 Remote Conflicting change
613b3e8 Added Another line locally
8f56c3a Update README.md
d0902bf committing after git pull --no-rebase
3ccaccc Remote update to README
ea6c5ed (origin/master, master) Local update to README

```

12. Verify changes in the file:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
Another line s added to readme.md for resetting commits

```

13. Check git status:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (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

```

Task 7 – Amending the Last Commit

1. Make a small change in any file

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "Created a small change in the file" >>README.md

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ cat README.md

This line is added to repeat the same process again
this line is added locally
This line was updated remotely again from GitHub.
This line was added remotely from GitHub.
this line is added locally to repeat the above process
This line was updated locally at the same time
Another line s added to readme.md for resetting commits
Created a small change in the file

```

2. Stage it and commit:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add .
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Fix log message"
[main 16d5544] Fix log message
1 file changed, 1 insertion(+)

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)

```

3.Realize you forgot to change another file. Update it now

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "Realized to forget change this file" >>README.md

```

4.Add it and amend the last commit

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add .
warning: in the working copy of 'README.md', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit --amend
[main 4132884] Fix log message
Date: Thu Oct 16 17:29:40 2025 +0500
1 file changed, 2 insertions(+)

```

Task 8 – Reverting a Commit (Safe Undo on Remote Branch)

1.Make a change and commit it:

```

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ touch temp.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ echo "Temporary change" >>temp.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git add .
warning: in the working copy of 'temp.txt', LF will be replaced by CRLF the next time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git commit -m "Added temporary text file"
[main 9529469] Added temporary text file
1 file changed, 1 insertion(+)
create mode 100644 temp.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 4 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (9/9), 924 bytes | 308.00 KiB/s, done.
Total 9 (delta 3), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (3/3), completed with 1 local object.
To https://github.com/Anara-hayat/lab-3.git
dfe1641..9529469 main -> main

```

2. Now revert that commit safely (do not delete it):

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git log --oneline
9529469 (HEAD -> main, origin/main, origin/HEAD) Added temporary text file
4132884 Fix log message
a8de50f Added test line
dfe1641 Removed tracked textfiles directory
3325ad9 Added, gitignore to ignore textfiles directory
a2f5be26 Added textfiles directory with three files
df55b79 Local conflicting change
a7bd261 Remote Conflicting change
613b3e8 Added Another line locally
8f56c3a Update README.md
d0902bf committing after git pull --no-rebase
3ccaccc Remote update to README
ea6c5ed (origin/master, master) Local update to README

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git revert 9529469
[main 72fblce] Revert "Added temporary text file"
1 file changed, 1 deletion(-)
delete mode 100644 temp.txt
```

3. Push the revert commit:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git push origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 266 bytes | 133.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Anara-hayat/lab-3.git
9529469..72fblce main -> main
```

After revert

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git log --oneline
72fblce (HEAD -> main, origin/main, origin/HEAD) Revert "Added temporary text file"
9529469 Added temporary text file
4132884 Fix log message
a8de50f Added test line
dfe1641 Removed tracked textfiles directory
3325ad9 Added, gitignore to ignore textfiles directory
a2f5be26 Added textfiles directory with three files
df55b79 Local conflicting change
a7bd261 Remote Conflicting change
613b3e8 Added Another line locally
8f56c3a Update README.md
d0902bf committing after git pull --no-rebase
3ccaccc Remote update to README
ea6c5ed (origin/master, master) Local update to README
```

Task 9 – Force Push (With Caution)

1. Create a new branch:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (main)
$ git checkout -b test-force
Switched to a new branch 'test-force'
```

2. Make and commit a small change

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ touch test.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ echo "Added line in test file" >test.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git add .
warning: in the working copy of 'test.txt', LF will be replaced by CRLF the next
time Git touches it

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git commit -m "commiting in the test branch"
[test-force 818cddf] commiting in the test branch
1 file changed, 1 insertion(+)
create mode 100644 test.txt
```

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git push origin main
Everything up-to-date
```

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git commit --amend -m "update committed message"
[test-force b343a99] update committed message
Date: Thu Oct 16 17:44:35 2025 +0500
1 file changed, 1 insertion(+)
create mode 100644 test.txt

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git commit --allow-empty -m "force commit with no chnage"
[test-force 6c737b0] force commit with no chnage
```

3. Push it:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git push --force
fatal: The current branch test-force has no upstream branch.
To push the current branch and set the remote as upstream, use

    git push --set-upstream origin test-force

To have this happen automatically for branches without a tracking
upstream, see 'push.autoSetupRemote' in 'git help config'.

anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git push --set-upstream origin test-force
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 458 bytes | 229.00 KiB/s, done.
Total 4 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), done.
remote:
remote: Create a pull request for 'test-force' on GitHub by visiting:
remote:   https://github.com/Anara-hayat/lab-3/pull/new/test-force
remote:
To https://github.com/Anara-hayat/lab-3.git
 * [new branch]      test-force -> test-force
branch 'test-force' set up to track 'origin/test-force'.
```

4.Perform a hard reset:

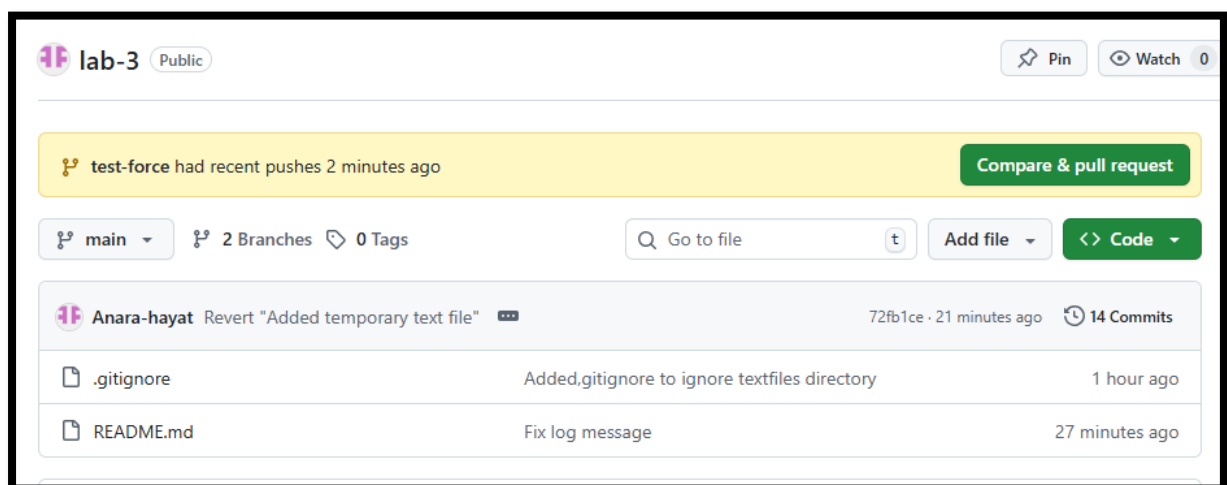
```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git reset --hard HEAD~1
HEAD is now at b343a99 update committed message
```

5.Push again

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git push origin test-force
To https://github.com/Anara-hayat/lab-3.git
! [rejected]        test-force -> test-force (non-fast-forward)
error: failed to push some refs to 'https://github.com/Anara-hayat/lab-3.git'
hint: Updates were rejected because the tip of your current branch is behind
hint: its remote counterpart. If you want to integrate the remote changes,
hint: use 'git pull' before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
```

6.Now force-push to remote:

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Labs/lab-3 (test-force)
$ git push origin test-force --force
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Anara-hayat/lab-3.git
+ 6c737b0...b343a99 test-force -> test-force (forced update)
```



Task 10 – Running Gitea in GitHub Codespaces via Docker Compose

1.Fork the Gitea Repository

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. [View existing forks.](#)

Required fields are marked with an asterisk (*).

Owner * Anara-hayat / Repository name * Gitea
Gitea is available.

By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.

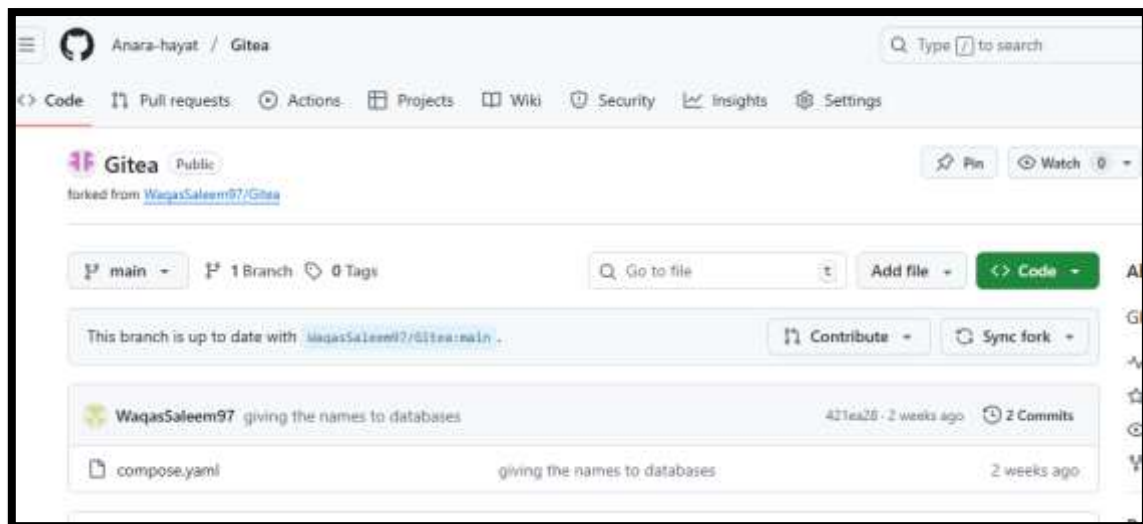
Description

15 / 350 characters

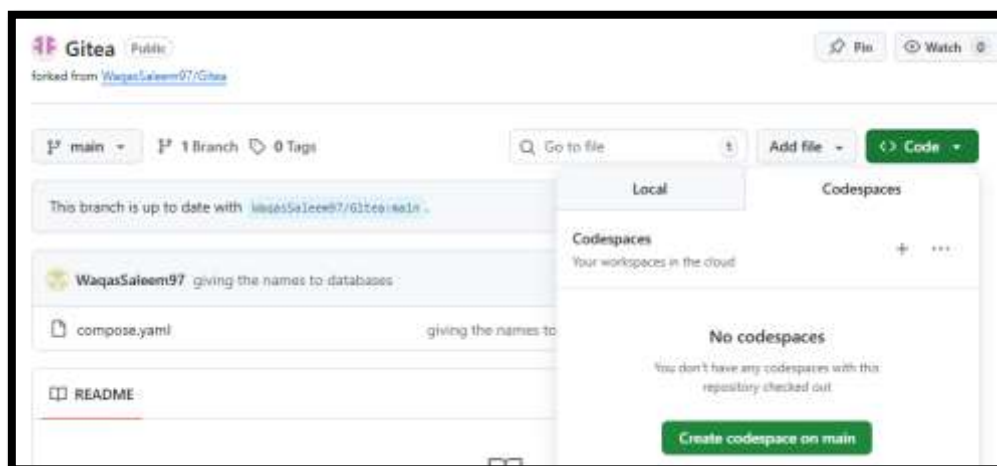
☒ Copy the `main` branch only
Contribute back to WaqasSaleem97/Gitea by adding your own branch. [Learn more.](#)

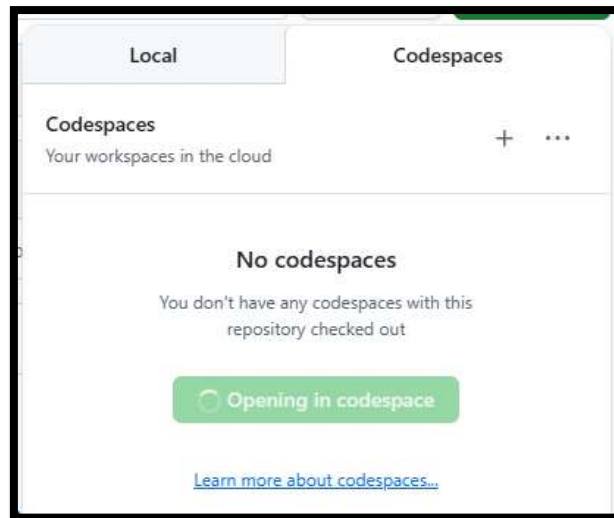
ⓘ You are creating a fork in your personal account.

[Create fork](#)



2. Open the Forked Repo in GitHub Codespaces





3.Start Gitea with Docker Compose

```
@Anara-hayat →/workspaces/Gitea (main) $ docker compose up -d
✓ db Pulled 15.2s
✓ gitea Pulled 17.3s
[+] Running 5/5
✓ Network webnet Created 0.1s
✓ Volume "gitea_postgres" Created 0.0s
✓ Volume "gitea" Created 0.0s
✓ Container gitea_db Started 1.2s
✓ Container gitea Started 1.2s
```

4.Access Gitea Web Interface

PORTS 1				
Port	Forwarded Add...	Running Process	Visibility	Origin
3000	https://silver-inve...		Public	User Forwarded
Add Port				

Initial Configuration

If you run Gitea inside Docker, please read the [documentation](#) before changing any settings.

Database Settings

Gitea requires MySQL, PostgreSQL, MSSQL, SQLite3 or TiDB (MySQL protocol).

Database Type *

PostgreSQL

Host *

db:5432

Username *

gitea

Password *

5.Install Gitea

Creating an administrator account is optional. The first registered user will automatically become an administrator.

Administrator Username	<input type="text" value="anara"/>
Email Address	<input type="text" value="23-22411-008@se.fjwu.edu.pk"/>
Password	<input type="password" value="....."/>
Confirm Password	<input type="password" value="....."/>

6.Log In to Gitea



7.Create a New Repository in Gitea

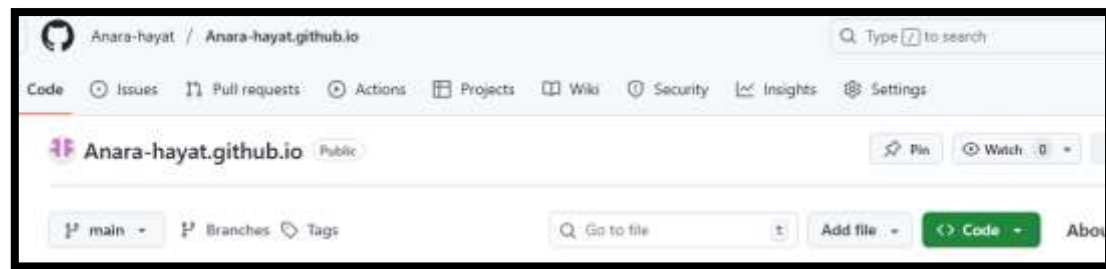
New Repository

A repository contains all project files, including revision history. Already hosting one elsewhere? [Migrate repository.](#)

Owner*	<input type="text" value="anara"/>
Repository Name*	<input type="text" value="cc-lab3"/>
Visibility	<input type="checkbox"/> Make repository private Only the owner or the organization members, if they have rights, will be able to see it.
Description	<input type="text" value="This is a gitea repository"/>

Task 11 – Creating a GitHub Pages Portfolio Site

1.Create a GitHub Pages Repository



2.Add Static Website Code

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/
$ ls Anara-hayat.github.io
assets/ css index.html
```

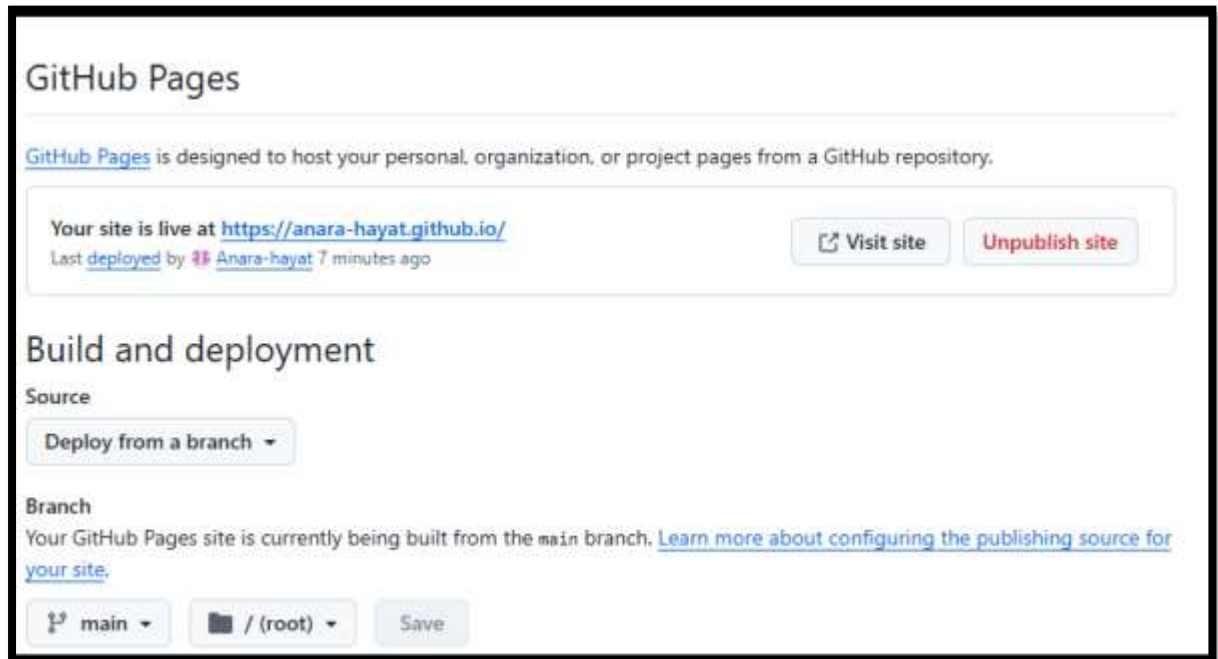
3.Push the Files to GitHub

```
$ git add assets/ css index.html
warning: in the working copy of 'assets/css/style.css', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/js/main.js', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/bootstrap-icons/bootstrap-icons.css', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/bootstrap/css/bootstrap.min.css', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/bootstrap/js/bootstrap.bundle.min.js', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/isotope-layout/isotope.pkgd.min.js', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/swiper/swiper-bundle.min.css', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/swiper/swiper-bundle.min.js', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/typed.js/typed.min.js', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'assets/vendor/waypoints/noframework.waypoints.js', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'css', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches it
```

```
anara@DESKTOP-FCGAHUV MINGW64 ~/Desktop/Codes/Assignments/Cloud Computing/Anara-h
$ git commit -m "created a portfolio website without images and icons"
[main (root-commit) 8f4b12a] created a portfolio website without images and icons
19 files changed, 6616 insertions(+)
create mode 100644 assets/css/style.css
create mode 100644 assets/js/main.js
create mode 100644 assets/vendor/aos/aos.css
create mode 100644 assets/vendor/aos/aos.js
create mode 100644 assets/vendor/bootstrap-icons/bootstrap-icons.css
create mode 100644 assets/vendor/bootstrap/css/bootstrap.min.css
create mode 100644 assets/vendor/bootstrap/js/bootstrap.bundle.min.js
create mode 100644 assets/vendor/boxicons/css/boxicons.min.css
create mode 100644 assets/vendor/glightbox/css/glightbox.min.css
create mode 100644 assets/vendor/glightbox/js/glightbox.min.js
create mode 100644 assets/vendor/isotope-layout/isotope.pkgd.min.js
create mode 100644 assets/vendor/php-email-form/validate.js
create mode 100644 assets/vendor/purecounter/purecounter_vanilla.js
create mode 100644 assets/vendor/swiper/swiper-bundle.min.css
create mode 100644 assets/vendor/swiper/swiper-bundle.min.js
create mode 100644 assets/vendor/typed.js/typed.min.js
create mode 100644 assets/vendor/waypoints/noframework.waypoints.js
create mode 100644 css
```

```
anara@DESKTOP-FCGAHV MINGW64 ~/Desktop/Codes/Assignments/Cloud
$ git push -u origin main
Enumerating objects: 41, done.
Counting objects: 100% (41/41), done.
Delta compression using up to 4 threads
Compressing objects: 100% (30/30), done.
Writing objects: 100% (41/41), 181.45 KiB | 2.97 MiB/s, done.
Total 41 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Anara-hayat/Anara-hayat.github.io.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
```

4. Check GitHub Pages Settings



GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

Your site is live at <https://anara-hayat.github.io/>
Last deployed by [Anara-hayat](#) 7 minutes ago

[Visit site](#) [Unpublish site](#)

Build and deployment

Source

Deploy from a branch ▼

Branch

Your GitHub Pages site is currently being built from the main branch. [Learn more about configuring the publishing source for your site.](#)

[main](#) ▼ [/ \(root\)](#) ▼ [Save](#)

5. Visit Your Live Site

Link: <https://anara-hayat.github.io/>