Ex. No: 1	Git and GitHub Operations
11.07.2024	

Aim:

To understand and practice the fundamental operations of Git, including repository setup, adding and committing changes, branching and merging, working with remote repositories, and collaborating via pull requests.

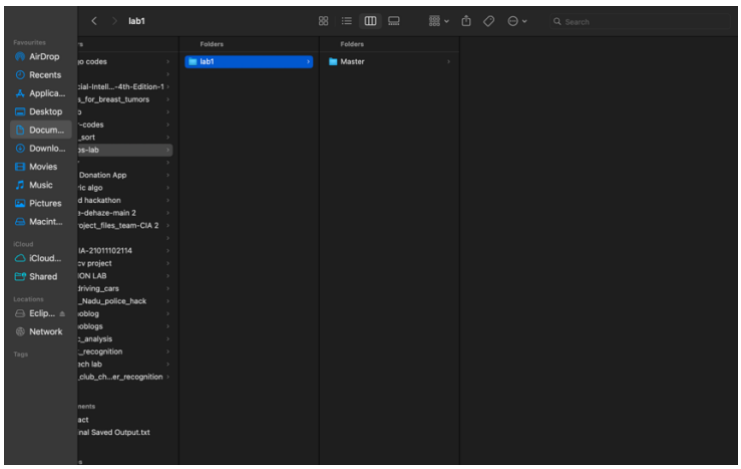
Procedure:

Part 1: Setting Up a New Git Repository

a. Create a Repository
   - Setting Up Git Repository named “Master”

Output:

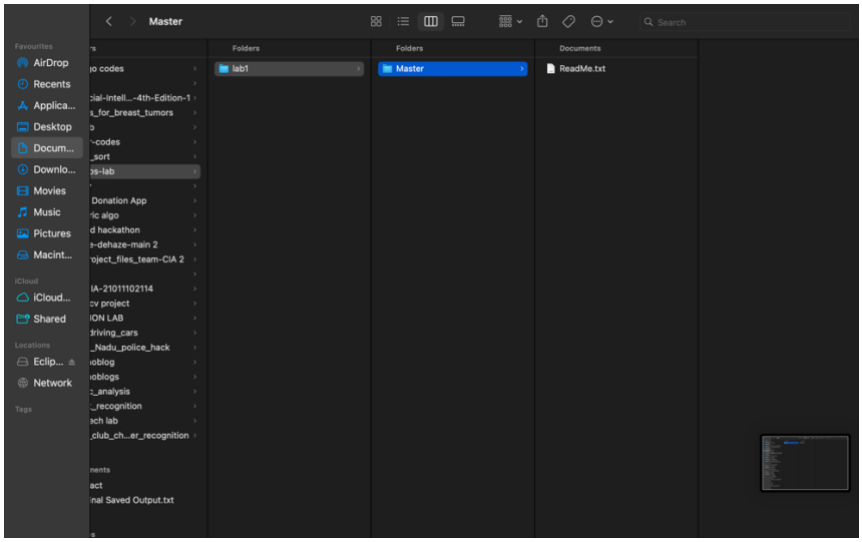
```
(base) ishareddyvaka@Ishas-MacBook-Air lab1 % git init Master
Initialized empty Git repository in /Users/ishareddyvaka/Documents/devops-lab/lab1/Master/.git/
(base) ishareddyvaka@Ishas-MacBook-Air lab1 % cd Master
(base) ishareddyvaka@Ishas-MacBook-Air Master %
```



b. Add and Commit Changes
   - Create a new text file named ReadMe.txt using any text editor.

Output:

```
(base) ishareddyvaka@Ishas-MacBook-Air Master % echo "Initial content" > ReadMe.txt
(base) ishareddyvaka@Ishas-MacBook-Air Master % git add ReadMe.txt

(base) ishareddyvaka@Ishas-MacBook-Air Master % git commit -m "Add initial ReadMe.txt"
[main (root-commit) 9c38903] Add initial ReadMe.txt
 Committer: Isha reddy Vaka <ishareddyvaka@Ishas-MacBook-Air.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 1 insertion(+)
 create mode 100644 ReadMe.txt
```



c. Exploring history
   - Modify/add content to the textfile.

Output:

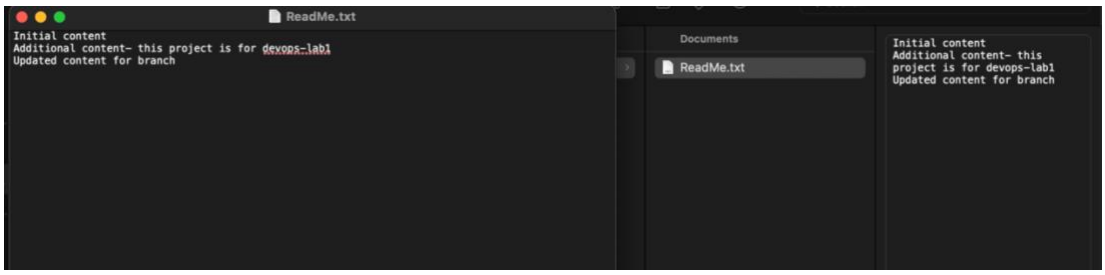
```
(base) ishareddyvaka@Ishas-MacBook-Air Master % echo "Additional content- this project is for devops-lab1" >> ReadMe.txt
(base) ishareddyvaka@Ishas-MacBook-Air Master % git add ReadMe.txt
(base) ishareddyvaka@Ishas-MacBook-Air Master % git commit -m "Update ReadMe.txt with additional content"
[main a3cf0a9] Update ReadMe.txt with additional content
 Committer: Isha reddy Vaka <ishareddyvaka@Ishas-MacBook-Air.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 1 insertion(+)
```

d. Branching and merging
   - Create a new branch named "Updated_ReadMe" and commit the changes in the branch.
   - Merge the changes from the Updated_ReadMe branch into the Master branch.

Output:

```
Master — -zsh — 87×46
Switched to branch 'Updated_ReadMe'
(base) ishareddyvaka@Ishas-MacBook-Air Master % echo "Updated content" >> ReadMe.txt
(base) ishareddyvaka@Ishas-MacBook-Air Master % git add ReadMe.txt
(base) ishareddyvaka@Ishas-MacBook-Air Master % git commit -m "Update ReadMe.txt with a
dditional content"
[Updated_ReadMe 12b7078] Update ReadMe.txt with additional content
 Committer: Isha reddy Vaka <ishareddyvaka@Ishas-MacBook-Air.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 1 insertion(+)
```

```
(base) ishareddyvaka@Ishas-MacBook-Air Master % git checkout main
Switched to branch 'main'
(base) ishareddyvaka@Ishas-MacBook-Air Master % git merge Updated_ReadMe
Updating f075fd1..12b7078
Fast-forward
 ReadMe.txt | 1 +
 1 file changed, 1 insertion(+)
```



e. Collaborating with Remote Repositories
   - Link your local repository to the remote repository

Output:

```
ishareddyvaka@Ishas-MacBook-Air Master % git remote add origin https://github.com/ireddy27
/webtech-lab3.git
```

f. Push Changes
   - Push your local commits to the remote repository

Output:

```
ishareddyvaka@Ishas-MacBook-Air Master % git push -f  origin main
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (9/9), 793 bytes | 793.00 KiB/s, done.
Total 9 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), done.
To https://github.com/ireddy27/webtech-lab3.git
 + fb2abee...e8bb88e main -> main (forced update)
```

Part 2: Working with an existing Repository

a. Cloning a Repository
   - Clone the repository of your project from GitHub

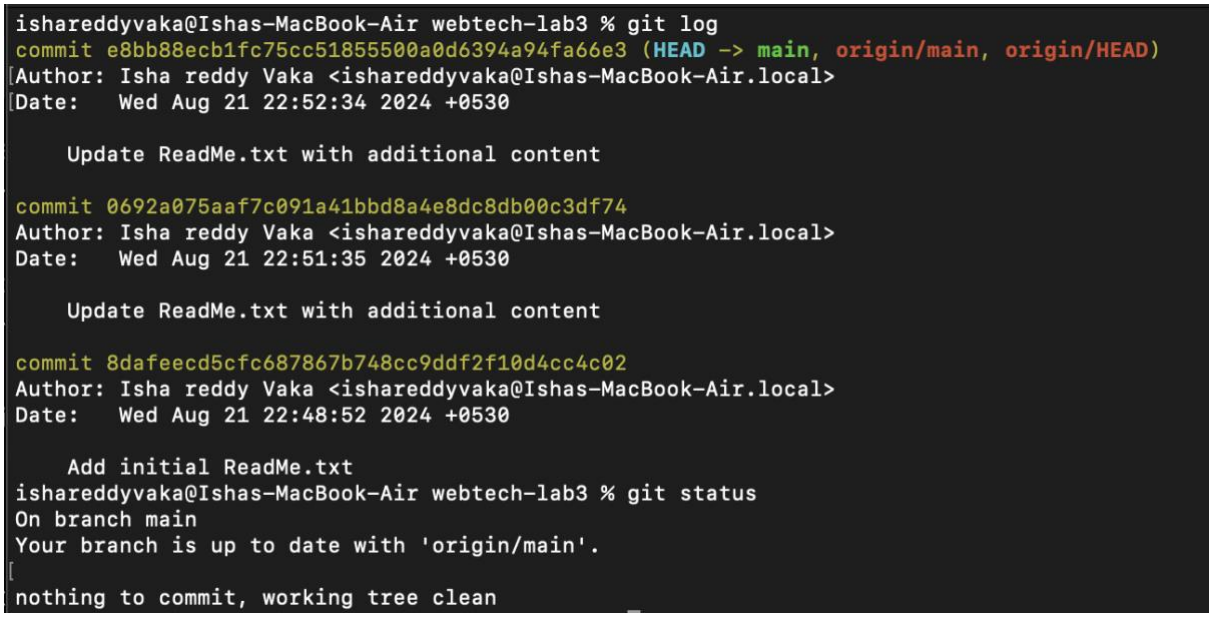
Output:

```
ishareddyvaka@Ishas-MacBook-Air Master % git clone https://github.com/ireddy27/webtech-lab3.git
Cloning into 'webtech-lab3'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 9 (delta 2), reused 9 (delta 2), pack-reused 0 (from 0)
Receiving objects: 100% (9/9), done.
Resolving deltas: 100% (2/2), done.
```

b. Making Changes and Creating a Branch

- Navigate into the cloned repository, do the necessary changes and check the status of the repository

Output:



c. Pushing Changes to GitHub
   - Add Repository URL in a variable
   - Push the local branch to the repository

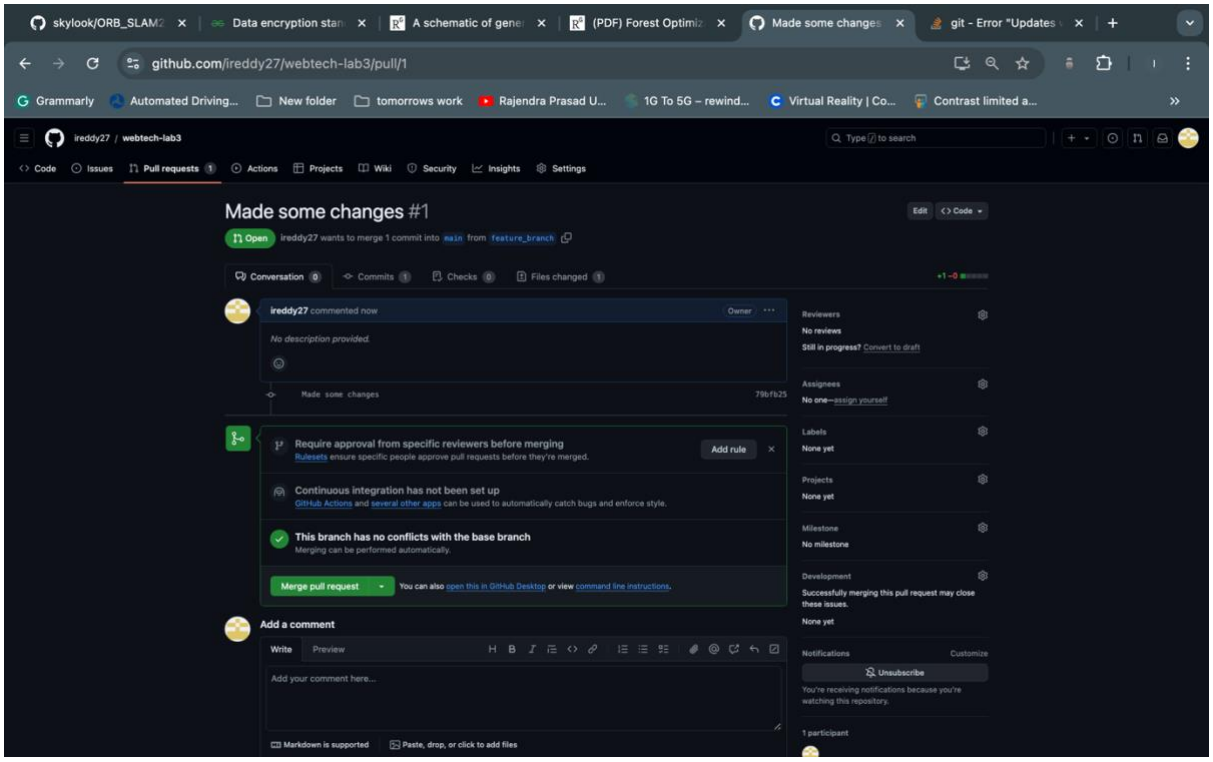
Output:

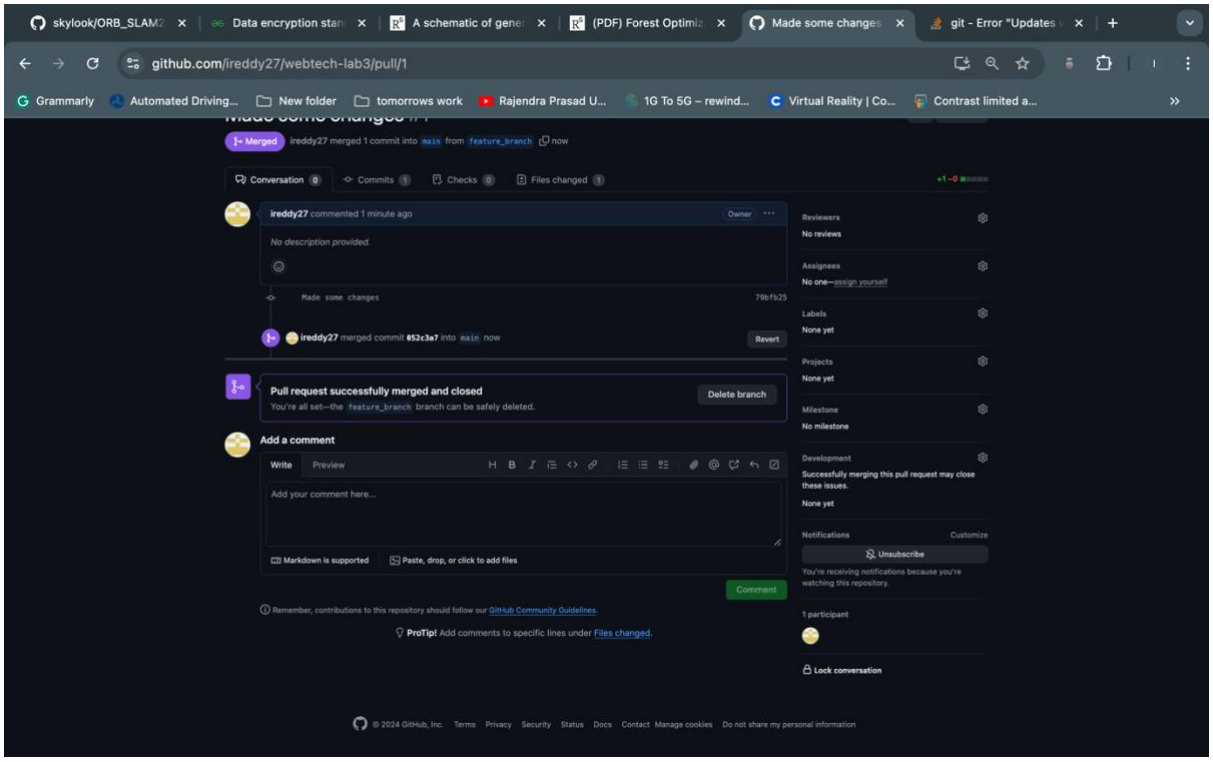
```
[ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % git checkout -b feature_branch
Switched to a new branch 'feature_branch'
[ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % echo "Some changes" >> ReadMe.txt
[ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % git add ReadMe.txt
ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % git commit -m "Made some changes"

[feature_branch 79bfb25] Made some changes
 Committer: Isha reddy Vaka <ishareddyvaka@Ishas-MacBook-Air.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 1 insertion(+)
ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % git push origin feature_branch

Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 306 bytes | 306.00 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.
remote:
remote: Create a pull request for 'feature_branch' on GitHub by visiting:
remote:      https://github.com/ireddy27/webtech-lab3/pull/new/feature_branch
remote:
To https://github.com/ireddy27/webtech-lab3.git
 * [new branch]      feature_branch -> feature_branch
ishareddyvaka@Ishas-MacBook-Air webtech-lab3 %
```

d. Collaborating through Pull Requests

- Create a pull request on GitHub
- Choose the base branch and compare it with the branch
- Review the changes and merge the pull request.
- Add a title and description for the pull request
- Assign reviewers
- Reviewers approve the pull request, merge it into the base branch.

Output:





e. Syncing Changes

- After the pull request is merged, update your local repository

Output:

```
ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
ishareddyvaka@Ishas-MacBook-Air webtech-lab3 % git pull origin main
remote: Enumerating objects: 1, done.
remote: Counting objects: 100% (1/1), done.
remote: Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (1/1), 904 bytes | 452.00 KiB/s, done.
From https://github.com/ireddy27/webtech-lab3
 * branch            main       -> FETCH_HEAD
   e8bb88e..052c3a7  main       -> origin/main
Updating e8bb88e..052c3a7
Fast-forward
 ReadMe.txt | 1 +
 1 file changed, 1 insertion(+)
```

Result:

Therefore, we've successfully performed all the Git and GitHub operations.