

Practical Implementation of Git with GitHub

To demonstrate the practical use of Git in GitHub, assuming you already have a GitHub account, let's walk through the process of creating a new repository, making changes to a file, and pushing those changes to GitHub.

- First, log in to your GitHub account then use this URL : <https://github.com/new> to create a new repository. Give it a name, add an optional description, and choose the visibility (public or private).

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Required fields are marked with an asterisk (*).

Owner * / Repository name *

Maverick7274 / NTCC-Git

NTCC-Git is available.

Great repository names are short and memorable. Need inspiration? How about [super-duper-parakeet](#) ?

Description (optional)

☒ **Public**
Anyone on the internet can see this repository. You choose who can commit.

☐ **Private**
You choose who can see and commit to this repository.

Initialize this repository with:

☐ **Add a README file**
This is where you can write a long description for your project. [Learn more about READMEs](#).

Add .gitignore

.gitignore template: None

Choose which files not to track from a list of templates. [Learn more about ignoring files](#).

Choose a license

License: None

A license tells others what they can and can't do with your code. [Learn more about licenses](#).

You are creating a public repository in your personal account.

Create repository


- Next, click the green button to create the repository.

ode. [Learn more about licenses.](#)


nal account.


Create repository

- Now, you'll see a page with instructions for creating a new repository on the command line.



 NTCC-Git Public

[Pin](#) [Unwatch 1](#) [Fork 0](#) [Star 0](#)

**Create a codespace**
Add a README file and start coding in a secure, configurable, and dedicated development environment.

**Invite collaborators**
Find people using their GitHub username or email address.


Quick setup — if you've done this kind of thing before

 Set up in Desktop or [HTTPS](#) [SSH](#) <https://github.com/Maverick7274/NTCC-Git.git> 

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).


...or create a new repository on the command line

```
echo "# NTCC-Git" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/Maverick7274/NTCC-Git.git
git push -u origin main
```



...or push an existing repository from the command line

```
git remote add origin https://github.com/Maverick7274/NTCC-Git.git
git branch -M main
git push -u origin main
```



...or import code from another repository

You can initialize this repository with code from a Subversion, Mercurial, or TFS project.

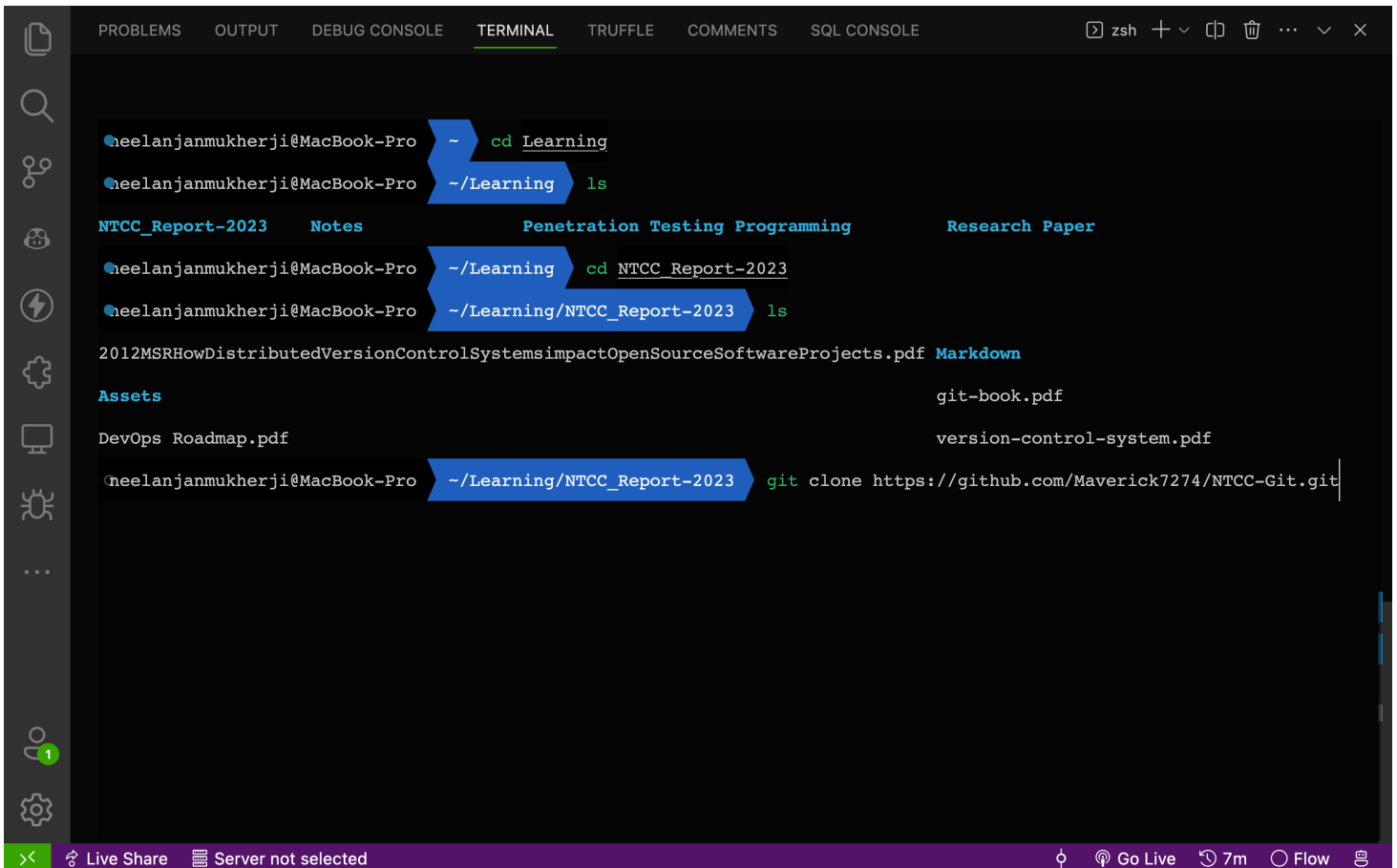
[Import code](#)

NOTE : In these next step we will clone the repository to our local machine. If you are using a UNIX based system, you can use the terminal to clone the repository. If you are using a Windows system, you can use the Git Bash terminal to clone the repository.

There are two ways to clone the repository to your local machine.

Using git clone command

- Open a terminal window and navigate to the directory where you want to create the repository.



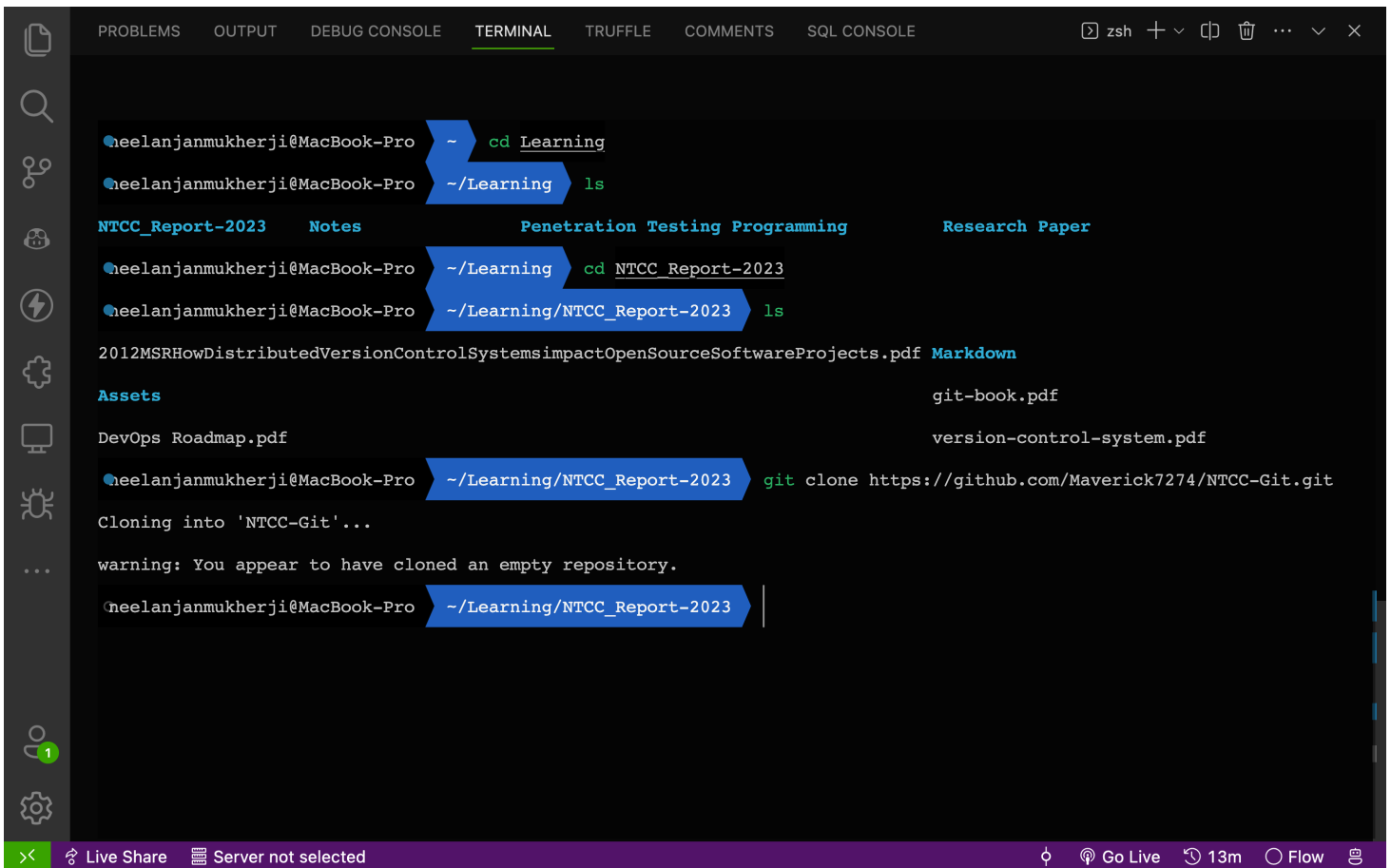
The screenshot shows a terminal window in VS Code with the following commands and output:

```
neelanjanmukherji@MacBook-Pro ~ % cd Learning
neelanjanmukherji@MacBook-Pro ~/Learning % ls
NTCC_Report-2023  Notes  Penetration Testing Programming  Research Paper
neelanjanmukherji@MacBook-Pro ~/Learning % cd NTCC_Report-2023
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023 % ls
2012MSRHowDistributedVersionControlSystemsimpactOpenSourceSoftwareProjects.pdf Markdown
Assets git-book.pdf
DevOps Roadmap.pdf version-control-system.pdf
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023 % git clone https://github.com/Maverick7274/NTCC-Git.git
```

- Here for demonstration we are using a UNIX based system. I would recommend using a UNIX based system for almost every professional server runs in a Linux or a UNIX based Operating System.
- To clone the repository, copy the URL from the Quick setup box, then use the `git clone` command with the copied URL.

```
git clone https://github.com/Maverick7274/NTCC-Git.git
```

- Now, you have a local copy of the repository on your machine.



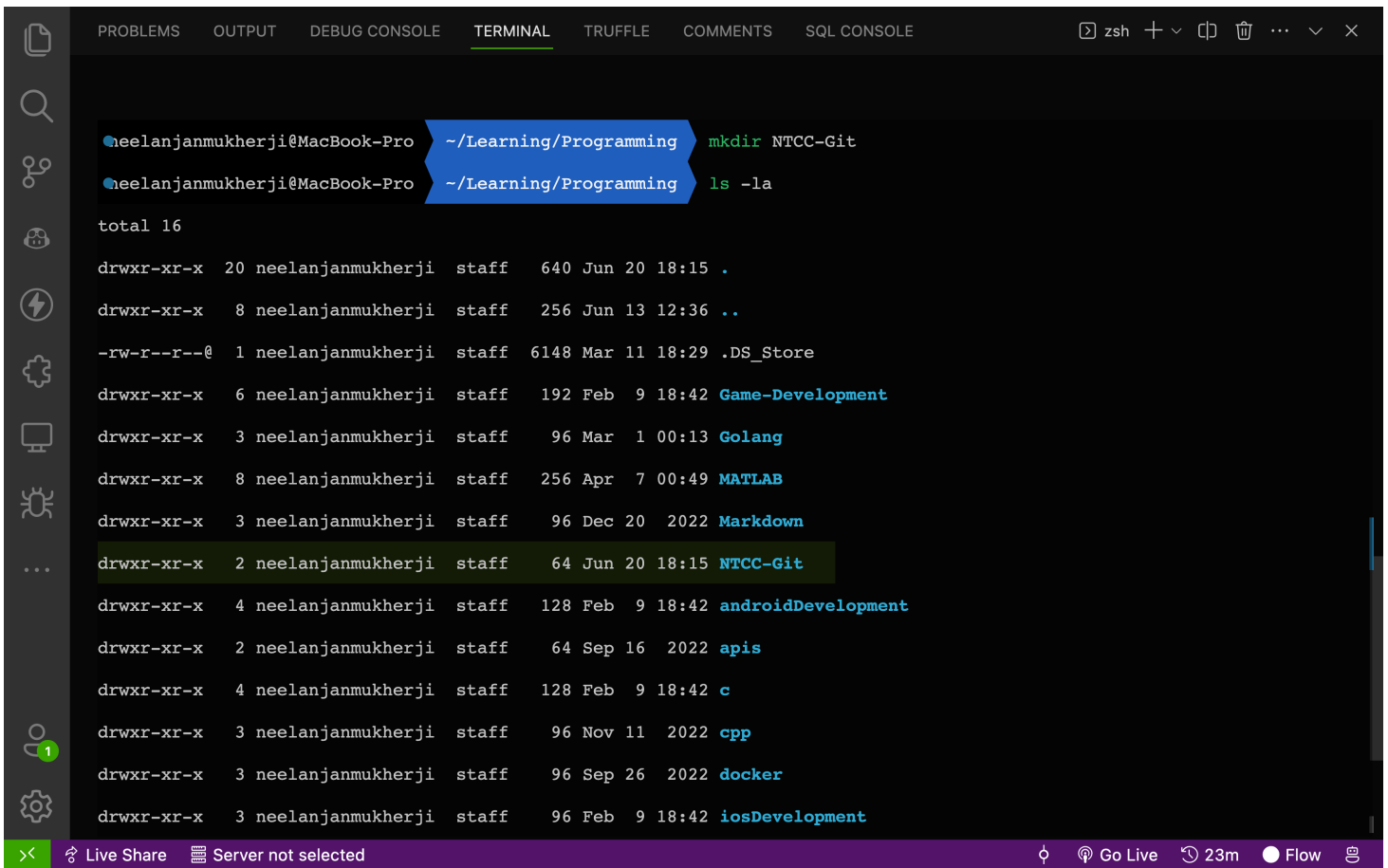
```
neelanjanmukherji@MacBook-Pro ~ cd Learning
neelanjanmukherji@MacBook-Pro ~/Learning ls
NTCC_Report-2023  Notes  Penetration Testing Programming  Research Paper
neelanjanmukherji@MacBook-Pro ~/Learning cd NTCC_Report-2023
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023 ls
2012MSRHowDistributedVersionControlSystemsimpactOpenSourceSoftwareProjects.pdf Markdown
Assets  git-book.pdf
DevOps Roadmap.pdf  version-control-system.pdf
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023 git clone https://github.com/Maverick7274/NTCC-Git.git
Cloning into 'NTCC-Git'...
warning: You appear to have cloned an empty repository.
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023
```

Cloning into 'NTCC-Git'...

warning: You appear to have cloned an empty repository.

Using remote add command

- Open a terminal window and navigate to the directory where you want to create the repository.
- use `mkdir` command to create a new directory.

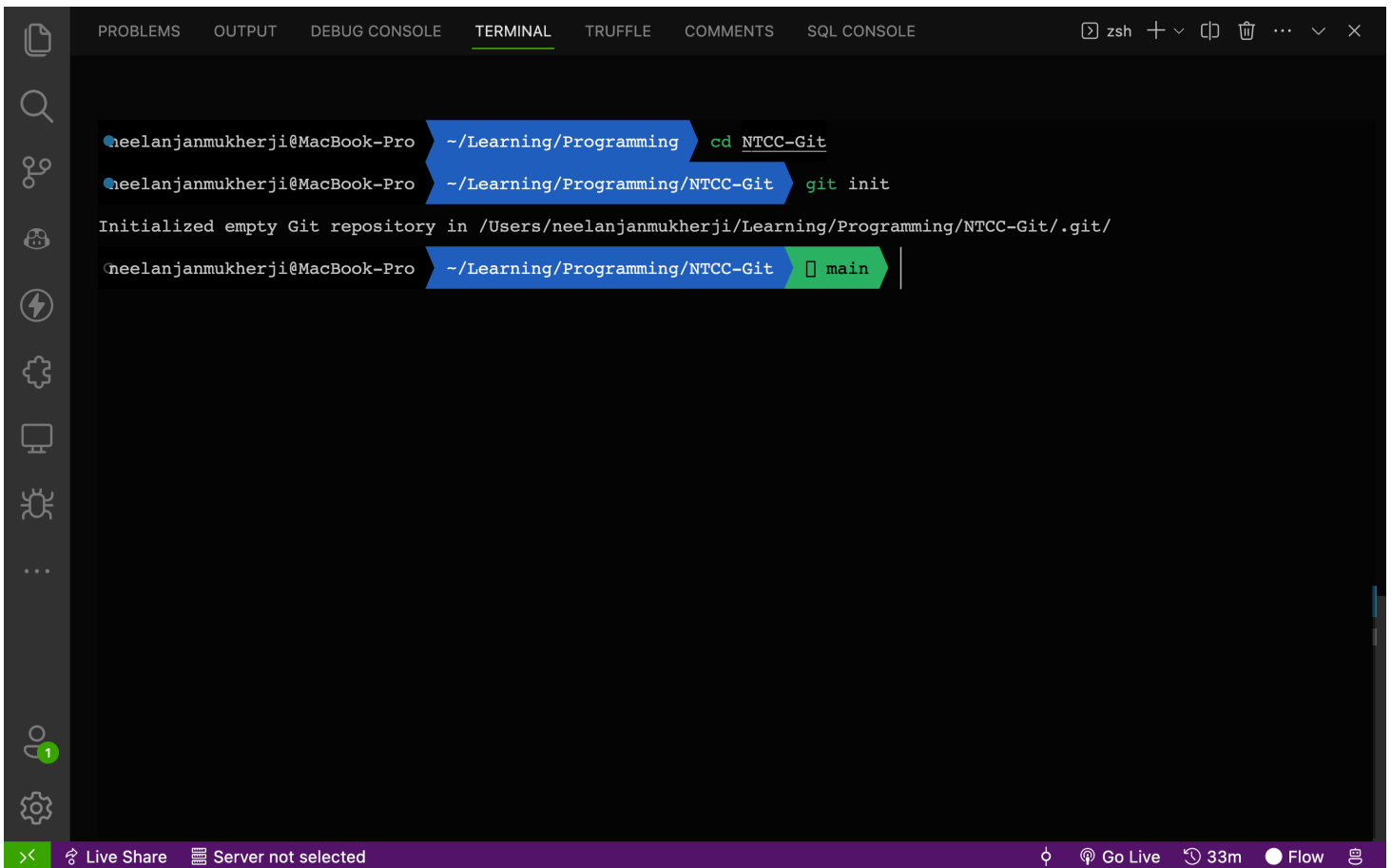


```
neelanjanmukherji@MacBook-Pro ~/Learning/Programming mkdir NTCC-Git
neelanjanmukherji@MacBook-Pro ~/Learning/Programming ls -la

total 16
drwxr-xr-x 20 neelanjanmukherji staff 640 Jun 20 18:15 .
drwxr-xr-x  8 neelanjanmukherji staff 256 Jun 13 12:36 ..
-rw-r--r--@ 1 neelanjanmukherji staff 6148 Mar 11 18:29 .DS_Store
drwxr-xr-x  6 neelanjanmukherji staff 192 Feb  9 18:42 Game-Development
drwxr-xr-x  3 neelanjanmukherji staff  96 Mar  1 00:13 Golang
drwxr-xr-x  8 neelanjanmukherji staff 256 Apr  7 00:49 MATLAB
drwxr-xr-x  3 neelanjanmukherji staff  96 Dec 20 2022 Markdown
drwxr-xr-x  2 neelanjanmukherji staff  64 Jun 20 18:15 NTCC-Git
drwxr-xr-x  4 neelanjanmukherji staff 128 Feb  9 18:42 androidDevelopment
drwxr-xr-x  2 neelanjanmukherji staff  64 Sep 16 2022 apis
drwxr-xr-x  4 neelanjanmukherji staff 128 Feb  9 18:42 c
drwxr-xr-x  3 neelanjanmukherji staff  96 Nov 11 2022 cpp
drwxr-xr-x  3 neelanjanmukherji staff  96 Sep 26 2022 docker
drwxr-xr-x  3 neelanjanmukherji staff  96 Feb  9 18:42 iosDevelopment
```

`mkdir NTCC-Git && cd NTCC-Git`

- Now, use `git init` command to initialize the repository.



The screenshot shows a VS Code terminal window with the following content:

```
neelanjanmukherji@MacBook-Pro ~/Learning/Programming cd NTCC-Git
neelanjanmukherji@MacBook-Pro ~/Learning/Programming/NTCC-Git git init
Initialized empty Git repository in /Users/neelanjanmukherji/Learning/Programming/NTCC-Git/.git/
neelanjanmukherji@MacBook-Pro ~/Learning/Programming/NTCC-Git [main]
```

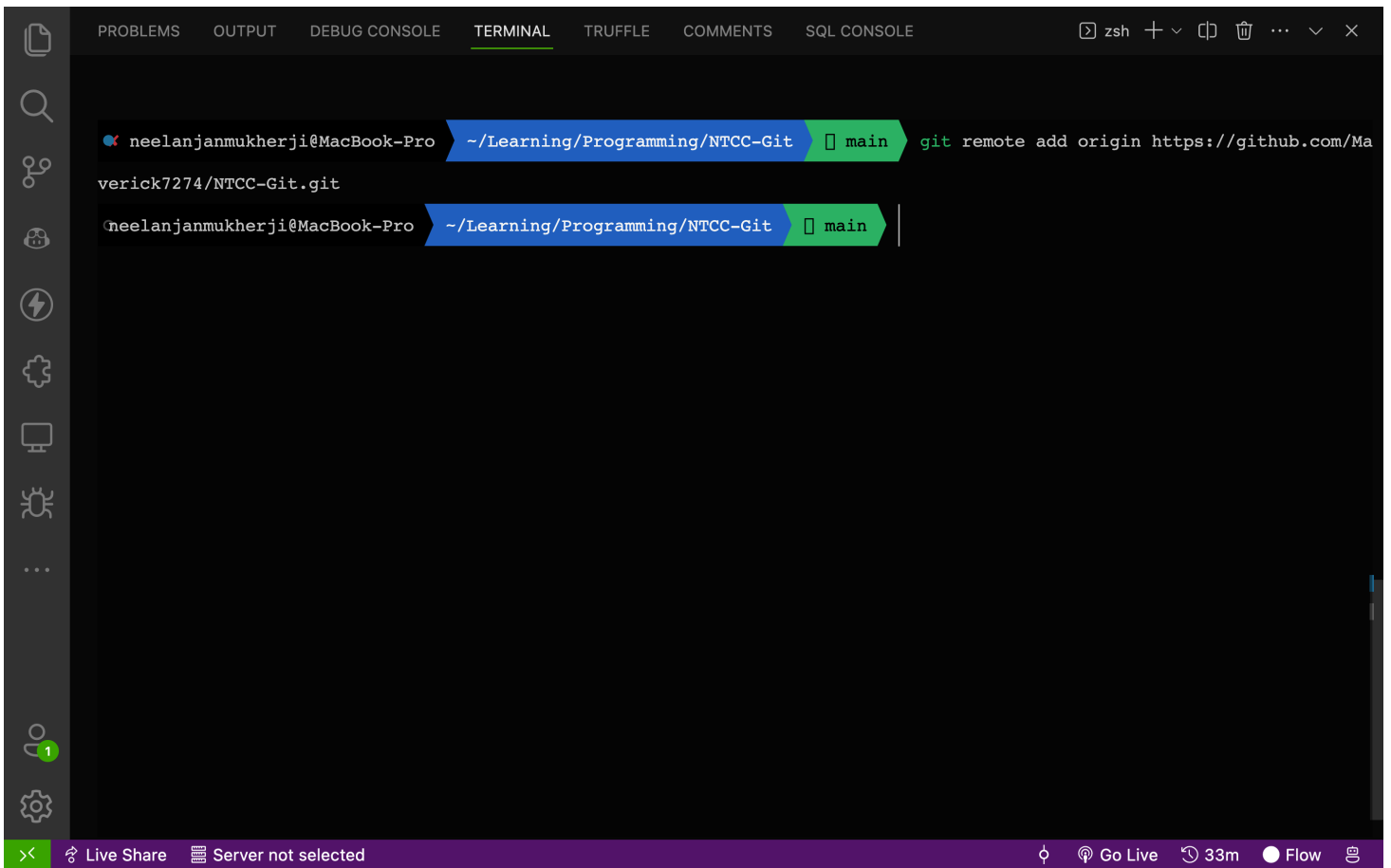
The terminal window has a dark theme. The top bar shows tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (active), TRUFFLE, COMMENTS, and SQL CONSOLE. The bottom status bar shows '><' icon, 'Live Share' button, 'Server not selected' text, and icons for 'Go Live', '33m' timer, 'Flow' mode, and a document icon.

`git init`

Output :

Initialized empty Git repository in `/Users/neelanjanmukherji/Learning/Programming/NTCC-Git/.git/`

- Now, use `git remote add` command to add the remote repository (again copy the url from the Quick setup box).

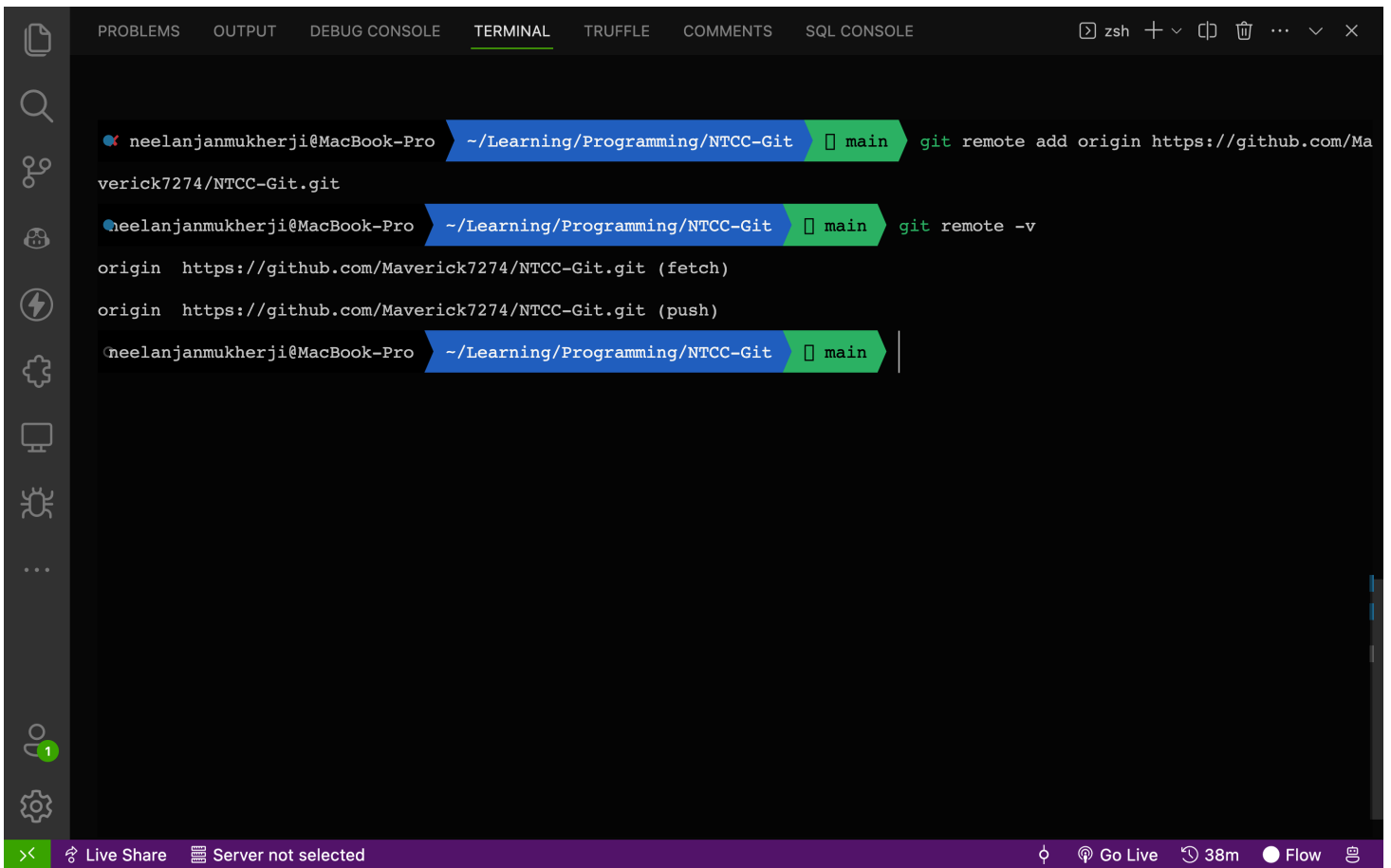


The image shows a screenshot of a Visual Studio Code (VS Code) terminal window. The terminal is open to the 'TERMINAL' tab, which is highlighted in the top bar. The top bar also includes tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TRUFFLE', 'COMMENTS', and 'SQL CONSOLE'. On the right side of the top bar, there are icons for 'zsh', a plus sign, a minus sign, a copy icon, a trash icon, and a close icon. The terminal content shows a prompt 'neelanjanmukherji@MacBook-Pro' followed by a blue banner indicating the current directory is '~/Learning/Programming/NTCC-Git' and the current branch is 'main'. The command 'git remote add origin https://github.com/Maverick7274/NTCC-Git.git' has been entered. The bottom status bar is purple and contains icons for '><', 'Live Share', 'Server not selected', a refresh icon, 'Go Live', a timer showing '33m', 'Flow', and a document icon.

```
neelanjanmukherji@MacBook-Pro ~/Learning/Programming/NTCC-Git main git remote add origin https://github.com/Maverick7274/NTCC-Git.git
```

`git remote add origin https://github.com/Maverick7274/NTCC-Git.git`

- To verify the remote repository, use `git remote -v` command.

A screenshot of a Visual Studio Code terminal window. The terminal shows a series of git commands and their outputs. The first command is 'git remote add origin https://github.com/Maverick7274/NTCC-Git.git'. The second command is 'git remote -v', which outputs 'origin https://github.com/Maverick7274/NTCC-Git.git (fetch)' and 'origin https://github.com/Maverick7274/NTCC-Git.git (push)'. The terminal interface includes a top bar with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (selected), TRUFFLE, COMMENTS, and SQL CONSOLE. The left sidebar shows various icons for file explorer, search, source control, and other VS Code features. The bottom status bar indicates 'Live Share' and 'Server not selected'.

```
git remote -v
```

Output :

```
origin https://github.com/Maverick7274/NTCC-Git.git (fetch)
origin https://github.com/Maverick7274/NTCC-Git.git (push)
```

- Now, you have a local copy of the repository on your machine.

Making Changes to the Repository

- Now, open the repository in your favorite code editor.
- Here, we are using VS Code.

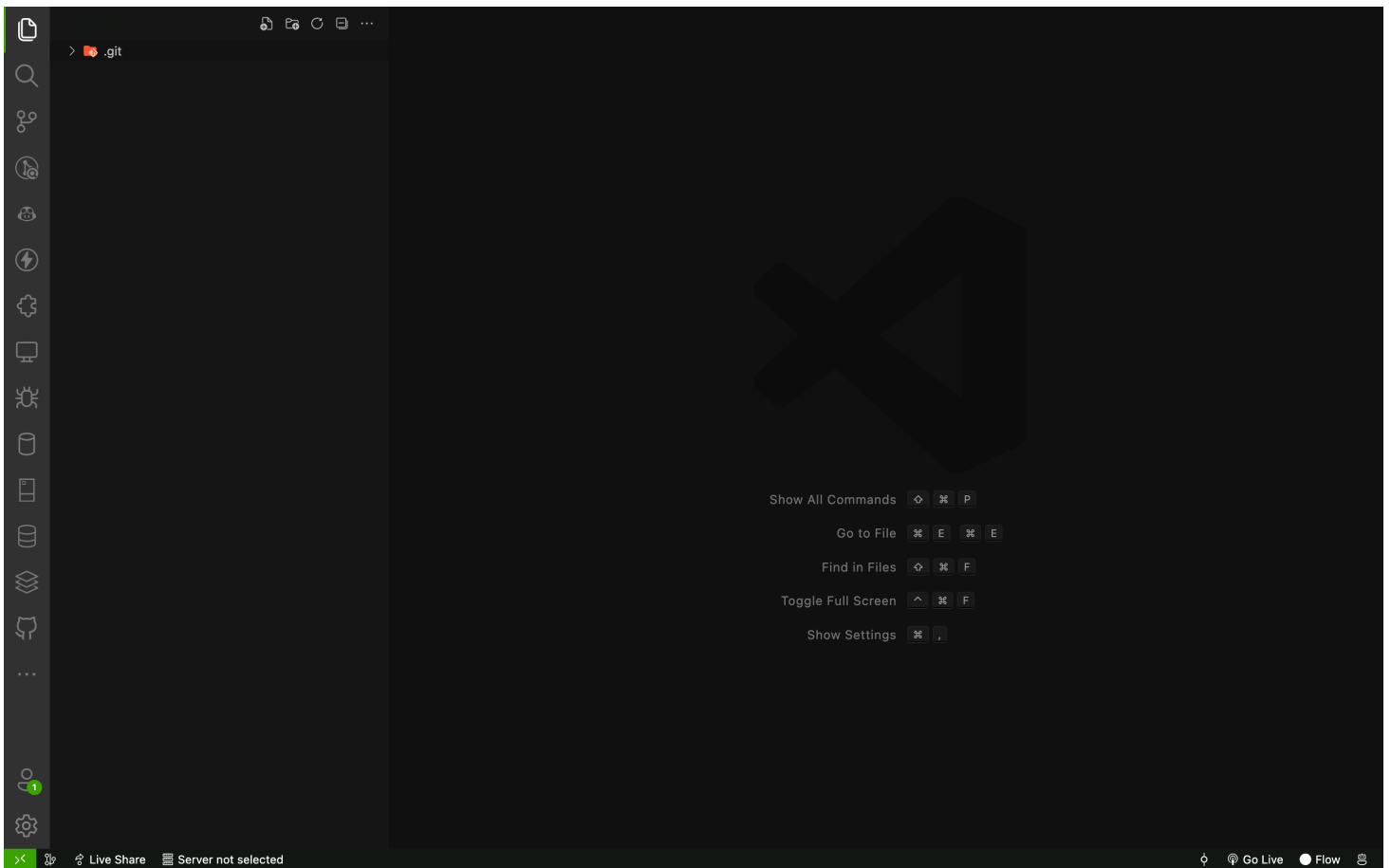
PRO TIP : You can open the repository in VS Code by using the command `code .` in the terminal.

The image shows a terminal window within a code editor. The terminal title bar includes tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is active), TRUFFLE, COMMENTS, and SQL CONSOLE. The terminal content shows the following commands and output:

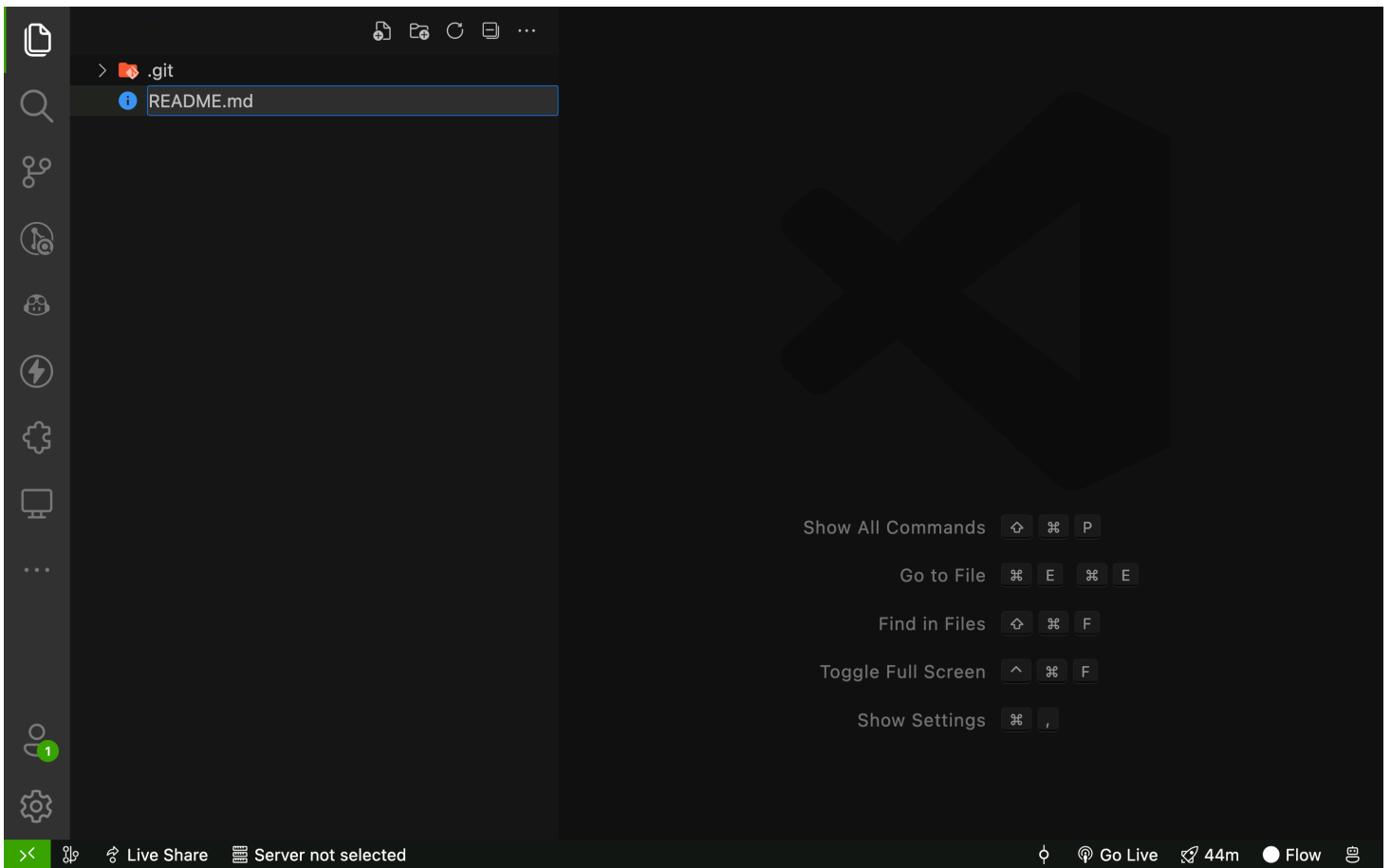
```
verick7274/NTCC-Git.git
neelanjanmukherji@MacBook-Pro ~/Learning/Programming/NTCC-Git [main] git remote -v
origin  https://github.com/Maverick7274/NTCC-Git.git (fetch)
origin  https://github.com/Maverick7274/NTCC-Git.git (push)
neelanjanmukherji@MacBook-Pro ~/Learning/Programming/NTCC-Git [main] code .
```

The status bar at the bottom of the editor shows '><' on the left, 'Live Share' with a status icon, 'Server not selected', and on the right, a search icon, 'Go Live' with a status icon, '38m' (session duration), 'Flow' with a status icon, and a document icon.

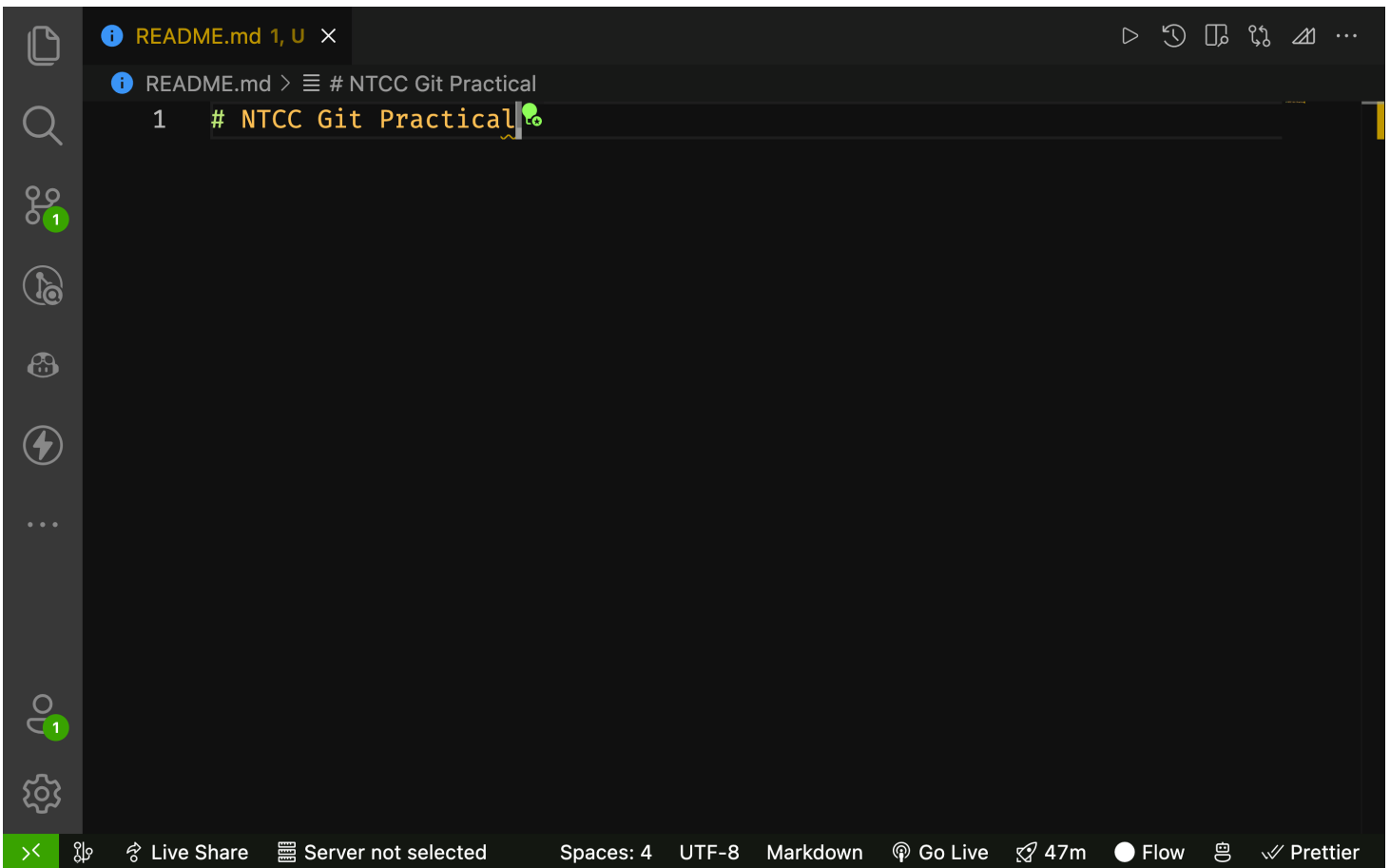
- After opening VS Code or any other code editor, navigate to the directory where you have cloned the repository.



- Now here we have no files in the repository. It's a good practice to create a `README.md` file in the repository. It will help others to understand the repository. So, let's create a `README.md` file.
- To create a new file, click on the `New File` button.
- Now, give the file a name `README.md` .



- Markdown is a lightweight markup language for creating formatted text using a plain-text editor. John Gruber and Aaron Swartz created Markdown in 2004 as a markup language that is appealing to human readers in its source code form. Markdown is widely used in blogging, instant messaging, online forums, collaborative software, documentation pages, and readme files.
- To learn more about Markdown, visit <https://www.markdownguide.org/>.
- Now, let's add some text to the `README.md` file.



- Here in the demonstration we have used VS Code's auto-save feature. If you are using any other code editor, you have to save the file manually.
- Now, let's check the status of the repository.
- To check the status of the repository, use `git status` command.

```
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main] git status

On branch main

No commits yet

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

    README.md

nothing added to commit but untracked files present (use "git add" to track)

neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main]
```

```
git status
```

Output :

```
On branch main
```

```
No commits yet
```

```
Untracked files:
```

```
(use "git add <file>..." to include in what will be committed)
```

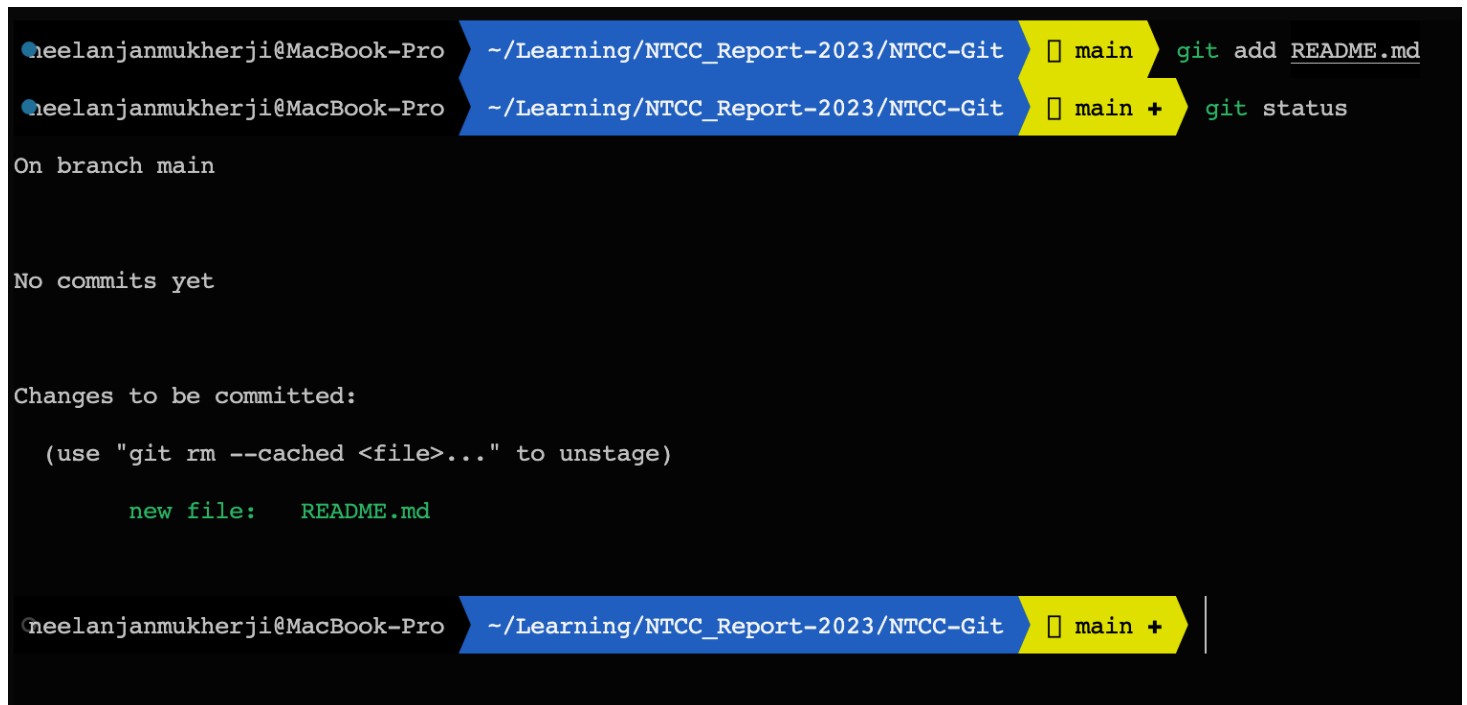
```
README.md
```

```
nothing added to commit but untracked files present (use "git add" to track)
```

- Here, we can see that the file README.md is untracked.
- Now, let's add the file to the staging area.
- To add the file to the staging area, use `git add` command.

```
git add README.md
```

- Now, let's check the status of the repository.
- To check the status of the repository, use `git status` command.



```
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main] git add README.md
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main +] git status

On branch main

No commits yet

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

    new file:   README.md

neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main +]
```

```
git status
```

Output :

On branch main

No commits yet

Changes to be committed:

(use "`git rm --cached <file>...`" to unstage)

new file: README.md

- Now, let's commit the changes.
- To commit the changes, use `git commit` command.

```
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main +] git commit -a -m "README.md Added"
[main (root-commit) 1126b9e] README.md Added
1 file changed, 1 insertion(+)
create mode 100644 README.md
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main]
```

```
git commit -a -m "Added README.md file"
```

Output :

```
[main (root-commit) 1126b9e] README.md Added
1 file changed, 1 insertion(+)
create mode 100644 README.md
```

- Now, let's check the status of the repository.
- To check the status of the repository, use `git status` command.

```
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [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
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git [main]
```

```
git status
```

Output :

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

- Now, let's push the changes to the remote repository.
- To push the changes to the remote repository, use `git push` command.

```
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git main git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 292 bytes | 292.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Maverick7274/NTCC-Git.git
    1126b9e..9854bc9  main -> main
neelanjanmukherji@MacBook-Pro ~/Learning/NTCC_Report-2023/NTCC-Git main
```

`git push origin main`

Output :

```
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 292 bytes | 292.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Maverick7274/NTCC-Git.git
    1126b9e..9854bc9  main -> main
```

- Now, you can see the changes in the remote repository.