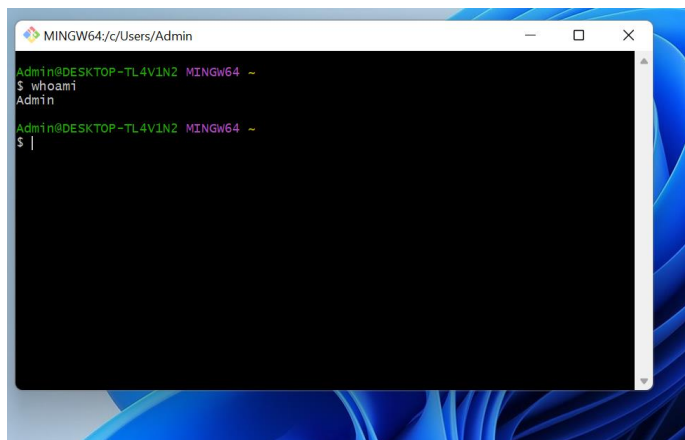
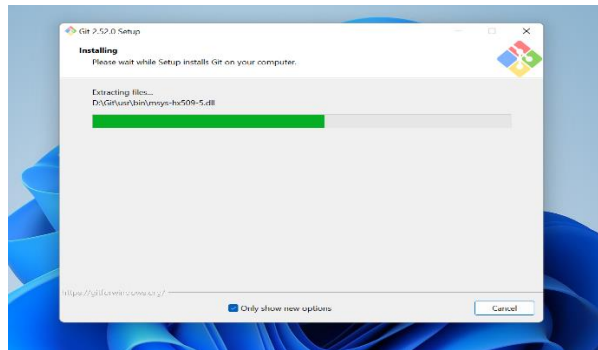
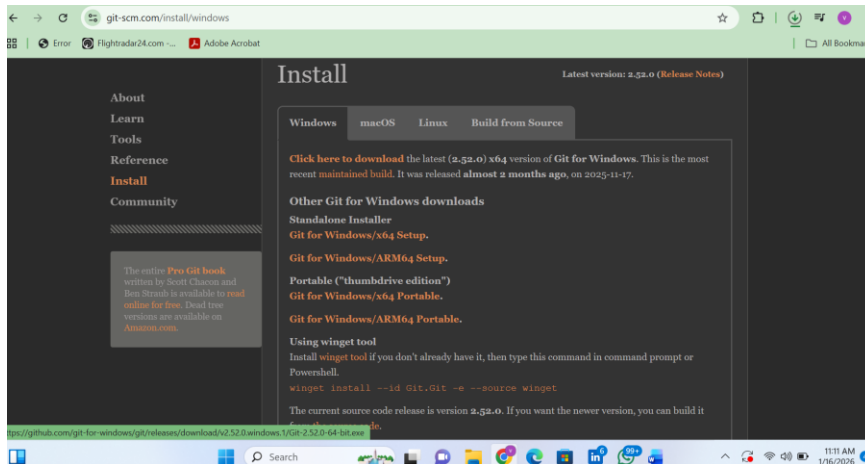


TASK 2: Git & GitHub Fundamentals

1. Install Git & GitHub Desktop

Install Git

- Download from: <https://git-scm.com>



2. Initialize a Local Git Repository

- Create a project directory

This is the command to create directory

“mkdir git-task2”

This command use for go into the created directory

“cd git-task2”

```
Design Layout References Mailings Review View Help Tell me what you want to do
vishnu@DESKTOP-TL4VIN2: ~/git-task2
[sudo] password for vishnu:
git:1 http://archive.ubuntu.com/ubuntu noble InRelease
git:2 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
git:3 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
git:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
git:5 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1694 kB]
git:6 http://archive.ubuntu.com/ubuntu noble-updates/main Translation-en [313 kB]
git:7 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [179 kB]
git:8 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [15.9 kB]
git:9 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1512 kB]
git:10 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [377 kB]
git:11 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
git:12 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [946 B]
git:13 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7308 B]
git:14 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [10.5 kB]
git:15 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [212 B]
git:16 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
git:17 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
git:18 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [71.5 kB]
git:19 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
git:20 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Fetched 4578 kB in 4s (1208 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
122 packages can be upgraded. Run 'apt list --upgradable' to see them.
vishnu@DESKTOP-TL4VIN2:~$ git config --list
vishnu@DESKTOP-TL4VIN2:~$ mkdir git-task2
vishnu@DESKTOP-TL4VIN2:~$ cd git-task2/
vishnu@DESKTOP-TL4VIN2:~/git-task2$
```

```
Building dependency tree... Done
122 packages can be upgraded. Run 'apt list --upgradable' to see them.
vishnu@DESKTOP-TL4VIN2:~$ git config --list
vishnu@DESKTOP-TL4VIN2:~$ mkdir git-task2
vishnu@DESKTOP-TL4VIN2:~$ cd git-task2/
vishnu@DESKTOP-TL4VIN2:~/git-task2$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:     git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:     git branch -m <name>
Initialized empty Git repository in /home/vishnu/git-task2/.git/
vishnu@DESKTOP-TL4VIN2:~/git-task2$ ls -la
.
..
.git
vishnu@DESKTOP-TL4VIN2:~/git-task2$
```

```
vishnu@DESKTOP-TL4VIN2:~/git-demo$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:     git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:     git branch -m <name>
Initialized empty Git repository in /home/vishnu/git-demo/.git/
vishnu@DESKTOP-TL4VIN2:~/git-demo$ ls -la
.
..
.git
vishnu@DESKTOP-TL4VIN2:~/git-demo$ touch file1.txt
vishnu@DESKTOP-TL4VIN2:~/git-demo$
vishnu@DESKTOP-TL4VIN2:~/git-demo$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
  file1.txt

nothing added to commit but untracked files present (use "git add" to track)
vishnu@DESKTOP-TL4VIN2:~/git-demo$
```

3. Create Files & Track Changes (status, add, commit)

- Create a file: touch file1.txt
- Check status: git status
 'File will appears as Untracked'
- Add file to staging area: git add file1.txt
- Commit changes: git commit -m "Initial commit - added file1.txt"
- Modify file: echo "Hello Git" >> file1.txt
- Track modified file: git status
 git add .
 git commit -m "Updated file1.txt with content"

4. Create GitHub Repository & Link with Local Repo

Step 1: Create repository on GitHub

Go to GitHub → New Repository

Repository name: git-demo

Do NOT add README

Click Create repository

Step 2: Connect using HTTPS

 git remote add origin <https://github.com/your-username/git-demo.git>

```
error: Remote origin already exists.
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote -v
origin https://github.com/your-username/git-demo.git (fetch)
origin https://github.com/your-username/git-demo.git (push)
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote remove origin
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote remove origin
error: No such remote: 'origin'
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote rm origin
error: No such remote: 'origin'
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote -v
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote add origin https://github.com/Vishnukumar777/git-demo.git
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git remote -v
origin https://github.com/Vishnukumar777/git-demo.git (fetch)
origin https://github.com/Vishnukumar777/git-demo.git (push)
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git branch -M main
```

Add key to GitHub (Correct Way)

- Go to GitHub → Settings
- Click SSH and GPG keys
- Click New SSH key
- Title: Laptop SSH Key
- Paste the FULL output from step 2
- Click Add SSH key

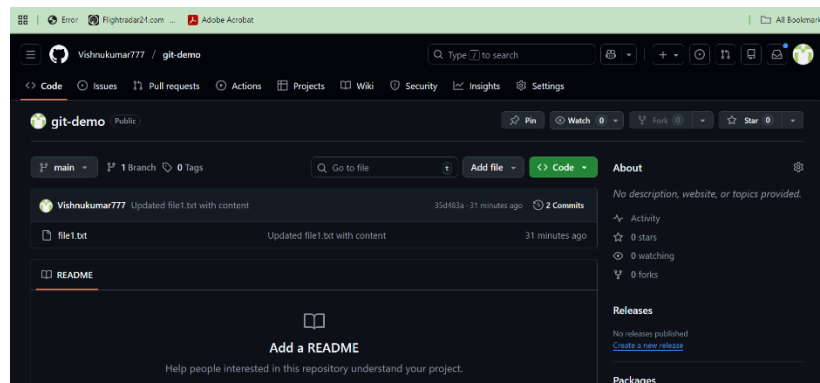
```

Enter some passphrase again:
Your identification has been saved in /home/vishnu/.ssh/id_ed25519
Your public key has been saved in /home/vishnu/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:p0GipRmPcFqFqSAEJZgGbuzat3YBSKwdGluQk vishnups777@gmail.com
The key's randomart image is:
+--[ED25519 256]--+
|X=+=|
|XoSo+|
|..+++.+|
|+...+|
|. +. S |
|....O|
|...O|
|...O|
|...O|
|...O|
+-----[SHA256]-----+
vishnu@kali:~$ ssh -T -A root@git-demo cat ~/.ssh/id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lbnRpdjE0ZTEwIzE5AAAAIAKA-Hae87c4H4QJf-dnQJL7657+N03I5NIGkwxL2tosi+ Vishnups777@gmail.com
vishnu@kali:~$ ssh -T git@github.com
The authenticity of host 'github.com (20.207.239.82)' can't be established.
ED25519 key fingerprint is SHA256:Dyly3vvW6TUJhp2lsf/zLOAHc2PM5vHdkr4UvCOQU.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.
Hi Vishnukumar777! You've successfully authenticated, but GitHub does not provide shell access.
vishnu@kali:~$ ssh -T git@github.com git remote set-url origin git@github.com:Vishnukumar777/git-demo.git
vishnu@kali:~$ ssh -T root@git-demo git push origin main
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Compressing objects: 0%, done.
Writing objects: 100% (6/6), 491 bytes | 78.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:Vishnukumar777/git-demo.git
 * [new branch]      main -> main
vishnu@kali:~$ ssh -T root@git-demo git remote -v
origin	git@github.com:Vishnukumar777/git-demo.git (fetch)
origin	git@github.com:Vishnukumar777/git-demo.git (push)
vishnu@kali:~$ ssh -T root@git-demo
```

5. Push local commits to remote GitHub repository.

This are the commands to push local to remote github repo

- git branch -M main
- git push -u origin main



This is the outcome when the file go to github repo

6. Create a New Branch, Make Changes & Merge

- Create and switch to new branch: `git checkout -b feature-branch`

```
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git checkout -b feature-branch
Switched to a new branch 'feature-branch'
vishnu@DESKTOP-TL4V1N2:~/git-demo$ echo "feature branch change" >> file1.txt
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git add .
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git commit -m "Added feature branch changes"
[feature-branch e68a927] Added feature branch changes
1 file changed, 1 insertion(+)
vishnu@DESKTOP-TL4V1N2:~/git-demo$
```

- Make changes: `echo "Feature branch change" >> file1.txt`
`git add .`

`git commit -m "Added feature branch changes"`

- Switch back to main: `git checkout main`

```
1 file changed, 1 insertion(+)
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git checkout main
Switched to branch 'main'
vishnu@DESKTOP-TL4V1N2:~/git-demo$
```

- Merge branch: `git merge feature-branch`

```
Switched to branch 'main'
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git merge feature-branch
Updating 35d483a..e68a927
Fast-forward
 file1.txt | 1 +
 1 file changed, 1 insertion(+)
vishnu@DESKTOP-TL4V1N2:~/git-demo$
```

7. Practice rollback using git log, git reset, and git checkout.

- View commit history: `git log --oneline`

```
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Writing objects: 100% (3/3), 290 bytes | 290.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:Vishnukumar777/git-demo.git
 35d483a..e68a927 main -> main
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git log --oneline --all --decorate
e68a927 (HEAD -> main, origin/main, feature-branch) Added feature branch changes
35d483a Updated file1.txt with content
3286601 Initial commit - added file1.txt
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git log --oneline
e68a927 (HEAD -> main, origin/main, feature-branch) Added feature branch changes
35d483a Updated file1.txt with content
3286601 Initial commit - added file1.txt
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git log --oneline
e68a927 (HEAD -> main, origin/main, feature-branch) Added feature branch changes
35d483a Updated file1.txt with content
3286601 Initial commit - added file1.txt
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git log --oneline --all --decorate
e68a927 (HEAD -> main, origin/main, feature-branch) Added feature branch changes
35d483a Updated file1.txt with content
3286601 Initial commit - added file1.txt
vishnu@DESKTOP-TL4V1N2:~/git-demo$ git push origin main
git reset --soft <commit-id>
```

