

# **Source Code Lab**

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### 1. Git & GitHub Fundamentals

#### Basic Linux Commands

- ls – List directory contents

- `ls -ah` – List all files including hidden ones
  - `pwd` – Print working directory
  - `cd ..` – Move to the parent directory
  - `mkdir` – Create a new directory
  - `cd <folder>` – Change into a directory
- 

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~
$ cd Desktop

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop
$ dir
May16  calculator  example  project

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop
$ cd calculator

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls
calculator_code.py

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls -ah
./  ../  .git/  calculator_code.py

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ pwd
/c/Users/Admin/Desktop/calculator

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ mkdir Cache

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls
Cache/  calculator_code.py

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$
```

## File Operations

- `vi <filename>` – Open file in vi editor
- Press `i` to insert
- Press `Esc` to exit insert mode
- Use `:wq` to save and quit
- `cat <filename>` – Display contents of a file

- `ls -l` – Show file permissions and details
- `history` – Show command history
- `clear` – Clear the terminal screen

```
MINGW64:/c/Users/Admin/Desktop/calculator
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~
$ cd Desktop
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop
$ dir
May16  calculator  example  project
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop
$ cd calculator
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls
calculator_code.py
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls -ah
./ ../ .git/ calculator_code.py
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ pwd
/c/Users/Admin/Desktop/calculator
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ mkdir Cache
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls
Cache/ calculator_code.py
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ vi newfile
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ cat newfile
```

This is a new file i have added  
My name is shreya sherikar.

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ ls -l
total 5
drwxr-xr-x 1 Admin 197121  0 Jun  1 20:10 Cache/
-rw-r--r-- 1 Admin 197121 1268 Feb 27 23:41 calculator_code.py
-rw-r--r-- 1 Admin 197121  61 Jun  1 20:13 newfile
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/calculator (master)
$ history
13 cd calculator
```

100

new

## Git Initialization

- `git init` – Initialize a Git repository

- git status – Show the working tree status
- git add <filename> – Stage a file for commit
- git commit -m "message" – Commit changes with a message
- Configure Git with your email and username

```

MINGW64:/c/Users/Admin/Desktop/labfile

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop
$ cd labfile

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile
$ vi F1

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile
$ git init
Initialized empty Git repository in C:/Users/Admin/Desktop/labfile/.git/

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    F1

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

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git add .

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   F1

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ gti commit -m"First commit"
bash: gti: command not found

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git commit -m"First commit"
[master (root-commit) 637d896] First commit
 1 file changed, 1 insertion(+)
 create mode 100644 F1

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ |

```

## 2. Committing & Viewing History

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git log --oneline
9fe8ebe (HEAD -> master) Second commit
637d896 First commit
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git diff^C
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git diff 637d896 9fe8ebe
```

```
@@ -0,0 +1,3 @@
```

```
+
```

```
+As I said I'll be adding more files.
```

```
+This is the second file I'm adding.
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$
```



### 3.

## Branching & Version Comparison

### 1. Branching:

- \* `git branch [branchname]`: Create a new branch
- \* `git checkout [branchname]`: Switch to a different branch
- \* `git checkout master`: Switch back to the master branch
- \* **Concept**: Any branch and the master branch can have completely different codebases after many commits in their respective branches.
- \* **HEAD**: A special pointer that points to the last commit in the current branch.

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git branch master2

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git checkout master2
Switched to branch 'master2'

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ ls
F1  F2

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ vi F1

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ vi F2

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git add .

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git remote

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git checkout master
M      F1
M      F2
Switched to branch 'master'

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$
```

---

### 2. Comparing Changes:

- \* `git diff`: Show changes between commits, commit and working tree, etc.

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git log --oneline
9fe8ebe (HEAD -> master, master2) Second commit
637d896 First commit
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$
```



## 4.

### Push Local Repository to GitHub (Remote)

#### Linking Local to Remote Repository:

- \* git remote: Helps connect your local repository to a remote repository
- \* git remote add origin "[address of repo GitHub]": Add a new remote repository (e.g., [github.com/kavya4kavya/Repo\\_1](https://github.com/kavya4kavya/Repo_1)). origin is a common variable name but can be anything.
- \* git push -u origin master: Push local master branch to the origin remote. The -u flag sets the upstream. This is used when there's only one branch.
- \* git push -u origin [branchname]: Push a specific local branch to the remote.

```
MINGW64:/c/Users/Admin/Desktop/labfile

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git remote add origin https://github.com/shreysherikar/Labfile

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git remote
origin

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git push -u origin master
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 585 bytes | 97.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/shreysherikar/Labfile
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.

Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ |
```

## 5.

### Induce Conflicts, Open and Close Pull Requests

#### 1. Git Merging & Conflicts:

- \* git merge: Integrate changes from one branch into another.
- \* Conflicts arise during merging when Git cannot automatically reconcile diverging changes.
- \* Use a merge tool to resolve conflicts. cv
- \* git mergetool: Command to launch the configured merge tool.

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git branch
* master
  master2
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master)
$ git checkout master2
M      F1
M      F2
Switched to branch 'master2'
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ ls ah
ls: cannot access 'ah': No such file or directory
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ ls
F1  F2
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git merge
fatal: No remote for the current branch.
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git merge master2
Already up to date.
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git merge master
Already up to date.
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$ git commit -m "Merged two branches"
[master2 76ea9d0] Merged two branches
 2 files changed, 2 insertions(+)
```

```
Admin@DESKTOP-3IU8VC8 MINGW64 ~/Desktop/labfile (master2)
$
```

---

```
MINGW64/c:/Users/kavya/Project_3
ky5hgt4r3ewd5tred
fikumjnyhbgvdf
mvscededdeg

kjfnv kdnkd
kvnkdjnvfk
mk ngjfnbjg

abdefgd
rtiwhdks,m cjnvfk
mertgrtbgfdece

./hello_LOCAL_1027.txt [dos] (12:12 28/05/2025) 2,1 All
./hello_BASE_1027.txt [dos] (12:12 28/05/2025) 2,1 All
./hello_REMOTE_1027.txt [dos] (12:12 28/05/2025) 2,1 All

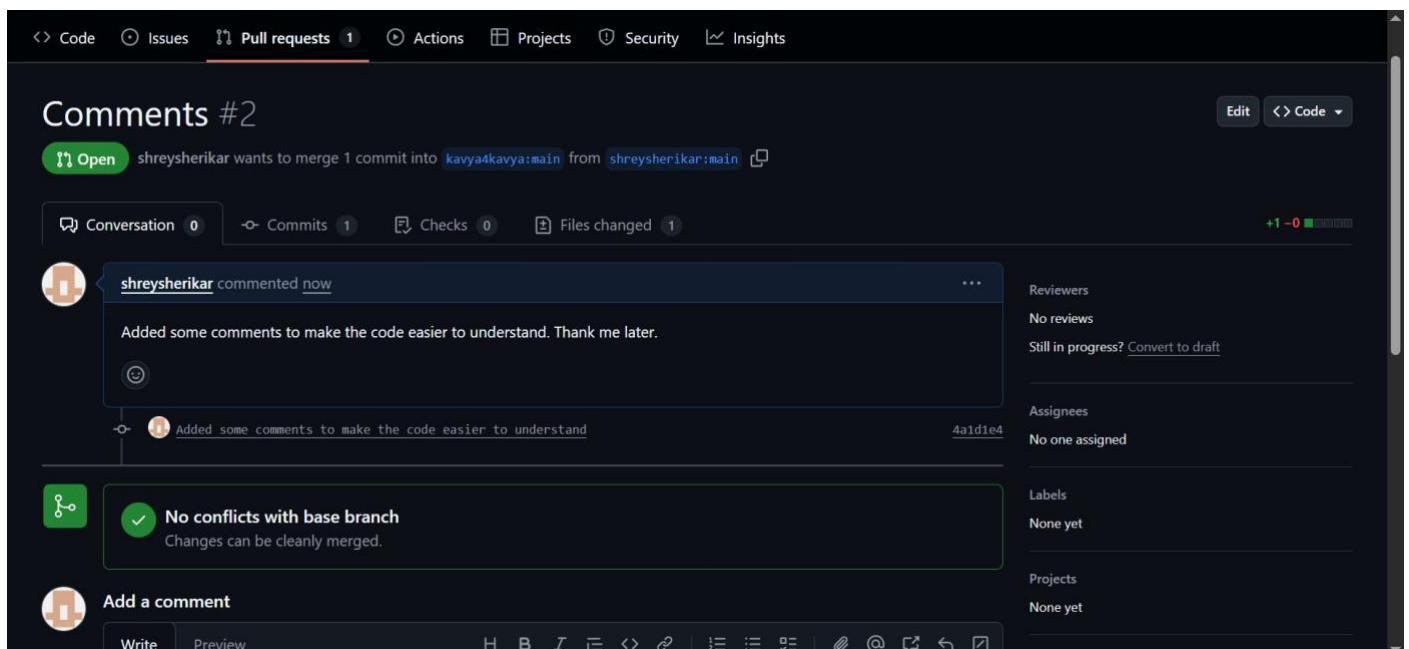
<<<<<< HEAD
ky5hgt4r3ewd5tred
fikumjnyhbgvdf
mvscededdeg
abdefgd
rtiwhdks,m cjnvfk
mertgrtbgfdece
>>>>>> test1

hello.txt [dos] (12:12 28/05/2025)
"hello.txt" [dos] 9L, 137B 2,1 All
```

2. **Gitignore:** \*. gitignore file: Specifies intentionally untracked files that Git should ignore.

\* Files listed in .gitignore will not be tracked by Git and will not be mirrored on GitHub.

3. **Pull Requests:** \* Opening a pull request



## 2. \* Closing a pull request

### Comments #2

Merged

kavya4kavya merged 1 commit into `kavya4kavya:main` from `shreyshekar:main` now

Conversation 0

Commits 1

Checks 0

Files changed 1

+1 -0

**shreyshekar** commented 6 minutes ago

Added some comments to make the code easier to understand. Thank me later.

Added some comments to make the code easier to understand `4a1d1e4`

**kavya4kavya** commented now

Thanks! This really helped

**kavya4kavya** merged commit `c4f1cbb` into `kavya4kavya:main` now

Revert

Reviews

No reviews

Still in progress? [Convert to draft](#)

Assignees

No one assigned

Labels

None yet

Projects

None yet

Milestone

No milestone