

Source Code Lab

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Course: 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
```


□ 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`). `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
kyShgt4r3ewdStred
fikumjnyhbgvdf
mvscwdededeg
kjfnnv kdnkd
kfvnkdjnvfk
mk ngjfnbjg
abcdefgd
rtiwfhdk,s m cjnvmk
mertgrtbgfdcew

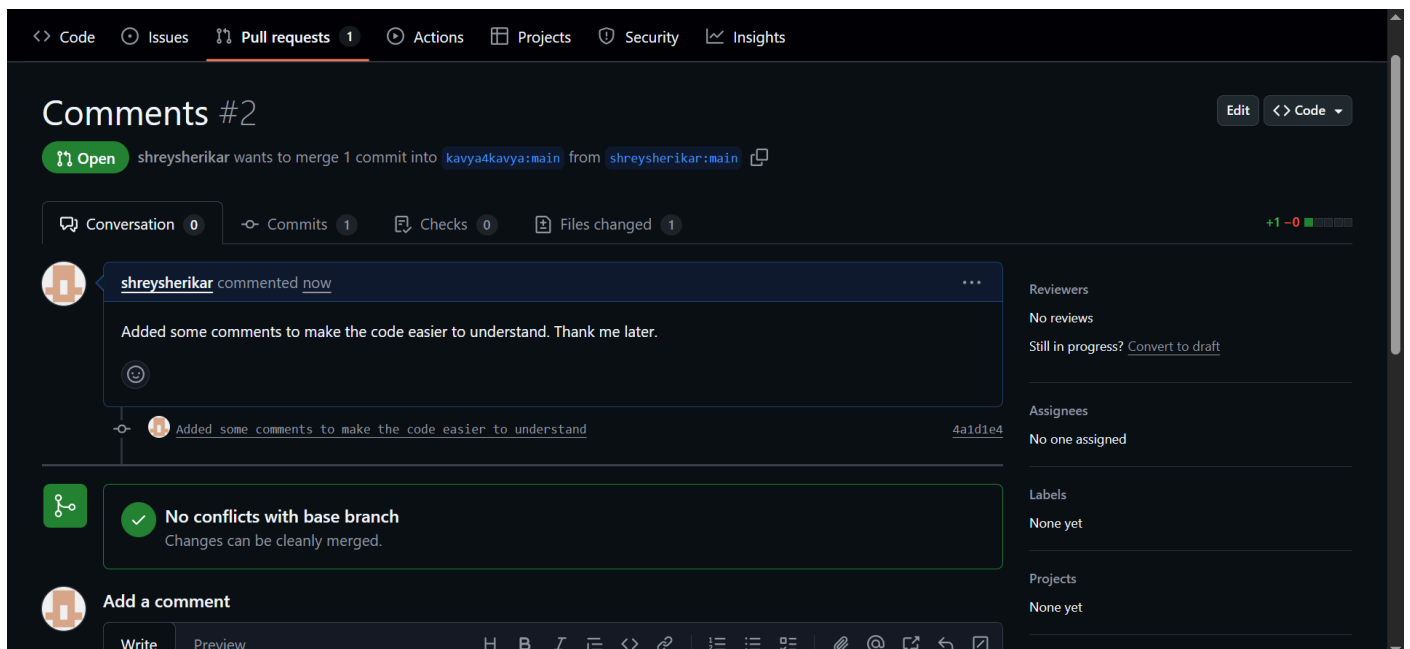
./hello_LOCAL_1027.txt [dos] (12:12 28/05/2025) 2,1 All
<<<<<< HEAD
kyShgt4r3ewdStred
fikumjnyhbgvdf
mvscwdededeg
=====
abcdefgd
rtiwfhdk,s m cjnvmk
mertgrtbgfdcew
>>>>>> test1

hello.txt [dos] (12:12 28/05/2025)
"hello.txt" [dos] 9L, 1378
```

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 `c4f1cba` into `kavya4kavya:main` now

Revert

Reviewers

No reviews

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

Assignees

No one assigned

Labels

None yet

Projects

None yet

Milestone

No milestone