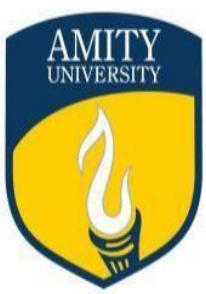

AMITY UNIVERSITY

SOURCE CODE MANAGEMENT

LABORATORY RECORD

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Lab Exercise 1 :

Introduction to Gitbash

Git Bash

- Git Bash is an application for Microsoft Windows that provides a command-line interface to use Git, the version control system.

- It emulates a Bash (Bourne Again Shell) environment, allowing users to run Linux-style commands on Windows.

- It is mainly used by developers to:

1. Execute Git commands (e.g., git init, git commit)
2. Manage code repositories
3. Interact with remote repositories

- **Key Features:**

1. Supports Git version control operations.
2. Provides Unix-style command-line tools (like ssh, scp, ls, etc.).
3. Helps users practice command-line Git workflows.

- **Steps to Install Git Bash:**

1. Go to the official Git website:

- https://git-scm.com

2. Download Git for Windows:

- Click the “Download for Windows” button.
- The .exe file will start downloading.

•

3. Run the Installer:

Double-click the downloaded .exe file.

4. Follow the Setup Wizard:

- Click Next on the welcome screen.
- Choose the default options (recommended for beginners).
- Select the text editor (e.g., Notepad or VS Code).
- Choose “Git from the command line and also from 3rd-party software”.
- Continue clicking Next until you reach Install.

5. Click Install:

- Wait for the installation to complete.

6. Finish Setup:

- Click Finish and leave “Launch Git Bash” checked.

7. Start Using Git Bash:

-
- Git Bash will open in a terminal window.

Basic Git Commands in Git Bash:

1. Git init

Initializes a new Git repository in your folder.

2. Git clone <repo-url>

Copies (clones) a remote repository to your local machine.

3. Git status

Shows the status of files (tracked, modified, staged).

4. Git add <filename>

Adds a specific file to the staging area.

Use git add . to add all files.

-

5. Git commit -m “Your message”

Saves the staged changes with a message.

6. Git push

Uploads your commits to the remote repository (GitHub).

7. Git pull

Downloads changes from the remote repository and merges them.

8. Git remote add origin <repo-url>

Connects your local repo to a GitHub repository.

9. Git log

Shows the commit history.

10. Git branch

Lists all branches.

Use git branch <name> to create a new branch.

11. Git checkout <branch-name>

Switches to a different branch.

12. Git merge <branch-name>

Merges changes from one branch into the current one.

Lab Exercise : 2

Introduction to GitHub

Git Hub.

- GitHub is a web-based platform for hosting and sharing Git repositories.

- It is widely used for collaboration, version control, and open-source development.

- GitHub allows users to:

1. Store code in repositories
2. Track changes using Git
3. Collaborate with others through pull requests and issues
4. Manage projects with built-in tools like GitHub Projects and Actions

- Key Features:

1. Cloud-based hosting for Git repositories
2. Social coding features (followers, stars, forks)
3. Integration with CI/CD, project management, and automation tools
4. Access control and team collaboration

- **Steps to Install GitHub Desktop:**

1. Go to: https://desktop.github.com

2. Click “Download for Windows” (or Mac).

3. Open the downloaded file and run the installer.

4. Follow the setup wizard.

5. After installation, open GitHub Desktop.

6. Sign in with your GitHub account.

7. You can now clone repositories, make commits, and push changes using a user-friendly interface.

Lab Exercise 3 :

Gitbash and GitHub

Git.

Git is a version control system that helps developers track and manage changes to code over time. It allows multiple people to work on a project at the same time without overwriting each other's work.

- **Key Features of Git:**

1. Version Tracking: Keeps a history of changes made to files.
2. Branching: Lets you work on new features or fixes in isolation.
3. Merging: Combines changes from different branches.
4. Collaboration: Enables teams to work together using services like GitHub, GitLab, or Bitbucket.

- **Step-by-Step Workflow :**

Step 1: Initialize Git

```
Supriya N@Supriya MINGW64 ~
$ mkdir folder

Supriya N@Supriya MINGW64 ~
$ cd folder

Supriya N@Supriya MINGW64 ~/folder
$ vi hello.c

Supriya N@Supriya MINGW64 ~/folder
$ git init
Initialized empty Git repository in C:/Users/Supriya N/folder/.git/
```

- Creates a new Git repository in your project folder.
- Git starts tracking changes to files in this folder.

Step 2: Add Files to Staging

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git add .
warning: in the working copy of 'hello.c', LF will be replaced by CRLF the next time Git touches it
```

- Adds all files to the staging area (preparing them to be committed).

- You can also use git add filename to add specific files.

Step 3: Commit Changes

- Records your changes in Git history with a message.

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git commit -m "first commit on master"
[master (root-commit) 9e28f5c] first commit on master
 1 file changed, 67 insertions(+)
 create mode 100644 hello.c
```

- This saves your code locally (not yet on GitHub).

Step 4: Link to GitHub Repository

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git remote add origin https://github.com/supriyaa1812/mygit.git
```

- Connects your local Git project to a remote GitHub repository.

Step 5: Push to GitHub

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git push -u origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 702 bytes | 702.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/supriyaa1812/mygit.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

- Uploads your committed code to GitHub.

- After this, your project appears online in the linked GitHub repo.

Lab Exercise 4 :

File Creation with commit and push command

PART 1: Create the GitHub repository

1. Go to GitHub (https://github.com) and sign in.

2. Click “New repository”.

3. Enter a repository name (e.g., my-repo).

4. Choose Public or Private.

5. Don’t add README, .gitignore, or license here — we will push an existing repo.

6. Click “Create repository”.

7. Copy the HTTPS URL shown (e.g., https://github.com/yourusername/my-repo.git).

This URL is where you will push your code.

PART 2: Using Git Bash

Step 1: Open Git Bash

This is your command line tool for running Git commands.

Step 2: Create a new local folder and navigate into it

```
Supriya N@Supriya MINGW64 ~
$ mkdir folder

Supriya N@Supriya MINGW64 ~
$ cd folder
```

- Mkdir my-repo: makes a new directory (folder) called my-repo.

- Cd my-repo: changes into that folder so your commands affect this directory.

Step 3: Initialize Git in this folder

```
Supriya N@Supriya MINGW64 ~/folder
$ git init
Initialized empty Git repository in C:/Users/Supriya N/folder/.git/
```

- This creates a hidden .git folder that tracks changes to files here.

- Now this folder is a Git repository.

Step 4: Create a file

```
Supriya N@Supriya MINGW64 ~/folder
$ vi hello.c
```

- This writes the text This is a sample file. Into a file named sample.txt.

- You can also create files using any editor.

Step 5: Stage the file

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git add .
warning: in the working copy of 'hello.c', LF will be replaced by CRLF the next time Git touches it
```

- This tells Git to “stage” (prepare) the file sample.txt for committing.

- Staging means you are telling Git what changes to include in the next commit.

Step 6: Commit the staged file

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git commit -m "first commit on master"
[master (root-commit) 9e28f5c] first commit on master
 1 file changed, 67 insertions(+)
 create mode 100644 hello.c
```

- This creates a commit, which is like a snapshot of your project.

- The -m flag adds a message describing the commit (“Add sample.txt”).

- Commits save your work history.

Step 7: Add the remote repository URL

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git remote add origin https://github.com/supriyaa1812/mygit.git
```

- This links your local Git repository to the remote one on GitHub.

- Origin is the default name for your remote repository.

- Replace the URL with your actual GitHub repo URL.

Step 8: Push your commit to GitHub

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git branch
* master

Supriya N@Supriya MINGW64 ~/folder (master)
$ git branch test
```

- Git branch -M main: renames your branch to main (modern default branch name).

- Git push -u origin main: uploads your local commits to GitHub.

- The -u flag sets the remote origin/main as the default upstream branch.

PART 3: Verify

- Go to your GitHub repository page in a browser.
- You should see sample.txt uploaded there.

Lab Exercise : 5

Branches Creation

Branches in Git allow you to work on different features, bug fixes, or experiments without affecting the main codebase. Here's how to create and manage branches using Git Bash:

---

1. **View Current Branches**

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git branch
* master
```

- Shows all local branches.
- The currently active branch is highlighted with *.

---

2. Create a New Branch

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git branch test

Supriya N@Supriya MINGW64 ~/folder (master)
```

- This creates a new branch called new-feature, but does not switch to it.

---

3. Switch to the New Branch

- Changes your working directory to the new-feature branch.

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git checkout test
Switched to branch 'test'

Supriya N@Supriya MINGW64 ~/folder (test)
```

OR **create and switch in one step:**

Git checkout -b test

---

4. Make Changes and Commit (on the new branch)

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git checkout test
Switched to branch 'test'

Supriya N@Supriya MINGW64 ~/folder (test)
$ vi hello.cpp

Supriya N@Supriya MINGW64 ~/folder (test)
$ git add .
warning: in the working copy of 'hello.cpp', LF will be replaced by CRLF the next time Git touches it

Supriya N@Supriya MINGW64 ~/folder (test)
$ git commit -m "first commit on test"
[test 08827e3] first commit on test
 1 file changed, 60 insertions(+)
 create mode 100644 hello.cpp
```

- Git add feature.txt

- Git commit -m “Add feature.txt in new-feature branch”

---

5. Push the New Branch to GitHub

```
Supriya N@Supriya MINGW64 ~/folder (test)
$ git push -u origin test
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 16 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 769 bytes | 769.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'test' on GitHub by visiting:
remote:      https://github.com/supriyaa1812/mygit/pull/new/test
remote:
To https://github.com/supriyaa1812/mygit.git
 * [new branch]      test -> test
branch 'test' set up to track 'origin/test'.
```

- The -u flag sets the remote new-feature branch as the default upstream for this branch.

---

6. Switch Back to Main Branch

```
Supriya N@Supriya MINGW64 ~/folder (test)
$ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
```

---

8. Merge New Branch into Main (Optional)

- First, make sure you're on the master branch:

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git merge test
Updating 9e28f5c..08827e3
Fast-forward
 hello.cpp | 60 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 1 file changed, 60 insertions(+)
 create mode 100644 hello.cpp
```

- This merges the new-feature branch into master.

Lab Exercise : 6

Git commit and Merge (Merge Request)

STEP 1: Create a Local Git Repository (if not already done)

```
Supriya N@Supriya MINGW64 ~
$ mkdir folder

Supriya N@Supriya MINGW64 ~
$ cd folder

Supriya N@Supriya MINGW64 ~/folder
$ vi hello.c

Supriya N@Supriya MINGW64 ~/folder
$ git init
Initialized empty Git repository in C:/Users/Supriya N/folder/.git/
```

STEP 2: Add a Remote GitHub Repository

- Create a new repo on GitHub, then connect:

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git remote add origin https://github.com/supriyaa1812/mygit.git
```

STEP 3: Create and Switch to a New Branch

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git branch
* master

Supriya N@Supriya MINGW64 ~/folder (master)
$ git branch test

Supriya N@Supriya MINGW64 ~/folder (master)
$ git checkout test
Switched to branch 'test'

Supriya N@Supriya MINGW64 ~/folder (test)
```

- This is your feature branch — where you make changes.

STEP 4: Add or Modify Files

Example:

```
Supriya N@Supriya MINGW64 ~/folder (test)
$ vi hello.cpp
```

STEP 5: Stage and Commit Changes

```
Supriya N@Supriya MINGW64 ~/folder (test)
$ git add .
warning: in the working copy of 'hello.cpp', LF will be replaced by CRLF the next time Git touches it

Supriya N@Supriya MINGW64 ~/folder (test)
$ git commit -m "first commit on test"
[test 08827e3] first commit on test
 1 file changed, 60 insertions(+)
 create mode 100644 hello.cpp
```

STEP 6: Push Feature Branch to GitHub

```
Supriya N@Supriya MINGW64 ~/folder (test)
$ git push -u origin test
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 16 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 769 bytes | 769.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'test' on GitHub by visiting:
remote:      https://github.com/supriyaa1812/mygit/pull/new/test
remote:
To https://github.com/supriyaa1812/mygit.git
 * [new branch]      test -> test
branch 'test' set up to track 'origin/test'.
```

- This uploads your branch to GitHub.

STEP 7: Create a Merge Request (Pull Request) on GitHub

1. Go to your repo on GitHub

2. GitHub will show a “Compare & pull request” button — click it

(or go to the Pull Requests tab > click New pull request)

3. Set:

- Base branch: main (target)
- Compare branch: feature-1 (your work)

4. Add a title and description

5. Click “Create pull request”

STEP 8: Review and Merge

- You or a teammate reviews the code
- If everything looks good, click “Merge pull request”
- Confirm the merge

STEP 9: Delete the Feature Branch (Optional)

- GitHub will offer an option to delete the branch. Or do it locally:

```
Git branch -d feature-1
```

STEP 10: Update Local Main Branch

```
Supriya N@Supriya MINGW64 ~/folder (master)
$ git checkout master
Already on 'master'
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

Supriya N@Supriya MINGW64 ~/folder (master)
$ git pull origin master
From https://github.com/supriyaa1812/mygit
 * branch            master     -> FETCH_HEAD
Already up to date.
```

Lab Exercise 7 :

Open and Close Pull Request

STEP-BY-STEP WORKFLOW :

1. Initialize Local Repo (Git Bash)

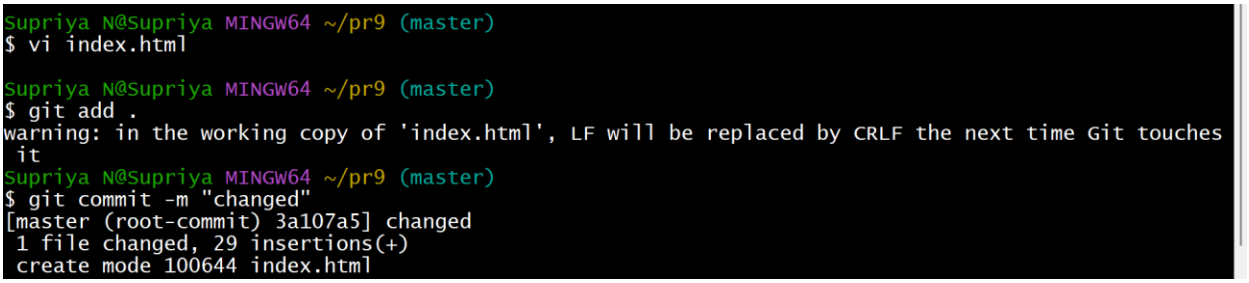
```
Supriya N@Supriya MINGW64 ~
$ mkdir pr9

Supriya N@Supriya MINGW64 ~
$ cd pr9

Supriya N@Supriya MINGW64 ~/pr9
$ git init
Initialized empty Git repository in C:/Users/Supriya N/pr9/.git/
```

---

2. Create a file ,Commit it



3.connect to GitHub Repository

On GitHub:

Create a new repo: my-project Back in Git Bash:

```
Supriya N@Supriya MINGW64 ~/pr9 (master)
$ git remote add origin https://github.com/supriyaa1812/my-git-3.git
```

---

4. Push to Main Branch

```
Supriya N@Supriya MINGW64 ~/pr9 (master)
$ git push -u origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 537 bytes | 537.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'master' on GitHub by visiting:
remote:      https://github.com/supriyaa1812/my-git-3/pull/new/master
remote:
To https://github.com/supriyaa1812/my-git-3.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

---

5. Create a Feature Branch and Switch to It

```
Supriya N@Supriya MINGW64 ~/pr9 (master)
$ git checkout -b test
Switched to a new branch 'test'

Supriya N@Supriya MINGW64 ~/pr9 (test)
```

Git checkout -b add-about-page

---

6. Add Another File and Commit

```
Supriya N@Supriya MINGW64 ~/pr9 (test)
$ vi index.html2

Supriya N@Supriya MINGW64 ~/pr9 (test)
$ git add .
warning: in the working copy of 'index.html', LF will be replaced by CRLF the next time Git touches
 it
warning: in the working copy of 'index.html2', LF will be replaced by CRLF the next time Git touche
s it

Supriya N@Supriya MINGW64 ~/pr9 (test)
$ git commit -m "html program"
[test d2ff7e2] html program
 2 files changed, 27 insertions(+)
 create mode 100644 hello.cpp
 create mode 100644 index.html2
```

---

7. Push the Feature Branch to GitHub Git push -u origin add-about-page

---

8. Open a Pull Request (on GitHub)

1. Go to your repo on GitHub.
2. GitHub will show “Compare & pull request” button — click it.

3. Set:

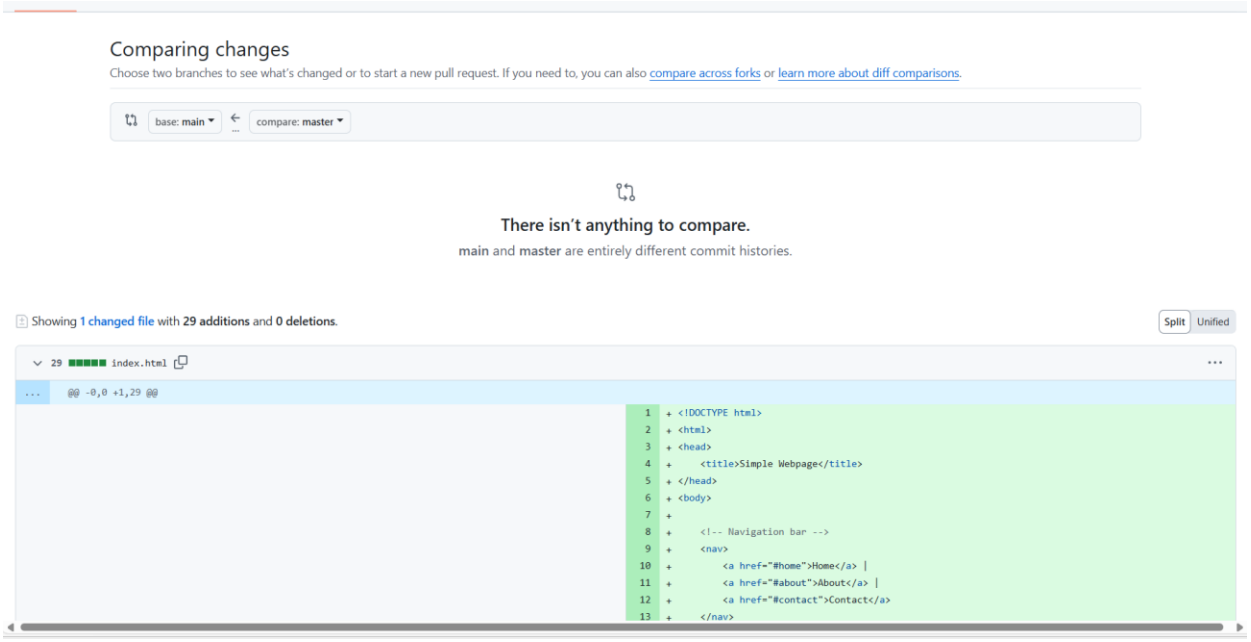
- Base: main
- Compare: add-about-page

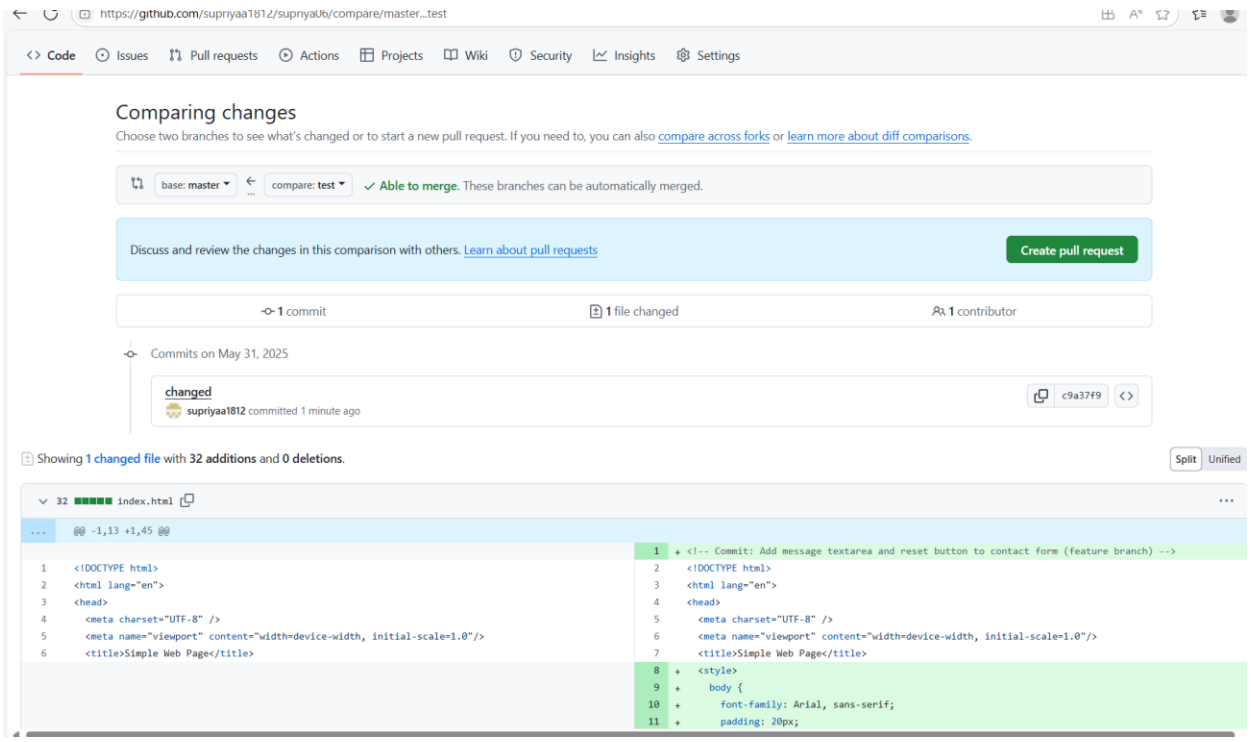
4. Add:

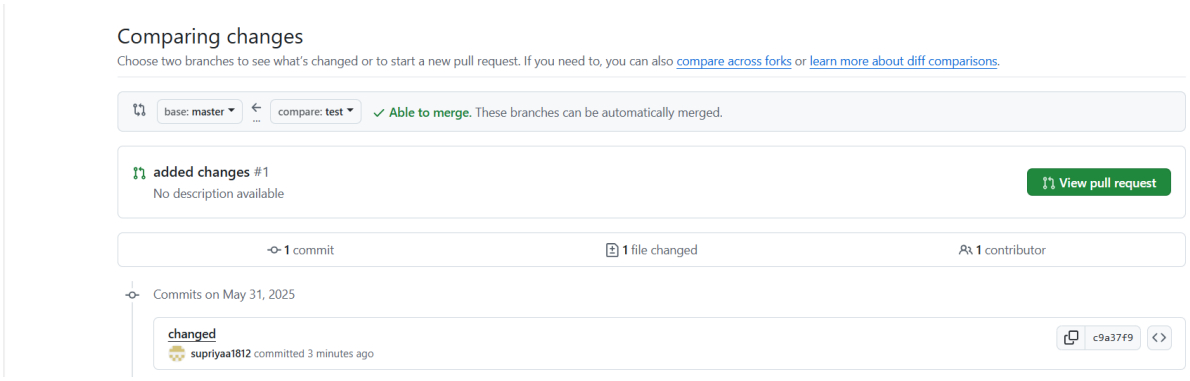
- Title: Add About Page
- Description: This PR adds about.html with basic content

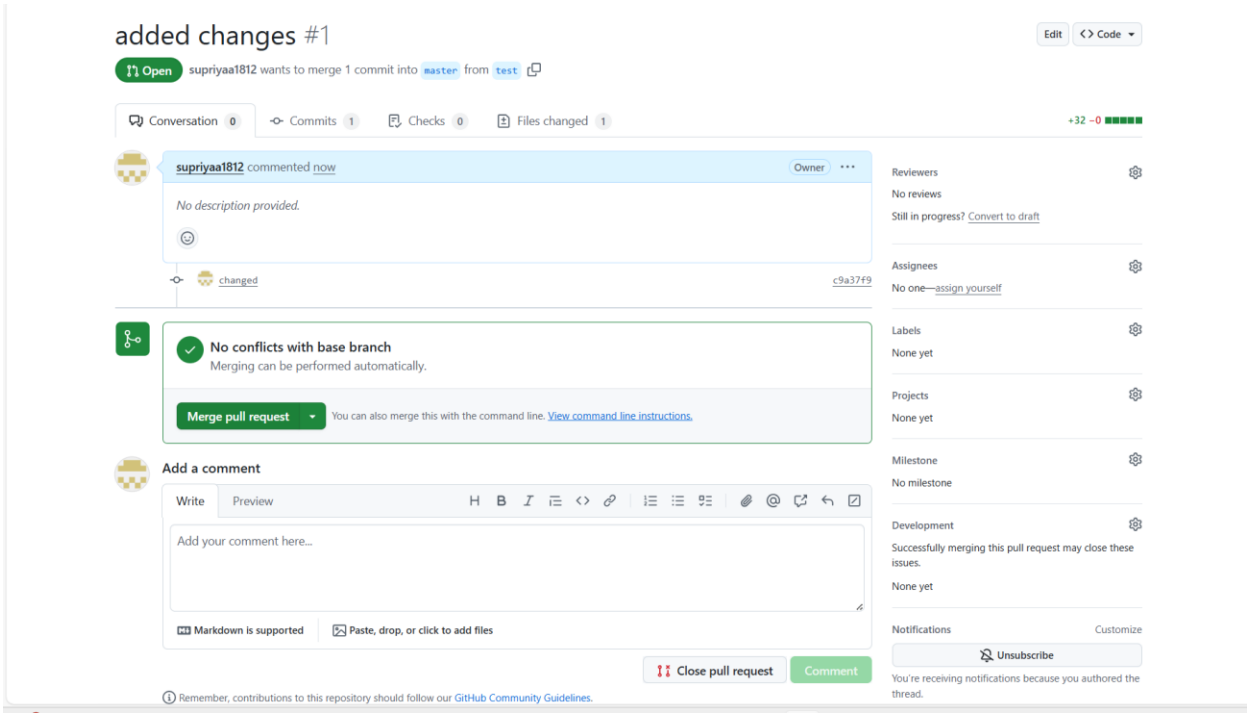
5. Click “Create pull request”

- Pull request is now open!









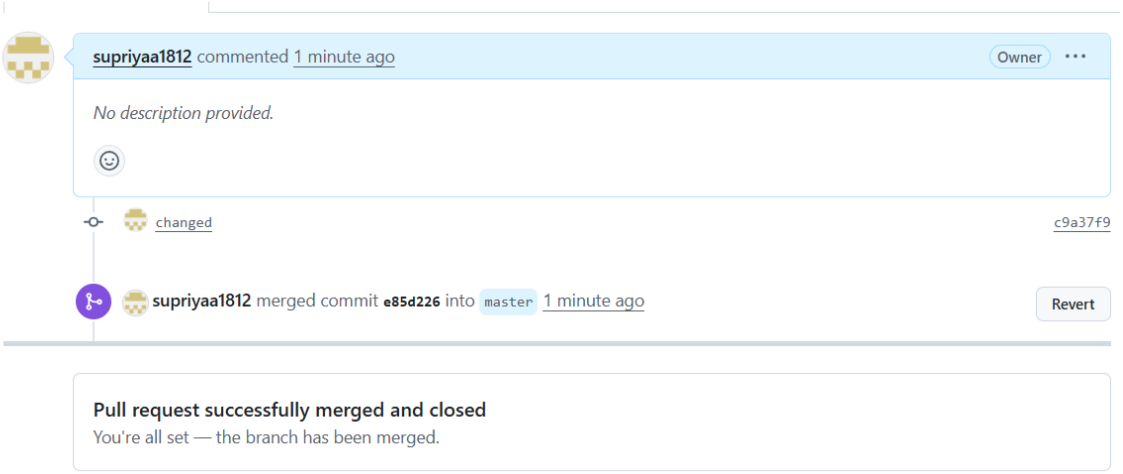
---

9. Close a Pull Request (Without Merging)

1. Scroll to the bottom of the pull request page.
2. Click “Close pull request”

3. (Optional) Add a comment like “Work in progress” or “Not needed”
4. Click “Close”

- Pull request is now closed and not merged.



---

10. Reopen (Optional)

- Go to the closed pull request
- Click “Reopen pull request”