

Name : Parimal Shrikant Kolhe
Roll No : PB_01
Sub : FSD

Sem : 5
Panel : B
Batch : B1

FSD Laboratory 01

Problem Statement: Create a public git repository for your team and submit the repo URL as a solution to this assignment, Learn Git concept of Local and Remote Repository, Push, Pull, Merge and Branch.

Aim : Version control with Git.

Objectives:

1. Introduce the concepts and software behind version control, using the example of Git.
2. Understand the use of 'version control' in the context of a coding project.
3. Learn Git version control with Clone, commit to, and push, pull from a git repository.

Theory:

What is Git? What is Version Control?

- Git is a distributed version control system that allows you to track changes in your files and collaborate with others efficiently.
- Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later.

How to use Git for version controlling?

1. Initializing a Git Repository:
 - Use git init to create a new Git repository in a directory.
2. Cloning a Repository:
 - Use git clone <repository_url> to create a local copy of a remote Git repository.
3. Adding and Committing Changes:
 - Use git add <file> to stage changes for commit.
 - Use git commit -m "Commit message" to commit staged changes with a descriptive message.
4. Pushing and Pulling:
 - Use git push to upload your local commits to a remote repository.
 - Use git pull to fetch changes from a remote repository and merge them into your local branch.

5. Checking Status and History:

- Use git status to see the status of your working directory.
- Use git log to view the commit history of the current branch.

FAQ :

1. What is branching in Git?

Branching in Git is the practice of creating divergent lines of development. It allows you to work on new features or bug fixes without affecting the main codebase.

2. How to create and merge branches in Git? Write the commands used.

1) Creating a Branch:

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

Use git checkout -b <branch_name> to create and switch to a new branch in one step.

2) Switching Between Branches:

Use git checkout <branch_name> to switch to an existing branch.

3) Merging Branches:

To merge changes from one branch into another, use git merge <branch_name>.

For example, if you're on the target branch, use git merge feature_branch to merge changes from feature_branch into the target branch.

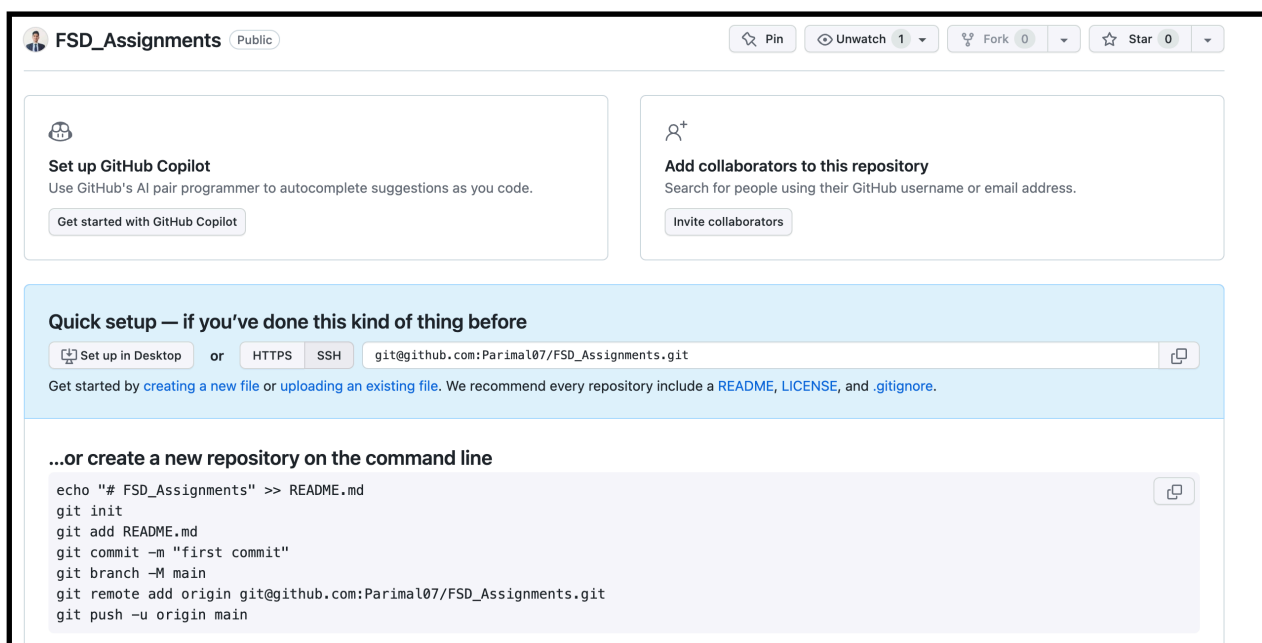
4) Resolving Conflicts:

If there are conflicts during a merge, Git will pause the process and allow you to manually resolve conflicts in the affected files.

After resolving conflicts, use git add <resolved_file> to stage the changes, then git commit to complete the merge.

Output :

Github Link - https://github.com/Parimal07/FSD_Assignments



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• (base) parimal@Parimals-MacBook-Air FSD % git init
Reinitialized existing Git repository in /Users/parimal/Documents/College/FSD/.git/
• (base) parimal@Parimals-MacBook-Air FSD % git add .
• (base) parimal@Parimals-MacBook-Air FSD % git commit -m "updated lab4"
[main 8f3a612] updated lab4
 8 files changed, 140 insertions(+), 6 deletions(-)
 create mode 100644 Lab4/dislay_data.html
 create mode 100644 Lab4/fetch_data.php
 create mode 100644 Lab4/responses.html
⊗ (base) parimal@Parimals-MacBook-Air FSD % git push origin main
To github.com:Parimal07/FSD_Assignments.git
 ! [rejected]        main -> main (fetch first)
error: failed to push some refs to 'github.com:Parimal07/FSD_Assignments.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

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⊗ (base) parimal@Parimals-MacBook-Air FSD % git push origin main
To github.com:Parimal07/FSD_Assignments.git
 ! [rejected]        main -> main (fetch first)
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hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
⊗ (base) parimal@Parimals-MacBook-Air FSD % git pull origin main
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 706 bytes | 176.00 KiB/s, done.
From github.com:Parimal07/FSD_Assignments
 * branch      main      -> FETCH_HEAD
    73b85d7..dbf244e  main      -> origin/main
hint: You have divergent branches and need to specify how to reconcile them.
hint: You can do so by running one of the following commands sometime before
hint: your next pull:
hint:
hint:   git config pull.rebase false  # merge
hint:   git config pull.rebase true   # rebase
hint:   git config pull.ff only       # fast-forward only
hint:
hint: You can replace "git config" with "git config --global" to set a default
hint: preference for all repositories. You can also pass --rebase, --no-rebase,
hint: or --ff-only on the command line to override the configured default per
hint: invocation.
fatal: Need to specify how to reconcile divergent branches.
• (base) parimal@Parimals-MacBook-Air FSD % git pull origin main --rebase
From github.com:Parimal07/FSD_Assignments
 * branch      main      -> FETCH_HEAD
Successfully rebased and updated refs/heads/main.

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• (base) parimal@Parimals-MacBook-Air FSD % git add .
⊗ (base) parimal@Parimals-MacBook-Air FSD % git push origin main
fatal: 'origin' does not appear to be a git repository
fatal: Could not read from remote repository.

Please make sure you have the correct access rights
and the repository exists.
• (base) parimal@Parimals-MacBook-Air FSD % git push origin main
Enumerating objects: 18, done.
Counting objects: 100% (18/18), done.
Delta compression using up to 8 threads
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 2.20 KiB | 2.20 MiB/s, done.
Total 11 (delta 7), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (7/7), completed with 6 local objects.
To github.com:Parimal07/FSD_Assignments.git
 dbf244e..050c1b7  main -> main
• (base) parimal@Parimals-MacBook-Air FSD % git checkout -b testing
Switched to a new branch 'testing'
• (base) parimal@Parimals-MacBook-Air FSD % git add .
• (base) parimal@Parimals-MacBook-Air FSD % git commit -m "deleted displaydata file"
[testing 1e85110] deleted displaydata file
 1 file changed, 25 deletions(-)
 delete mode 100644 Lab4/dislay_data.html

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• (base) parimal@Parimals-MacBook-Air FSD % git push origin testing
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 297 bytes | 297.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
remote:
remote: Create a pull request for 'testing' on GitHub by visiting:
remote:   https://github.com/Parimal07/FSD_Assignments/pull/new/testing
remote:
To github.com:Parimal07/FSD_Assignments.git
 * [new branch]      testing -> testing
• (base) parimal@Parimals-MacBook-Air FSD % git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
• (base) parimal@Parimals-MacBook-Air FSD % git merge testing
Updating 050c1b7..1e85110
Fast-forward
 Lab4/dislay_data.html | 25 -----
 1 file changed, 25 deletions(-)
 delete mode 100644 Lab4/dislay_data.html
```