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Experiment 3

AIM: To Perform various GIT operations on local and Remote repositories.

THEORY:

1. Git Local Repository Operations

A local Git repository exists on your computer and allows you to manage changes to a project independently of any remote server.

a. Initialize a Local Repository

git init

This creates a new Git repository in the current directory.

b. Checking Repository Status

git status

Shows the current state of the working directory and staging area.

c. Adding Files to Staging Area

```
git add <filename>        # Adds a specific file
git add .                 # Adds all files in the directory
```

Prepares files for commit by moving them to the staging area.

d. Committing Changes

git commit -m "Commit message"

Saves a snapshot of the staged changes to the local repository.

e. Viewing Commit History

git log

Displays a list of all the commits made in the repository.

f. Creating and Switching Branches

git branch <branch-name> # Create a new branch
git checkout <branch-name> # Switch to the branch
git switch <branch-name> # Alternative to checkout for switching

g. Merging Branches

git checkout main
git merge <branch-name>

Combines changes from another branch into the current branch.

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2. Git Remote Repository Operations

A remote Git repository is hosted on a server like GitHub, GitLab, or Bitbucket. It allows collaboration and backup of your code.

a. Connecting to a Remote Repository

git remote add origin https://github.com/user/repo.git

Links the local repository to a remote one.

b. Pushing Changes to Remote

git push origin main # Push changes from local main to remote main
git push -u origin main # Sets upstream to track remote branch

c. Pulling Changes from Remote

git pull origin main

Fetches and merges changes from the remote repository into your local branch.

d. Cloning a Remote Repository

git clone https://github.com/user/repo.git

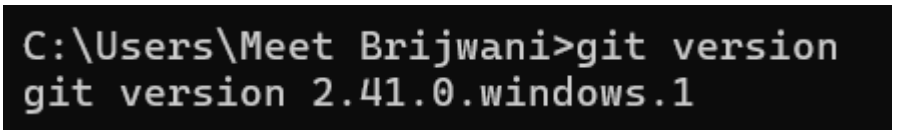
Creates a local copy of the remote repository.

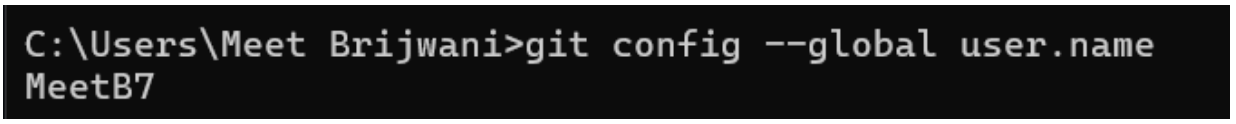
e. Fetching Updates Without Merging

git fetch origin

Downloads commits, files, and refs from a remote repository without merging them automatically.

SCREENSHOTS:





```
C:\Users\Meet Brijwani>git status
warning: could not open directory 'Application Data/': Permission denied
warning: could not open directory 'Cookies/': Permission denied
warning: could not open directory 'Local Settings/': Permission denied
warning: could not open directory 'My Documents/': Permission denied
warning: could not open directory 'NetHood/': Permission denied
warning: could not open directory 'PrintHood/': Permission denied
warning: could not open directory 'Recent/': Permission denied
warning: could not open directory 'SendTo/': Permission denied
warning: could not open directory 'Start Menu/': Permission denied
warning: could not open directory 'Templates/': Permission denied
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .bash_history
        .cache/
        .config/
        .gitconfig
```

```
C:\Users\Meet Brijwani>git add .
```

```
C:\Users\Meet Brijwani>git commit -m "First commit"
```

CONCLUSION: Hence, we have performed various GIT operations on local and Remote repositories.