**3.GIT-HOL**

**GIT Branching and Merging**

In software development, **branching and merging** are essential for managing code changes efficiently. Branches allow developers to work on features or fixes in isolation, while merging brings these changes back into the main project. GitLab simplifies this process through branch and merge request features, enabling smooth collaboration in teams.

**Objectives:**

* Understand **branching and merging** concepts in Git.
* Learn to **create a branch request** in GitLab.
* Learn to **create a merge request** in GitLab.
* Practice creating a branch, making changes, and **merging it with the master branch**.

**Requirements:**

* Setting up Git environment with P4Merge tool for Windows
* A GitHub account

**Part 1:** Branching

1. Create a new branch “GitNewBranch”
2. git checkout -b GitNewBranch
3. List all local and remote branches
4. git branch -a
5. Observe the \* mark which denotes the current active branch.
6. Switch to the newly created branch
7. git checkout GitNewBranch
8. Add files with content
9. echo"This is a new file for GitNewBranch"> newfile.txt  
   git add newfile.txt
10. Commit the changes
11. git commit -m"Added newfile.txt in GitNewBranch"
12. Check the status
13. git status

**Part 2**: Merging

1. Switch back to master
2. git checkout master
3. List differences between trunk (master) and branch
4. git diff GitNewBranch
5. List visual differences using P4Merge tool
6. git mergetool
7. Ensure P4Merge is configured as the default mergetool.
8. Merge the source branch into master
9. git merge GitNewBranch
10. View log after merging
11. git log --oneline--graph--decorate
12. Delete the merged branch
13. git branch -d GitNewBranch
14. git status

**Part 3:** Creating Branch and Merge Requests in GitLab

1. Creating a Branch Request
2. Navigate to your GitLab repository.
3. Go to **Repository > Branches**.
4. Click **New branch**.
5. Provide branch name (e.g., GitNewBranch) and source branch (master).
6. Click **Create branch**.
7. Creating a Merge Request
8. After pushing your branch, go to **Merge Requests**.
9. Click **New Merge Request**.
10. Select source branch (GitNewBranch) and target branch (master).
11. Add a title and description for your changes.
12. Click **Submit Merge Request**.

**Notes:**

1. Always sync (git pull) before creating a new branch.
2. Use clear commit messages for traceability.
3. Ensure all conflicts are resolved before merging.

**Output:**



