Exercise – 3

**Objectives**

* Explain **branching** and **merging** in Git
* Explain how to create a **branch request** in GitLab
* Explain how to create a **merge request** in GitLab

**In this lab, we will:**

* Create a Git branch, make changes, and merge it into the master (trunk) branch

**Prerequisites**

To complete this hands-on lab, the following setup is required:

* Git environment installed and configured
* **P4Merge** tool installed and configured for visual merge and diff
* A local Git repository and a remote repository (e.g., in GitLab)

**Estimated Time:** 30 minutes

**Branching in Git**

1. **Create a New Branch**

git checkout -b GitNewBranch

This creates and switches to a new branch named GitNewBranch.

1. **List All Branches**

git branch -a

* + The branch with the \* symbol is the current branch.
  + This will show both local and remote branches.

1. **Make Changes in the New Branch**

echo "This is a test file in new branch" > branchFile.txt

1. **Add and Commit the File**

git add branchFile.txt

git commit -m "Added branchFile.txt in GitNewBranch"

1. **Check Status**

git status

**Merging in Git**

1. **Switch Back to Master**

git checkout master

1. **Show CLI Differences Between Branches**

git diff master..GitNewBranch

* + This displays changes made in GitNewBranch compared to master.

1. **Show Visual Differences Using P4Merge**

git difftool master GitNewBranch

* + This will launch the **P4Merge** tool to compare branches visually.

1. **Merge the Branch into Master**

git merge GitNewBranch

1. **View Merge Log**

git log --oneline --graph --decorate

* + This will show a graphical view of commits and merged branches.

1. **Delete the Branch After Merge**

git branch -d GitNewBranch

1. **Check Final Git Status**

git status

**Creating a Branch Request and Merge Request in GitLab**

**Branch Request**

1. Login to your GitLab repository.
2. Navigate to **Repository > Branches**.
3. Click on **New Branch**, name it (e.g., GitNewBranch), and select the base branch (master).
4. Click **Create Branch**.

**Merge Request**

1. After pushing your local branch to GitLab:

git push origin GitNewBranch

1. Go to **Merge Requests** in GitLab.
2. Click on **New Merge Request**.
3. Select source branch (GitNewBranch) and target branch (master).
4. Provide title, description, and submit the merge request.