# Git-HOL-Solutions3

## Objective

Understand branching and merging in Git, create branch requests in GitLab, and perform merge requests.

## Prerequisites

1. Git installed and configured (username, email, and preferred editor).  
2. P4Merge installed and configured as the Git merge tool (Windows example):  
 git config --global merge.tool p4merge  
 git config --global mergetool.p4merge.path "C:/Program Files/Perforce/p4merge.exe"  
3. Remote repository ready (GitHub or GitLab).

## Step 1: Branching

# Create a new branch:  
git branch GitNewBranch  
  
# List all local and remote branches:  
git branch -a  
  
# Switch to the new branch:  
git checkout GitNewBranch  
  
# Add a file and make changes:  
echo "Content for new branch" > branchfile.txt  
  
# Stage and commit the file:  
git add branchfile.txt  
git commit -m "Add branchfile.txt in GitNewBranch"  
  
# Check branch status:  
git status

## Step 2: Merging

# Switch back to master branch:  
git checkout master  
  
# View differences between master and GitNewBranch in CLI:  
git diff GitNewBranch  
  
# View visual differences with P4Merge:  
git mergetool  
  
# Merge GitNewBranch into master:  
git merge GitNewBranch  
  
# View merge history graph:  
git log --oneline --graph --decorate  
  
# Delete the branch after merging:  
git branch -d GitNewBranch  
  
# Check repository status:  
git status

## Step 3: Creating a Branch Request in GitLab

1. Push the branch to remote:  
 git push origin GitNewBranch  
  
2. Go to GitLab repository in browser.  
3. Click 'Create merge request' for the pushed branch.  
4. Fill in title, description, reviewers, and submit.

## Step 4: Creating a Merge Request in GitLab

1. Review changes in the merge request.  
2. Resolve conflicts if shown by GitLab.  
3. Once approved, click 'Merge'.  
4. Verify branch is merged into master and optionally delete branch from remote.

## Verification Checklist

✓ Branch created and visible in git branch -a output  
✓ Changes committed to branch  
✓ Differences reviewed (CLI and P4Merge)  
✓ Merge completed and logged in history  
✓ Branch deleted locally and/or remotely