Objectives

- Explain branching and merging
- Explain about creating a branch request in GitLab
- Explain about creating a merge request in GitLab

In this hands-on lab, you will learn how to:

- Construct a branch, do some changes in the branch, and merge it with master (or trunk)

Branching:

1. Create a new branch **"GitNewBranch".**

```
Already up to date.

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (main)
$ git branch NewGitBranch
```

2. List all the local and remote branches available in the current trunk. Observe the "*" mark which denote the current pointing branch.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (NewGitBranch)
$ git branch -a
* NewGitBranch
  main
  master
  remotes/origin/HEAD -> origin/main
  remotes/origin/main
  remotes/origin/master
```

3. Switch to the newly created branch. Add some files to it with some contents.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (main)
$ git checkout NewGitBranch
Switched to branch 'NewGitBranch'

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (NewGitBranch)
$ git status
On branch NewGitBranch
nothing to commit, working tree clean

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (NewGitBranch)
$ echo "This is a file inside NewGitBranch" >> NewFile.txt
```

4. Commit the changes to the branch.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (NewGitBranch)
$ git commit -m "NewFile.txt added"
[NewGitBranch 7bcfb69] NewFile.txt added
 1 file changed, 1 insertion(+)
 create mode 100644 NewFile.txt
```

5. Check the status with **"git status"** command.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (NewGitBranch)
$ git status
On branch NewGitBranch
nothing to commit, working tree clean
```

Merging:

1. Switch to the master

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (NewGitBranch)
$ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
```

2. List out all the differences between trunk and branch. These provide the differences in command line interface.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$ git diff master NewGitBranch
diff --git a/.gitignore b/.gitignore
deleted file mode 100644
index 4a74afe..0000000
--- a/.gitignore
+++ /dev/null
@@ -1,2 +0,0 @@
-*.log
-log/
\ No newline at end of file
diff --git a/NewFile.txt b/NewFile.txt
new file mode 100644
index 0000000..9e43915
--- /dev/null
+++ b/NewFile.txt
@@ -0,0 +1 @@
+This is a file inside NewGitBranch
diff --git a/welcome.txt b/welcome.txt
deleted file mode 100644
index 166ac6c..0000000
--- a/welcome.txt
+++ /dev/null
@@ -1,2 +0,0 @@
-Welcome to the Version Control
-Welcome to the Version Control

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$ |
```

3. List out all the visual differences between master and branch using **P4Merge tool**.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$ git difftool master NewGitBranch

Viewing (1/3): '.gitignore'
Launch 'p4merge' [Y/n]? Y

Viewing (2/3): 'NewFile.txt'
Launch 'p4merge' [Y/n]? Y

Viewing (3/3): 'welcome.txt'
Launch 'p4merge' [Y/n]? Y
```

4. Merge the source branch to the trunk.

```
create mode 100644 NewFile.txt

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$ git merge NewGitBranch
Auto-merging NewFile.txt
Merge made by the 'ort' strategy.
 NewFile.txt | 1 +
 1 file changed, 1 insertion(+)

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$
```

5. Observe the logging after merging using **"git log –oneline –graph –decorate"**

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$ git log --oneline --graph --decorate
*   6a35c44 (HEAD -> master, origin/master) Merge branch 'NewGitBranch' This is Important
|\
| * 7bcfb69 (NewGitBranch) NewFile.txt added
* | 2ffbd69 added NewFile
* | dea6014 Added gitignore file
* | 0ce5919 Added welcome.txt
|/
* 0a9ca8c (origin/main, origin/HEAD, main) Initial commit

SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (master)
$
```

6. Delete the branch after merging with the trunk and observe the git status.

```
SUBHUNDU@DESKTOP-GRPMM05 MINGW64 ~/OneDrive/Desktop/Gitproject (main)
$ git branch -d master
warning: deleting branch 'master' that has been merged to
         'refs/remotes/origin/master', but not yet merged to HEAD
Deleted branch master (was 6a35c44).
```