Lab Exercise 3- Working with Git Rebase

Lab Exercise: Git Rebase

This exercise demonstrates the use of git rebase in a scenario where no conflicts occur.

Objective

1. Learn how to rebase branches when there are no conflicting changes.

2. Understand the clean, linear history created by git rebase.

Prerequisites

1. Install Git on your system.

2. Initialize a Git repository:

```
git init git-rebase-lab

cd git-rebase-lab
```

```
Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories
$ git init git-rebase-lab && cd git-rebase-lab
Initialized empty Git repository in D:/Repositories/git-rebase-lab/.git/
```

Step-by-Step Instructions

1. Set Up the Repository

1. Create the main branch and make the initial commit:

```
echo "Line 1 from main branch" > file.txt

git add file.txt
```

git commit -m "Initial commit: Add Line 1 from main branch"

2. Create a new branch feature-branch:

```
git checkout -b feature-branch
```

3. Add a new line to file.txt in feature-branch:

```
echo "Line 2 from feature branch" >> file.txt

git add file.txt

git commit -m "Add Line 2 from feature branch"
```

4. Switch back to the main branch and add another line:

```
git checkout main

echo "Line 3 from main branch" >> file.txt

git add file.txt

git commit -m "Add Line 3 from main branch"
```

```
Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (main)
$ echo "Line 1 from main branch" > file.txt && git add file.txt
warning: in the working copy of 'file.txt', LF will be replaced by CRLF the next time Git touches it

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (main)
$ git commit -m "Initial commit: Add Line 1 from main branch"
[main (root-commit) c1f7349] Initial commit: Add Line 1 from main branch
 1 file changed, 1 insertion(+)
 create mode 100644 file.txt

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (main)
$ git checkout -b feature-branch
Switched to a new branch 'feature-branch'

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ echo "Line 2 from feature branch" >> file.txt && git add file.txt && git commit -m "Add Line 2 from
feature branch"
warning: in the working copy of 'file.txt', LF will be replaced by CRLF the next time Git touches it
[feature-branch 0d1c011] Add Line 2 from feature branch
 1 file changed, 1 insertion(+)

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ git checkout main && echo "Line 3 from main branch" >> file.txt && git add file.txt && git commit -m
 "Add Line 3 from main branch"
Switched to branch 'main'
warning: in the working copy of 'file.txt', LF will be replaced by CRLF the next time Git touches it
[main bc8a786] Add Line 3 from main branch
 1 file changed, 1 insertion(+)
```

2. Rebase feature-branch onto main

1. Switch to feature-branch:

```
git checkout feature-branch
```

2. Rebase feature-branch onto main:

```
git rebase main
```

3. Git will replay the commit from feature-branch onto the main branch. Since there are no conflicts,

the rebase completes automatically.

```
Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (main)
$ echo "Line 1 from main branch" > file.txt && git add file.txt
warning: in the working copy of 'file.txt', LF will be replaced by CRLF the next time Git touches it

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (main)
$ git commit -m "Initial commit: Add Line 1 from main branch"
[main (root-commit) c1f7349] Initial commit: Add Line 1 from main branch
 1 file changed, 1 insertion(+)
 create mode 100644 file.txt

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (main)
$ git checkout -b feature-branch
Switched to a new branch 'feature-branch'

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ echo "Line 2 from feature branch" >> file.txt && git add file.txt && git commit -m "Add Line 2 from
feature branch"
warning: in the working copy of 'file.txt', LF will be replaced by CRLF the next time Git touches it
[feature-branch 0d1c011] Add Line 2 from feature branch
 1 file changed, 1 insertion(+)

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ git checkout main && echo "Line 3 from main branch" >> file.txt && git add file.txt && git commit -m
 "Add Line 3 from main branch"
Switched to branch 'main'
warning: in the working copy of 'file.txt', LF will be replaced by CRLF the next time Git touches it
[main bc8a786] Add Line 3 from main branch
 1 file changed, 1 insertion(+)
```

---

3. Verify the Rebase

1. View the commit history:

```
git log --oneline

git log --oneline --graph
```

```
Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ git log --oneline
bb83a79 (HEAD -> feature-branch) Add Line 2 from feature branch
bc8a786 (main) Add Line 3 from main branch
c1f7349 Initial commit: Add Line 1 from main branch

Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ git log --oneline --graph
* bb83a79 (HEAD -> feature-branch) Add Line 2 from feature branch
* bc8a786 (main) Add Line 3 from main branch
* c1f7349 Initial commit: Add Line 1 from main branch
```

2. Check the contents of file.txt:

```
cat file.txt
```

Output:

```
Pranav Akshit@Pranav-LOQ MINGW64 /d/Repositories/git-rebase-lab (feature-branch)
$ cat file.txt
Line 1 from main branch
<<<<<<< HEAD
Line 3 from main branch
=======
Line 2 from feature branch
>>>>>>> 0d1c011 (Add Line 2 from feature branch)
```