Lab Exercise 1- Working with Git Revert

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Exercise: Git Revert

This exercise will guide you through reverting changes in Git. The git revert command is used to create a new commit that undoes the changes introduced by a previous commit without modifying the history.

Objective

- Learn how to use git revert to undo changes from specific commits.

- Practice handling merge conflicts during a revert.

Prerequisites

1. Install Git on your system.

2. Set up a Git repository:

```
git init git-revert-lab

cd git-revert-lab
```

Steps

1. Set Up the Repository

1. Create a file:

```
echo "Line 1" > file.txt
```

2. Stage and commit the file:

```
git add file.txt

git commit -m "Initial commit: Add file.txt with Line 1"
```

3. Add more changes:

```
echo "Line 2" >> file.txt

git commit -am "Add Line 2 to file.txt"
```

4. Add another change:

```
echo "Line 3" >> file.txt
```

```
git commit -am "Add Line 3 to file.txt"
```

5. Verify the commit history:

```
git log --oneline
```

Output:

```
● PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps> git init git-revert-lab
  Initialized empty Git repository in C:/Users/dimpl/OneDrive/Desktop/DevSecOps/git-revert-lab/.git/
○ PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps>
```

```
● PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps> cd git-revert-lab
○ PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab>
```

```
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> echo "Line 1" > file.txt
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> git add file.txt
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> git commit -m "Initial commit"
[master (root-commit) 67a9125] Initial commit
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 file.txt
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> echo "Line 2" >> file.txt
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> git commit -am "Add Line 2 to file.txt"
[master fc5a639] Add Line 2 to file.txt
 1 file changed, 0 insertions(+), 0 deletions(-)
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> echo "Line 3" >> file.txt
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> git commit -am "Add Line 3 to file.txt"
[master 2bcf7aa] Add Line 3 to file.txt
 1 file changed, 0 insertions(+), 0 deletions(-)
```

```
 1 file changed, 0 insertions(+), 0 deletions(-)
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> git log --oneline
>>
2bcf7aa (HEAD -> master) Add Line 3 to file.txt
fc5a639 Add Line 2 to file.txt
67a9125 Initial commit
```

2. Revert the Last Commit

1. Revert the most recent commit:

git revert HEAD

2. Git will open   a text editor for the commit message. Save and close the editor to complete the revert.
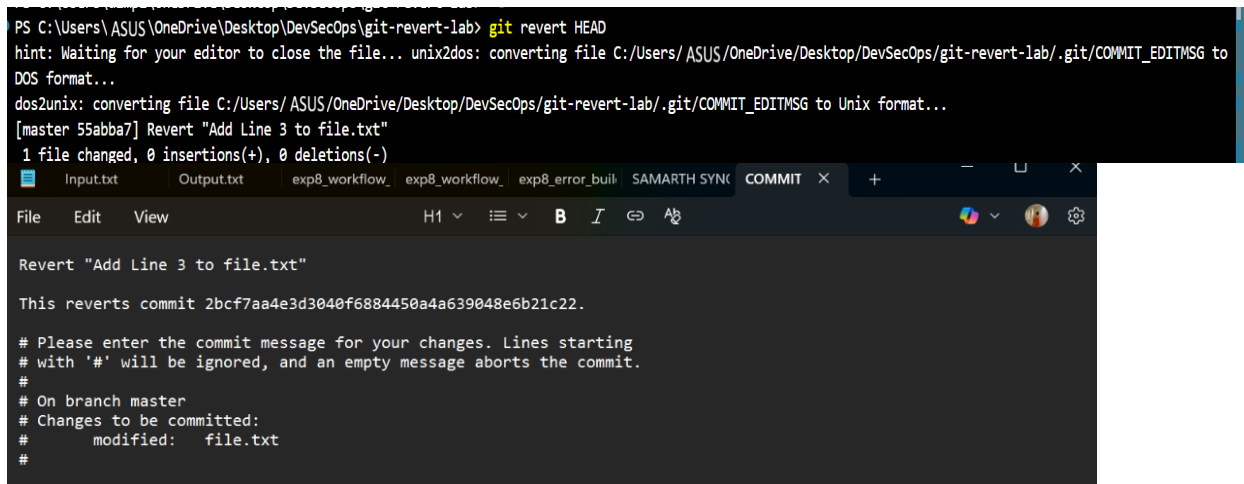
3. Verify the contents of file.txt:

cat file.txt

4. Check the commit history:

git log --oneline

Output:

```
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> cat file.txt
Line 1
Line 2
PS C:\Users\ASUS\OneDrive\Desktop\DevSecOps\git-revert-lab> git log --oneline
55abba7 (HEAD -> master) Revert "Add Line 3 to file.txt"
2bcf7aa Add Line 3 to file.txt
fc5a639 Add Line 2 to file.txt
67a9125 Initial commit
```

---

3. Handle Merge Conflicts During Revert

1. Modify file.txt:

```
echo "Conflict Line" >> file.txt

git commit -am "Add Conflict Line"
```

2. Revert the second commit (8b2a1c1 again) to trigger a conflict:

```
git revert 8b2a1c1
```

3. Git will indicate a conflict. Resolve it:

   o Open file.txt and remove conflict markers.

   o Keep the desired lines.

4. Stage the resolved file:

```
git add file.txt
```

5. Complete the revert:

```
git revert --continue
```

Output:

```
● PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> echo "Conflict Line" >> file.txt
● PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> git commit -am "Add Conflict Line"
 [master c7ba200] Add Conflict Line
  1 file changed, 0 insertions(+), 0 deletions(-)
● PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> git log --oneline
 c7ba200 (HEAD -> master) Add Conflict Line
 55abba7 Revert "Add Line 3 to file.txt"
 2bcf7aa Add Line 3 to file.txt
 fc5a639 Add Line 2 to file.txt
 67a9125 Initial commit
⊗ PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> git revert fc5a639
 warning: Cannot merge binary files: file.txt (HEAD vs. parent of fc5a639 (Add Line 2 to file.txt))
 Auto-merging file.txt
 CONFLICT (content): Merge conflict in file.txt
 error: could not revert fc5a639... Add Line 2 to file.txt
 hint: After resolving the conflicts, mark them with
 hint: "git add/rm <pathspec>", then run
 hint: "git revert --continue".
 hint: run "git revert --abort".
 hint: Disable this message with "git config advice.mergeConflict false"
```

```
 PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> git add file.txt
 PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> git revert --continue
● On branch master
⊗ You are currently reverting commit fc5a639.
   (all conflicts fixed: run "git revert --continue")
   (use "git revert --skip" to skip this patch)
   (use "git revert --abort" to cancel the revert operation)

 nothing to commit, working tree clean
 PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab> git log --oneline
 c7ba200 (HEAD -> master) Add Conflict Line
 55abba7 Revert "Add Line 3 to file.txt"
 2bcf7aa Add Line 3 to file.txt
 fc5a639 Add Line 2 to file.txt
 67a9125 Initial commit
○ PS C:\Users\ ASUS \OneDrive\Desktop\DevSecOps\git-revert-lab>
```