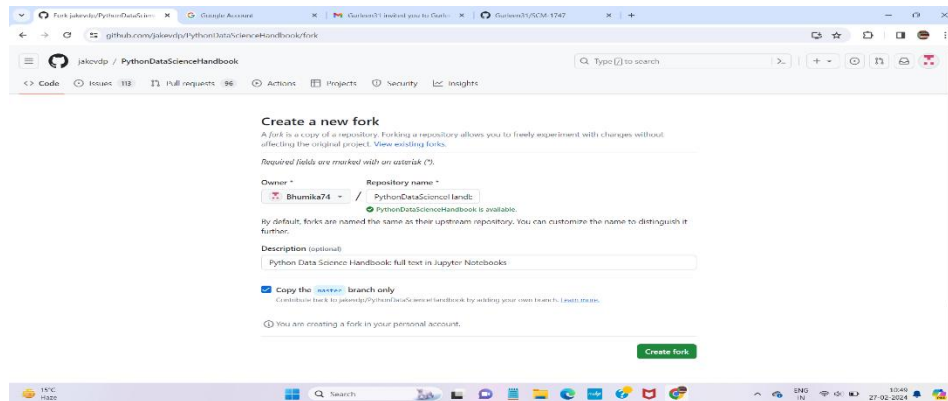


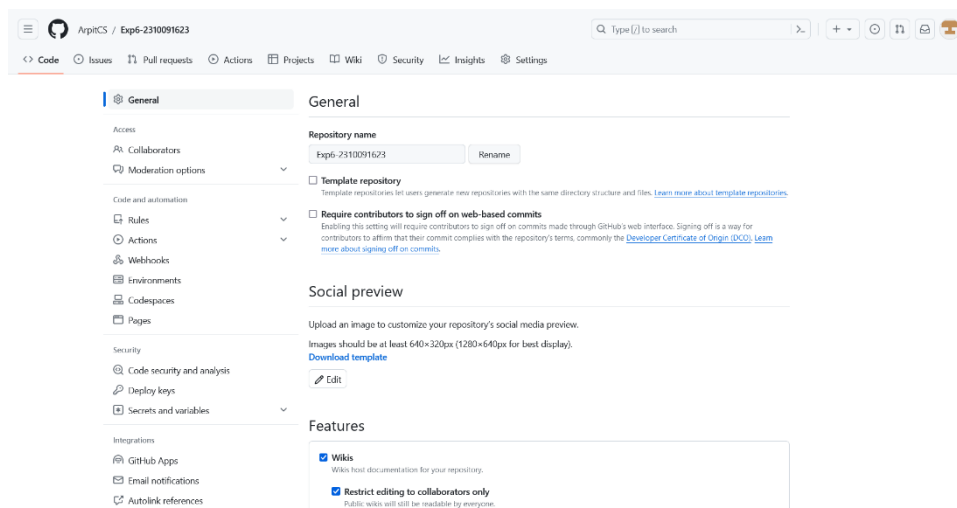
**Aim:** To grant teams access to a repository for collaborative development and project management.

## Algorithm:

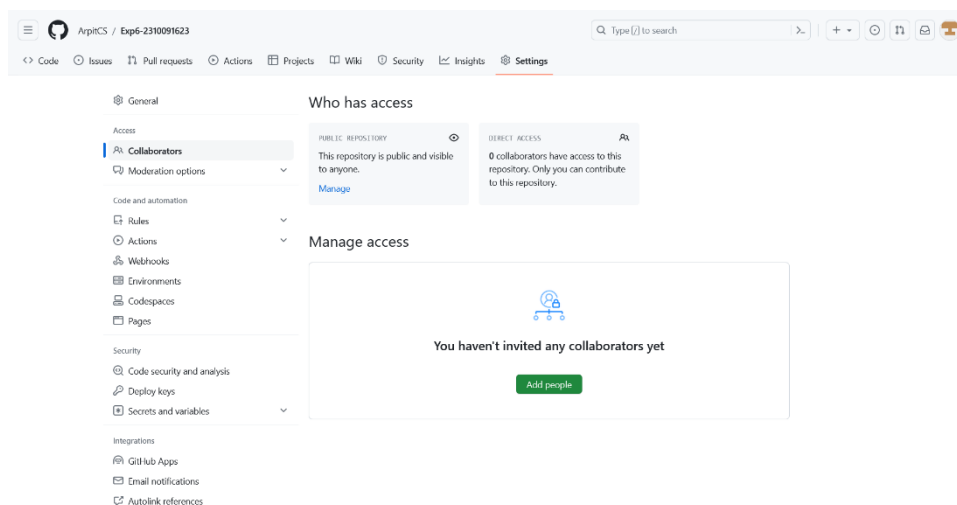
1. Create a new repository in github.



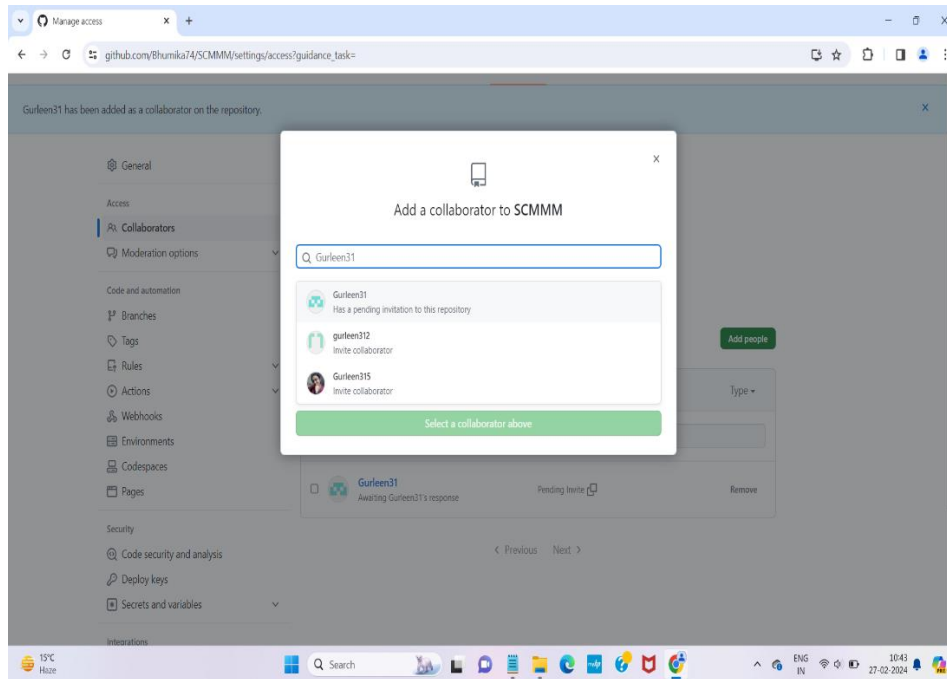
2. Open the “Settings” page of the Repository.



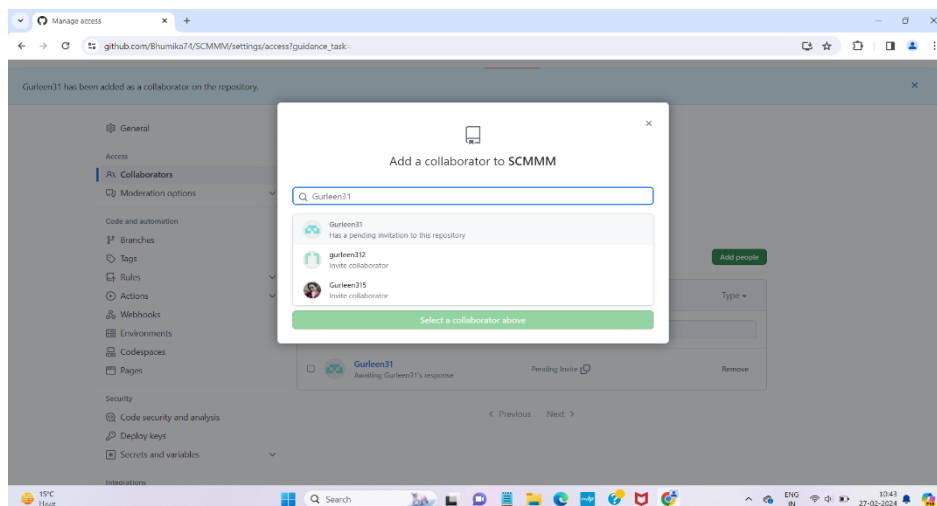
3. Then, open the “Collaborators” section in the settings.



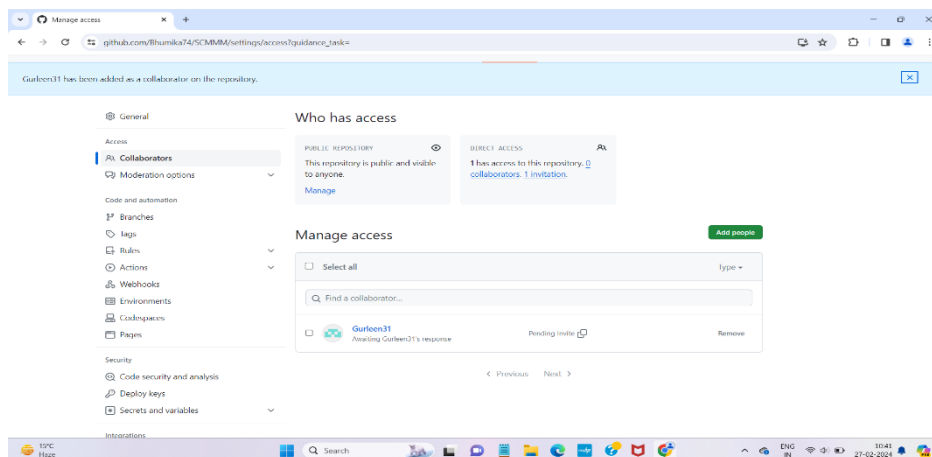
4. Click on “Add People” to invite collaborators to the github repository.



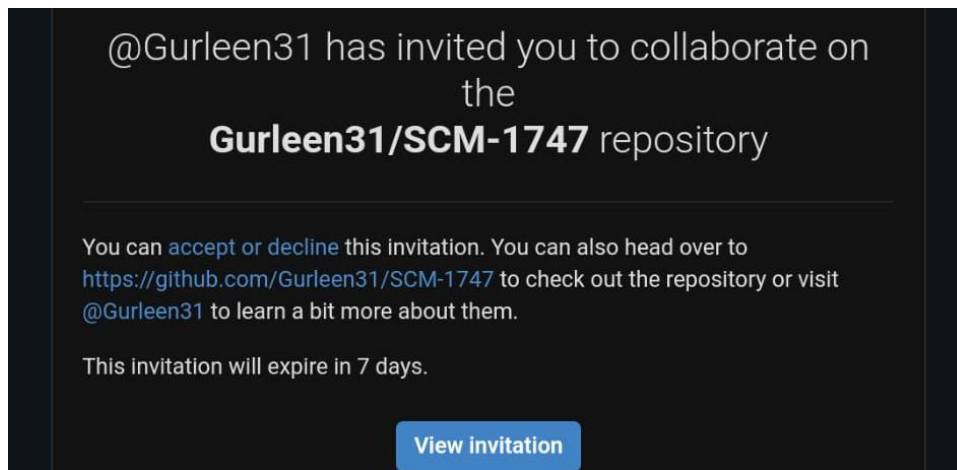
5. Send the invite to the selected users.



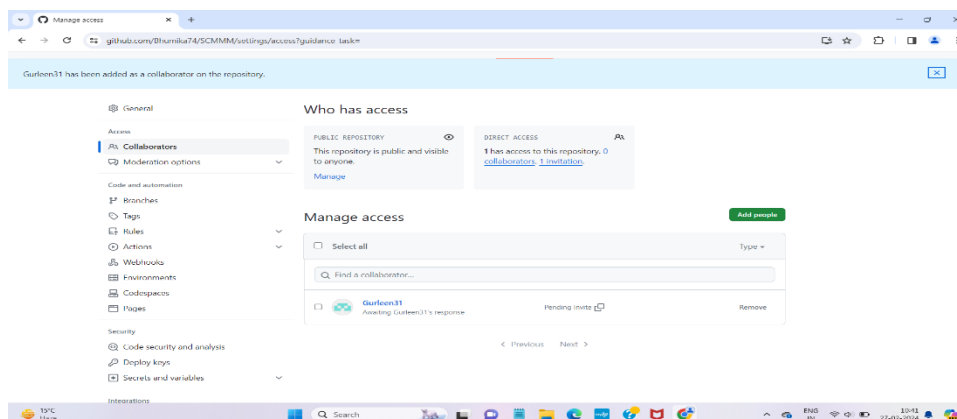
6. Visit the Collaborators page to check the status of invites and current collaborators of the repository.



7. The invited Collaborator should receive a Invite Email. Click on “View Invitation” and, accept the Invitation.



8. Collaborator has now been added to the repository.

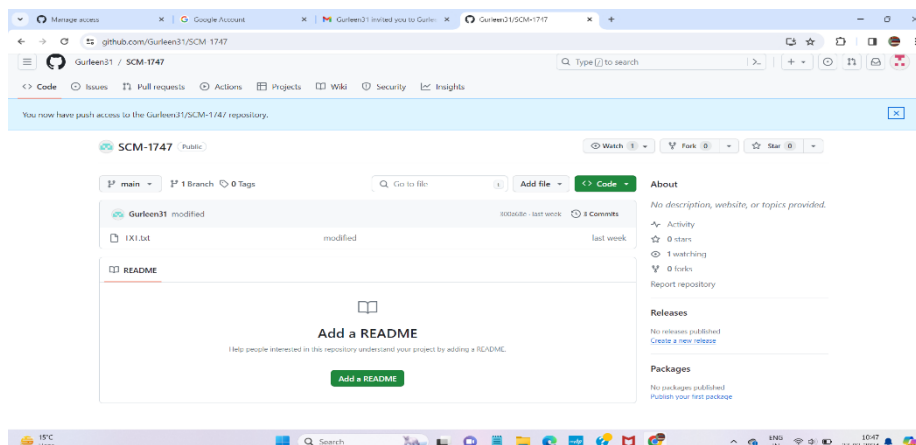


## Experiment No. 07

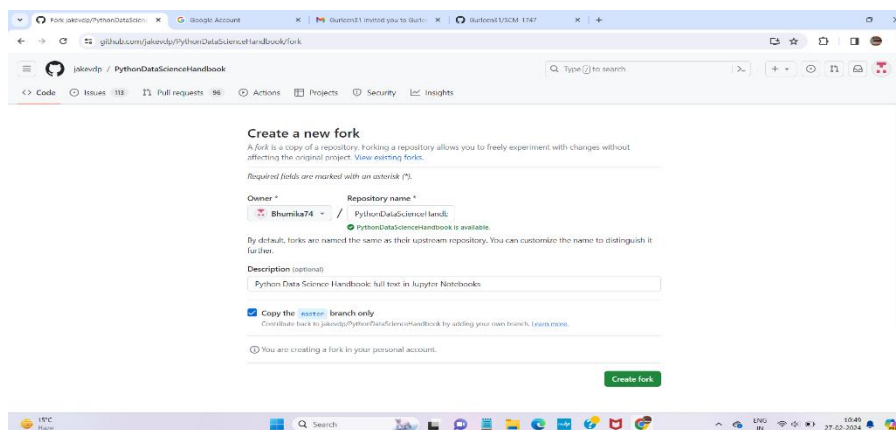
**Aim:** To create a personal copy of a repository, make changes to the code base and then, submit those changes to the original repository through commits, enable collaboration and code improvement.

### Algorithm:

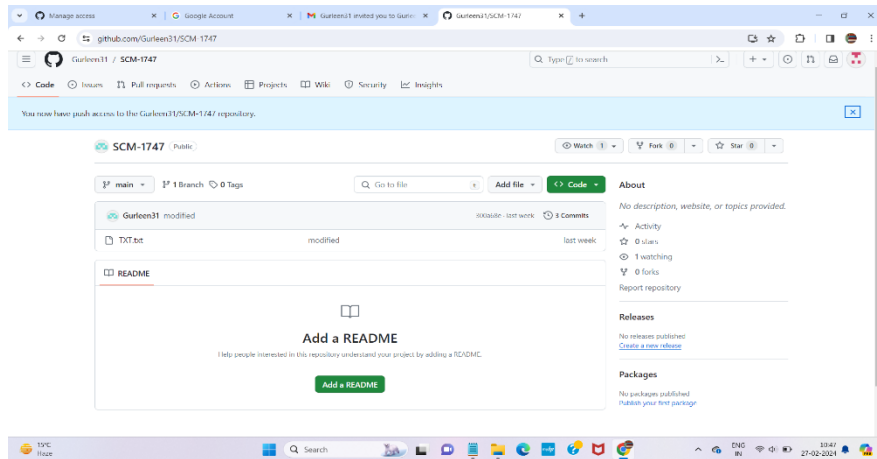
1. Visit a Public Repository in github.



2. Create a fork of the repository by clicking on the “Fork” option on the homepage of the repository.



### 3. Open the Forked Repository.



### 4. Copy the HTTPS link of the forked repository. Initialize a Local Git Repository and then Clone the repository in the created local repository.

\$git init

\$git clone https://github.com/Gurleen31/SCM-1747.git

```
hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm (master)
$ git clone https://github.com/Gurleen31/SCM-1747.git
Cloning into 'SCM-1747'...
remote: Enumerating objects: 26, done.
remote: Counting objects: 100% (26/26), done.
remote: Compressing objects: 100% (10/10), done.
remote: Total 26 (delta 0), reused 6 (delta 0), pack-reused 0
Receiving objects: 100% (26/26), 7.44 KiB | 7.44 MiB/s, done.
```

### 5. Check the Status of the local repository.

\$git status

```
hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   scm.ext

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        SCM-1747/
```

### 6. Change the git bash path to be inside the forked repository. And, Check Status.

\$cd SCM-1747.

\$git status

```
hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm (master)
$ cd SCM-1747
```

### 7. Create a new branch in the local repo. Checkout to the created branch.

\$git branch newbranch

\$git branch

\$git checkout newbranch

```

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git branch
* main

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git branch guddi

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git branch
* guddi
  main

```

8. Make some changes in the repository. For example, add content to the “README.md” file.

**#Bhumika-230991722**

**Content Added in the newBranch in Local repository.**

9. Do the Git Lifecycle process (i.e., Add the changes to the Staging area and then Commit).

\$git status

\$git add .

\$git commit -m “Updated ”

\$git status

```

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   TXT.txt

```

```

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git add .

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git commit -m"updated"
[main 6d43b61] updated
1 file changed, 2 insertions(+)

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git push

```

10. Checkout to the “main” branch of the repository and then check the branching status.

\$git checkout main

\$git branch

```

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git checkout guddi
Switched to branch 'guddi'

hp@LAPTOP-92POMHL1 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (guddi)
$ git branch
* guddi
  main

```

11. Push the changes made in the Local Repository to the Remote Repository.

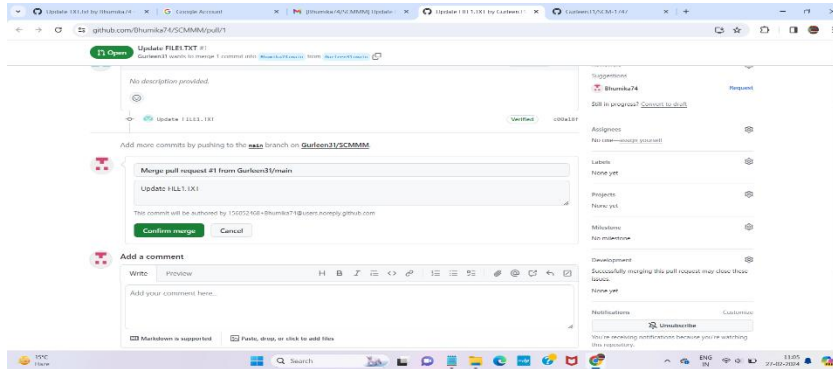
\$git push

```

ip@LAPTOP-9ZPOMH11 MINGW64 ~/OneDrive/Desktop/scm/SCM-1747 (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 297 bytes | 297.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Gurleen31/SCM-1747.git
35965b5..6d43b61 main -> main

```

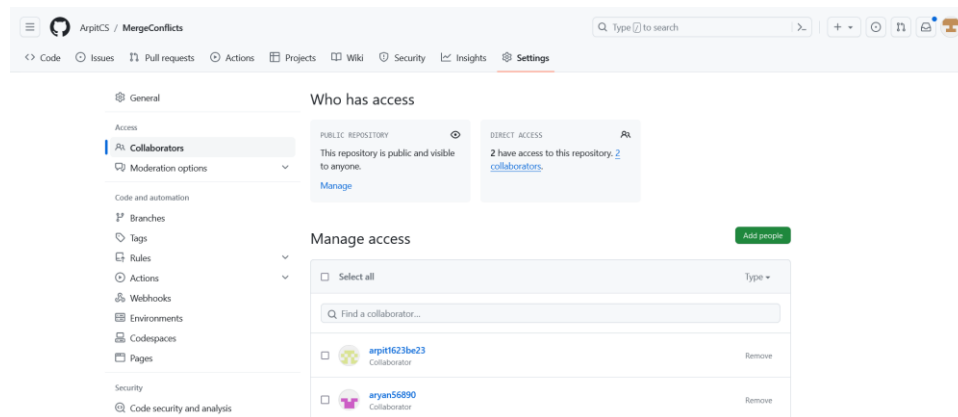
12. Check the Commits made in the github Repository.



**Aim:** To integrate changes from multiple collaborators into a main branch, while addressing any conflicts that arise from conflict in changes made by one self and collaborators.

### Algorithm (Own Activity):

1. Open github Website: “<https://github.com>”. And, open a repository with Collaborators. Dev-1 is the Owner of the repository and Dev-2 is a Collaborator of the repository.



2. Dev-1 clones the repository to a local repository and changes the working directory to be inside the cloned repository.

```
$git init
```

```
$git clone https://github.com/arpitcs/mergeconflicts.git
```

```
$git status
```

```
$cd mergeconflict/
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1
$ git init
Initialized empty Git repository in C:/Users/arpit/OneDrive/Desktop/Exp8 Dev-1/.git/

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1 (main)
$ git clone https://github.com/ArpitCS/MergeConflicts.git
Cloning into 'MergeConflicts'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1 (main)
$ git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    MergeConflicts/

nothing added to commit but untracked files present (use "git add" to track)

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1 (main)
$ cd MergeConflicts/
```



3. Dev-1 creates a new branch “newbranch” and checkouts to the created branch.

\$git branch newbranch

\$git branch

\$git checkout newbranch

\$git branch

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main)
$ git branch newBranch

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main)
$ git branch
* main
  newBranch

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main)
$ git checkout newBranch
Switched to branch 'newBranch'

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (newBranch)
$ git branch
* main
  newBranch
```

4. Dev-1 makes changes to the repository contents (e.g., add content to the ‘README.md’ file) and performs git lifecycle (i.e., adds to the staging area and then, commit).

\$git status

\$git add .

\$git commit -m “Updated README.md”

```
# MergeConflicts
Content Added by Dev-1 in newBranch
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (newBranch)
$ git status
On branch newBranch
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (newBranch)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (newBranch)
$ git commit -m "Updated README.md"
[newBranch 324b500] Updated README.md
1 file changed, 2 insertions(+), 1 deletion(-)
```

5. Dev-2 clones the repository to a local repository and changes the working directory to be inside the cloned repository.

\$git init

\$git clone https://github.com/arpitcs/mergeconflicts.git

\$git status

\$cd mergeconflict/

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8
$ git init
Initialized empty Git repository in C:/Users/aryan/OneDrive/Desktop/Exp-8/.git/

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8 (master)
$ git clone https://github.com/ArpitCS/MergeConflicts.git
Cloning into 'MergeConflicts'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8 (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        MergeConflicts/

nothing added to commit but untracked files present (use "git add" to track)

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8 (master)
$ cd MergeConflicts/
```

6. Dev-2 makes changes to the repository contents (e.g., add content to the 'README.md' file) and performs git lifecycle (i.e., adds to the staging area and commit).

\$git status

\$git add .

\$git commit -m "Updated README"

```
# MergeConflicts
Content Added by Dev-2 in main Branch
```

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git add .

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git commit -m "Updated README.md Dev-2"
[main 1dc6d32] Updated README.md Dev-2
1 file changed, 2 insertions(+), 1 deletion(-)
```

7. Dev-2 pushes the changes to the github repository.

\$git push

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 311 bytes | 311.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ArpitCS/MergeConflicts.git
   6ebf0b3..1dc6d32  main -> main
```

8. Dev-1 checkout to the "main" branch.

\$git checkout main

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (newBranch)
$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
```

9. Dev-1 updates the repository using 'git pull'.

\$git pull

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main)
$ git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 291 bytes | 17.00 KiB/s, done.
From https://github.com/ArpitCS/MergeConflicts
   6ebf0b3..1dc6d32  main       -> origin/main
Updating 6ebf0b3..1dc6d32
Fast-forward
 README.md | 3 ++-
1 file changed, 2 insertions(+), 1 deletion(-)
```

10. Dev-1 tries to merge "newbranch" into the "main", but receives a conflict error.

\$git merge newbranch

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main)
$ git merge newBranch
Auto-merging README.md
CONFLICT (content): Merge conflict in README.md
Automatic merge failed; fix conflicts and then commit the result.
```

11. Dev-1 makes changes to the conflicted files and resolves the conflicts.

#### Before Resolving Conflicts

```
# MergeConflicts
<<<<<< HEAD
Content Added by Dev-2 in main Branch
=====
Content Added by Dev-1 in newBranch
>>>>>> newBranch
```

#### After Resolving Conflicts

```
# MergeConflicts
Content Added by Dev-2 in main Branch
Content Added by Dev-1 in newBranch
```

12. Dev-1 performs git lifecycle after making the changes and pushes them to the github repository.

\$git add .

\$git commit -m "Fixed README.md Conflicts"

\$git push

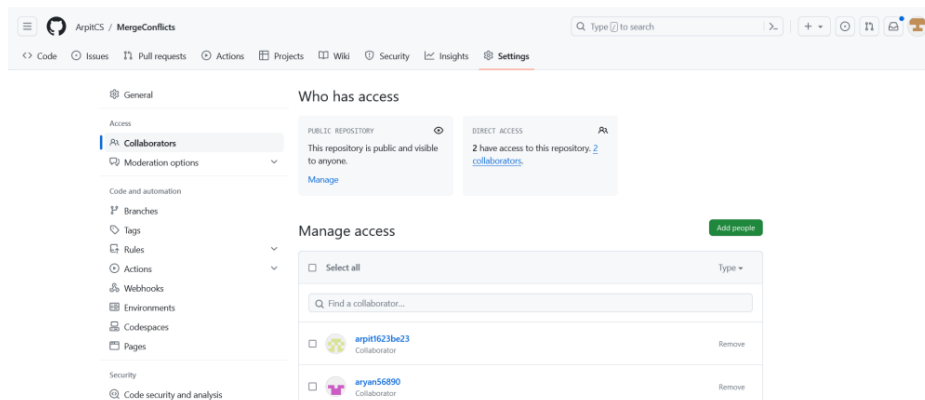
```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main|MERGE
NG)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main|MERGE
NG)
$ git commit -m "Fixed README.md Conflicts"
[main eda0d0e] Fixed README.md Conflicts

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp8 Dev-1/MergeConflicts (main)
$ git push
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 16 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 624 bytes | 312.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ArpitCS/MergeConflicts.git
   1dc6d32..eda0d0e  main -> main
```

Algorithm (Collaborator Activity):

1. Open github Website: "<https://github.com>". And, open a repository with collaborators. Dev-1 is a Collaborator of the repository and Dev-2 is the Owner of the repository.



2. Dev-1 clones the repository to a local repository and changes the working directory to be inside the cloned repository.

\$git init

\$git clone https://github.com/arpitcs/mergeconflicts.git

\$git status

\$cd mergeconflict/

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8
$ git init
Initialized empty Git repository in C:/Users/arpit/OneDrive/Desktop/Exp8 Dev-1/.git/

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8 (master)
$ git clone https://github.com/ArpitCS/MergeConflicts.git
Cloning into 'MergeConflicts'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8 (master)
$ git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    MergeConflicts/

nothing added to commit but untracked files present (use "git add" to track)

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8 (master)
$ cd MergeConflicts/
```

3. Dev-1 creates a new branch “newbranch” and checkouts to the created branch.

\$git branch newbranch

\$git branch

\$git checkout newbranch

\$git branch

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git branch newBranch

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git branch
* main
  newBranch

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git checkout newBranch
Switched to branch 'newBranch'
```

4. Dev-1 makes changes to the repository contents (e.g., add content to the ‘README.md’ file) and performs git lifecycle (i.e., adds to the staging area and commit).

\$git status

\$git add .

\$git commit -m “Updated README.md”

```
# MergeConflicts
Content Added by Dev-2 in main Branch
Content Added by Dev-1 in newBranch
(b) Collaborator Activity
Content Added by Dev-1 in newBranch
```

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (newBranch)
$ git status
On branch newBranch
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (newBranch)
$ git add .

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (newBranch)
$ git commit -m "Updated README.md"
[newBranch 324b500] Updated README.md
1 file changed, 2 insertions(+), 1 deletion(-)
```

5. Dev-2 clones the repository to a local repository and changes the working directory to be inside the cloned repository.

`$git init`

`$git clone https://github.com/arpitcs/mergeconflicts.git`

`$git status`

`$cd mergeconflict/`

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b)
$ git init
Initialized empty Git repository in C:/Users/arpit/OneDrive/Desktop/Exp-8(b)/.git/

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b) (main)
$ git clone https://github.com/ArpitCS/MergeConflicts.git
Cloning into 'MergeConflicts'...
remote: Enumerating objects: 21, done.
remote: Counting objects: 100% (21/21), done.
remote: Compressing objects: 100% (11/11), done.
remote: Total 21 (delta 4), reused 16 (delta 2), pack-reused 0
Receiving objects: 100% (21/21), done.
Resolving deltas: 100% (4/4), done.

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b) (main)
$ git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    MergeConflicts/

nothing added to commit but untracked files present (use "git add" to track)

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b) (main)
$ cd MergeConflicts/
```

6. Dev-2 makes changes to the repository contents (e.g., add content to the ‘README.md’ file) and performs git lifecycle (i.e., adds to the staging area and commit).

`$git status`

`$git add .`

`$git commit -m "Updated README.md (b)"`

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b)/MergeConflicts (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b)/MergeConflicts (main)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b)/MergeConflicts (main)
$ git commit -m "Updated README.md (b)"
[main b04ef14] Updated README.md (b)
1 file changed, 1 insertion(+), 3 deletions(-)
```

7. Dev-2 pushes the changes to the github repository.

`$git push`

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-8(b)/MergeConflicts (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 303 bytes | 303.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/ArpitCS/MergeConflicts.git
   cd91dd5..b04ef14  main -> main
```

8. Dev-1 checkout to the “main” branch and updates the repository using ‘*git pull*’.

`$git checkout main`

`$git pull`

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (newBranch)
$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
```

9. Dev-1 updates the repository using 'git pull'.

\$git pull

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 291 bytes | 17.00 KiB/s, done.
From https://github.com/ArpitCS/MergeConflicts
  6ebf0b3..1dc6d32  main    -> origin/main
Updating 6ebf0b3..1dc6d32
Fast-forward
 README.md | 3 ++-
 1 file changed, 2 insertions(+), 1 deletion(-)
```

10. Dev-1 tries to merge "newbranch" into the "main", but receives a conflict error.

\$git merge newbranch

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git merge newBranch
Auto-merging README.md
CONFLICT (content): Merge conflict in README.md
Automatic merge failed; fix conflicts and then commit the result.
```

11. Dev-1 makes changes to the conflicted files and resolves the conflicts.

Before Resolving Conflicts

```
# MergeConflicts
Content Added by Dev-2 in main Branch
Content Added by Dev-1 in newBranch
(b) Collaborator Activity
<<<<<< HEAD
Content Added by Dev-1 in newBranch
=====
Content Added by Dev-2 in mainBranch
>>>>>> 43b9d1f93000247905311731b2060c830e964ebe
```

After Resolving Conflicts

```
# MergeConflicts
Content Added by Dev-2 in main Branch
Content Added by Dev-1 in newBranch
(b) Collaborator Activity
Content Added by Dev-1 in newBranch
Content Added by Dev-2 in mainBranch
```

12. Dev-1 performs git lifecycle after making the changes and pushes them to the github repository.

\$git add .

\$git commit -m "Fixed README.md Conflicts"

\$git push

```
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main|MERGING)
$ git add .

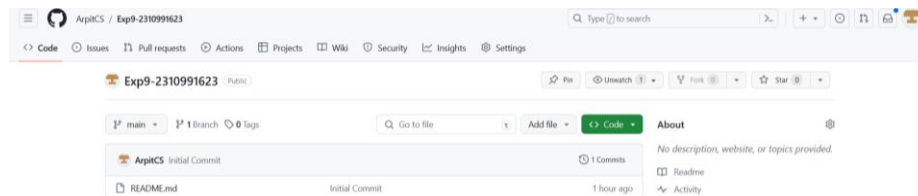
aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main|MERGING)
$ git commit -m "Fixed README.md Conflicts"
[main eda0d0e] Fixed README.md Conflicts

aryan@HP MINGW64 ~/OneDrive/Desktop/Exp-8/MergeConflicts (main)
$ git push
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 16 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 624 bytes | 312.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ArpitCS/MergeConflicts.git
  1dc6d32..eda0d0e  main -> main
```

**Aim:** To manage changes to the code base, reset allows you to move the current branch to a specific commit either discarding changes or staging them for recommitting. Revert creates a new commit that undoes the changes introduced by a specific commit, preserving the commit history.

### Algorithm:

1. Visit "<https://www.github.com>". Open a repository and, copy the HTTPS link.



2. Clone the repository to a local repository. And, redirect the git push to be inside the folder.

```
$git init
```

```
$git clone https://github.com/arpitcs/Exp9-2310991623.git
```

```
$git status
```

```
$cd Exp9-2310991623/
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9
$ git init
Initialized empty Git repository in C:/Users/arpit/OneDrive/Desktop/Exp-9/.git/

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9 (main)
$ git clone https://github.com/ArpitCS/Exp9-2310991623.git
Cloning into 'Exp9-2310991623'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9 (main)
$ git status
On branch main

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
  Exp9-2310991623/

nothing added to commit but untracked files present (use "git add" to track)

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9 (main)
$ cd Exp9-2310991623/
```

3. Make some changes to the repository (e.g., add some content to 'README.md' file). Then, perform git lifecycle process (i.e., add the files to staging area and then, commit).

```
$git status
```

```
$git add .
```

```
$git commit -m "Updated README.md 01"
```

```
# Exp9-2310991623
Content Added 01

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git commit -m "Updated README.md 01"
[main 2793120] Updated README.md 01
1 file changed, 2 insertions(+), 1 deletion(-)
```

4. Perform the process in 'Step-3' 4 more times, to produce 5 commits in total excluding the "Initial Commit". Then, check the one-line logs of the repository, to view the commit history of the repository.

\$git log --oneline

```
# Exp9-2310991623
Content Added 01
Content Added 02
Content Added 03
Content Added 04
Content Added 05
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
0749373 (HEAD -> main) Updated README.md 05
b4bde54 Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

5. Reset the repository to the 4<sup>th</sup> commit.

\$git reset b4bde54

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git reset b4bde54
Unstaged changes after reset:
M   README.md
```

6. Check the one-line logs of the repository.

\$git log --oneline

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
b4bde54 (HEAD -> main) Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

7. Check Repository status.

\$git status

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 4 commits.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
```

8. Perform Git Lifecycle process and check one-line logs.

\$git add .

\$git commit -m "Updated README.md 06"

\$git log --oneline

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git commit -m "Updated README.md 06"
[main fef5f9c] Updated README.md 06
 1 file changed, 2 insertions(+), 1 deletion(-)

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
fef5f9c (HEAD -> main) Updated README.md 06
b4bde54 Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```



9. 'Soft' Reset the repository to the 4<sup>th</sup> commit. And, check the one-line logs of the repository.

```
$git reset --soft b4bde54
```

```
$git log --oneline
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git reset --soft b4bde54

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
b4bde54 (HEAD -> main) Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

10. Check the repository status.

```
$git status
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 4 commits.
  (use "git push" to publish your local commits)

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   README.md
```

11. Perform git lifecycle process. Add the files to the staging area and commit.

```
$git add .
```

```
$ git commit -m "Updated README.md 07"
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git commit -m "Updated README.md 07"
[main 5ddfebb] Updated README.md 07
1 file changed, 2 insertions(+), 1 deletion(-)
```

12. Check one-line logs of the repository.

```
$git log --oneline
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
5ddfebb (HEAD -> main) Updated README.md 07
b4bde54 Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

13. 'Mixed' Reset the repository to the 4<sup>th</sup> commit. And, check one-line logs.

```
$git reset --mixed b4bde54
```

```
$git log --oneline
```

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git reset --mixed b4bde54
Unstaged changes after reset:
M   README.md

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
b4bde54 (HEAD -> main) Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

14. Check status of the repository. Perform git lifecycle and check the one-line logs.

\$git status

\$git add .

\$git commit -m "Updated README.md 08"

\$git log --oneline

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 4 commits.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git add .

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git commit -m "Updated README.md 08"
[main 6c7d400] Updated README.md 08
 1 file changed, 2 insertions(+), 1 deletion(-)

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
6c7d400 (HEAD -> main) Updated README.md 08
b4bde54 Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

15. 'Hard' Reset the repository to the 4<sup>th</sup> commit.

\$git reset --hard b4bde54

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git reset --hard b4bde54
HEAD is now at b4bde54 Updated README.md 04
```

```
# Exp9-2310991623
Content Added 01
Content Added 02
Content Added 03
Content Added 04
```

16. Check status and one-line logs of the repository.

\$git status

\$git log --oneline

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 4 commits.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
b4bde54 (HEAD -> main) Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce (origin/main, origin/HEAD) Initial commit
```

17. Push the changes to github.

\$git push

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git push
Enumerating objects: 14, done.
Counting objects: 100% (14/14), done.
Delta compression using up to 16 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (12/12), 1016 bytes | 338.00 KiB/s, done.
Total 12 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), done.
To https://github.com/ArpitCS/Exp9-2310991623.git
  64f72ce..b4bde54  main -> main
```

18. 'Hard' Reset the repository to the 3<sup>th</sup> commit. Check the file contents and one-line logs.

Also, check the repository status.

\$git reset --hard 057b963

\$git log --oneline

\$git status

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git reset --hard 057b963
HEAD is now at 057b963 Updated README.md 03

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
057b963 (HEAD -> main) Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce Initial commit

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git status
On branch main
Your branch is behind 'origin/main' by 1 commit, and can be fast-forwarded.
(use "git pull" to update your local branch)

nothing to commit, working tree clean
```

```
# Exp9-2310991623
Content Added 01
Content Added 02
Content Added 03
```

19. Update the repository with the remote repository using 'git pull'. Check the updated logs and file contents.

\$git pull

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git pull
Updating 057b963..b4bde54
Fast-forward
 README.md | 3 ++-
 1 file changed, 2 insertions(+), 1 deletion(-)

arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
b4bde54 (HEAD -> main, origin/main, origin/HEAD) Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce Initial commit
```

```
# Exp9-2310991623
Content Added 01
Content Added 02
Content Added 03
Content Added 04
```

20. Revert the repository to the most recent commit.

\$git revert b4bde54

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git revert b4bde54
[main 321c0d0] Revert "Updated README.md 04"
 1 file changed, 1 insertion(+), 2 deletions(-)
```

21. Check the commit logs. Also, check the updated file contents.

\$git log --oneline

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git log --oneline
321c0d0 (HEAD -> main) Revert "Updated README.md 04"
b4bde54 (origin/main, origin/HEAD) Updated README.md 04
057b963 Updated README.md 03
01ef3ec Updated README.md 02
1e5c729 Updated README.md 01
64f72ce Initial commit
```

```
# Exp9-2310991623
Content Added 01
Content Added 02
Content Added 03
```

22. Push the changes to the remote repository.

\$git push

```
arpit@ArpitASUS MINGW64 ~/OneDrive/Desktop/Exp-9/Exp9-2310991623 (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 307 bytes | 307.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/ArpitCS/Exp9-2310991623.git
   b4bde54..321c0d0  main -> main
```

23. Check commits made in the remote repository.

Commits		
main	All users	All time
Commits on Mar 12, 2024		
Revert "Updated README.md 04"	321c0d0	<>
This reverts commit <a href="#">b4bde54</a> .		
ArpitCS committed 2 minutes ago		
Updated README.md 04	b4bde54	<>
ArpitCS committed 29 minutes ago		
Updated README.md 03	0579963	<>
ArpitCS committed 29 minutes ago		
Updated README.md 02	01ef3ec	<>
ArpitCS committed 29 minutes ago		
Updated README.md 01	1e5c729	<>
ArpitCS committed 30 minutes ago		
Initial commit	64f72ce	<>
ArpitCS committed 35 minutes ago		