

Submitted by- **Rithika**

1.)Basic commands:

git init (To initialize the repo)

```
D:\EI exercise\Merging>mkdir git-merge-demo  
D:\EI exercise\Merging>cd git-merge-demo  
D:\EI exercise\Merging\git-merge-demo>git init  
Initialized empty Git repository in D:/EI exercise/Merging/git-merge-demo/.git/
```

git config user.name "Name" (Sets commit author name)

git config user.email "email" (Sets commit author email)

```
D:\EI exercise\Merging\git-merge-demo>git config user.email "rithikasenthilkumar4@gmail.com"  
D:\EI exercise\Merging\git-merge-demo>git config user.name "Rithika"
```

git config --list(To check configuration)

```
D:\EI exercise\Merging\git-merge-demo>git config --list  
diff.astextplain.textconv=astextplain  
filter.lfs.clean=git-lfs clean -- %f  
filter.lfs.smudge=git-lfs smudge -- %f  
filter.lfs.process=git-lfs filter-process  
filter.lfs.required=true  
http.sslbackend=schannel  
core.autocrlf=true  
core.fscache=true  
core.symlinks=false  
pull.rebase=false  
credential.helper=manager  
credential.https://dev.azure.com.usehttppath=true  
init.defaultbranch=master  
user.name=rithikas20  
user.email=rithikasenthilkumar4@gmail.com  
core.repositoryformatversion=0  
core.filemode=false  
core.bare=false  
core.logallrefupdates=true  
core.symlinks=false  
core.ignorecase=true  
user.email=rithikasenthilkumar4@gmail.com  
user.name=Rithika
```

2.) **Status:** git status(before commit)

```
D:\EI exercise\Merging\git-merge-demo>git init  
Initialized empty Git repository in D:/EI exercise/Merging/git-merge-demo/.git/  
  
D:\EI exercise\Merging\git-merge-demo>git status  
On branch master  
  
No commits yet  
  
nothing to commit (create/copy files and use "git add" to track)
```

git status(Before adding files to index)

```
D:\EI exercise\Merging\git-merge-demo>echo "file">file.txt  
  
D:\EI exercise\Merging\git-merge-demo>git status  
On branch master  
  
No commits yet  
  
Untracked files:  
  (use "git add <file>..." to include in what will be committed)  
    file.txt  
  
nothing added to commit but untracked files present (use "git add" to track)
```

git status (After file added to staging area)

```
D:\EI exercise\Merging\git-merge-demo>git add file.txt  
  
D:\EI exercise\Merging\git-merge-demo>git status  
On branch master  
  
No commits yet  
  
Changes to be committed:  
  (use "git rm --cached <file>..." to unstage)  
    new file:   file.txt
```

git status(After file been commited)

```
D:\EI exercise\Merging\git-merge-demo>git commit -m "Initail Commit"  
[master (root-commit) 1ad5902] Initail Commit  
  1 file changed, 1 insertion(+)  
  create mode 100644 file.txt  
  
D:\EI exercise\Merging\git-merge-demo>git status  
On branch master  
nothing to commit, working tree clean
```

git status -M(Modified files)

```
D:\EI exercise\Merging\git-merge-demo>git status -sb
## master
 M file.txt
```

git status -sb(to view modified, untracked files)

```
D:\EI exercise\Merging\git-merge-demo>echo "new file">file.txt
D:\EI exercise\Merging\git-merge-demo>git status -M
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:   file.txt

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

D:\EI exercise\Merging\git-merge-demo>git status -sb
## master
 M file.txt
```

3.)Commit

git commit -am “Message”(Commit without use of add)

```
D:\EI exercise\Merging\git-merge-demo>echo "file change">file.txt
D:\EI exercise\Merging\git-merge-demo>git commit -am "sking staging area"
[master a91c6c9] sking staging area
 1 file changed, 1 insertion(+), 1 deletion(-)
```

git commit –amend -m “Message”(Editting the prev commit message)

```
D:\EI exercise\Merging\git-merge-demo>git add file.txt
D:\EI exercise\Merging\git-merge-demo>git commit -m "Commit"
On branch master
nothing to commit, working tree clean

D:\EI exercise\Merging\git-merge-demo>git commit --amend -m "Fixing typo"
[master a86effa] Fixing typo
  Date: Sat Dec 6 13:18:58 2025 +0530
  1 file changed, 1 insertion(+), 1 deletion(-)
```

4.)Restore

git restore <filename> (file returns to previous commit version, changes lost)

```
D:\EI exercise\Merging\git-merge-demo>git add file.txt  
D:\EI exercise\Merging\git-merge-demo>git commit -m "Commit"  
On branch master  
nothing to commit, working tree clean  
  
D:\EI exercise\Merging\git-merge-demo>git commit --amend -m "Fixing typo"  
[master a86effa] Fixing typo  
Date: Sat Dec 6 13:18:58 2025 +0530  
1 file changed, 1 insertion(+), 1 deletion(-)
```

git restore --staged <fname>(Your edits are NOT deleted — only unstaged.)

```
D:\EI exercise\Merging\git-merge-demo>echo "add lines">file.txt  
D:\EI exercise\Merging\git-merge-demo>git restore file.txt  
D:\EI exercise\Merging\git-merge-demo>echo "add lines">file.txt  
D:\EI exercise\Merging\git-merge-demo>git add file.txt  
  
D:\EI exercise\Merging\git-merge-demo>git status  
On branch master  
Changes to be committed:  
  (use "git restore --staged <file>..." to unstage)  
    modified:   file.txt  
  
D:\EI exercise\Merging\git-merge-demo>git restore --staged file.txt
```

5.)git diff

git diff(line-level changes bt git trees)- To see what changes are **not yet added**

```
D:\EI exercise\Merging\git-merge-demo>echo "extraa add">file.txt  
D:\EI exercise\Merging\git-merge-demo>git diff  
diff --git a/file.txt b/file.txt  
index 1fcfd1d1..61f96c5 100644  
--- a/file.txt  
+++ b/file.txt  
@@ -1 +1 @@  
- "file change"  
+ "extraa add"
```

git diff --staged(difference between last commit and staging area.)

```
D:\EI exercise\Merging\git-merge-demo>git add file.txt

D:\EI exercise\Merging\git-merge-demo>git diff --staged
diff --git a/file.txt b/file.txt
index 1fcfd1d1..61f96c5 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1 @@
-"file change"
+"extraa add"
```

git diff HEAD(Compares working directory (including staged) with last commit.)

```
D:\EI exercise\Merging\git-merge-demo>git diff HEAD
diff --git a/file.txt b/file.txt
index 1fcfd1d1..61f96c5 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1 @@
-"file change"
+"extraa add"
```

git diff branch1 branch2

```
D:\EI exercise\Merging\git-merge-demo>git checkout -b feature
Switched to a new branch 'feature'

D:\EI exercise\Merging\git-merge-demo>echo "Feature branch update"

D:\EI exercise\Merging\git-merge-demo>git add file.txt

D:\EI exercise\Merging\git-merge-demo>git commit -m "update"
[feature 4526b7b] update
 1 file changed, 2 insertions(+), 1 deletion(-)

D:\EI exercise\Merging\git-merge-demo>git checkout master
Switched to branch 'master'
```

```
D:\EI exercise\Merging\git-merge-demo>git diff master feature
diff --git a/file.txt b/file.txt
index 1fcfd1d1..7569a99 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1,2 @@
-"file change"
+"extraa add"
+"Feature branch update"
```

```
git diff <commit_hash1> <commit_hash2>
```

```
D:\EI\exercise\Merging\git-merge-demo>git log --oneline
a86effa (HEAD -> master) Fixing typo
1ad5902 Initail Commit

D:\EI\exercise\Merging\git-merge-demo>git diff a86effa 1ad5902
diff --git a/file.txt b/file.txt
index 1fcfd1d1..786db4e 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1 @@
- "file change"
+ "file"
```

```
git diff branch1 branch2 --<fname>
```

```
D:\EI\exercise\Merging\git-merge-demo>git diff master feature -- file.txt
diff --git a/file.txt b/file.txt
index 1fcfd1d1..7569a99 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1,2 @@
- "file change"
+ "extraa add"
+ "Feature branch update"
```

6.)git blame

```
git blame <fname>( who change each line change in the file)
```

```
D:\EI\exercise\Merging\git-merge-demo>git add file.txt

D:\EI\exercise\Merging\git-merge-demo>git commit -m "Initial commit"
[master 4fe731b] Initial commit
 1 file changed, 1 insertion(+), 1 deletion(-)

D:\EI\exercise\Merging\git-merge-demo>echo "line3">file.txt

D:\EI\exercise\Merging\git-merge-demo>git add file.txt

D:\EI\exercise\Merging\git-merge-demo>git commit -m " line 3 :commit"
[master b5c5a2b] line 3 :commit
 1 file changed, 1 insertion(+), 1 deletion(-)

D:\EI\exercise\Merging\git-merge-demo>git blame file.txt
b5c5a2be (rithikas20 2025-12-06 13:49:14 +0530 1) "line3"
```

```
git blame -p <fname>( Blame with commit msg)
```

```
D:\EI exercise\Merging\git-merge-demo>git blame -p file.txt  
b5c5a2be23f3a22d00fa2ada663ba9655d4a0bee 1 1 1  
author rithikas20  
author-mail <rithikasenthilkumar4@gmail.com>  
author-time 1765009154  
author-tz +0530  
committer rithikas20  
committer-mail <rithikasenthilkumar4@gmail.com>  
committer-time 1765009154  
committer-tz +0530  
summary line 3 :commit  
previous 4fe731b8fec360dd0a8f323b23258784a7f5ffb3 file.txt  
filename file.txt  
"line3"
```

```
git blame <bname> --<fname>( Blame a file in another branch)
```

```
D:\EI exercise\Merging\git-merge-demo>git blame feature -- file.txt  
4526b7ba (rithikas20 2025-12-06 13:41:18 +0530 1) "extraaa add"  
4526b7ba (rithikas20 2025-12-06 13:41:18 +0530 2) "Feature branch update"
```

```
git blame -w <fname>(Ignore whitespace)
```

```
D:\EI exercise\Merging\git-merge-demo>git blame -w file.txt  
b5c5a2be (rithikas20 2025-12-06 13:49:14 +0530 1) "line3"
```

```
git blame -L start, end <fname>(show specific line range)
```

```
D:\EI exercise\Merging\git-merge-demo>git blame -L 2,2 file.txt  
c0107641 (rithikas20 2025-12-06 13:56:40 +0530 2) line1
```

7.)git log

```
git log( commit history)
```

```
D:\EI exercise\Merging\git-merge-demo>git log  
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)  
Author: rithikas20 <rithikasenthilkumar4@gmail.com>  
Date:   Sat Dec 6 13:56:40 2025 +0530  
  
        added  
  
commit 2abef764eea48d3036675e72ca04a4e108127588  
Author: rithikas20 <rithikasenthilkumar4@gmail.com>  
Date:   Sat Dec 6 13:54:41 2025 +0530  
  
        added  
  
commit b5c5a2be23f3a22d00fa2ada663ba9655d4a0bee  
Author: rithikas20 <rithikasenthilkumar4@gmail.com>  
Date:   Sat Dec 6 13:49:14 2025 +0530
```

```
git log --oneline( compact view)
```

```
D:\EI exercise\Merging\git-merge-demo>git log --oneline
c010764 (HEAD -> master) added
2abef76 added
b5c5a2b line 3 :commit
4fe731b Initial commit
a86effa Fixing typo
1ad5902 Initail Commit
```

```
git log --oneline --graph --decorate --all(Graph view with branches)
```

```
D:\EI exercise\Merging\git-merge-demo>git log --oneline --graph --decorate --
-all
* c010764 (HEAD -> master) added
* 2abef76 added
* b5c5a2b line 3 :commit
* 4fe731b Initial commit
| * 4526b7b (feature) update
|/
* a86effa Fixing typo
* 1ad5902 Initail Commit
```

```
git log -p( show diff in each commit)
```

```
D:\EI exercise\Merging\git-merge-demo>git log -p
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:56:40 2025 +0530

    added

diff --git a/file.txt b/file.txt
index 19a8bf9..8fa111f 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1,2 @@
- "line 2 add"
+ "line2"
+line1
\ No newline at end of file

commit 2abef764eea48d3036675e72ca04a4e108127588
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:54:41 2025 +0530

    added

diff --git a/file.txt b/file.txt
index 9904d9e..19a8bf9 100644
--- a/file.txt
+++ b/file.txt
@@ -1 +1 @@
- "line3"
+ "line 2 add"
```

```
git log -number(show last n commits)
```

```
D:\EI exercise\Merging\git-merge-demo>git log -2
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:56:40 2025 +0530

    added

commit 2abef764eea48d3036675e72ca04a4e108127588
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:54:41 2025 +0530

    added
```

```
git log --grep="Commit msg used"( show history by commit msg)
```

```
D:\EI exercise\Merging\git-merge-demo>git log --grep="commit"
commit b5c5a2be23f3a22d00fa2ada663ba9655d4a0bee
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:49:14 2025 +0530

    line 3 :commit

commit 4fe731b8fec360dd0a8f323b23258784a7f5ffb3
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:48:44 2025 +0530

    Initial commit
```

```
git log --merge( show only merge commit)
```

```
git log --no-merges(exclude merges)
```

```
D:\EI exercise\Merging\git-merge-demo>git log --merges

D:\EI exercise\Merging\git-merge-demo>git log --no-merges
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:56:40 2025 +0530

    added

commit 2abef764eea48d3036675e72ca04a4e108127588
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:54:41 2025 +0530

    added
```

```
git log --stat
```

```
D:\EI\exercise\Merging\git-merge-demo>git log --stat
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:56:40 2025 +0530

    added

file.txt | 3 ++
1 file changed, 2 insertions(+), 1 deletion(-)
```

```
git log --since=" number of days"
```

```
D:\EI\exercise\Merging\git-merge-demo>git log --since="1 days ago"
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:56:40 2025 +0530

    added

commit 2abef764eea48d3036675e72ca04a4e108127588
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:54:41 2025 +0530

    added
```

```
git log --author=="Name"
```

```
D:\EI\exercise\Merging\git-merge-demo>git log --author="rithikas20"
commit c010764109c9aefb96ad514ef2cda520256a4a4a (HEAD -> master)
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:56:40 2025 +0530

    added

commit 2abef764eea48d3036675e72ca04a4e108127588
Author: rithikas20 <rithikasenthilkumar4@gmail.com>
Date:   Sat Dec 6 13:54:41 2025 +0530
```

8.) Rename:

```
git mv <oldname> <newname>
```

```
D:\EI\exercise\Merging\git-merge-demo>git mv file.txt newfile.txt

D:\EI\exercise\Merging\git-merge-demo>git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    renamed:   file.txt -> newfile.txt
```

9.)Branch:

```
git branch <bname>
```

```
git checkout <bname>
```

```
D:\EI exercise\Merging\git-merge-demo>git branch feature  
D:\EI exercise\Merging\git-merge-demo>git checkout feature  
D      file.txt  
A      newfile.txt  
Switched to branch 'feature'
```

git checkout -b <bname> (Create and move at same time)

```
D:\EI exercise\Merging\git-merge-demo>git checkout -b feature1  
Switched to a new branch 'feature1'
```

git branch (list of all branch)

```
D:\EI exercise\Merging\git-merge-demo>git branch  
  feature  
* feature1  
  master
```

git branch -a (all local + remote)

git branch -r(remote branch)

```
D:\EI exercise\Merging\git-merge-demo>git branch -a  
  feature1  
* master
```

git branch -v (last commit)

```
D:\EI exercise\Merging\git-merge-demo>git branch -v  
  feature1 0d3b8d8 Rename  
* master    0d3b8d8 Rename
```

git branch --merged(List the merged branches)

git branch --no-merged(list branches that are not merged yet)

```
D:\EI exercise\Merging\git-merge-demo>git branch --merged  
  feature1  
* master  
  
D:\EI exercise\Merging\git-merge-demo>git branch --no-merged
```

git branch -D <bname> (Force delete even if not merged)

```
D:\EI exercise\Merging\git-merge-demo>git branch -D feature  
Deleted branch feature (was 4526b7b).
```

git remote add <alias_name> <path/url>

```
D:\EI exercise\Merging\subtree-merge-main>git remote add ui_lib ..\subtree-ui-library  
  
D:\EI exercise\Merging\subtree-merge-main>git fetch ui_lib  
remote: Enumerating objects: 3, done.  
remote: Counting objects: 100% (3/3), done.  
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
Unpacking objects: 100% (3/3), 225 bytes | 20.00 KiB/s, done.  
From ..\subtree-ui-library  
 * [new branch] master      -> ui_lib/master
```

git fetch <alias_name>

```
D:\EI exercise\Merging\subtree-merge-main>git fetch ui_lib  
remote: Enumerating objects: 3, done.  
remote: Counting objects: 100% (3/3), done.  
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
Unpacking objects: 100% (3/3), 225 bytes | 20.00 KiB/s, done.  
From ..\subtree-ui-library  
 * [new branch] master      -> ui_lib/master
```

10.)git reflog:

- Even if you lose commits by mistake (reset --hard, rebase rewrite, deleted branch), reflog helps recover them

git reset --hard HEAD~2(lost 2 latest commit)

git reflog

```
D:\EI exercise\Merging>mkdir reflog-demo  
  
D:\EI exercise\Merging>cd reflog-demo  
  
D:\EI exercise\Merging\reflog-demo>git init  
Initialized empty Git repository in D:/EI exercise/Merging/reflog-demo/.git/
```

```
D:\EI exercise\Merging\reflog-demo>echo "A" > file.txt

D:\EI exercise\Merging\reflog-demo>git add .

D:\EI exercise\Merging\reflog-demo>git commit -m "Commit A"
[master (root-commit) a75e064] Commit A
 1 file changed, 1 insertion(+)
 create mode 100644 file.txt

D:\EI exercise\Merging\reflog-demo>echo "B" >> file.txt

D:\EI exercise\Merging\reflog-demo>git add .

D:\EI exercise\Merging\reflog-demo>git commit -m "Commit B"
[master e6e6621] Commit B
 1 file changed, 1 insertion(+)

D:\EI exercise\Merging\reflog-demo>
D:\EI exercise\Merging\reflog-demo>echo "C" >> file.txt

D:\EI exercise\Merging\reflog-demo>git add .

D:\EI exercise\Merging\reflog-demo>git commit -m "Commit C"
[master 82de380] Commit C
 1 file changed, 1 insertion(+)

D:\EI exercise\Merging\reflog-demo>git log --oneline
82de380 (HEAD -> master) Commit C
e6e6621 Commit B
a75e064 Commit A

D:\EI exercise\Merging\reflog-demo>git reset --hard HEAD~2
HEAD is now at a75e064 Commit A

D:\EI exercise\Merging\reflog-demo>git reflog
a75e064 (HEAD -> master) HEAD@{0}: reset: moving to HEAD~2
82de380 HEAD@{1}: commit: Commit C
e6e6621 HEAD@{2}: commit: Commit B
a75e064 (HEAD -> master) HEAD@{3}: commit (initial): Commit A

D:\EI exercise\Merging\reflog-demo>git reset --hard 82de380
HEAD is now at 82de380 Commit C

D:\EI exercise\Merging\reflog-demo>git log --oneline
82de380 (HEAD -> master) Commit C
e6e6621 Commit B
a75e064 Commit A
```

git reflog show main/master - shows the history of where the main branch pointer was previously pointing

```
D:\EI\exercise\Merging\reflog-demo>git reset --hard HEAD~2
HEAD is now at a75e064 Commit A

D:\EI\exercise\Merging\reflog-demo>git reflog show main
fatal: ambiguous argument 'main': unknown revision or path not in tree.
Use '--' to separate paths from revisions, like this:
'git <command> [<revision>...] -- [<file>...]'

D:\EI\exercise\Merging\reflog-demo>git reflog show master
a75e064 (HEAD -> master) master@{0}: reset: moving to HEAD~2
82de380 master@{1}: reset: moving to 82de380
a75e064 (HEAD -> master) master@{2}: reset: moving to HEAD~2
82de380 master@{3}: commit: Commit C
e6e6621 master@{4}: commit: Commit B
a75e064 (HEAD -> master) master@{5}: commit (initial): Commit A
```

git reflog expire --all --expire=now

git gc --prune=now

```
D:\EI\exercise\Merging\reflog-demo>git reflog expire --all --expire=now

D:\EI\exercise\Merging\reflog-demo>git gc --prune=now
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
```