

1) Initialize a new Git repository in a directory. Create a new file and add it to the staging area and commit the changes with an appropriate commit message.

i) Create a new folder called “aec” and switch into the folder

mkdir aec

cd aec

ii) To initialize git repository

git init

iii) Create a new file called “hello.txt”

touch hello.txt

iv) Add the file to the staging area

git add .

v) Committing the file

git commit -m “initial commit: adds a hello file”

2) Creating and Managing Branches

a) Create a new branch named "feature-branch." Switch to the "master" branch. Merge the "featurebranch" into "master."

(Here the name can be either master or main)

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cd aec

ii) To initialize git repository

git init

iii) Create a new file called "hello.txt"

touch hello.txt

iv) Add the file to the staging area

git add .

v) Committing the file

git commit -m "adds a hello file"

vii) Create and switch to the feature-branch

git checkout -b feature-branch

viii) Create a new file called "hello2.txt"

touch hello2.txt

ix) Add the file to the staging area

git add .

x) Committing the file

git commit -m "adds a hello2 file"

xi) Create and switch to the feature-branch

git checkout main

xii) Merge the branch to the main branch

git merge feature-branch

(Both hello1 and hello2 file should be present)

git log - to see the progress

b) Write the commands to stash your changes, switch branches, and then apply the stashed changes.

xiii) Create a new file

touch hello3.txt

ivx) Add the changes

git add .

xv) Stash the changes

git stash

(The file will go)

xvi) Checkout the feature branch

git stash pop

(The file should appear back in this branch)

3) Collaboration and Remote Repositories

a) Clone a remote Git repository to your local machine.

```
git clone https://github.com/dev-shetty/aec-github.git  
cd aec-github
```

b) Fetch the latest changes from a remote repository and rebase your local branch onto the updated remote branch.

```
git fetch  
git checkout -b feature-branch  
git rebase origin/master
```

c) Write the command to merge "feature-branch" into "master" while providing a custom commit message for the merge.

```
touch hello.txt  
git add .  
git commit -m "adds hello file"  
git checkout master  
git rebase feature-branch
```

4) Git Tags and Releases Write the command to create a lightweight Git tag named "v1.0" for a commit in your local repository

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ii) To initialize git repository

git init

iii) Create a new file called "hello.txt"

touch hello.txt

vi) Add the file to the staging area

git add .

v) Committing the file

git commit -m "adds a hello file"

vi) Tag the commit

git tag v1.0

(To see the tag run **git log**, v1.0 will be present there)

5) Advanced Git Operations Write the command to cherry-pick a range of commits from "source-branch" to the current branch

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git init

iii) Create a new file called "hello.txt"

touch hello.txt

iv) Add the file to the staging area

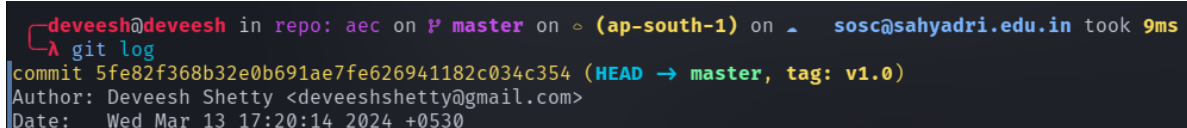
git add .

v) Committing the file

git commit -m "adds a hello file"

vi) Copy the commit hash from the git log

git log

A terminal window showing the output of the 'git log' command. The prompt is 'deveesh@deveesh in repo: aec on P master on (ap-south-1) on sosc@sahyadri.edu.in took 9ms'. The command 'λ git log' is entered. The output shows a single commit: 'commit 5fe82f368b32e0b691ae7fe626941182c034c354 (HEAD -> master, tag: v1.0)'. Below the commit hash, it says 'Author: Deveesh Shetty <deveeshshetty@gmail.com>' and 'Date: Wed Mar 13 17:20:14 2024 +0530'.

Here the commit hash is the full word from 5fe8....c354 (copy the entire thing it will be different in your commit)

vi) Cherry pick the commit

git cherry-pick commit-hash

(Replace the commit-hash with the copied commit hash, should get message like this)

```
deveesh@deveesh in repo: aec on P master on ◦ (ap-south-1) on ▲ sosc@sahyadri.edu.in took 7ms
└─ git cherry-pick 5fe82f368b32e0b691ae7fe626941182c034c354
On branch master
You are currently cherry-picking commit 5fe82f3.
(all conflicts fixed: run "git cherry-pick --continue")
(use "git cherry-pick --skip" to skip this patch)
(use "git cherry-pick --abort" to cancel the cherry-pick operation)

nothing to commit, working tree clean
The previous cherry-pick is now empty, possibly due to conflict resolution.
If you wish to commit it anyway, use:

    git commit --allow-empty

Otherwise, please use 'git cherry-pick --skip'
```

6) Analysing and Changing Git History

i) Create a new folder called “aec” and switch into the folder

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ii) To initialize git repository

git init

iii) Create a new file called “hello.txt”

touch hello.txt

iv) Add the file to the staging area

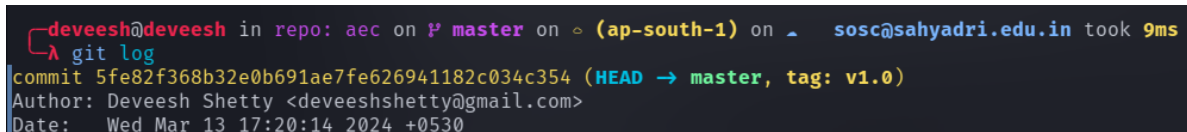
git add .

v) Committing the file

git commit -m “adds a hello file”

vi) Copy any of the commit hash by doing

git log



```
deveesh@deveesh in repo: aec on P master on ○ (ap-south-1) on ㄿ sosc@sahyadri.edu.in took 9ms
λ git log
commit 5fe82f368b32e0b691ae7fe626941182c034c354 (HEAD → master, tag: v1.0)
Author: Deveesh Shetty <deveeshshetty@gmail.com>
Date: Wed Mar 13 17:20:14 2024 +0530
```

a) Given a commit ID, how would you use Git to view the details of that specific commit, including the author, date, and commit message?

git show commit-hash

b) Write the command to list all commits made by the author "JohnDoe" between "2023-01-01" and "2023-12-31."

git log --author="JohnDoe" --since="2023-01-01" --until="2023-12-31"

c) Write the command to display the last five commits in the repository's history.

git log -n 5

d) Write the command to undo the changes introduced by the commit with the ID "abc123"

git revert commit-hash