Placement Empowerment Program

Cloud Computing and DevOps Centre

Create a new branch in your Git repository for testing .
Add a new feature and merge it

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Introduction:

In this Proof of Concept (POC), Git is used for version control to manage the development workflow. Git allows developers to create separate branches for new features, isolate them from the main branch, and merge them back after completion. This ensures organized and collaborative development.

Overview:

This POC demonstrates how to:

1. Initialize a Git repository.
2. Create and switch between branches.
3. Commit changes in different branches.
4. Merge feature branches into the main branch.
5. Delete branches after completing the work.

Objectives:

1. To initialize and set up a Git repository.
2. To create and manage feature branches (e.g., testing-feature).
3. To demonstrate adding, committing, and merging code.
4. To showcase how to delete branches after their purpose is served.
5. To learn how to resolve merge conflicts if any arise during the process.

Importance:

1. Version Control: Helps track changes, revert to previous versions, and avoid conflicts in the codebase.

2. Collaboration: Different team members can work on separate features simultaneously without interfering with each other's work.

3. Branching: Isolates new features or bug fixes, ensuring stability in the main branch (master or main).

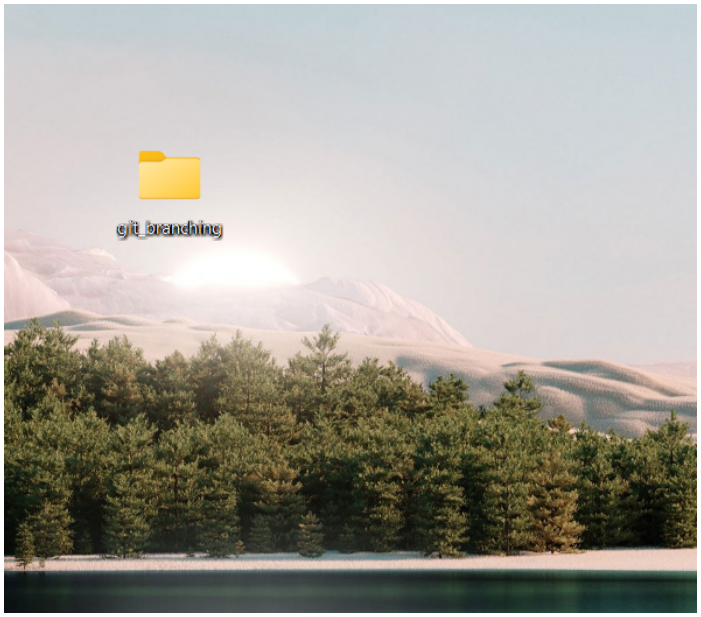
4. Efficiency: Merging branches allows rapid integration of new features without disrupting ongoing work.

5. Clean Workflow: Deleting feature branches after merging keeps the repository clean and manageable.

Step-by-Step Overview

Step 1:

Create a folder and name it (Git_Branching).



Step 2:

Set the path to the folder created in first step (Git_Branching).

```
C:\Users\Hi>cd C:\Users\Hi\Desktop\Git_Branching
```

Step 3:

Initialize Git by typing this command:

git init

This command will create a .git folder inside your folder, which tells Git to start tracking your files.

```
C:\Users\Hi\Desktop\Git_Branching>git init
Initialized empty Git repository in C:/Users/Hi/Desktop/Git_Branching/.git/
```

Step 4:

Create a simple file to start the repository:

```
C:\Users\Hi\Desktop\Git_Branching>echo "Initial file content" > first-file.txt
```

Step 5:

Add the File to Git

Tell Git to track this file:

```
C:\Users\Hi\Desktop\Git_Branching>git add .
```

Step 6:

Save this change in Git with a commit message.

```
C:\Users\Hi\Desktop\Git_Branching>git commit -m "Initial commit"
[master (root-commit) 22dd1a1] Initial commit
 1 file changed, 1 insertion(+)
 create mode 100644 first-file.txt
```

Step 7:

Create and switch to a new branch called testing-feature.

```
C:\Users\Hi\Desktop\Git_Branching>git checkout -b testing-feature
Switched to a new branch 'testing-feature'
```

Step 8:

Let’s add a new file for our feature:

```
C:\Users\Hi\Desktop\Git_Branching>echo "Initial file content" > first-file.txt
```

Step 9:

Now, stage the changes:

```
C:\Users\Hi\Desktop\Git_Branching>git add .
```

Step 10:

Commit the changes:

```
C:\Users\Hi\Desktop\Git_Branching>git commit -m "Add new feature file"
[testing-feature 738d034] Add new feature file
 1 file changed, 1 insertion(+)
 create mode 100644 new-feature.txt
```

Step 11:

Switch to the master Branch

```
C:\Users\Hi\Desktop\Git_Branching>git checkout master
Switched to branch 'master'
```

Step 12:

Merge Changes from testing-feature to master

```
C:\Users\Hi\Desktop\Git_Branching>git merge testing-feature
Updating 22dd1a1..738d034
Fast-forward
 new-feature.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 new-feature.txt
```

Step 13:

Once the merge is done, you can delete the testing-feature branch:

```
C:\Users\Hi\Desktop\Git_Branching>git branch -d testing-feature

Deleted branch testing-feature (was 738d034).
```

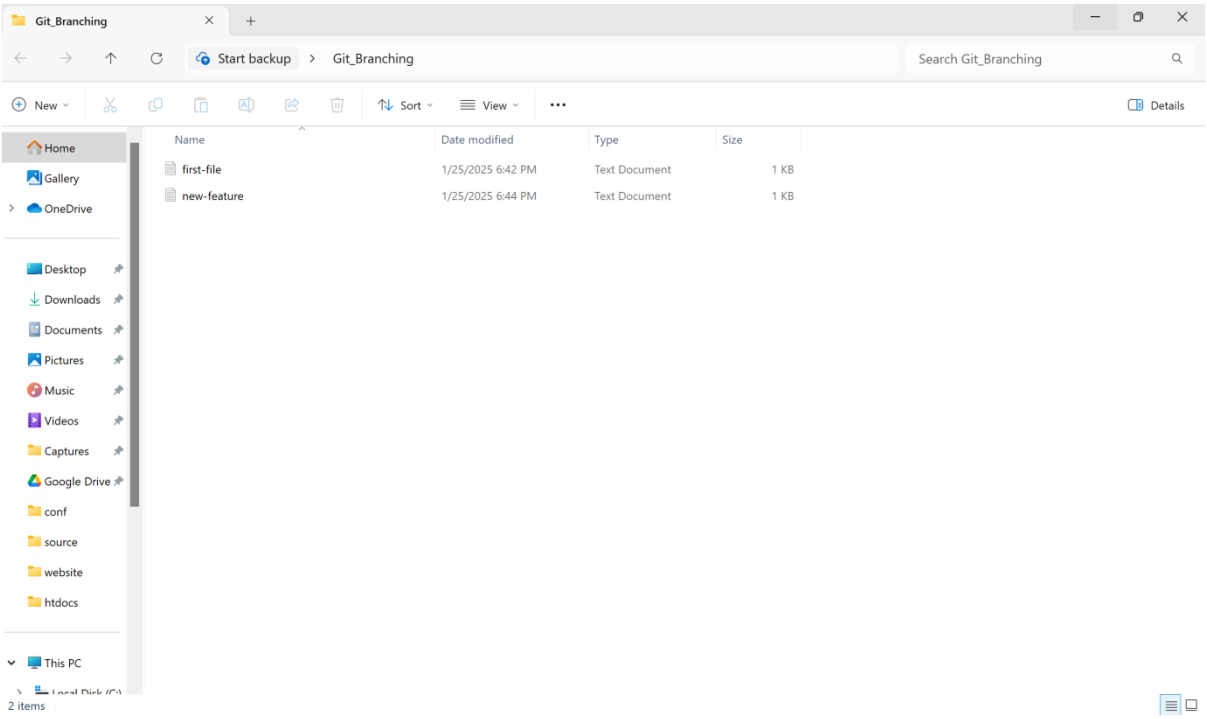
Step 14:

Now, check the files in the folder:

```
C:\Users\Hi\Desktop\Git_Branching>dir
 Volume in drive C has no label.
 Volume Serial Number is 3CD7-932D

 Directory of C:\Users\Hi\Desktop\Git_Branching

01/25/2025  06:44 PM    <DIR>          .
01/25/2025  06:41 PM    <DIR>          ..
01/25/2025  06:42 PM                25 first-file.txt
01/25/2025  06:44 PM                27 new-feature.txt
               2 File(s)             52 bytes
               2 Dir(s)  158,287,220,736 bytes free
```



Outcome

By completing this PoC of managing branches in Git for a local repository, you will:

1. Successfully initialize a Git repository in your local project folder.

2. Create and manage multiple branches for feature development and experimentation.

3. Track and commit changes made to files in different branches.

4. Merge feature branches back into the main branch while maintaining project integrity.

5. Gain hands-on experience with key Git commands such as git init, git add, git commit, git checkout, and git merge.