

## SCM Sample Assignment Problem Statement (Task 1.1)

**Title:** Implementing Git Basics

**Problem Statement:** You are part of a small development team working on a project. To ensure efficient version control, you are tasked with performing and demonstrating the following operations using Git and GitHub:

- 1. Repository Setup and Initial Commit:** Create a new GitHub repository for the project. Clone the repository to your local system, initialize it with a main branch, and create an initial commit that includes a file named `project_overview.txt` with a brief description of the project

```
bhumi@BhumikaSharma MINGW64 ~ (feature-update)
$ pwd
/c/Users/bhumi

bhumi@BhumikaSharma MINGW64 ~ (feature-update)
$ cd "C:\Users\bhumi\OneDrive\Desktop\Documents\git 1.1"

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1 (feature-update)
$ git init
Initialized empty Git repository in C:/Users/bhumi/OneDrive/Desktop/Documents/git 1.1/.git/

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1 (master)
$ git clone https://github.com/bhumikasharma1409/SCM-project.git
Cloning into 'SCM-project'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), 71.96 KiB | 1.47 MiB/s, done.

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1 (master)
$ cd SCM-project

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ echo "This project contains details about subject SCM" > project_overview.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git branch -M main

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git add project_overview.txt
warning: in the working copy of 'project_overview.txt', LF will be replaced by CRLF the next time Git touches it

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   project_overview.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git commit -m "Initial commit: Have added project_overview.txt"
[main ad57fc7] Initial commit: Have added project_overview.txt
 1 file changed, 1 insertion(+)
 create mode 100644 project_overview.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git log --oneline
ad57fc7 (HEAD -> main) Initial commit: Have added project_overview.txt
1064719 (origin/main, origin/HEAD) Add files via upload
```

- 2. Branch Creation and Updates:** Create a new branch named feature-update from the main branch. In this branch, add a file named feature\_details.txt containing details of a new feature you plan to implement. Commit your changes to the feature-update branch

```
bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-pr
object (main)
$ git checkout main
Already on 'main'
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git checkout -b Hello
Switched to a new branch 'Hello'

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (Hello)
$ git checkout -b feature_update
Switched to a new branch 'feature_update'

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ echo "We can track file using this." > feature_details.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git add feature_details.txt
warning: in the working copy of 'feature_details.txt', LF will be replaced by CRLF the next time Git touches it

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git commit -m "Have added new features in feature_details.txt"
[feature_update a0affd9] Have added new features in feature_details.txt
1 file changed, 1 insertion(+)
create mode 100644 feature_details.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git log --oneline
a0affd9 (HEAD -> feature_update) Have added new features in feature_details.txt
ad57fc7 (main, Hello) Initial commit: Have added project_overview.txt
1064719 (origin/main, origin/HEAD) Add files via upload
```

3. **Merge and Conflict Resolution:** While working on the feature-update branch, simulate a merge conflict: o Modify the feature\_details.txt file in the main branch. o Attempt to merge the feature-update branch into the main branch and resolve the conflict using Git Bash. o Commit the resolved changes to complete the merge

```
bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git checkout main
Switched to branch 'main'
Your branch is ahead of 'origin/main' by 1 commit.
(use "git push" to publish your local commits)

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ echo "We can set reminders using this" > feature_details.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git add feature_details.txt
warning: in the working copy of 'feature_details.txt', LF will be replaced by CRLF the next time Git touches it

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git commit -m "Updated feature details"
[main be4cf69] Updated feature details
1 file changed, 1 insertion(+)
create mode 100644 feature_details.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (main)
$ git checkout feature_update
Switched to branch 'feature_update'

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git merge main
Auto-merging feature_details.txt
CONFLICT (add/add): Merge conflict in feature_details.txt
Automatic merge failed; fix conflicts and then commit the result.

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update|MERGING)
$ git add feature_details.txt

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update|MERGING)
$ git commit -m "Merged conflicts"
[feature_update 7692c6c] Merged conflicts

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git log --oneline
7692c6c (HEAD -> feature_update) Merged conflicts
be4cf69 (main) Updated feature details
a0affd9 Have added new features in feature_details.txt
ad57fc7 (Hello) Initial commit: Have added project_overview.txt
1064719 (origin/main, origin/HEAD) Add files via upload
```

```
<<<<<<< HEAD
We can track file using this.
=====
We can set reminders using this
>>>>>>> main
```

(Note Pad Screenshot before resolving the conflict)

4. **Repository Audit:** Use Git commands such as `git status` and `git log` to review the repository status and commit history. Document the key actions performed, including branch creation, commits, merges, and conflict resolutions.

```
bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git status
On branch feature_update
nothing to commit, working tree clean

bhumi@BhumikaSharma MINGW64 ~/OneDrive/Desktop/Documents/git 1.1/SCM-project (feature_update)
$ git log
commit 7692c6c94e280df6ff5a2f36b0d87256a7077244 (HEAD -> feature_update)
Merge: a0affd9 be4cf69
Author: Bhumika <bhumika6432@gmail.com>
Date: Sat Feb 8 08:18:03 2025 +0530

    Merged conflicts

commit be4cf69b54b6b85c53d885dee6da015e78ef0865 (main)
Author: Bhumika <bhumika6432@gmail.com>
Date: Sat Feb 8 08:16:47 2025 +0530

    Updated feature details

commit a0affd968e580ebe5189759c14db71d635853084
Author: Bhumika <bhumika6432@gmail.com>
Date: Sat Feb 8 08:13:36 2025 +0530

    Have added new features in feature_details.txt
```