

■ Steps for Git Merging of Branches

■ 1. Clone the Repository (if not done already)

```
git clone <repository-url>
cd <repository-name>
```

■ 2. Fetch Latest Changes

```
git fetch origin
```

■ 3. Switch to the Target Branch (usually main or develop)

```
git checkout main
git pull origin main
```

■ 4. Merge the Source Branch into Target

```
git merge feature/login
```

If conflicts occur

Git will indicate the files with conflicts
Open and resolve each file manually

Mark the conflict as resolved:
git add <resolved-file>
git commit

■ 5. Push the Merged Changes

```
git push origin main
```

■ Best Practices for Branching & Collaboration

■ 1. Use a Clear Branching Strategy

- GitFlow: Feature branches, release branches, hotfixes
- GitHub Flow: Simple: main + feature branches
- Trunk-Based Development: Single shared branch, short-lived feature branches

■ 2. Name Branches Clearly and Consistently

- Examples:
- feature/user-login
 - bugfix/crash-on-startup

- hotfix/security-patch

■ Avoid:

- temp
- test1
- mybranch

■ 3. Keep Branches Short-Lived

- Don't let feature branches linger
- Merge as soon as code is complete and reviewed
- Avoid large, complex merge conflicts

■ 4. Use Pull Requests (PRs) for Merging

- PRs enable code review, discussion, and approvals
- Assign at least one reviewer
- Use PR templates (checklist, summary, test steps)

■ 5. Rebase for Clean History (Optional but Powerful)

```
git checkout feature/login
git fetch origin
git rebase origin/main
```

This keeps history linear and easier to debug.

■ 6. Protect the main/release Branches

- Require PR approval before merge
- Require CI checks to pass (tests, linter, etc.)
- Restrict direct pushes to main

■ 7. Document & Automate

- Use branch naming policies in team docs
- Automate formatting/linting/test steps in CI before merging

■ Bonus Tips

- Commit often with meaningful messages
- Regularly sync your branch with main to avoid large merge conflicts
- Use tags (git tag) for marking releases or deployment points