Git Mastery: From Basics to Advanced

1. Introduction to Git
- What is Git?
- Benefits of Git
- Installing Git

2. Git Basics
- git init, git config, git help
- git status, git add, git commit
- git log, git diff

3. Working with Branches
- git branch, git checkout, git switch
- git merge, git rebase
- Resolving merge conflicts

4. Remote Repositories
- git remote add, git clone, git fetch
- git pull, git push
- Authentication (SSH, HTTPS)

5. Undoing Changes
- git checkout -- file
- git reset (soft, mixed, hard)
- git revert

6. Stashing
- git stash save
- git stash list
- git stash pop/apply

7. Collaboration
- Pull requests (GitHub/GitLab)
- Code reviews
- Forks & contributions

8. Advanced Git
- Interactive rebase (git rebase -i)
- Cherry-pick
- Submodules
- Git hooks
- Squash commits

9. Debugging & Optimization
- git bisect

- git blame

- git grep

- git gc

10. Best Practices

- Write good commit messages

- Branch naming conventions

- Feature branching workflow

- Avoid committing secrets

Cheat Sheet:

- git init → Initialize repo

- git clone → Clone repo

- git add → Stage changes

- git commit -m "msg" → Commit changes

- git push origin main → Push code

- git pull origin main → Pull code

- git branch → List branches

- git checkout -b → Create + switch branch