**1. Basic Git Commands**

| **Command** | **Description** |
| --- | --- |
| git init | Initializes a new Git repository in the current directory. |
| git clone <repo\_url> | Creates a local copy of a remote repository. |
| git config --global user.name "Your Name" | Sets the global username for commits. |
| git config --global user.email "you@example.com" | Sets the global email for commits. |
| git status | Shows the current status of the working directory (modified, staged, or untracked files). |
| git add <file> | Adds a specific file to the staging area. |
| git add . | Stages all changes in the working directory. |
| git commit -m "Commit message" | Saves the staged changes to the local repository with a message. |
| git commit --amend -m "New message" | Modifies the last commit message. |
| git log | Shows commit history. |
| git log --oneline --graph --all | Displays a condensed commit history with a visual branch structure. |
| git show <commit\_hash> | Shows the details of a specific commit. |

**2. Branching & Merging**

| **Command** | **Description** |
| --- | --- |
| git branch | Lists all branches in the repository. |
| git branch <branch\_name> | Creates a new branch. |
| git checkout <branch\_name> | Switches to an existing branch. |
| git switch <branch\_name> | Alternative to checkout, used to switch branches. |
| git checkout -b <branch\_name> | Creates and switches to a new branch. |
| git merge <branch\_name> | Merges the specified branch into the current branch. |
| git rebase <branch\_name> | Reapplies commits on top of another base branch. |
| git branch -d <branch\_name> | Deletes a branch. |
| git branch -D <branch\_name> | Force deletes a branch. |

**3. Working with Remote Repositories (GitHub)**

| **Command** | **Description** |
| --- | --- |
| git remote -v | Lists remote repositories connected to the local repo. |
| git remote add origin <repo\_url> | Links the local repo to a remote repository. |
| git push -u origin <branch> | Pushes a branch to the remote repository (GitHub). |
| git push origin --delete <branch> | Deletes a remote branch from GitHub. |
| git fetch origin | Fetches changes from the remote repository without merging. |
| git pull origin <branch> | Fetches and merges changes from the remote repository into the current branch. |
| git clone <repo\_url> | Clones a remote repository. |

**4. Undoing Changes**

| **Command** | **Description** |
| --- | --- |
| git reset <file> | Removes a file from the staging area. |
| git reset --soft <commit\_hash> | Moves HEAD to the specified commit, keeping changes staged. |
| git reset --mixed <commit\_hash> | Moves HEAD to the specified commit, unstaging changes but keeping them. |
| git reset --hard <commit\_hash> | Moves HEAD to the specified commit, discarding all changes. |
| git revert <commit\_hash> | Creates a new commit that undoes the specified commit. |
| git stash | Temporarily stores uncommitted changes. |
| git stash pop | Restores the latest stashed changes and removes them from the stash. |
| git stash list | Lists all stashed changes. |
| git stash drop | Deletes a specific stash. |

**5. Tagging**

| **Command** | **Description** |
| --- | --- |
| git tag | Lists all tags in the repository. |
| git tag <tag\_name> | Creates a lightweight tag. |
| git tag -a <tag\_name> -m "Message" | Creates an annotated tag with a message. |
| git push origin <tag\_name> | Pushes a specific tag to the remote repository. |
| git push origin --tags | Pushes all local tags to the remote repository. |
| git tag -d <tag\_name> | Deletes a local tag. |
| git push --delete origin <tag\_name> | Deletes a remote tag. |

**6. Git Ignore & Cleanup**

| **Command** | **Description** |
| --- | --- |
| echo "filename" >> .gitignore | Adds a file to the .gitignore list. |
| git clean -f | Deletes untracked files. |
| git clean -fd | Deletes untracked files and directories. |
| git gc | Runs garbage collection to optimize the repo. |

**7. Collaboration & Pull Requests (GitHub)**

| **Command** | **Description** |
| --- | --- |
| git fork | Creates a copy of someone else's repo in your GitHub account. |
| git clone <your\_forked\_repo\_url> | Clones your forked repository. |
| git remote add upstream <original\_repo\_url> | Links your fork to the original repo. |
| git fetch upstream | Fetches updates from the original repo. |
| git merge upstream/main | Merges upstream changes into your branch. |
| git push origin <branch> | Pushes local changes to your fork. |
| **On GitHub:** Create a **Pull Request (PR)** to contribute your changes. |  |

**8. Git Submodules**

| **Command** | **Description** |
| --- | --- |
| git submodule add <repo\_url> | Adds a submodule (another repo inside your repo). |
| git submodule update --init --recursive | Initializes and updates submodules. |
| git submodule foreach git pull | Pulls updates for all submodules. |

**9. Git Bisect & Debugging**

| **Command** | **Description** |
| --- | --- |
| git bisect start | Starts a bisect session to find a faulty commit. |
| git bisect bad | Marks the current commit as bad. |
| git bisect good <commit> | Marks a known good commit. |
| git bisect reset | Ends the bisect session. |

**10. Git Cherry-Pick**

| **Command** | **Description** |
| --- | --- |
| git cherry-pick <commit\_hash> | Applies a specific commit from another branch. |

**🔥 Bonus: Useful Shortcuts**

| **Shortcut** | **Description** |
| --- | --- |
| git alias <shortcut> '<command>' | Creates an alias for a Git command. |
| git shortlog -sn | Shows the number of commits per author. |
| git diff | Shows changes between commits, branches, or working directory. |