**Git Commands**

Git is a version control system that helps track changes in code and collaborate with others. GitHub is a cloud-based platform that hosts Git repositories and enables collaboration. Below are essential Git commands for working with GitHub:

### **1. Setting Up Git and GitHub**

**Configure user details (only needed once per system)**

git config --global user.name "Your Name"

git config --global user.email "your\_email@example.com"

**Verify Git configuration**

git config --list

### **2. Initializing a Git Repository**

**Initialize a new local repository**

git init

### **3. Cloning a Repository from GitHub**

**Clone an existing GitHub repository to your local machine**

git clone https://github.com/username/repository.git

### **4. Checking Repository Status**

**Show the status of the working directory**

git status

### **5. Adding and Committing Changes**

**Add all changed files to staging area**

git add .

**Commit changes with a message**

git commit -m "Your commit message"

### **6. Connecting Local Repository to GitHub**

**Add a remote repository**

git remote add origin https://github.com/username/repository.git

**Verify remote repository**

git remote -v

### **7. Pushing Changes to GitHub**

**Push local changes to GitHub (first push)**

git push -u origin main

**Push subsequent changes**

git push origin main

### **8. Pulling Updates from GitHub**

**Fetch and merge changes from GitHub**

git pull origin main

### **9. Branching and Merging**

**Create a new branch**

git branch new-branch

**Switch to the new branch**

git checkout new-branch

**Merge changes from new-branch to main**

git checkout main

git merge new-branch

### **10. Resolving Merge Conflicts**

**If a merge conflict occurs, manually edit the conflicting files, then run:**

git add .

git commit -m "Resolved merge conflict"

### **11. Deleting a Branch**

**Delete a local branch**

git branch -d branch-name

**Delete a remote branch**

git push origin --delete branch-name

### **12. Undoing Changes**

**Undo changes before committing**

git checkout -- filename

**Reset to last committed state**

git reset --hard HEAD

### **13. Working with GitHub Forks**

**Add the original repository as an upstream remote**

git remote add upstream https://github.com/original-owner/repository.git

**Fetch and merge latest changes from the upstream repo**

git fetch upstream

git merge upstream/main

### **14. Viewing Commit History**

**View commit history**

git log

### **15. GitHub Authentication (For HTTPS Users)**

**Cache GitHub credentials**

git config --global credential.helper cache

These commands help you effectively manage repositories on GitHub and collaborate with teams.