**GIT-GITHUB Assignment**

**1.What is git and why is it used?**

Git is a distributed version control system that allows multiple developers to collaborate on projects simultaneously. It tracks changes made to files over time, facilitates merging of changes made by different developers, and provides mechanisms for reverting to previous versions if needed. Git is widely used in software development to manage source code effectively.

**2. Explain the difference between Git pull and Git fetch.**

git pull: It fetches the changes from a remote repository and merges them into the current local branch. It is essentially a combination of git fetch followed by git merge.

git fetch: This command only retrieves the changes from the remote repository and updates the branches. It doesn't automatically merge the changes into the local branch like git pull. It's useful for inspecting changes before merging.

**3. How do you revert a commit in Git?**

using git revert followed by the commit hash of the commit you want to revert.

git revert <commit-hash>

**4. Describe the Git staging area.**

The staging area is where changes are placed before committing them to the repository. When you make changes to files, you can add them to the staging area using git add command. Once added, these changes are ready to be committed to the repository using git commit.

**5.What is a merge conflict, and how can it be resolved?**

A merge conflict occurs when Git is unable to automatically merge changes from different branches because they conflict with each other. This happens when two branches have made changes to the same part of a file. To resolve a merge conflict, you need to manually edit the conflicted files to resolve the differences, then add the resolved files to the staging area, and finally commit the changes to complete the merge.

**6. How does Git branching contribute to collaboration?**

Git branching allows developers to work on different features or fixes simultaneously without interfering with each other's work. Each branch is an independent line of development, enabling developers to experiment with changes without affecting the main codebase. Branches can be easily merged back into the main branch when the features are complete or the fixes are tested and ready.

**7. What is the purpose of Git rebase?**

Git rebase is used to incorporate changes from one branch into another by reapplying commits on top of the target branch. It helps in maintaining a cleaner commit history by avoiding unnecessary merge commits. Rebase is often used to integrate feature branches with the main branch before merging to keep the commit history linear and easier to understand.

**8. Explain the difference between Git clone and Git fork.**

git clone: This command creates a copy of a repository, including all branches and commit history, on the local machine. It's used when you want to work with an existing repository and contribute to it.

git fork: Forking is a concept used in GitHub. It creates a copy of a repository under your account on the platform, allowing you to freely experiment with changes without affecting the original repository.

**9. How do you delete a branch in Git?**

Using the git branch -d <branch-name> command.

**10. What is a Git hook, and how can it be used?**

Git hooks are scripts that Git executes before or after certain events such as committing, merging, or pushing. They allow developers to automate tasks or enforce policies. They run automatically every time a particular event occurs in a Git repository.