Git Theory Test

1. What is Git and why is it used?

- Git is a distributed version control system.
- It handles projects of all sizes with speed and efficiency.
- Used for tracking changes in source code during software development.
- Enables multiple developers to work on non-linear development simultaneously.

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

- **Git pull:** Updates the local branch with changes from the remote repository and merges them.
- **Git fetch:** Downloads changes from the remote repository without merging, allowing review before integration.

3.How do you revert a commit in Git?

- Use git revert <commit_id>: Creates a new commit that undoes the changes of the specified commit.
- Alternatively, use git reset --hard <commit_id>: Resets the repository to a previous state (caution: rewrites history).

4.Describe the Git staging area.

- Also known as the index.
- A place where changes are gathered before committing to the repository.
- Allows formatting and reviewing changes before they become part of the project history.

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

- Occurs when Git encounters conflicting changes during a merge.
- Happens with changes to the same line or when one branch deletes a file that another modifies.
- Resolve by manually editing conflicting files, adding resolved files to the staging area, and committing changes.

6.How does Git branching contribute to collaboration?

- Allows multiple developers to work on different features, bug fixes, or experiments simultaneously.
- Each branch can be developed independently and merged back into the main branch.
- Facilitates parallel development and enhances collaboration.

7. What is the purpose of Git rebase?

- Integrates changes from one branch into another.

- Moves or combines a sequence of commits to a new base commit.
- Maintains a clean project history by avoiding unnecessary merge commits and linearizing the commit history.

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

- **Git clone:** Creates a copy of an existing repository on your local machine.
- **Git fork:** Creates a personal copy of someone else's repository under your account on platforms like GitHub.
- Forking allows proposing changes to the original repository via pull requests.

9.How do you delete a branch in Git?

- Delete a local branch: `git branch -d <branch_name> (if merged), git branch -D <branch_name> (force delete).
- Delete a remote branch: `git push origin --delete <branch_name>.

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

- A script triggered by specific Git events (commits, merges, pushes).
- Used to enforce policies, automate tasks, and enhance workflows.
- Categorized into client-side hooks (e.g., pre-commit, post-commit) and server-side hooks (e.g., pre-receive, post-receive).