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Git Workflows

Git is a popular version control system used primarily for source code management. Understanding how to use Git and its importance in software development is vital to efficiently contributing to small and large projects, especially when working in a team.

A Git workflow, in a team project, is essential as it defines the responsibilities of each team member. A successful Git workflow allows each team member to undo their own mistakes and others as well. Mistakes will happen in a project, so being able to swiftly deal with them benefits a team tremendously. This can range from restoring files back to a previous state to undoing a snapshot.

Team members are easily able to reverse errors and such by cloning their own repository and editing the project locally. Once a team member is satisfied with their contribution, they push their changes to a local branch. Team members are then able to push their changes to a central repository that will hold the project and allow the changes to be shared with other team members involved. This is known as a commit. Commits contain a snapshot of the project, a message describing the changes made in this version, a date and time, along with author of the commit. To prevent a team member from reversing another team member's contributions to the project, Git will reject the "fast-forward" and require the team member to pull official commits from the project and merge them with their own local changes.

Another important component of Git is the branching system. Branching is essentially a snapshot of a team member's changes. No matter what how small or large the changes, Git will create a new branch. Git's branching system allows team members to work on multiple versions at the same time. This way, if a feature of the project ends up being undesirable, team members can just delete the branch instead of deleting complete code and performing adjustments to previous code. Git does this by using branches as a reference to a previous commit. Branches are able to be created, renamed, merged, and deleted.

An issue that team members may run into are merge conflicts. Merge conflicts happen when multiple team members try to edit the same code. If two team members change the same line of code, Git will not be able to know which one to commit. The use of branches that are not connected with each can lower the probability that team members will run into merge conflicts. When dealing with a merge conflict, it is up to the team members to resolve it. One way to resolve it is by editing the file that is conflicted. By editing the content that is causing the merge conflict, Git will be able to resolve the conflict and will merge commit to finalize it.

Git is important to software development. It allows multiple team members to work collaboratively at their own pace. This eliminates the use of numerous meetings and sessions needed to communicate with other team members. Another huge benefit is tracking changes and updates. Git allows every team member to see what changes were made, the time at when it was made, a message stating why the changes were made, along with who made the changes. The commit history is immutable, meaning it cannot be changed. Therefore, it creates a sense of accountability and responsibility in a team collaborative setting. Coupled with its scalability, speed, and efficiency, Git is an important component of software development and should be learned by anyone with an interest in creating a project individually or with a team.

Works Cited

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