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Probability and Applied Stats

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Git Workflow

What is Git Workflow? Before we dive into that topic, let’s establish what Git is. According to *SimpliLearn*, “Git is a DevOps tool used for source code management. It is a free and open-source version control system used to handle small to very large projects efficiently. Git is used to tracking changes in the source code, enabling multiple developers to work together on non-linear development. Linus Torvalds created Git in 2005 for the development of the Linux kernel” (Perveez 2023). GitHub is a free Internet hosting service that uses Git. GitHub provides Git to users, which allows users to work/collaborate on projects together with having the luxury of being anywhere in the world.

Moving along, let’s get into the main topic, Git Workflow. Knowing now what Git is, let’s combine what Git is and what a workflow is. A workflow is self explanatory, it’s essentially a guideline or recommendation on how flow should be done to maximize efficiency and performance. The proper definition of Git Workflow is, “A Git workflow is a recipe or recommendation for how to use Git to accomplish work in a consistent and productive manner. Git workflows encourage developers and DevOps teams to leverage Git effectively and consistently. Git offers a lot of flexibility in how users manage changes” (Atlassian). Git Workflow is a simple guideline for users to follow to achieve a high efficiency.

Git has numerous functions that include commits, pushes, pulls, and merge conflicts. Commiting in Git is an important feature. When a file has been updated and is ready to be updated or uploaded, then you commit. After a commit of a file has been uploaded, a snapshot is taken of the whole repository that always contains the name, time, and message. Git also include features called pushing and pulling. Pushing in Git is a key feature that connects the local and remote repositories. This is what allows users to transfer previous commits to the remote repository from the local one. Pulling is the opposite of pushing. Pulling would be taking the commits from the remote repository and upload them to the local.

There is also a Git command/feature called merge. According to *Atlassian*, “Merging is Git's way of putting a forked history back together again. The git merge command lets you take the independent lines of development created by git branch and integrate them into a single branch” (Atlassian). Merging will essentially take multiple series of commits and puts them together in one unified history. Git merging can lead to conflicts. Conflicts can stem from multiple actions taken. A conflict will most likely arise from two people editing the same line of code at once. Another can be when a file is deleted by someone while another person is editing that said file. It is important to know what a Git merge conflict looks like. It can be created in a practice repository if you like. “Git will produce some descriptive output letting us know that a CONFLICT has occurred. We can gain further insight by running the git status command” (Atlassian). By running “git status” in the command line, a user can see if there are any merged or unmerged paths. GitHub along with Git in general is an important topic and knowledge that should be learned by all in the Computer Science field. This is the future of file/project collaboration.

Atlassian. (n.d.). *Git workflow: Atlassian Git Tutorial*. Atlassian. Retrieved January 30, 2023, from https://www.atlassian.com/git/tutorials/comparing-workflows#:~:text=A%20Git%20workflow%20is%20a,in%20how%20users%20manage%20changes.

Perveez, S. H. (2023, January 30). *What is git: Features, command and workflow in git [updated]*. Simplilearn.com. Retrieved January 30, 2023, from https://www.simplilearn.com/tutorials/git-tutorial/what-is-git