Updating the remote repository

About GitHub

Git is a decentralised version management system used to manage versions of source code. GitHub provides online Git repository hosting services for developers. As of December 2013, GitHub hosts over 10 million repositories.

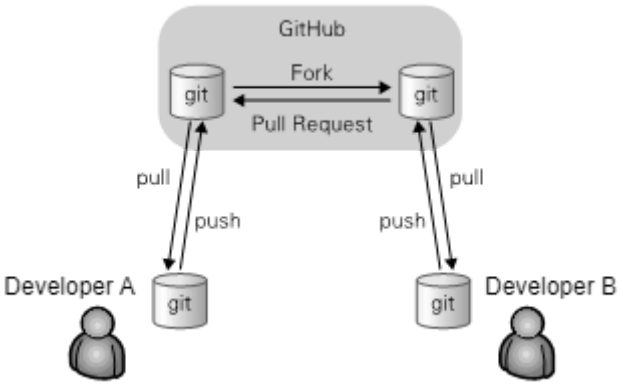


Figure 1 The relationship between git repositories and GitHub

As shown in Figure 1, local repositories are those held locally by developers and remote repositories are those hosted online on GitHub. The repository contains all the information (source code, documentation, etc.) for a particular software project.

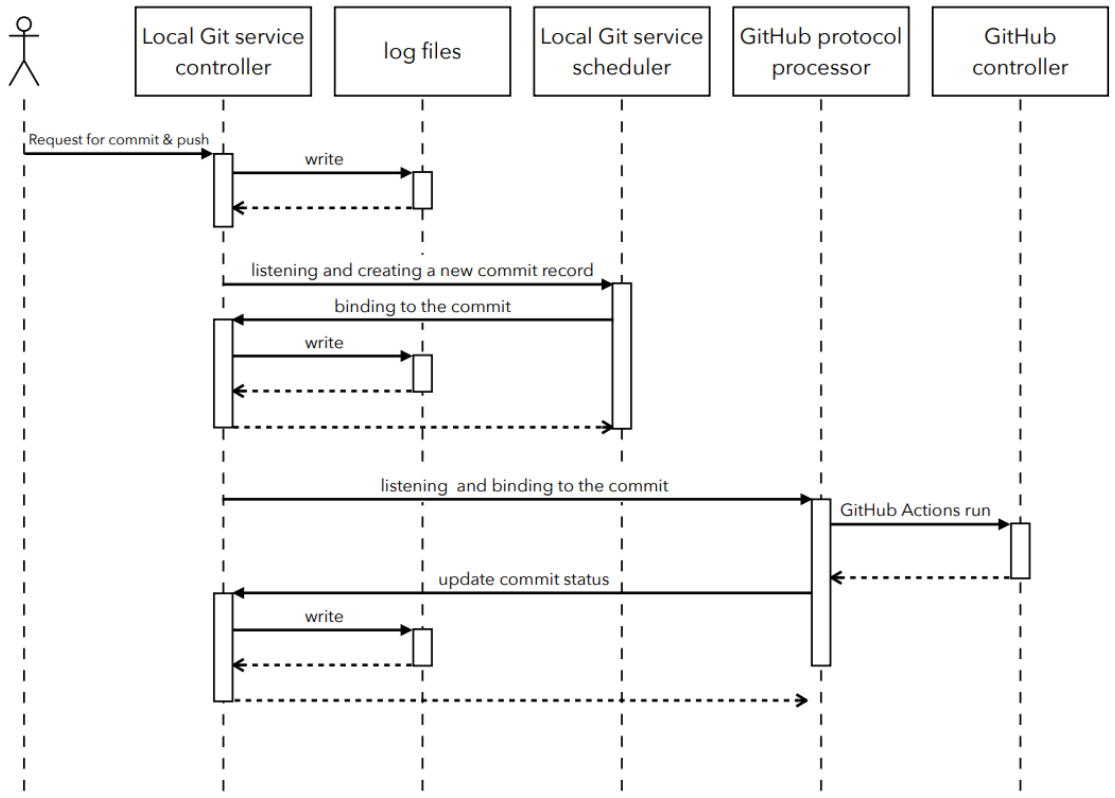
Modify files in the local repository and update the remote repository

Modifying files in your local repository, Git does not automatically record these changes. To make a file manageable by a Git repository, you need to first add it to a staging area with the git add command. The staging area is a temporary area until the commit is made. Using the git commit command, you can then physically save the files in the current staging area to the local repository's history (log file). If you want to push the contents of the local repository to the remote repository, then you need to continue using the git push command.

Introduction to GitHub Actions

GitHub Actions is a continuous integration and continuous delivery platform provided by GitHub that automates the building, testing and deployment of software projects. Workflows can be defined using YAML syntax to automatically build software projects for testing after each push of code, and are typically stored in the actions.yml file in the .github file directory of the corresponding software project.

Sequence diagram of the steps to modify the local repository and update the remote repository on Github



1. Users use a local Git service to perform commit and push operations.
2. The local Git service controller listens for file changes in this commit from the local scheduler, creates a new commit record, and eventually writes it to the local repository log file.
3. The local Git service controller continues to perform the push operation, binding the commit to the remote GitHub protocol processor. GitHub controller runs the build and test workflows set up in GitHub Actions and feeds the results back to the GitHub protocol processor. The processor updates the remote repository and updates the commit status to the local Git service controller.
4. The updated commit status is written to the local repository log file.

Data flow diagram of modifying the local repository and updating the remote repository