

Code Review Procedures

This document outlines the code review procedures for the system during the development and testing phases. The purpose of these reviews is to ensure the system's correctness, performance, maintainability and code style.

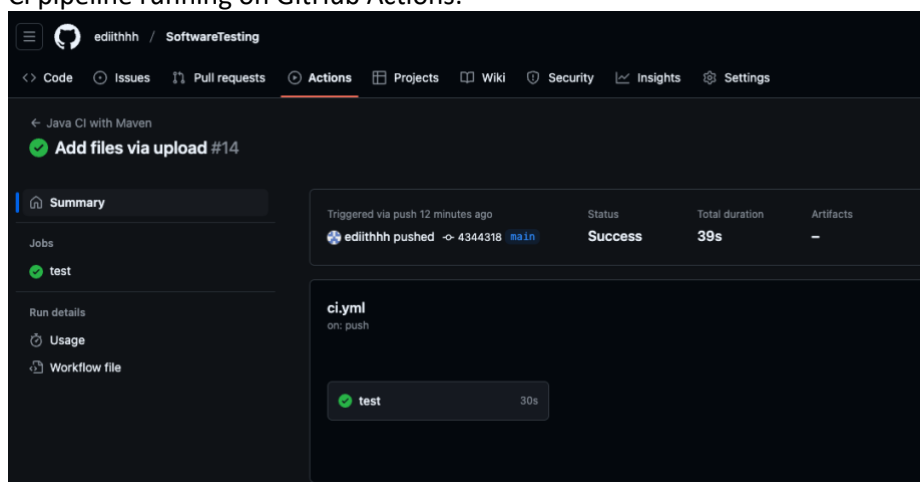
Review Procedures

1. Code walkthroughs
 - a. To ensure that the logic is correct and aligned with the system specifications
 - b. Manually reviewed code changes before integration
 - c. Ensure code is well-organized, readable and followed coding standards
 - d. Code reviews were done after each feature was completed or a significant change was made to the code, as well as before merging into the main branch.
2. Test-Driven Debugging
 - a. To ensure early detection of issues by continuously debugging during the test development process
 - b. Unit tests were developed alongside the code to verify correctness. Debugging tools were used to track errors and trace incorrect behavior

Identified Issues

1. Pathfinding algorithm was inefficient and caused delays in calculating delivery routes under load
 - a. Solution: Optimized the algorithm by improving the heuristic function
 - b. Used three data structure in the algorithm for efficiency: openSet (Priority Queue) ensures nodes with the lowest cost are expanded first to optimize performance; allNodes (HashMap) tracks visited nodes, allowing efficient lookups and updates if a better path is found; and closedSet (HashSet) prevents revising processed nodes, avoiding infinite loops.
2. Inconsistent error handling in order validation logic
 - a. Standardized error codes and ensured uniform handling of invalid inputs
3. Code duplication
 - a. Solution: Refactored duplicated code into reusable functions to improve maintainability

CI pipeline running on GitHub Actions:



Running tests automatically on each commit and immediate feedback helped catch issues and help with debugging.