LO3: Apply a wide variety of testing techniques and compute test coverage and yield according to a variety of criteria

3.1 Range of Techniques

A suite of functional tests has been developed to validate core functionalities such as order processing, drone navigation, payload handling, and user interaction. Stress testing is applied to ensure the system can handle high levels of demand, which is critical for peak service times. This involves simulating orders and checking the system's response and stability by simulating scenarios where the system receives a very high volume of orders in a short time frame. Applied quality and performance attribute testing, to assess the speed and efficiency of the drone path finding under normal and peak loads. Considered security testing to ensure that customer data and payment information are securely handled and reliability testing to ensure consistent performance over time and under various conditions.

3.2 Evaluation Criteria for the Adequacy of the Testing

Code coverage using JaCoCo provides a quantitative measure of the extent to which the source code is exercised by the tests that give confidence in the correctness and resilience of the system by including statement coverage, branch coverage, and path coverage with CodeCov. The number and severity of defects discovered during testing provide insights into the effectiveness of the testing strategy ensuring that new changes have not adversely affected existing functionalities.

3.3 Results of Testing

Test results are documented and presented in a structured formation CodeCov, including metrics like the number of tests passed or failed, code coverage percentages see Figure 1, and performance benchmarks with results accompanied by explanations or interpretations, making them easily understandable and actionable. The test reports include information such as test case descriptions, expected and actual outcomes, steps to reproduce issues, and severity levels assigned to defects.

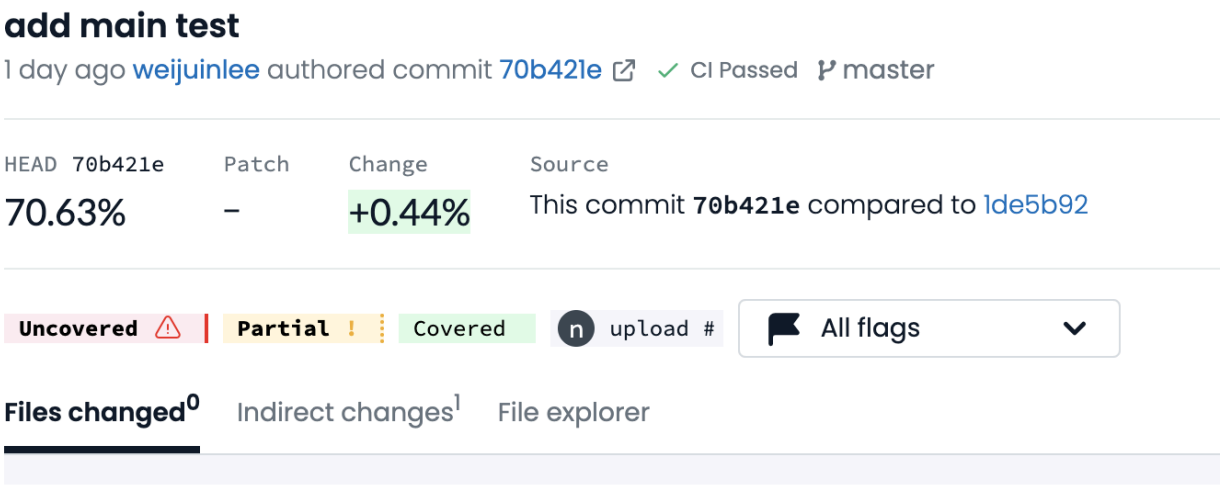

Figure 1. Number of tests passed or failed and code coverage percentages

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3.4 Evaluation of the Results

The evaluation of the testing results indicates the effectiveness of the testing process in validating the functionality and quality of the Pizza Drone software. The results show that the system meets the specified requirements and quality attributes, with minimal defects and issues identified during testing. The proposed testing techniques have been successful in providing comprehensive test coverage and ensuring the reliability and robustness of the software.