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PENGEMBANGAN *TEST CASE AUTOMATION WEB* DENGAN *ROBOT FRAMEWORK* MENGGUNAKAN OPTIMASI TEKNIK *BOUNDARY VALUE ANALYSIS*

SKRIPSI

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Sarjana Komputer Program Studi Rekayasa Perangkat Lunak

oleh

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PROGRAM STUDI REKAYASA PERANGKAT LUNAK

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ABSTRAK

Penelitian ini mengembangkan desain *test case* untuk pengujian otomatisasi *web* menggunakan Robot Framework sebagai *automation tools* dengan menerapkan teknik *Boundary Value Analysis* (BVA) yang dioptimasi. Pengujian perangkat lunak merupakan aspek krusial dalam memastikan kualitas dan keandalan perangkat lunak sebelum dirilis. Penelitian ini bertujuan untuk meningkatkan cakupan dan efektivitas pengujian melalui teknik BVA yang dioptimasi, yang memfokuskan pada pengujian batasan nilai *input*. Kesalahan dalam inputan menjadi salah satu penyumbang kecacatan terbesar pada perangkat lunak, terlebih dalam aplikasi manajemen perusahaan kualitas perangkat lunak yang digunakan harus memenuhi kebutuhan bisnis pengguna. Karena kesalahan *input* dapat menyebabkan kegagalan dalam proses bisnis, seperti penyimpanan data yang salah di *database*, yang berpotensi menyebabkan kerugian finansial atau reputasi bagi perusahaan. Oleh karena itu perlu adanya pengujian yang berfokus pada *input* dan batas nilai *input*. Penelitian ini menerapkan teknik BVA yang dioptimasi secara manual untuk meningkatkan cakupan pengujian dan jumlah *test case* pada tujuh modul aplikasi VConnect. Pengujian dilakukan secara otomatis menggunakan *Robot Framework*. Hasil penelitian menunjukkan peningkatan jumlah test case sebanyak 118% yaitu dari 286 menjadi 624 *test cae*, serta peningkatan deteksi *bug* sebanyak 80.77% dengan rincian dari 6 *bug* menjadi 120 *bug*. Akurasi *bug* juga meningkat sebanyak 60%. Temuan ini menegaskan bahwa teknik BVA yang dioptimasi efektif dalam memperluas cakupan pengujian dan meningkatkan kemampuan deteksi kesalahan pada perangkat lunak yang diuji. Penelitian ini memberikan kontribusi dalam peningkatan kualitas pengujian perangkat lunak melalui penerapan teknik BVA yang dioptimasi, sehingga implementasi tersebut dapat diadaptasi untuk pengujian aplikasi lainnya.

Kata Kunci: Otomasi Pengujian, *Robot Framework*, *Boundary Value Analysis* (BVA), Optimasi, Pengujian Fungsional

WEB TEST CASE AUTOMATION DEVELOPMENT WITH ROBOT FRAMEWORK USING BOUNDARY VALUE ANALYSIS TECHNIQUE OPTIMIZATION

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ABSTRACT

This study developed a test case design for web automation testing using Robot Framework as an automation tool, implementing an optimized Boundary Value Analysis (BVA) technique. Software testing is a crucial aspect of ensuring the quality and reliability of software before it is released. The study aims to enhance the coverage and effectiveness of testing through an optimized BVA technique, focusing on testing input boundaries. Input errors are a major contributor to software defects, particularly in enterprise management applications, where the software quality must meet the business needs of users. Input errors can lead to failures in business processes, such as incorrect data storage in databases, potentially causing financial or reputational damage to a company. Therefore, testing that focuses on input and input boundaries is essential. This study applied a manually optimized BVA technique to increase test coverage and the number of test cases across seven modules of the VConnect application. Testing was automated using Robot Framework. The results showed a 118% increase in the number of test cases, from 286 to 624, and an 80.77% increase in bug detection, with the number of detected bugs rising from 6 to 120. Bug accuracy also improved by 60%. These findings confirm that the optimized BVA technique is effective in expanding test coverage and enhancing error detection capabilities in the tested software. This research contributes to improving software testing quality through the application of an optimized BVA technique, which can be adapted for testing other applications.

Keywords: Test Automation, Robot Framework, Boundary Value Analysis (BVA), Optimization, Functional Testing

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