

INTISARI

Pengujian otomatis berperan penting untuk memastikan kualitas dan efisiensi pengujian pada pengembangan perangkat lunak. Pengembangan pengujian otomatis memiliki banyak tantangan seperti kompleksitas kode, kesulitan dalam pemeliharaan, kurangnya *reusability*, kurangnya fleksibilitas, dan sulitnya pemeliharaan kode. Solusi yang dapat digunakan untuk memecahkan masalah tersebut salah satunya adalah penggunaan *design pattern*. Masing-masing *design pattern* ini memiliki kegunaan dan kelebihan tersendiri dalam mengatasi berbagai tantangan dalam pengembangan pengujian otomatis. Pada penelitian ini dilakukan studi untuk menilai efektivitas dari penggunaan *design pattern* khususnya pada pengembangan pengujian otomatis. Studi ini mengkaji perbandingan antara *Page Object Model* (POM) dengan kombinasi POM dan *Singleton Pattern* pada pengujian otomatis *website* Simulasi Ujian *Certified Government Accounting Associate* (CGAA). POM dipilih karena merupakan *design pattern* yang familiar dan sering digunakan oleh *quality assurance engineer*. Sedangkan *Singleton* dipilih karena lebih fleksibel dalam pengelolaan *instance* kelas. Kedua *design pattern* tersebut dievaluasi berdasarkan metrik *Quality Model of Object-Oriented Design* (QMOOD). QMOOD menggunakan beberapa metrik untuk menilai aspek-aspek kualitas desain seperti *reusability*, *flexibility*, *understandability*, *functionality*, *extendibility*, dan *effectiveness*. Hasil penelitian menunjukkan bahwa *design pattern Page Object Model* lebih unggul pada aspek *understandability*, dan *extendibility* yaitu dengan nilai sebesar -18,63 dan -0,76. Sedangkan POM yang dikombinasikan dengan *Singleton Pattern* unggul pada aspek *reusability*, *flexibility*, *functionality*, dan *effectiveness* dengan nilai sebesar 33,74, 1,60, 15,46 dan 1,87.

Kata Kunci: Pengujian Otomatis, *Design Pattern*, *Page Object Model*, *Singleton Pattern*, *Quality Model of Object-Oriented Design*, Simulasi Ujian CGAA, *Selenium*.

ABSTRACT

Automated testing plays an important role in ensuring the quality and efficiency of testing in software development. The development of automated tests has many challenges such as code complexity, difficulty in maintenance, lack of reusability, lack of flexibility, and difficulty in code maintenance. One solution that can be used to solve these problems is the use of design patterns. Each of these design patterns has its own uses and advantages in overcoming various challenges in the development of automated testing. In this research, a study was conducted to assess the effectiveness of using design patterns, especially in the development of automated tests. This study examines the comparison between the Page Object Model (POM) and the combination of POM and Singleton Pattern on automated testing of the Certified Government Accounting Associate (CGAA) Exam Simulation website. POM was chosen because it is a familiar design pattern and is often used by quality assurance engineers. Singleton was chosen because it is more flexible in managing class instances. Both design patterns were evaluated based on the Quality Model of Object-Oriented Design (QMOOD) metrics. QMOOD uses several metrics to assess aspects of design quality such as reusability, flexibility, understandability, functionality, extensibility, and effectiveness. The results show that the Page Object Model design pattern is superior in the aspects of understandability, and extendibility with a value of -18.63 and -0.76. While POM combined with Singleton Pattern is superior in the aspects of reusability, flexibility, functionality, and effectiveness with values of 33.74, 1.60, 15.46 and 1.87.

Keywords: *Automated Testing, Design Pattern, Page Object Model, Singleton Pattern, Quality Model of Object-Oriented Design, CGAA Exam Simulation, Selenium.*