

INTISARI

Penelitian ini berjudul Pengujian Performa *REST API* Sistem *Booking Book* Perpustakaan Berbasis *Mobile* dengan JMeter. Latar belakang penelitian adalah perlunya pengembangan sistem perpustakaan yang data dan informasinya dapat diakses lintas platform, agar layanan lebih mudah diakses dan terintegrasi. Tujuan penelitian ini adalah mengembangkan *REST API* yang terhubung dengan sistem perpustakaan AMIKOM Surakarta, membangun aplikasi *mobile Booking Book*, serta melakukan pengujian fungsional dan non fungsional.

Metode penelitian yang digunakan meliputi analisis kebutuhan, perancangan sistem, pengembangan *REST API* dan aplikasi *mobile*, serta pengujian. Evaluasi *usability* dilakukan pada aplikasi *mobile* dengan metode *System Usability Scale* (SUS) melibatkan 30 responden. Sementara itu, pengujian performa *REST API* dilakukan menggunakan Apache JMeter dengan dua skenario, yaitu *load test* untuk mengukur kemampuan sistem pada jumlah pengguna normal harian, *stress test* untuk mengetahui batas maksimum sistem, dan *soak test* untuk menguji daya tahan sistem dalam menangani request dalam jangka waktu tertentu.

Hasil penelitian ini antara lain sistem booking book berbasis mobile mendapatkan skor SUS rata-rata 82,25 yang masuk kategori Excellent, sehingga dapat disimpulkan mudah digunakan dan sesuai dengan kebutuhan pengguna. Pengujian performa menunjukkan bahwa REST API mampu menangani hingga 50 pengguna simultan dengan waktu respons rata-rata 1 detik pada pengujian *load test*, pada *stress test* sistem masih stabil hingga 400 thread namun mulai mengalami penurunan performa pada 450-500 thread dengan error rate meningkat hingga 13,60%. Pada *soak test* dengan 50 thread selama 1 jam, sistem terbukti stabil dengan response time rata-rata 1134 ms, throughput konsisten sekitar 44 request per detik, dan error rate 0%.

Kata kunci: *REST API*, *Booking* buku, Perpustakaan, Apache JMeter, *System Usability Scale* (SUS).

ABSTRACT

This research is entitled Performance Testing of REST API for Mobile-Based Library Booking System Using JMeter. The background of this study is the need for the development of a library system whose data and information can be accessed across platforms, so that services can be more easily accessed and integrated. The purpose of this research is to develop a REST API connected to the library system of AMIKOM Surakarta, to build the Booking Book mobile application, and to conduct both functional and non-functional testing.

The research methods include requirements analysis, system design, development of REST API and mobile application, and testing. Usability evaluation was carried out on the mobile application using the System Usability Scale (SUS) method with 30 respondents. Meanwhile, performance testing of the REST API was conducted using Apache JMeter with three scenarios: load test to measure the system's capability under normal daily usage, stress test to determine the maximum capacity of the system, and soak test to evaluate the system's endurance in handling requests over a longer period of time.

The results of this study show that the mobile-based Booking Book system obtained an average SUS score of 82.25, which falls into the Excellent category, indicating that the application is easy to use and meets user needs. Performance testing demonstrated that the REST API could handle up to 50 simultaneous users with an average response time 1 second during the load test. In the stress test, the system remained stable up to 400 threads, but performance degradation began at 450–500 threads, with the error rate increasing to 13.60%. In the soak test with 50 threads running for 1 hour, the system proved stable with an average response time of 1134 ms, a consistent throughput of around 44 requests per second, and an error rate of 0%.

Keywords: REST API, Book Reservation, Library, Apache JMeter, System Usability Scale (SUS).