WEB-BASED LABORATORY LOAN APPLICATION USING THE WATERFALL METHOD

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Abstract

The laboratory loan process at Politeknik Negeri Bengkalis has so far been carried out through direct requests to the laboratory staff without systematic recording. This approach causes several issues: loan data is not properly documented, the risk of schedule miscommunication is high, laboratory availability validation takes time, and transparency for students and lecturers is lacking. This study aims to provide a solution through the development of a Web-Based Laboratory Loan Information System using the Waterfall development method, the Laravel framework, and a MySQL database. The system provides features such as user registration, real-time laboratory availability checking, online loan and return submissions, status notifications, and laboratory data management by the administrator. Testing was conducted using the black-box testing method on all main modules including registration/login, availability checking, loan submission, administrator verification and approval, monitoring, returns, and notifications across test scenarios. The test results showed that all functions operated according to specifications with a 100% success rate. The system's implementation speeds up administrative processes, eliminates the risk of data loss or overlap, and improves transparency and accuracy of laboratory availability information.

Keywords: Information System, Laboratory Borrowing, Web, Waterfall, Laravel