

Extended Finite State Machine Model-Based Testing menggunakan Postman Problem Algorithm pada Web Application SiPProp

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Abstract

This research examines the intricate challenges in testing the Sistem Penilaian Proposal (SiPProp) online application developed by Telkom University's School of Computing, which heavily relies on control flow mechanisms and introduces numerous guard usages. To address these challenges comprehensively, the research advocates for the application of the Model-Based Testing Extended Finite State Machine (MBT-EFSM) methodology, known for its proficiency in handling control flow mechanisms, CRUD systems, and guards. Additionally, the research incorporates the Postman Problem Algorithm to optimize path determination for comprehensive coverage of all states and transitions within the model. The algorithm achieves an impressive 100% coverage rate for both state and transition coverage. However, a slight shortfall is observed in requirement coverage, reaching only 95%, attributed to a defect in the application affecting the accurate detection and identification of invalid file types. Despite this, the overall methodology proves effective in addressing the challenges posed by SiPProp's control flow mechanisms and guard usage.

Keywords: TestOptimal, Model-Based Testing (MBT), Extended Finite State Machine (EFSM), Postman Problem Algorithm, CRUD.
