IMPLEMENTATION OF SOLID DESIGN PRINCIPLES IN THE DEVELOPMENT OF WEB BASED HAPPY THRIFTING APPLICATION

Student Name : Dini Amy Narti
Nim : 6304221470
Supervisor : Depandi Enda, M.Kom.

ABSTRACT

Modern software development demands high code quality, flexibility, and maintainability. However, in practice, many applications still possess unorganized code structures and multiple responsibilities within a single component, which complicates the maintenance process. This research aims to apply the SOLID design principles Single Responsibility, Open/Closed, Liskov Substitution, Interface Segregation, and Dependency Inversion to the "Happy Thrifting" application, a web-based second-hand clothing marketplace, to improve software design quality. The research methodology includes identifying issues in the initial system, data collection, code refactoring using the Laravel framework, and evaluating the implementation results through static code analysis using PHP Metrics tools. The results show that the application of SOLID principles produces a more organized application structure with clear separation of concerns between components. The code quality evaluation indicates a decrease in class coupling with an Average Efferent Coupling value of 3.45 and an increase in method cohesion with an LCOM value of 2.28. Furthermore, an Average Cyclomatic Complexity value of 5.45 suggests that the system falls into the low-risk category with stable procedures. In conclusion, the implementation of SOLID design principles effectively enhances software design quality and system maintainability.

Keywords: *SOLID, Refactoring, Laravel, Maintainability, PHP Metrics.*