

Abstract

The high complexity and low maintainability of code make it difficult to maintain a program. Maintainability and readability are interrelated because low maintainability makes code difficult to read and modify. Lowering complexity, improving maintainability, and increasing readability are the goals of refactoring in test driven development. Refactoring extract method chosen because it can improve readability and reduce duplication in the code. The website development in this research uses a functional programming paradigm and experiences long method problems. This refactoring method can eliminate long methods in the functional programming paradigm so that it is suitable for this research. Test driven development is software development based on creating a small automated iterative testing program, writing code to pass testing, and refactoring code. This research makes the Hung model e-learning readiness assessment website based on the requirements of the S1 PJJ Informatics captain using test driven development. This website development is done by one team and has a small budget. Therefore, this research is in accordance with the software development method of test driven development which allows software development with one team and a small budget. This website was researched and analyzed regarding the effect of the extract method on cyclomatic complexity, halstead volume, maintainability index, and code readability prediction on development using test driven development. Cyclomatic complexity and halstead volume are complexity matrices, maintainability index is a maintainability matrix, and code readability prediction is a readability matrix so that it can be calculated to determine the suitability of a refactoring method in test driven development. This research was conducted because there are no journals that discuss the effect of extract methods on cyclomatic complexity, halstead volume, maintainability index, and code readability prediction in development using test driven development. The results of this study show an average reduction in cyclomatic complexity of 31%, an average decrease in halstead volume of 68%, an average increase in maintainability index of 28%, and an average increase in code readability prediction of 4% compared to before extract method refactoring.

Keywords: test driven development, extract method, cyclomatic complexity, halstead volume, maintainability index, code readability prediction.