ABSTRACT

Software is one of the technologies that continues to evolve over time. This development leads to increased software complexity. The resilience of software in performing its functions requires a maintenance process carried out by developers. This maintenance process consumes time and cost, depending on the level of software complexity. Maintainability measurement is needed to help developers understand the condition of the software's source code. Potential challenges in maintainability measurement include system complexity, low code quality, and insufficient documentation and testing. In this study, maintainability measurement was carried out using the Software Improvement Group Maintainability Model (SMM). The SMM model illustrates the condition of the software source code and helps developers identify risky parts of the code. The object of this study is four versions of the JSONX-ORG/JAVA software: Version 0.2.2, Version 0.3.1, Version 0.3.2, and Version 0.4.0, which were measured for maintainability using the SMM model. JSONX-ORG/JAVA is a framework software designed to run systems or functions within the Java and JavaScript domain. JSONX-ORG/JAVA is primarily written in Java, making it suitable for measurement using the SMM model. The results of this study indicate changes in maintainability levels across versions, which tend to remain stable at level + (value 4). The SIG Maintainability Model provides consistent results that align with maintainability characteristics when measuring maintainability based on the source code properties of the JSONX-ORG/JAVA software. At the end of this study, it was found that Version 0.2.2 had the lowest average maintainability score, while Version 0.3.1 had the highest. However, the trend of changes in maintainability scores was not very clear due to the proximity of the software versions and the small differences in their scores.

Keyword: *SIG Maintainability Model*, *Maintainability*, *Maintainability Meassures*, JSONX-ORG/JAVA