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McCabe's Complexity and CK Metrics on the Internal Quality of Test First Implementation in Malaysian Education Settings

By: Yahya, N (Yahya, Norzariyati)^[1]; Abu Bakar, NSA (Abu Bakar, Normi Sham Awang)^[2]

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Abstract

Test first is promoted in test driven development method as one of an effective Agile manifesto in producing a better quality applications. Several research have been conducted in education settings and among industrial practitioners in order to investigate the test first contribution in producing better quality software compared to a traditional approach. This paper focuses on studying the internal quality of the project developed by undergraduates with the implementation of test first over test last approach in Malaysian education settings. In the analyses, JHawk is used as the metrics extraction tools, and the analysis utilized the SPSS and G*Power statistical packages. The metrics collected are based on six object oriented metrics by Chidamber and Kemerer (CK) and the McCabe's cyclomatic complexity (CC). However, only four CK Metric (Lack of Cohesion in Method, Coupling between Objects, Weighted Methods per Class, and Response for a Class) were evaluated, in addition, the complexity is measured based on McCabes's CC. The outcome based on t-test and Mann-Whitney test shows that none of the metrics is statistically significant for test first in producing better internal quality; however, the hypothesis is accepted due to the effect size and achieved power contributed by the Weighted Method per Class.

Keywords

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Author Information

Reprint Address: Yahya, N (reprint author)

+ Int Islamic Univ, Ctr Fdn Studies, Selangor, Malaysia.

Addresses:

+ [1] Int Islamic Univ, Ctr Fdn Studies, Selangor, Malaysia

+ [2] Int Islamic Univ, Dept Comp Sci, Selangor, Malaysia

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