The effectiveness of an enhanced weighted method with a unique priority value for test case prioritization in regression testing

ABSTRACT

Regression testing is an important and costly strategy in software testing. To decrease its cost, many methods have been proposed including the test case prioritization methods. The aim of the prioritization methods is to define an ideal order of test cases that allows for higher coverage and early fault detection with minimal number of executed test cases. However, the problem with most of the existing test case prioritization methods is the random sorting of test cases when two or more test cases record equal priority values. In this paper, the effectiveness of an enhanced weighted method using a unique priority value, UniVal, is proposed. Univalprioritizes test cases based on code coverage criteria with information from history of previous executions. In addition, a controlled experiment was executed, and the results were statistically analyzed to assess the effectiveness of the proposed method. The results indicates better performance with regard to prioritize test cases and achieve higher APFD values.

Keyword: Regression testing; Software testing; Statistical test; Test case prioritization; Unique priority value