

Test case prioritization technique for event sequence test cases based on redundancy factor

ABSTRACT

Software testing is often used to verify and validate the output of the system to confirm that no discrepancy has taken place throughout the development phase. Test case prioritization (TCP) is one of the techniques applied to modify the order of test cases based on best test scenarios and to prioritize them. The main objectives of the TCP are to increase the effectiveness of the testing process, while reducing time and cost, which would increase when the system reaches a certain level of complexity. Numerous TCP techniques have been proposed in the past; however, only a handful of researches were truly focused on TCP techniques for test cases involving the sequence of events. TCP technique for sequence of events is more complex compared to the conventional code-based application due to the properties of the sequence of events. The size of the sequence of events' test cases can be infinite and large sized test cases have considerable degrees of redundancy. This means that there is a possibility for these test cases to have combinations of events with a large input parameter. Redundancy is one of the major issues that have been discussed by previous researchers. This paper proposes a technique that can detect the redundancy within the test suites and produce a unique weight value. This paper will also present how test cases were prioritized based on the obtained unique weight value. The experiment results obtained indicates that the prioritized test suite is effective compared with the original test suite. The effectiveness of the proposed approach is evaluated using Average Percentage of Faults Detected (APFD).

Keyword: Test case prioritization; Software testing; Unique weight; Event sequences