

A Framework for Automating Software Testing: A Practical Approach

Authors : Ana Paula Cavalcanti Furtado, Silvio Meira

Abstract : Context: The quality of a software product can be directly influenced by the quality of its development process. Therefore, immature or ad-hoc test processes are means that are unsuited for introducing systematic test automation, and should not be used to support improving the quality of software. Objective: In order to conduct this research, the benefits and limitations of and gaps in automating software testing had to be assessed in order to identify the best practices and to propose a strategy for systematically introducing test automation into software development processes. Method: To conduct this research, an exploratory bibliographical survey was undertaken so as to underpin the search by theory and the recent literature. After defining the proposal, two case studies were conducted so as to analyze the proposal in a real-world environment. In addition, the proposal was also assessed through a focus group with specialists in the field. Results: The proposal of a Framework for Automating Software Testing (FAST), which is a theoretical framework consisting of a hierarchical structure to introduce test automation. Conclusion: The findings of this research showed that the absence of systematic processes is one of the factors that hinder the introduction of test automation. Based on the results of the case studies, FAST can be considered as a satisfactory alternative that lies within the scope of introducing and maintaining test automation in software development.

Keywords : software process improvement, software quality, software testing, test automation

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