UNIVERSITI TEKNOLOGI MARA

SOFTWARE FAULT INJECTION TESTING (SFIT) FRAMEWORK

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CANDIDATE'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and it is the result of my own work. Unless otherwise indicated or acknowledge as references work. This dissertation has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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ABSTRACT

Recent studies had shown that software defect can occur from many factors not only from the programming base but also induce by external factors such as improper interaction with the system. One of the testing techniques that have been proposed to encounter this type of software defect is using Software Fault Injection Testing (SFIT). This technique can determine common error conditions through the behavior observations; discover the interaction weaknesses and reveal how the systems react when abnormalities or fault is being injected. In a nutshell, SFIT is a process of building defensive mechanism to prevent unwanted consequences emerges from the system and it is widely considered as important technique of developing robust system. This research offers an empirical knowledge of SFIT specifically on the testing practices in Malaysia and factors influencing the success of SFIT process. For describing SFIT practices, ten steps of SFIT Methodology is used as the reference model. Data are collected using semi-structured qualitative interview approach where five software testing practitioners had been selected and interviewed. Content analysis is used to analyze the qualitative data for emerging themes. The results discovered that current SFIT practice in Malaysia follows six steps of reference model. Three factors influencing the SFIT process which are Software Tester Knowledge and Experience, Testing Preparation and Accuracy of FIT Process are discovered. This research contributes towards new knowledge through the development of a SFIT framework.

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