

Software Fault Tree Reliability Analysis Using a Java-based Reliability Library

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Abstract

Software reliability is currently a research subject that has won respect from all areas of activity, particularly industry. However, in complex systems with large liability, in respect to reliability, techniques and methods for quality and reliability assessment still must be implemented urgently and with the same seriousness as in hardware. In this paper, the author proposes an integrated framework for software reliability modeling and analysis, based on several assessment techniques developed throughout history, and together with advanced Java programming technologies. The new methodology is simple to use and can model and analyze, in terms of reliability, a variety of complex systems. The analysis framework uses a new Java library called JReliability, and which can assess various measures of reliability, using analytical calculations together with graphical representations.

Keywords: software reliability, software modeling techniques, reliability analysis, SFTA, BDD, Java-based reliability

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