Effective Path Selection to Estimate Software Reliability

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Abstract

With the increase in use of software system for complex applications there is a growing need for software engineers to prove its reliability and assure its quality. Software reliability and quality assurance has high correlation with failure intensity. Failure can be best analyzed by white box testing. Basis path testing is an important white box testing approach, as the coverage in path testing is high it is directly proportional to its reliability. We propose a frame work to test the path for a structural language. Three major elements of structural language include sequence, branches and loop structures. Evaluating the reliability of each node in turn helps in evaluating the path reliability. Further, software reliability is achieved by correlating the reliability of each
unique path followed by the system. Specifically, higher the path coverage higher is the accuracy of reliability. Hence the proposed system helps in evaluating the software reliability based on path testing for a system developed with structural language. Also critical nodes could be identified with which the critical paths are estimated hence to prioritize fault correction.

References


Index Terms

Computer Science  Information Technology

Keywords

Software Reliability  Path Testing