Software Assessment: Reliability, Safety, Testability (New Dimensions In Engineering Series)

Synopsis

Is software quality testing really effective or just a waste of time? The skeptics conclude that it is an exercise in futility to try to measure the reliability and safety of these complex systems under all critical circumstances. They contend that quality assurance comes only through a strict adherence to rigorous development process models. In this groundbreaking book, Michael Friedman and Jeffrey Voas dispel that myth. They demonstrate that extremely accurate, cost-effective software quality testing can now be a reality, thanks to powerful new analytical tools. Central to the approach outlined in Software Assessment is a sophisticated assessment optimization technique called testability analysis. Pioneered at the College of William and Mary and NASA by Jeffrey Voas, testability analysis predicts the likelihood that latent bugs will be detected during testing. Drawing upon their experiences working on various high-profile projectsâ ”including air traffic control systems, an automated high-speed train-control system, and a CASE-generated autopilot systemâ ”they describe how testability analysis is used to determine which tests work and which do not; how much testing should be done on a given program; which areas of a program (modules, lines of code, etc.) are the most testable and which are the least testable; and how to allocate precious resources. The authors also describe original techniques for designing and coding programs to maximize their testability and a new method of generating test cases to support testing and testability analysis. Software Assessment offers a balanced presentation of theory and practice and is designed to function as either (continued on back flap) (continued from front flap) graduate-level text or professional reference. Featuring exhaustive coverage of the theoretical foundations of reliability, safety, and testability, it uses real-world examples, illustrations, and clear descriptions to explore all of the latest techniques for assessing those qualities. Information technology and the software that makes it possible are vital aspects of our economic, political, and cultural lives. Software Assessment provides powerful new tools for assessing and enhancing the safety, reliability, and testability of these crucial resources. Software Assessment Breakthrough tools and techniques that make accurate, cost-effective software quality testing a reality Written by two of the most prominent figures in the field of software quality testing, Software Assessment arms software designers and developers with cutting-edge tools and techniques for measuring and enhancing the safety, reliability, and testability of the programs they produce. Drawing upon their experiences working on major software projects at NASA and other agencies for which software quality is literally a matter of life and death, Michael Friedman and Jeffrey Voas show you how to: Use powerful testability tools and techniques to optimize the testing process Execute programs to perform automated quality testing Design and code programs for maximum testability Generate test

cases to support testing and testability analysis And much more Cover Design/Illustration: Robin Lee Malik

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