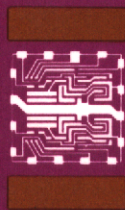


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Software System Testing and Quality Assurance

Boris Beizer

Van Nostrand Reinhold Electrical/Computer Science and Engineering Series

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SOFTWARE SYSTEM TESTING AND QUALITY ASSURANCE

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Van Nostrand Reinhold Electrical/Computer Science and Engineering Series



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PREFACE

This book concerns system software testing and quality assurance methods. The companion volume, *Software Testing Techniques* (BEIZ82), is concerned with structural and functional test techniques that are basic to all testing. The sum is not equal to the whole of its parts: the best designed, implemented, and tested individual units can come together in hopeless chaos in the absence of system-wide test plans, quality assurance, and integration testing. Unit testing, no matter how well done, just isn't enough.

I set out to write a single book that would cover the gamut from testing to quality assurance—from unit to system—and from individual test and quality assurance methods to system testing and quality assurance. It would have been a big, cumbersome book, and holding it to a publishable size would have required unfortunate compromises. The book would have been unsatisfying to me and to most readers. Accordingly, with Van Nostrand Reinhold's concurrence, I declared a book split, which yielded some unexpected dividends. It was no longer necessary to compromise between unit-level and system-level issues or between the programmer's and manager's points of views.

Software Testing Techniques focuses on what the individual programmer can and should do to create reliable software units. It is written for the programmer from a programmer's point of view. I thought at first that *this* book would have a single point of view, but soon found that there were four distinct voices with contradictory demands vying for my attention. The subject of system testing and quality assurance can be seen from the project manager's or the quality assurance manager's point of view and can be addressed to the project manager or to the quality assurance manager—for four voices in all. I quickly put the idea of a four-way split out of my mind—it would have yielded four thin books. I have instead used all four voices in this book. When discussing desk checking, for example, an activity in which I believe quality assurance has no productive role to play, it is as project manager to project manager. The

problems of how to select QA personnel and how to shield them from hostility are clearly a conversation between QA managers. The inherent conflicts in system functional testing lead to the crossed conversations. The voice, therefore, changes from section to section, and within sections, without warning. There are so many conflicting goals inherent in system testing and quality assurance that it's essential that all parties in the process understand each other's point of view, and shifting it is one way to help that understanding.

Actually, while there may be beneficial tensions, there are no real conflicts, despite appearances to the contrary, just as there should be no real conflict between the programmer and program manager. In the ideal project, unit testing is well planned, thorough, well documented, and well managed. There is a hierarchy of testing methods from unit to system. The programmer can work in confidence that management and quality assurance methods are in place that relieve much of the uncertainty of interfacing with other programs. Well-wrought pieces of software come together because someone has taken the trouble to emplace the methods that assure that that will be the case. The project manager is not burdened with agonizing over the outcome of thousands of microscopic unit tests, because those tests are developed and executed under a uniform methodology. There is no need to agonize over what might have been forgotten, because quality assurance keeps track of everything. There is no need to worry about what surprises may come from a user's acceptance test, or from the first few months in the field, because quality assurance has savaged the system more than any user ever could, and done it in privacy, where the consequences are merely extra work rather than litigation.

Boris Beizer
Abington, Pennsylvania

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