

# PREFACE

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With the pervasive use of software systems in modern society and people's reliance on them in daily life, work, and societal functions, we need to make sure that these systems meet people's expectations for quality and reliability. This is the general subject of *Software Quality Engineering*, which is organized into three major topics:

- Software testing as a primary means to ensure software quality;
- Other alternatives for quality assurance (QA), including defect prevention, process improvement, inspection, formal verification, fault tolerance, safety assurance, and damage control;
- Measurement and analysis to close the feedback loop for quality assessment and quantifiable improvement.

These topics and related concepts are introduced in Part I, with detailed coverage for each major topic in Parts II, III, and IV, respectively.

This book evolved from class notes for the one-semester course “Software Testing and Quality Assurance” that I have taught many times at Southern Methodist University since 1995. Most of our students are full-time software professionals enrolled in SMU's MS program in Software Engineering, with a few other graduate students or undergraduate juniors/seniors in related programs. Although there are many books on software testing and some on specific software QA techniques, they are typically too specialized to be suitable as a main textbook for a course like ours. On the other hand, general books on software engineering or software management cannot and do not cover software quality topics in enough detail or depth. Consequently, a combination of class notes and multiple textbooks was used. Similar situations were also common at other universities for similar

courses, such as “Software Quality Assurance” and “Software Verification and Validation”. With its comprehensive coverage of all the major topics in software quality engineering in an integrated framework, this book is suitable as the main textbook for such a course.

In addition, this book could be used as a technical reference about software testing, QA, and quality engineering by other readers, particularly professionals who perform QA activities as testers, inspectors, analysts, coordinators, and so forth. It should also be useful to people involved in project planning and management, product release, and support. Similarly, this book could help prepare students for their internship assignments or future employment related to testing or QA.

For more information on this book, please visit the following website:

[www.engr.smu.edu/~tian/SQEbook/](http://www.engr.smu.edu/~tian/SQEbook/)

Supplementary material for instructors is available at the Wiley.com product page:

[www.wiley.com/WileyCDA/WileyTitle/productCd-0471713457.html](http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471713457.html)

## Acknowledgments

First, I thank all my students in the SMU/CSE 5314/7314 classes since 1995, particularly, Katherine Chen, Tony Cluff, DeLeon English, Janet Farrar, Nishchal Gupta, Gina Habash, Chris Jordan, Zhao Li, Sateesh Rudrangi, Zahra Shahim, and Nathan Vong, for reading the manuscript and offering many invaluable suggestions. I also thank Tim Culver, for sharing his detailed class notes with me, and Li Ma, for checking the exercise questions.

I thank the co-authors of my technical papers and the sponsors of my research projects for the material included in this book based on related publications. Since all these publications are individually cited in the bibliography, I only single out my project sponsors and industrial collaborators here: National Science Foundation, through awards MRI-9724517, CCR-9733588, and CCR-0204345; Texas Higher Education Coordinating Board, through awards 003613-0030-1999 and 003613-0030-2001; IBM, Nortel Networks, and Lockheed-Martin.

I am grateful to SMU for granting me a sabbatical leave for the 2003/2004 academic year to work on my research and to write this book. I thank my colleagues at SMU, particularly Prof. Hesham El-Rewini, for their encouragement and help. I also appreciate the opportunity to work for the IBM Software Solutions Toronto Laboratory between 1992 and 1995, where I gained invaluable practical experience in software QA and testing.

This book would not be possible without the love and support of my wife Sharon and my daughters Christine and Elizabeth. Sharon, a professional tester for many years, also helped me greatly by offering her invaluable technical critique. Utilizing her strength in reading and writing, Christine edited the entire manuscript (and many of my previous papers too).

I also thank my editor Val Moliere, her assistant Emily Simmons, and my production editor Melissa Yanuzzi, for their professional help.

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