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

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