

When computer software succeeds—when it meets the needs of the people who use it, when it performs flawlessly over a long period of time, when it is easy to modify and even easier to use—it can and does change things for the better. But when software fails—when its users are dissatisfied, when it is error prone, when it is difficult to change and even harder to use—bad things can and do happen. We all want to build software that makes things better, avoiding the bad things that lurk in the shadow of failed efforts. To succeed, we need discipline when software is designed and built. We need an engineering approach.

It has been almost three decades since the first edition of this book was written. During that time, software engineering has evolved from an obscure idea practiced by a relatively small number of zealots to a legitimate engineering discipline. Today, it is recognized as a subject worthy of serious research, conscientious study, and tumultuous debate. Throughout the industry, software engineer has replaced programmer as the job title of preference. Software process models, software engineering methods, and software tools have been adopted successfully across a broad spectrum of industry segments.

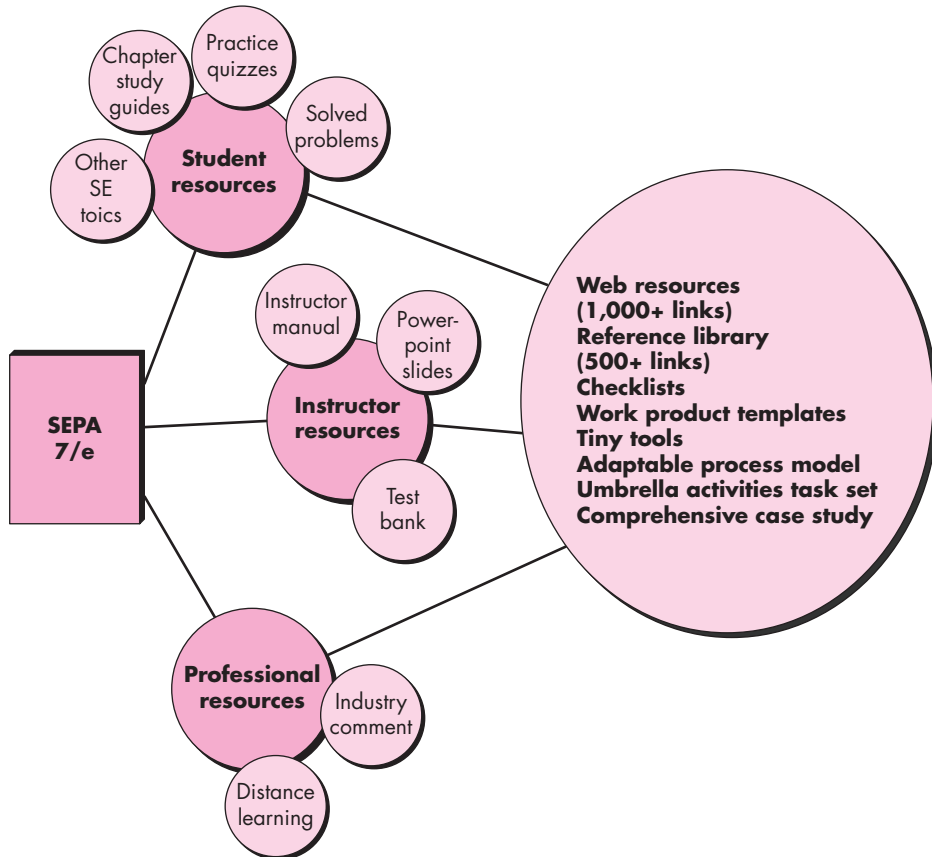
Although managers and practitioners alike recognize the need for a more disciplined approach to software, they continue to debate the manner in which discipline is to be applied. Many individuals and companies still develop software haphazardly, even as they build systems to service today's most advanced technologies. Many professionals and students are unaware of modern methods. And as a result, the quality of the software that we produce suffers, and bad things happen. In addition, debate and controversy about the true nature of the software engineering approach continue. The status of software engineering is a study in contrasts. Attitudes have changed, progress has been made, but much remains to be done before the discipline reaches full maturity.

The seventh edition of *Software Engineering: A Practitioner's Approach* is intended to serve as a guide to a maturing engineering discipline. Like the six editions that preceded it, the seventh edition is intended for both students and practitioners, retaining its appeal as a guide to the industry professional and a comprehensive introduction to the student at the upper-level undergraduate or first-year graduate level.

The seventh edition is considerably more than a simple update. The book has been revised and restructured to improve pedagogical flow and emphasize new and important software engineering processes and practices. In addition, a revised and updated “support system,” illustrated in the figure, provides a comprehensive set of student, instructor, and professional resources to complement the content of the book. These resources are presented as part of a website (www.mhhe.com/pressman) specifically designed for *Software Engineering: A Practitioner's Approach*.

The Seventh Edition. The 32 chapters of the seventh edition have been reorganized into five parts. This organization, which differs considerably from the sixth edition, has been done to better compartmentalize topics and assist instructors who may not have the time to complete the entire book in one term.

Support
System for
SEPA, 7/e



Part 1, *The Process*, presents a variety of different views of software process, considering all important process models and addressing the debate between prescriptive and agile process philosophies. Part 2, *Modeling*, presents analysis and design methods with an emphasis on object-oriented techniques and UML modeling. Pattern-based design and design for Web applications are also considered. Part 3, *Quality Management*, presents the concepts, procedures, techniques, and methods that enable a software team to assess software quality, review software engineering work products, conduct SQA procedures, and apply an effective testing strategy and tactics. In addition, formal modeling and verification methods are also considered. Part 4, *Managing Software Projects*, presents topics that are relevant to those who plan, manage, and control a software development project. Part 5, *Advanced Topics*, considers software process improvement and software engineering trends. Continuing in the tradition of past editions, a series of sidebars is used throughout the book to present the trials and tribulations of a (fictional) software team and to provide supplementary materials about methods and tools that are relevant to chapter topics. Two new appendices provide brief tutorials on UML and object-oriented thinking for those who may be unfamiliar with these important topics.

The five-part organization of the seventh edition enables an instructor to “cluster” topics based on available time and student need. An entire one-term course can be built around one or more of the five parts. A software engineering survey course would select chapters from all five parts. A software engineering course that emphasizes analysis and design would select topics from Parts 1 and 2. A testing-oriented software engineering course would select topics from Parts 1 and 3, with a brief foray into Part 2. A “management course” would stress Parts 1 and 4. By organizing the seventh edition in this way, I have attempted to provide an instructor with a number of teaching options. In every case, the content of the seventh edition is complemented by the following elements of the *SEPA, 7/e Support System*.

Student Resources. A wide variety of student resources includes an extensive online learning center encompassing chapter-by-chapter study guides, practice quizzes, problem solutions, and a variety of Web-based resources including software engineering checklists, an evolving collection of “tiny tools,” a comprehensive case study, work product templates, and many other resources. In addition, over 1000 categorized *Web References* allow a student to explore software engineering in greater detail and a *Reference Library* with links to over 500 downloadable papers provides an in-depth source of advanced software engineering information.

Instructor Resources. A broad array of instructor resources has been developed to supplement the seventh edition. These include a complete online *Instructor’s Guide* (also downloadable) and supplementary teaching materials including a complete set of over 700 *PowerPoint Slides* that may be used for lectures, and a test bank. Of course, all resources available for students (e.g., tiny tools, the Web References, the downloadable Reference Library) and professionals are also available.

The *Instructor’s Guide for Software Engineering: A Practitioner’s Approach* presents suggestions for conducting various types of software engineering courses, recommendations for a variety of software projects to be conducted in conjunction with a course, solutions to selected problems, and a number of useful teaching aids.

Professional Resources. A collection of resources available to industry practitioners (as well as students and faculty) includes outlines and samples of software engineering documents and other work products, a useful set of software engineering checklists, a catalog of software engineering (CASE) tools, a comprehensive collection of Web-based resources, and an “adaptable process model” that provides a detailed task breakdown of the software engineering process.

When coupled with its online support system, the seventh edition of *Software Engineering: A Practitioner’s Approach*, provides flexibility and depth of content that cannot be achieved by a textbook alone.

Acknowledgments. My work on the seven editions of *Software Engineering: A Practitioner’s Approach* has been the longest continuing technical project of my life. Even when the writing stops, information extracted from the technical literature continues to be assimilated and organized, and criticism and suggestions from readers worldwide is evaluated and cataloged. For this reason, my thanks to the many authors of books, papers, and articles (in both hardcopy and electronic media) who have provided me with additional insight, ideas, and commentary over nearly 30 years.

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Roger S. Pressman