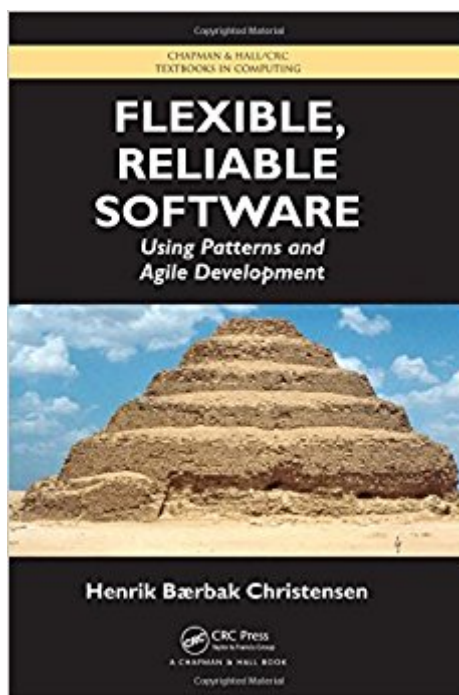




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# Flexible, Reliable Software: Using Patterns And Agile Development (Chapman & Hall/CRC Textbooks In Computing)



## Synopsis

Flexible, Reliable Software: Using Patterns and Agile Development guides students through the software development process. By describing practical stories, explaining the design and programming process in detail, and using projects as a learning context, the text helps readers understand why a given technique is required and why techniques must be combined to overcome the challenges facing software developers. The presentation is pedagogically organized as a realistic development story in which customer requests require introducing new techniques to combat ever-increasing software complexity. After an overview and introduction of basic terminology, the book presents the core practices, concepts, tools, and analytic skills for designing flexible and reliable software, including test-driven development, refactoring, design patterns, test doubles, and responsibility driven and compositional design. It then provides a collection of design patterns leading to a thorough discussion of frameworks, exemplified by a graphical user interface framework (MiniDraw). The author also discusses the important topics of configuration management and systematic testing. In the last chapter, projects lead students to design and implement their own frameworks, resulting in a reliable and usable implementation of a large and complex software system complete with a graphical user interface. This text teaches how to design, program, and maintain flexible and reliable software. Installation guides, source code for the examples, exercises, and projects can be found on the author's website.

## Book Information

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â | This book brings together a careful selection of topics that are relevant, indeed crucial, for developing good quality software with a carefully designed pedagogy that leads the reader through an experience of active learning. The emphasis in the content is on practical goalsâ •how to construct reliable and flexible software systemsâ •covering many topics that every software engineer should have studied. The emphasis in the method is on providing a practical context, hands-on projects, and guidance on process. â | The text discusses not only what the end product should be like, but also how to get there. â | I know that this book will be a great help for many of my students on the path from a novice programmer to a mature, professional software developer.â •From the Foreword by Michael KÃ¶lling, originator of the BlueJ and Greenfoot environments, co-author of the best-selling Objects First with Java, and author of the best-selling Introduction to Programming with Greenfoot

Henrik BÃ¸rjak Christensen is an associate professor in the Department of Computer Science at the University of Aarhus, where he has been teaching advanced design and programming techniques for more than ten years to young students and seasoned developers. Dr. Christensen is also the owner of Imhotep, a company specializing in consulting and courses in software development.

I evaluated this book for my graduate class on advanced software design. I'm still ambivalent about making it a required text. Strengths: Code examples in Java. Interesting reasoning of applying patterns, especially with respect to variability (a dimension I find is often minimized in many texts). Addresses iterative development with testing, with real examples and detailed analyses of risks. There are exercises, which are useful in a course environment. The reasoning for applying patterns (or not) is quite detailed. The projects (pay station software development) are realistic, although the problem domain might be more suited for people familiar with these devices (in Denmark). The Figure 1 in the "Tour of the book" gives a great map of the case studies, patterns, etc. It's easy to go to specific applications of patterns (the book is quite modular). Weaknesses: When I compare its price to other books on Agile Design and OOD patterns (e.g. Craig Larman's UML 2 and Patterns from 2005), this book is overpriced (almost double the price). There's an eBook option (Kindle) but it's the same price as the hard cover (that doesn't encourage sustainable development). The author introduces a 3-2-1 method that is actually a new name for an old thing. He makes no reference to Protected Variations coined by Larman (which is the same as the 3-2) or Indirection (which is the 1), but oddly cites Larman on a less-important coining of "Don't talk to strangers" for the Law of Demeter pattern. Variability is a big part of this book, but I feel the author doesn't do a good job of

showing who else contributed along these lines. The text refers to "stories" from XP, but there's little guidance on how to write stories (despite Agile being in the title). Reliability is also exaggerated. It's defined (borrowed from ISO 9126) but mostly this book is based on writing code that is bug-free via Test-Driven Development in Agile (good material, but not sufficient for true reliability). Reliability also concerns dealing with failures in the software that occur because of environmental problems, for example. This book is not about fault tolerance, even though Reliability in the title might imply it. Again, books such as Larman's address fault tolerance specifically and discuss patterns for achieving it through redundancy.

I used this textbook for an upperclass Applications Programming course with approximately 15 students. The students and I enjoyed the book and found the material engaging, understandable, and helpful for developing good programming practices. The book is a good fit for a course which builds on previous courses in programming, data structures, and algorithms. It teaches students Test Driven Development, Design Patterns, and Software Lifecycle topics in the context of a significant hands-on programming project. It is well-suited to a team-oriented approach, and fits nicely into a series of two-week iterations in a 15 week semester, so students get a feel for an Agile Software Development process. The online Teacher Resources are very useful and useable, and include Lecture Slides, code examples, and suggestions for how the material should be used in several course formats.

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