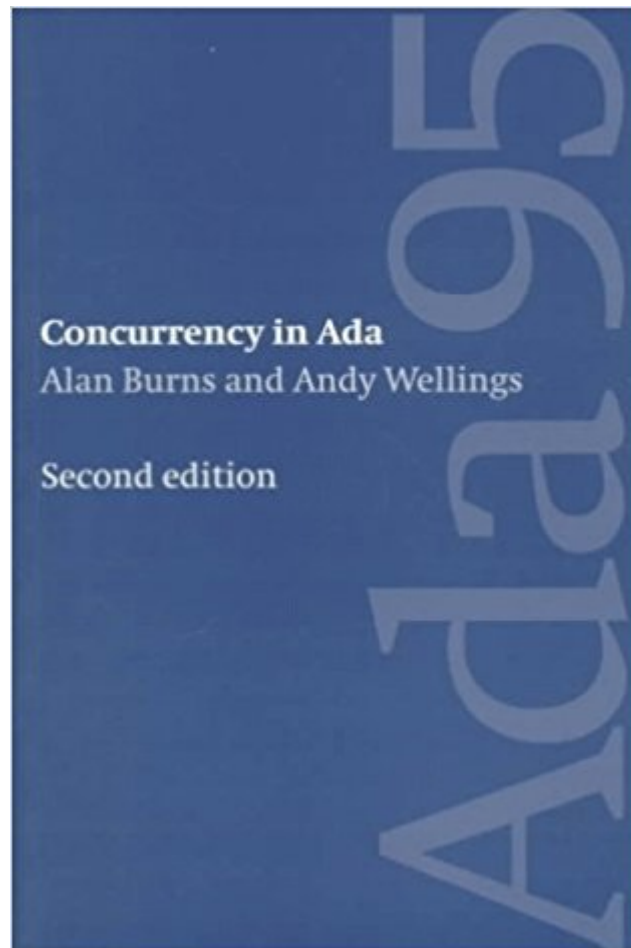


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# Concurrency In Ada



## Synopsis

A major feature of the Ada programming language is the facilities it provides for concurrent programming. In this book, Alan Burns and Andy Wellings provide a thorough and self-contained account of concurrent programming in Ada, and show users how to harness the full power of the language. Starting with an overview of the nonconcurrent features of Ada, the authors examine in detail the uses of concurrent programming and the inherent difficulties in providing interprocess communication. They introduce the Ada tasking model, and explain system programming, real-time issues, distribution, object-oriented programming, and reuse. This is the first book to deal with concurrent features in the new Ada standard, and it offers practical advice to both programmers working with embedded systems and those interested more broadly in the development of programming languages. Many otherwise inaccessible issues are probed in depth, making this book invaluable to professional software engineers and advanced students of programming alike. Every Ada programmer will find it essential reading and a primary reference work.

## Book Information

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## Customer Reviews

Fully harnessing multi-core processors requires concurrent programming, yet most mainstream languages have little support or do so with poor portability. Well-written concurrent Ada programs can be extremely portable and support multi-core and multiple processors automatically. This book explores, in-depth, the concurrent programming ("tasking") part of the Ada language. The authors then show how the concurrent programming facilities of Ada are augmented by the language to

support real-time programming. These standard real-time facilities are state-of-the-art, extending, for example, beyond the POSIX real-time facilities in their expressive power. The book first establishes the necessary foundation for understanding concurrent programming by explaining the possible problems (e.g., deadlocks and race conditions) and highlighting some of the mechanisms traditionally used in concurrent programming, such as semaphores and message-passing. The tasking part of Ada is then covered in full detail, necessarily including interactions with some other parts of the language, such as exceptions, but also including interactions with the Ada object-oriented language facilities. The implementations of a number of reusable concurrency abstractions serve to illustrate the use of the tasking features. The authors next lay another foundation, this time for scheduling in real-time systems, and show how Ada directly supports the common approaches. Both fixed-priority and dynamic-priority dispatching are supported by Ada and these are covered in detail. Ada 2005 also defines a number of time-related abstractions, such as a monotonic clock and timing events, and these are also covered completely.

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