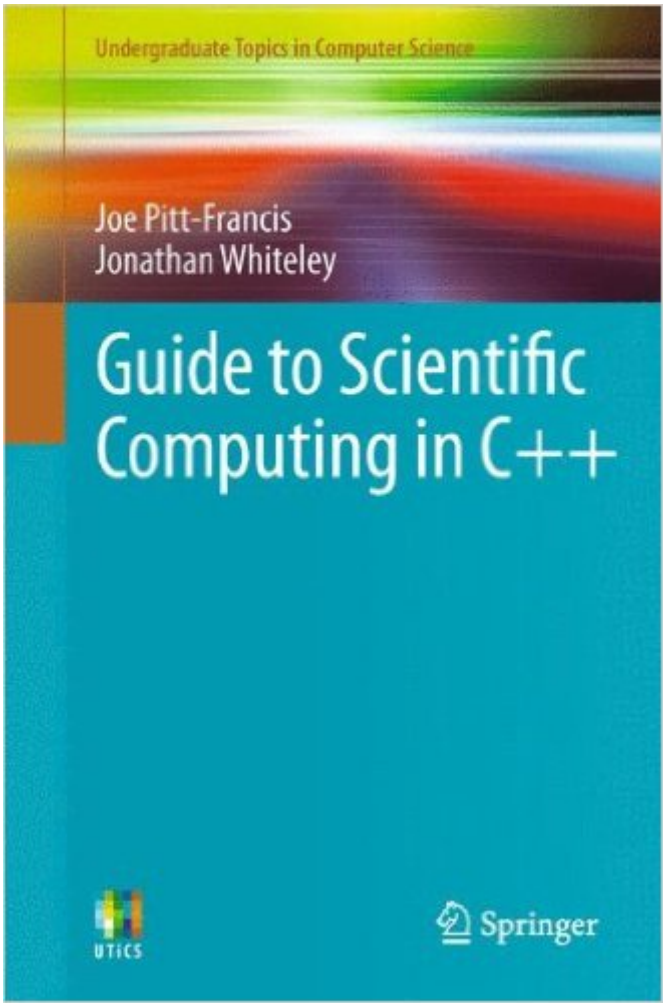
Guide To Scientific Computing In C++ (Undergraduate Topics In Computer Science)



Synopsis

This easy-to-read textbook/reference presents an essential guide to object-oriented C++ programming for scientific computing. With a practical focus on learning by example, the theory is supported by numerous exercises. Features: provides a specific focus on the application of C++ to scientific computing, including parallel computing using MPI; stresses the importance of a clear programming style to minimize the introduction of errors into code; presents a practical introduction to procedural programming in C++, covering variables, flow of control, input and output, pointers, functions, and reference variables; exhibits the efficacy of classes, highlighting the main features of object-orientation; examines more advanced C++ features, such as templates and exceptions; supplies useful tips and examples throughout the text, together with chapter-ending exercises, and code available to download from Springer.

Book Information

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Customer Reviews

This is what happens when Fortran programmers learn some C and then decide they are ready to teach C++ to newcomers; it’s an abysmal failure. If you are an engineering student looking to learn C++, please do not get this book. I recommend Discovering Modern C++: An Intensive Course for Scientists, Engineers, and Programmers (C++ In-Depth). It does a substantially better job of introducing the basic elements of C++ and carries the reader through to some very high-level programming with little effort (the big project in the book is quite impressive, even for professional

programmers).In Chapter 3, the authors discuss reading and writing to file streams. In every code snippet, they call the "close" member function on their fstream object. This is unnecessary as the fstream's destructor will do that for them. It might seem pedantic, but they are setting the stage for how to think in C++. This is not how C++ programmers should think. Using RAII is a basic tenet of C++, and the authors get it wrong almost immediately.Chapter 4 is all about using "new" and "delete" in user code. This should never been done today (see C++ Core Guidelines). RAII is the de-facto resource control idiom in C++. I was hopeful that Chapter 6 (classes) would remedy this, but RAII is never discussed there.Chapter 5's discussion about using pointers in interfaces never discusses the difference between owning and non-owning pointers. This is a massive area of easy confusion and dangerous territory for the newcomer. It is imperative to distinguish between these two ideas.

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