As stated in the general introduction, this book is produced by NAFEMS to serve as a compendium of good practice and to guide users of finite element software and systems to achieve high quality results from their analysis. While this very admirable goal can never be achieved to every user's satisfaction, this book goes farther than any finite element analysis text or user's manual.

The book is organized in the following seven sections: (1) Analysis Specification; (2) Method Validation; (3) Modelling and Formulation; (4) Analysis and Execution; (5) Results Interpretation; (6) Documentation; and (7) Analysis System Expectations.

These sections provide guidelines for finite element software selection, specification, execution, interpretation, and result reporting. Each section is organized using a numbering system to allow the user to make alterations and additions. A six page glossary of terms is also included.

The various sections are presented in a topical outline format with explanations that some readers may find terse or insufficient but others may welcome since they highlight the topic and make information easy to locate later. Useful tables and figures as well as a format to aid in the preparation of an analysis specification are included.

This book should be a requirement for anyone contemplating or already performing a finite element analysis. Supervisors and managers should also find the book useful to aid in the organization, preparation, execution, and result reporting of finite element analyses. This book as well as other tasks in progress by NAFEMS deserves recognition and a vote of appreciation by the practicing finite element community.

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Application and Implementation of Finite Element Methods
Dr Akin
ISBN 0-12-047652-5

Dr Akin's book has been written to illustrate the principle methods currently used to manipulate the basic theory of the finite element technique into a tool for solving useful problems. Emphasis is therefore placed on the computational algorithms required, together with their application, rather than the underlying theory of the method, which is only developed to the level required to introduce each topic.

The theme is thus developed by describing each computational phase in turn, from control and input through to the development of element stiffness matrices, overall assembly, solution procedures and finally the output of results. The description of each phase is general, with specific examples used where appropriate. In every phase the material is presented in conjunction with a modular subroutine which can perform the task described. The subroutines can then be used either with the control program supplied, in order to solve the illustrative examples given, or as the basis of a finite element system which can be expanded to meet the user's specific requirements. The subroutines are thoughtfully written, using largely self-explanatory variable names and are liberally punctuated with comment cards. The reviewer was able to verify that for a sample test problem the appropriate subroutines generated the correct answers at the first attempt. However, the subroutines have been written in FORTRAN and this is likely to prove restrictive for personal computer use.

The depth of coverage in each section is good, especially with respect to isoparametric elements and numerical integration. A number of interesting topics, which are often considered to be too peripheral for a basic text, are also included, such as skyline storage, nodal condensation, interpolation enhancement for transition elements and the patch test. However, the question of pre- and post-processing of data has largely been omitted, except for discussion of a mesh generation routine, whose listing is also given. The book is rounded off by considering a wide range of specific examples in one, two and three dimensional applications, including conventional stress analysis, lubrication problems, heat conduction and fluid flow.

The test is generally clear, extremely readable and always positive in its aim. In addition, a number of useful features have been included to aid the serious user, namely, diagrams located together at the end of each chapter, a subroutine index, a list of subroutine variable names and their meanings and an extensive reference list. In conclusion I would be happy to recommend the text to anybody who wishes to develop an understanding of how to apply the finite element technique in practice, although a thorough understanding of basic finite element theory is an essential prerequisite.

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Notes on Numerical Fluid Mechanics (Volume 12): The Efficient Use of Vector Computers with Emphasis on Computational Fluid Dynamics
Eds: Willi Schönauer and Wolfgang Gentzsch
Vieweg, 1986, £23.60, John Wiley and Sons Ltd.
ISBN 0-528080-86-8

Until recently it has been impossible to solve fluid dynamics problems of anything but the very simplest geometry. The full solution of the Navier-Stokes equations (including the continuity, momentum and energy equations) requires a very fine mesh of grid, or node, points because of the high gradients associated with phenomena such as turbulence and flow separation. This gives rise to models of extraordinary complexity and vast systems of equations, but
