
Maple 12 Advanced Programming Guide

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Maple V Programming Guide Springer-Verlag

Problem Solving is essential to solve real-world problems. Advanced Problem Solving with Maple: A First Course applies the mathematical modeling process by formulating, building, solving, analyzing, and criticizing mathematical models. It is intended for a course introducing students to mathematical topics they will revisit within their further studies. The authors present mathematical modeling and problem-solving topics using Maple as the computer algebra system for mathematical explorations, as well as obtaining plots that help readers perform analyses. The book presents cogent applications that demonstrate an effective use of Maple, provide discussions of the results obtained using Maple, and stimulate thought and analysis of additional applications.

Highlights: The book's real-world case studies prepare the student for modeling applications Bridges the study of topics and applications to various fields of

mathematics, science, and engineering Features a flexible format and tiered approach offers courses for students at various levels The book can be used for students with only algebra or calculus behind them About the authors: Dr. William P. Fox is an emeritus professor in the Department of Defense Analysis at the Naval Postgraduate School. Currently, he is an adjunct professor, Department of Mathematics, the College of William and Mary. He received his Ph.D. at Clemson University and has many publications and scholarly activities including twenty books and over one hundred and fifty journal articles. William C. Bauldry, Prof. Emeritus and Adjunct Research Prof. of Mathematics at Appalachian State University, received his PhD in Approximation Theory from Ohio State. He has published many papers on pedagogy and technology, often using Maple, and has been the PI of several NSF-funded projects incorporating technology and modeling into math courses. He currently serves as Associate Director of COMAP's Math Contest in Modeling (MCM).

Microfluidics Walter de Gruyter GmbH & Co KG

Mathematics for Physical Science and Engineering is a complete text in mathematics for physical science that includes the use of symbolic computation to illustrate

the mathematical concepts and enable the solution of a broader range of practical problems. This book enables professionals to connect their knowledge of mathematics to either or both of the symbolic languages Maple and Mathematica. The book begins by introducing the reader to symbolic computation and how it can be applied to solve a broad range of practical problems. Chapters cover topics that include: infinite series; complex numbers and functions; vectors and matrices; vector analysis; tensor analysis; ordinary differential equations; general vector spaces; Fourier series; partial differential equations; complex variable theory; and probability and statistics. Each important concept is clarified to students through the use of a simple example and often an illustration. This book is an ideal reference for upper level undergraduates in physical chemistry, physics, engineering, and advanced/applied mathematics courses. It will also appeal to graduate physicists, engineers and related specialties seeking to address practical problems in physical science. Clarifies each important concept to students through the use of a simple example and often an illustration Provides quick-reference for students through multiple appendices, including an overview of terms in most commonly used applications (Mathematica, Maple) Shows how symbolic computing enables solving a broad range of practical problems

Maple Eleven Introductory Programming Guide
Academic Press

Microfluidics: Modeling, Mechanics and Mathematics, Second Edition provides a practical, lab-based approach to nano- and microfluidics,

including a wealth of practical techniques, protocols and experiments ready to be put into practice in both research and industrial settings. This practical approach is ideally suited to researchers and R&D staff in industry. Additionally, the interdisciplinary approach to the science of nano- and microfluidics enables readers from a range of different academic disciplines to broaden their understanding. Alongside traditional fluid/transport topics, the book contains a wealth of coverage of materials and manufacturing techniques, chemical modification/surface functionalization, biochemical analysis, and the biosensors involved. This fully updated new edition also includes new sections on viscous flows and centrifugal microfluidics, expanding the types of platforms covered to include centrifugal, capillary and electro kinetic platforms. Provides a practical guide to the successful design and implementation of nano- and microfluidic processes (e.g., biosensing) and equipment (e.g., biosensors, such as diabetes blood glucose sensors) Provides techniques, experiments and protocols that are ready to be put to use in the lab, or in an academic or industry setting Presents a collection of 3D-CAD and image files on a companion website Mathematische Probleme lösen mit Maple
Addison Wesley

An accessible introduction to the theoretical and computational aspects of linear algebra using Maple™ Many topics in linear algebra can be computationally intensive, and software programs often serve as important tools for understanding challenging concepts and visualizing the geometric aspects of the subject. Principles of Linear Algebra with Maple uniquely addresses the quickly growing intersection between subject theory and numerical computation, providing all of the commands required to solve complex and computationally challenging linear algebra problems using Maple. The authors supply an informal, accessible, and easy-to-follow treatment of key topics often found in a first course in linear algebra. Requiring no prior knowledge of the software, the book begins with an introduction to the commands and programming guidelines

for working with Maple. Next, the book explores linear systems of equations and matrices, applications of linear systems and matrices, determinants, inverses, and Cramer's rule. Basic linear algebra topics such as vectors, dot product, cross product, and vector projection are explained, as well as the more advanced topics of rotations in space, rolling a circle along a curve, and the TNB Frame. Subsequent chapters feature coverage of linear transformations from R^n to R^m , the geometry of linear and affine transformations, least squares fits and pseudoinverses, and eigenvalues and eigenvectors. The authors explore several topics that are not often found in introductory linear algebra books, including sensitivity to error and the effects of linear and affine maps on the geometry of objects. The Maple software highlights the topic's visual nature, as the book is complete with numerous graphics in two and three dimensions, animations, symbolic manipulations, numerical computations, and programming. In addition, a related Web site features supplemental material, including Maple code for each chapter's problems, solutions, and color versions of the book's figures. Extensively class-tested to ensure an accessible presentation, *Principles of Linear Algebra with Maple* is an excellent book for courses on linear algebra at the undergraduate level. It is also an ideal reference for students and professionals who would like to gain a further understanding of the use of Maple to solve linear algebra problems.

Maple V Learning Guide Elsevier

This book constitutes the joint refereed proceedings of three international events, namely the 18th Symposium on the Integration of Symbolic Computation and Mechanized Reasoning, Calculemus 2011, the 10th International Conference on Mathematical Knowledge Management, MKM 2011, and a new track on Systems and Projects descriptions that

span both the Calculemus and MKM topics, all held in Bertinoro, Italy, in July 2011. All 51 submissions passed through a rigorous review process. A total of 15 papers were submitted to Calculemus, of which 9 were accepted. Systems and Projects track 2011 there have been 12 papers selected out of 14 submissions while MKM 2011 received 22 submissions, of which 9 were accepted for presentation and publication. The events focused on the use of AI techniques within symbolic computation and the application of symbolic computation to AI problem solving; the combination of computer algebra systems and automated deduction systems; and mathematical knowledge management, respectively.

Maple 9 Springer Science & Business Media

Advanced Problem Solving Using Maple™: Applied Mathematics, Operations Research, Business Analytics, and Decision Analysis applies the mathematical modeling process by formulating, building, solving, analyzing, and criticizing mathematical models. Scenarios are developed within the scope of the problem-solving process. The text focuses on discrete dynamical systems, optimization techniques, single-variable unconstrained optimization and applied problems, and numerical search methods. Additional coverage includes multivariable unconstrained and constrained techniques. Linear algebra techniques to model and solve problems such as the Leontief model, and advanced regression techniques including nonlinear, logistics, and Poisson are covered. Game theory, the Nash equilibrium, and Nash arbitration are also included. Features: The text's case studies and student projects involve students with real-world problem solving Focuses on numerical solution techniques in dynamical systems, optimization, and numerical analysis The numerical procedures discussed in the text are algorithmic and iterative Maple is utilized throughout the text as a tool for computation and analysis All algorithms are provided with step-by-step formats

About the Authors: William P. Fox is an emeritus professor in the Department of

Defense Analysis at the Naval Postgraduate School. Currently, he is an adjunct professor, Department of Mathematics, the College of William and Mary. He received his PhD at Clemson University and has many publications and scholarly activities including twenty books and over one hundred and fifty journal articles. William C. Bauldry, Prof. Emeritus and Adjunct Research Prof. of Mathematics at Appalachian State University, received his PhD in Approximation Theory from Ohio State. He has published many papers on pedagogy and technology, often using Maple, and has been the PI of several NSF-funded projects incorporating technology and modeling into math courses. He currently serves as Associate Director of COMAP's Math Contest in Modeling (MCM). Understanding Maple CRC Press

Rapid technological developments in the last century have brought the field of biomedical engineering into a totally new realm. Breakthroughs in material science, imaging, electronics and more recently the information age have improved our understanding of the human body. As a result, the field of biomedical engineering is thriving with new innovations that aim to improve the quality and cost of medical care. This book is the first in a series of three that will present recent trends in biomedical engineering, with a particular focus on electronic and communication applications. More specifically: wireless monitoring, sensors, medical imaging and the management of medical information.

MATLAB and Simulink in Action Cambridge University Press

Dieses kompakte Mathematikbuch ü berzeugt durch das didaktische Konzept und durch sein ansprechendes, in der 7. Auflage verbessertes Layout. Das einb ä ndig vorliegende Werk umfasst den Mathematikstoff f ü r technisch orientierte Bachelor-Studieng ä nge. Abstrakte mathematische Begriffe werden anschaulich erkl ä rt, auf Beweise wird gr ö ß tenteils verzichtet. 380 ausf ü hrlich durchgerechnete Beispiele auch aus technischen

Anwendungsgebieten helfen den Studierenden, sich die Mathematik einpr ä gsam zu erschlie ß en. Auf der Homepage zum Buch befinden sich zahlreiche Animationen zur Visualisierung der mathematischen Begriffe, die L ö sungen zu den Übungsaufgaben sowie MAPLE-Arbeitsbl ä tter, mit denen der Stoff interaktiv einge ü bt werden kann. Die elektronischen Arbeitsbl ä tter wurden an MAPLE 18 angepasst. Das Buch eignet sich hervorragend f ü r das Selbststudium sowie zur erfolgreichen Pr ü fungsvorbereitung.

Maple Programming Guide Springer Science & Business Media

Maple V Mathematics Programming Guide is the fully updated language and programming reference for Maple V Release 5. It presents a detailed description of Maple V Release 5 - the latest release of the powerful, interactive computer algebra system used worldwide as a tool for problem-solving in mathematics, the sciences, engineering, and education. This manual describes the use of both numeric and symbolic expressions, the data types available, and the programming language statements in Maple. It shows how the system can be extended or customized through user defined routines and gives complete descriptions of the system's user interface and 2D and 3D graphics capabilities.

Maple Eleven Advanced Programming Guide Wiley

The design and implementation of the Maple system is an on-going project of the Symbolic Com putation Group at the University of Waterloo in Ontario, Canada. This manual corresponds with version V (roman numeral five) of the Maple system. The on-line help subsystem can be invoked from within a Maple session to view documentation on specific topics. In particular, the command ?updates points the user to documentation updates for each new

version of Maple. The Maple project was first conceived in the autumn of 1980 growing out of discussions on the state of symbolic computation at the University of Waterloo. The authors wish to acknowledge many fruitful discussions with colleagues at the University of Waterloo, particularly Morven Gentleman, Michael Malcolm, and Frank Tompa. It was recognized in these discussions that none of the locally-available systems for symbolic computation provided the facilities that should be expected for symbolic computation in modern computing environments. We concluded that since the basic design decisions for the then-current symbolic systems such as ALTRAN, CAMAL, REDUCE, and to design a new system MACSYMA were based on 1960's computing technology, it would be wise from scratch taking advantage of the software engineering technology which had become available since then, as well as drawing from the lessons of experience. Maple's basic features (e. g. elementary data structures, input/output, arithmetic with numbers, and elementary simplification) are coded in a systems programming language for efficiency.

Maple 9 CRC Press

Maple V Mathematics Programming Guide is the fully updated language and programming reference for Maple V Release 5. It presents a detailed description of Maple V Release 5 - the latest release of the powerful, interactive computer algebra system used worldwide as a tool for problem-solving in mathematics, the sciences, engineering, and education. This manual describes the use of both numeric and symbolic expressions, the data types available, and the programming language statements in Maple. It shows how the system can be extended or customized through user defined routines and gives complete descriptions of the system's user interface and 2D and 3D graphics capabilities.

Maple Introductory Programming Guide

Springer Science & Business Media

0805311912B04062001

The Maple Book CRC Press

This book presents fundamentals in MATLAB programming, including data and

statement structures, control structures, function writing and bugging in MATLAB programming, followed by the presentations of algebraic computation, transcendental function evaluations and data processing. Advanced topics such as MATLAB interfacing, object-oriented programming and graphical user interface design are also addressed.

Maple V Programming Guide Springer Buch und CD-ROM ermöglichen es, ohne Vorkenntnisse das Computeralgebra-System MAPLE zu nutzen, um elementare mathematische Probleme am Computer zu lösen. Sie liefern einen schnellen Zugriff auf die Lösung mit der Beschreibung der zugehörigen MAPLE-Befehle. Besondere Vorteile: Alle Probleme werden exemplarisch behandelt. Die flexiblen elektronischen Arbeitsblätter können an die eigenen Problemstellungen einfach angepasst werden. Die übersichtliche Struktur der einzelnen Abschnitte: - Jedes Thema wird mathematisch beschrieben. - Das Problem wird mit MAPLE gelöst. - Die Syntax des MAPLE-Befehls wird erläutert. - Ein Beispielaufruf wird angegeben. - Hinweise behandeln Besonderheiten des Befehls oder der Ausgabe. Die CD-ROM enthält neben den über 120 im Text gelösten Problemen viele weitere Beispiele. Inhaltsverzeichnis und Index ermöglichen eine übersichtliche und benutzerfreundliche Navigation auf der CD-ROM zum gezielten Aufsuchen der Themen und der MAPLE-Worksheets. Die 4. Auflage enthält eine Einführung in die Benutzeroberfläche von Maple 14.

Intelligent Computer Mathematics Springer Nature

Maple is a very powerful computer algebra system used by students, educators, mathematicians, statisticians, scientists, and engineers for doing numerical and symbolic computations. Greatly expanded and updated from the author's MAPLE V Primer, The MAPLE Book offers extensive coverage of the

latest version of this outstanding software package, MAPLE 7.0 The MAPLE Book serves both as an introduction to Maple and as a reference. Organized according to level and subject area of mathematics, it first covers the basics of high school algebra and graphing, continues with calculus and differential equations then moves on to more advanced topics, such as linear algebra, vector calculus, complex analysis, special functions, group theory, number theory and combinatorics. The MAPLE Book includes a tutorial for learning the Maple programming language. Once readers have learned how to program, they will appreciate the real power of Maple. The convenient format and straightforward style of The MAPLE Book let users proceed at their own pace, practice with the examples, experiment with graphics, and learn new functions as they need them. All of the Maple commands used in the book are available on the Internet, as are links to various other files referred to in the book. Whatever your level of expertise, you'll want to keep The MAPLE Book next to your computer.

Advanced Programming Language Design Springer
Science & Business Media

- * Uses a pedagogical approach that makes a mathematically challenging subject easier and more fun to learn
- * Self-contained and standalone text that may be used in the classroom, for an online course, for self-study, as a reference
- * Using MAPLE allows the reader to easily and quickly change the models and parameters

Biomedical Engineering, Trends in Electronics
Springer-Verlag

This book explains the key features of Maple, with a focus on showing how things work, and how to avoid common problems.

Maple 8 Learning Guide

Maple 12: Introductory Programming Guide

Maple V Programming Guide