Ansys Fluent Dem Tutorial

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Finite Element Simulations with ANSYS Workbench 2021
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An Introduction to Ansys Fluent 2024
2018 3rd International Conference on Smart City and Systems Engineering (ICSCSE)
An Introduction to ANSYS Fluent 2021
ANSYS Workbench Tutorial
ANSYS Workbench 14.0
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Turbulent Jets
Multiphase Flow and Fluidization
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Finite Element Simulations with ANSYS Workbench 18
CFD-Modellierung
An Introduction to ANSYS Fluent 2020

DARIO HOUSTON

Finite Element Simulations with ANSYS Workbench 17 SDC Publications
The exercises in the ANSYS Workbench Tutorial introduce the reader to effective engineering problem solving through the use of this powerful modeling, simulation and optimization tool. Topics that are covered include solid modeling, stress analysis, conduction/convection heat transfer, thermal stress, vibration and buckling. It is designed for practicing and student engineers alike and is suitable for use with an organized course of instruction or for self-study.

Finite Element Simulations with ANSYS Workbench 2021 Elsevier
The nine lessons in this book introduce the reader to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM software in a series of step-by-step tutorials. Topics covered include problems involving trusses, plane stress, plane strain, axisymmetric and three-dimensional geometries, beams, plates, conduction and convection heat transfer, thermal stress, and more. The tutorials are suitable for either professional or student use.
ANSYS Workbench Tutorial SDC Publications
• Teaches new users how to run Computational Fluid Dynamics simulations using Ansys Fluent • Uses applied problems, with detailed step-by-step instructions • Designed to supplement undergraduate and graduate courses • Covers the use of Ansys

Workbench, Ansys DesignModeler, Ansys Meshing, Ansys Fluent and Ansys Polyflow • Compares results from Ansys Fluent with numerical solutions using Mathematica • This edition features new chapters on a Spinning Propeller and a Pool Table Ball Simulation As an engineer, you may need to test how a design interacts with fluids. For example, you may need to simulate how air flows over an aircraft wing, how water flows through a filter, or how water seeps under a dam. Carrying out simulations is often a critical step in verifying that a design will be successful. In this hands-on book, you'll learn in detail how to run Computational Fluid Dynamics (CFD) simulations using Ansys Fluent. Ansys Fluent is known for its power, simplicity and speed, which has helped make it a world leader in CFD software, both in academia and industry. Unlike any other Ansys Fluent textbook currently on the market, this book uses applied problems to walk you step-by-step through completing CFD simulations for many common flow cases, including internal and external flows, laminar and turbulent flows, steady and unsteady flows, and single-phase and multiphase flows. You will also learn how to visualize the computed flows in the post-processing phase using different types of plots. To better understand the mathematical models being applied, we'll validate the results from Ansys Fluent with numerical solutions calculated using Mathematica. Throughout this book we'll learn how to create geometry using Ansys Workbench and Ansys DesignModeler, how to create mesh using Ansys Meshing, how to use physical models and how to perform calculations using Ansys Fluent. The chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using Ansys. Intermediate users, already familiar with the basics of Ansys Fluent, will still find new areas to explore and learn. An Introduction to Ansys Fluent 2024 is designed to be used as a supplement to undergraduate courses in Aerodynamics, Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability. The use of CFD simulation software is rapidly growing in all industries. Companies are now expecting graduating engineers to have knowledge of how to perform simulations. Even if you don't eventually complete simulations yourself, understanding the process used to complete these simulations is necessary to be an effective team member. People with experience using Ansys Fluent are highly sought after in the industry, so learning this software will not only give you an advantage in your classes, but also when applying for jobs and in the workplace. This book is a valuable tool that will help you master Ansys Fluent and better understand the underlying theory. Topics Covered • 2D Axisymmetric Flow • 2D Axisymmetric Swirl • 3D Flow • Animation • Batch Job • Boundary Conditions • Cell Zone Conditions • CFD-Post • Compressible Flow • Contours • Drag and Lift • Dynamic Mesh Zones • Fault-tolerant Meshing • Fluent Launcher • Force-Report • Initialization • Iterations • Laminar and Turbulent Flows • Macroscopic Particle Model • Materials • Meshing • Multiphase Flows • Nodes and Elements • Pathlines • Polyflow • Post-Processing • Pressure • Project Schematic • Reference Values • Reports • Residuals • Results • Sketch • Solution • Solver • Streamlines • Supersonic Flow • Transient • User Defined Functions • Viscous Model • Visualizations • XY Plot • Watertight-Geometry

Finite Element Simulations with ANSYS Workbench 2020 SDC

Publications
The nine lessons in this book introduce the reader to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM Release 12.1 software in a series of step-by-step tutorials. The tutorials are suitable for either professional or student use. The lessons discuss linear static response for problems involving truss, plane stress, plane strain, axisymmetric, solid, beam, and plate structural elements. Example problems in heat transfer, thermal stress, mesh creation and transferring models from CAD solid modelers to ANSYS are also included. The tutorials progress from simple to complex. Each lesson can be mastered in a short period of time, and Lessons 1 through 7 should all be completed to obtain a thorough understanding of basic ANSYS structural analysis.
ANSYS Workbench 2023 R2: A Tutorial Approach, 6th Edition SDC Publications
The exercises in ANSYS Workbench Tutorial Release 14 introduce you to effective engineering problem solving through the use of this powerful modeling, simulation and optimization software suite. Topics that are covered include solid modeling, stress analysis, conduction/convection heat transfer, thermal stress, vibration, elastic buckling and geometric/material nonlinearities. It is designed for practicing and student engineers alike and is suitable for use with an organized course of instruction or for self-study. The compact presentation includes just over 100 end-of-chapter problems covering all aspects of the tutorials.
An Introduction to Ansys Fluent 2023 SDC Publications
As an engineer, you may need to test how a design interacts with fluids. For example, you may need to simulate how air flows over an aircraft wing, how water flows through a filter, or how water seeps under a dam. Carrying out simulations is often a critical step in verifying that a design will be successful. In this hands-on book, you'll learn in detail how to run Computational Fluid Dynamics (CFD) simulations using ANSYS Fluent. ANSYS Fluent is known for its power, simplicity and speed, which has helped make it a world leader in CFD software, both in academia and industry. Unlike any other ANSYS Fluent textbook currently on the market, this book uses applied problems to walk you step-by-step through completing CFD simulations for many common flow cases, including internal and external flows, laminar and turbulent flows, steady and unsteady flows, and single-phase and multiphase flows. You will also learn how to visualize the computed flows in the post-processing phase using different types of plots. To better understand the mathematical models being applied, we'll validate the results from ANSYS Fluent with numerical solutions calculated using Mathematica. Throughout this book we'll learn how to create geometry using ANSYS Workbench and ANSYS DesignModeler, how to create mesh using ANSYS Meshing, how to use physical models and how to perform calculations using ANSYS Fluent. The chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using ANSYS. Intermediate users, already familiar with the basics of ANSYS Fluent, will still find new areas to explore and learn. An Introduction to ANSYS Fluent 2021 is designed to be used as a supplement to undergraduate courses in Aerodynamics, Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability. The use of CFD simulation

software is rapidly growing in all industries. Companies are now expecting graduating engineers to have knowledge of how to perform simulations. Even if you don’t eventually complete simulations yourself, understanding the process used to complete these simulations is necessary to be an effective team member. People with experience using ANSYS Fluent are highly sought after in the industry, so learning this software will not only give you an advantage in your classes, but also when applying for jobs and in the workplace. This book is a valuable tool that will help you master ANSYS Fluent and better understand the underlying theory. Topics Covered • Boundary Conditions • Drag and Lift • Initialization • Iterations • Laminar and Turbulent Flows • Mesh • Multiphase Flows • Nodes and Elements • Pressure • Project Schematic • Results • Sketch • Solution • Solver • Streamlines • Transient • Visualizations • XY Plot Table of Contents 1. Introduction 2. Flat Plate Boundary Layer 3. Flow Past a Cylinder 4. Flow Past an Airfoil 5. Rayleigh-Benard Convection 6. Channel Flow 7. Rotating Flow in a Cavity 8. Spinning Cylinder 9. Kelvin-Helmholtz Instability 10. Rayleigh-Taylor Instability 11. Flow Under a Dam 12. Water Filter Flow 13. Model Rocket Flow 14. Ahmed Body 15. Hourglass 16. Bouncing Spheres 17. Falling Sphere 18. Flow Past a Sphere 19. Taylor-Couette Flow 20. Dean Flow in a Curved Channel 21. Rotating Channel Flow 22. Compressible Flow Past a Bullet 23. Vertical Axis Wind Turbine Flow 24. Circular Hydraulic Jump

ANSYS Tutorial SDC Publications

• A comprehensive easy to understand workbook using step-by-step instructions • Designed as a textbook for undergraduate and graduate students • Relevant background knowledge is reviewed whenever necessary • Twenty seven real world case studies are used to give readers hands-on experience • Comes with video demonstrations of all 45 exercises • Compatible with ANSYS Student 2021 • Printed in full color Finite Element Simulations with ANSYS Workbench 2021 is a comprehensive and easy to understand workbook. Printed in full color, it utilizes rich graphics and step-by-step instructions to guide you through learning how to perform finite element simulations using ANSYS Workbench. Twenty seven real world case studies are used throughout the book. Many of these case studies are industrial or research projects that you build from scratch. Prebuilt project files are available for download should you run into any problems. Companion videos, that demonstrate exactly how to perform each tutorial, are also available. Relevant background knowledge is reviewed whenever necessary. To be efficient, the review is conceptual rather than mathematical. Key concepts are inserted whenever appropriate and summarized at the end of each chapter. Additional exercises or extension research problems are provided as homework at the end of each chapter. A learning approach emphasizing hands-on experiences is utilized though this entire book. A typical chapter consists of six sections. The first two provide two step-by-step examples. The third section tries to complement the exercises by providing a more systematic view of the chapter subject. The following two sections provide more exercises. The final section provides review problems. Who this book is for This book is designed to be used mainly as a textbook for undergraduate and graduate students. It will work well in: • a finite element simulation course taken before any theory-intensive courses • an auxiliary tool used as a tutorial in parallel during a Finite Element Methods course • an advanced, application oriented, course taken after a Finite Element Methods course About the Videos Each copy of this book includes access to video instruction. In these videos the author provides a clear presentation of tutorials found in the book. The videos reinforce the steps described in the book by allowing you to watch the exact steps the author uses to complete the exercises. Table of Contents 1. Introduction 2. Sketching 3. 2D Simulations 4. 3D Solid Modeling 5. 3D Simulations 6. Surface Models 7. Line Models 8. Optimization 9. Meshing 10. Buckling and Stress Stiffening 11. Modal Analysis 12. Transient Structural Simulations 13. Nonlinear Simulations 14. Nonlinear Materials 15. Explicit Dynamics Index

Finite Element Simulations with ANSYS Workbench 2019
SDC Publications
As an engineer, you may need to test how a design interacts with fluids. For example, you may need to simulate how air flows over an aircraft wing, how water flows through a filter, or how water seeps under a dam. Carrying out simulations is often a critical step in verifying that a design will be successful. In this hands-on book, you'll learn in detail how to run Computational Fluid Dynamics (CFD) simulations using ANSYS Fluent. ANSYS Fluent is known for its power, simplicity and speed, which has helped make it a world leader in CFD software, both in academia and industry. Unlike any other ANSYS Fluent textbook currently on the market, this book uses applied problems to walk you step-by-step through completing CFD simulations for many common flow cases, including internal and external flows, laminar and turbulent flows, steady and unsteady flows, and single-phase and multiphase flows. You will also learn how to visualize the computed flows in the post-processing phase using different types of plots. To better understand the mathematical models being applied, we'll validate the results from ANSYS Fluent with numerical solutions calculated using Mathematica. Throughout this book we'll learn how to create geometry using ANSYS Workbench and ANSYS DesignModeler, how to create mesh using ANSYS Meshing, how to use physical models and how to perform calculations using ANSYS Fluent. The twenty chapters in this book can be used in any order and are suitable for beginners with little or no previous experience using ANSYS. Intermediate users, already familiar with the basics of ANSYS Fluent, will still find new areas to explore and learn. An Introduction to ANSYS Fluent 2020 is designed to be used as a supplement to undergraduate courses in Aerodynamics, Finite Element Methods and Fluid Mechanics and is suitable for graduate level courses such as Viscous Fluid Flows and Hydrodynamic Stability. The use of CFD simulation software is rapidly growing in all industries. Companies are now expecting graduating engineers to have knowledge of how to perform simulations. Even if you don't eventually complete simulations yourself, understanding the process used to complete these simulations is necessary to be an effective team member. People with experience using ANSYS Fluent are highly sought after in the industry, so learning this software will not only give you an advantage in your classes, but also when applying for jobs and in the workplace. This book is a valuable tool that will help you master ANSYS Fluent and better understand the underlying theory.

ANSYS Tutorial CADCIM Technologies

The eight lessons in this book introduce the reader to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM Release 13 software in a series of step-by-step tutorials. The tutorials are suitable for either professional or student use. The lessons discuss linear static response for problems involving truss, plane stress, plane strain, axisymmetric, solid, beam, and plate structural elements. Example problems in heat transfer, thermal stress, mesh creation and transferring models from CAD solid modelers to ANSYS are also included. The tutorials progress from simple to complex. Each lesson can be mastered in a short period of time, and Lessons 1 through 7 should all be completed to obtain a thorough understanding of basic ANSYS structural analysis.

Coupled CFD-DEM Modeling CADCIM Technologies

The topics of the 3rd International Conference on Smart City and System Engineering(ICSCSE2018) which are CPS s field of interest Hardware B 1 Control structure and Microprogramming B 8 Integrated circuits Computer system organization C 2 Commulication networking and information technology C 4 Performance of system Computing Methodologies I 2 Artificial intelligence I 3 Computer graphics I 6 Simulation modeling and visualization Computer Application J 6 Computer aidded engineering J 7 Computers in other system Information Technology and System H 1 Model and principles H 4 Information technology and system applications About 95 of all accepted papers will be included in above topics

ANSYS Tutorial Release 2020 Elsevier

In diesem kompakten Lehrbuch legt der Autor die Methodik der numerischen Simulation von Strömungsprozessen dar. Nach einer konzisen Erläuterung der Grundlagen lernen Leser das Potenzial der Methodik anhand von Anwendungsbeispielen kennen. Demonstriert werden sowohl einfache wie komplexe Probleme. Während Leser die einfachen Problemstellungen mithilfe von Open-Source-Softwarepaketen selbst bearbeitet können, sind die komplexen Beispiele aus aktuellen grundlagenorientierten und aus anwendungsnahen Forschungsprojekten des Autors abgeleitet.

ANSYS Tutorial Release 12.1 SDC Publications

Due to the increasing importance of multi-scale computation in engineering, stimulated by the dramatic development of computer technology and understanding of multi-scale structures, an issue on multi-scale simulation and design--or so-called virtual process engineering--is now edited. ACE published an issue with title of multi-scale analysis in 2005 (vol 35). The intention of the present volume is different, trying to elucidate the bottlenecks and to identify the correct directions for the coming years from the process and product engineering point of view. Both fundamental and practical contributions will be provided from academia and industry. - Updates and informs the reader on the latest research findings using original reviews - Written by leading industry experts and scholars - Reviews and analyzes developments in the field

ANSYS Workbench Tutorial SDC Publications

Finite Element Simulations with ANSYS Workbench 17 is a comprehensive and easy to understand workbook. Printed in full color, it utilizes rich graphics and step-by-step instructions to guide you through learning how to perform finite element simulations using ANSYS Workbench. Twenty seven real world case studies are used throughout the book. Many of these case studies are industrial or research projects that you build from scratch. Prebuilt project files are available for download should you run into any problems. Companion videos, that demonstrate exactly how to perform each tutorial, are also available Relevant background knowledge is reviewed whenever necessary. To be efficient, the review is conceptual rather than mathematical. Key concepts are inserted whenever appropriate and summarized at the end of each chapter. Additional exercises or extension research problems are provided as homework at the end of each chapter. A learning approach emphasizing hands-on experiences spreads though this entire book. A typical chapter consists of 6 sections. The first two provide two step-by-step examples. The third section tries to complement the exercises by providing a more systematic view of the chapter subject. The following two sections provide more exercises. The final section provides review problems.

An Introduction to ANSYS Fluent 2019 SDC Publications

ANSYS Workbench 2022 R1: A Tutorial Approach book introduces the readers to ANSYS Workbench 2022, one of the world's leading, widely distributed, and popular commercial CAE packages. It is used across the globe in various industries such as aerospace, automotive, manufacturing, nuclear, electronics, biomedical, and so on. ANSYS provides simulation solutions that enable designers to simulate design performance. This book covers various simulation streams of ANSYS such as Static Structural, Modal, Steady-State, and Transient Thermal analyses. Structured in a pedagogical sequence for effective and easy learning, the content in this book will help FEA analysts quickly understanding the capability and usage of tools of ANSYS Workbench. Salient Features Book consisting of 11 chapters that are organized in a pedagogical sequence. Summarized content on the first page of the topics that are covered in the chapter. More than 10 real-world mechanical engineering problems used as tutorials. Additional information throughout the book in the form of notes and tips. Self-Evaluation Tests and Review Questions at the end of each chapter to help the users assess their knowledge. Table of Contents Chapter 1: Introduction to FEA Chapter 2: Introduction to ANSYS Workbench Chapter 3: Part Modeling - I Chapter 4: Part Modeling -II Chapter 5: Part Modeling - III Chapter 6: Defining Material Properties Chapter 7: Generating Mesh - I Chapter 8: Generating Mesh – II Chapter 9: Static Structural Analysis Chapter 10: Vibration Analysis Chapter 11: Thermal Analysis Index

ANSYS Workbench 2021 R1: A Tutorial Approach, 4th Edition SDC Publications

The essence of this book is the innovative approach used to learn ANSYS software by imitation. The primary aim of this book is to assist in learning the use of the ANSYS software through examples taken from various areas of engineering. It provides readers with a comprehensive cross section of analysis types, in order to provide a broad choice of examples to be imitated in one's own work.

Spouted and Spout-Fluid Beds Cambridge University Press

Since the pioneering text by Mathur and Epstein over 35 years ago, much of the work on this subject has been extended or superseded, producing an enormous body of scattered literature. This edited volume unifies the subject, pulling material together

and underpinning it with fundamental theory to produce the only complete, up-to-date reference on all major areas of spouted bed research and practice. With contributions from internationally renowned research groups, this book guides the reader through new developments, insights and models. The hydrodynamic and reactor models of spouted and spout-fluid beds are examined, as well as such topics as particle segregation, heat and mass transfer, mixing and scale-up. Later chapters focus on drying, particle-coating and energy-related applications based on spouted and spout-fluid beds. This is a valuable resource for chemical and mechanical engineers in research and industry.
ANSYS Workbench Tutorial SDC Publications
The nine lessons in this book introduce the reader to effective finite element problem solving by demonstrating the use of the comprehensive ANSYS FEM software in a series of step-by-step tutorials. Topics covered include problems involving trusses, plane stress, plane strain, axisymmetric and three-dimensional geometries, beams, plates, conduction and convection heat transfer, thermal stress, and more. The tutorials are suitable for either professional or student use. [kilde Amazon]
ANSYS Workbench Tutorial Release 14 SDC Publications
Finite Element Simulations with ANSYS Workbench 18 is a comprehensive and easy to understand workbook. Printed in full color, it utilizes rich graphics and step-by-step instructions to guide you through learning how to perform finite element simulations using ANSYS Workbench. Twenty seven real world case studies are used throughout the book. Many of these case studies are industrial or research projects that you build from scratch. Prebuilt project files are available for download should you run into any problems. Companion videos, that demonstrate exactly how to perform each tutorial, are also available. Relevant background knowledge is reviewed whenever necessary. To be efficient, the review is conceptual rather than mathematical. Key concepts are inserted whenever appropriate and summarized at the end of each chapter. Additional exercises or extension research problems are provided as homework at the end of each chapter. A learning approach emphasizing hands-on experiences is utilized though this entire book. A typical chapter consists of six sections. The first two provide two step-by-step examples. The third section tries to complement the exercises by providing a more systematic view of the chapter subject. The following two sections provide more exercises. The final section provides review problems.
Finite Element Simulations with ANSYS Workbench 14 SDC Publications
• Step-by-step tutorials teach you to use Ansys Workbench 2024
• Covers stress analysis, conduction/convection heat transfer, thermal stress, vibration, buckling and nonlinear problems • Includes an introduction to composites, design optimization, and electro-thermal-deflection coupling • Designed for both practicing and student engineers • End of chapter problems reinforce and develop the skills learned in each tutorial To understand Ansys Workbench quickly and well, you need to learn from an expert, study in short bursts of time, and complete hands-on exercises. Ansys Workbench Tutorial: Structural & Thermal Analysis Using Ansys Workbench Release 2024 checks all those boxes. Ansys Workbench is a powerful and widely used solid modeling, simulation and optimization software program. This textbook

uses tutorials to cover key features of the software: stress analysis, conduction/convection heat transfer, thermal stress, vibration, buckling, nonlinear problems with an introduction to composites, design optimization, and electro-thermal-deflection coupling. To use Ansys Workbench Tutorial effectively, you should understand the fundamentals of engineering. It is designed for practicing and student engineers alike and is suitable for use with an organized course of instruction or for self-study. If you are just starting with Ansys Workbench, read the introduction and chapters one and two first. Experienced Workbench users can read the material in any order desired. Since each tutorial can be mastered in a short period of time, the entire book quickly provides a complete, basic introduction to the concepts and capabilities of Ansys Workbench. Engineers routinely use solid modelers together with the Finite Element Method (FEM) to solve everyday problems of modeling for form/fit/function, stress, deformation, heat transfer, fluid flow, electromagnetics, etc. using commercial as well as special purpose computer codes. FEM tools like the ones found in Ansys Workbench are important components in the skill set of today's engineers. In Ansys Workbench Tutorial, the reader practices these skills by creating the models for the tutorials with DesignModeler, which comes with Ansys Workbench, or the solid modeler (parametric modeling system) of their choice. Chapter one reviews a variety of ways to create and access geometry for each project you complete. In each tutorial, the author completes analyses with you, explains the results, and touches on alternative ways to accomplish tasks. The author’s straightforward and focused style shows you how an expert in Ansys Workbench thinks and works, helping cement your proficiency with the software and increasing your productivity in class and in your career. End-of-Chapter Problems Apply what you learned in the tutorials to solve end-of-chapter problems. Problems advance in difficulty as the tutorials do. Some problems challenge learners to create a new model and find stresses, strains, deflections, factor of safety, natural frequencies, pressure, buckling load, and more, using methods discussed in the tutorials. Other problems start with a model and a task and then ask you to consider that same model using different materials, after changing the size or conditions, or by comparing two results. Tackling the problems from different angles covers all aspects of each topic, prepares you for real-life modeling challenges, and helps you learn Ansys Workbench more thoroughly.

Ansys Workbench Software Tutorial with Multimedia CD Schroff Development Corporation

Useful as a reference for engineers in industry and as an advanced level text for graduate engineering students, Multiphase Flow and Fluidization takes the reader beyond the theoretical to demonstrate how multiphase flow equations can be used to provide applied, practical, predictive solutions to industrial fluidization problems. Written to help advance progress in the emerging science of multiphase flow, this book begins with the development of the conservation laws and moves on through kinetic theory, clarifying many physical concepts (such as particulate viscosity and solids pressure) and introducing the new dependent variable--the volume fraction of the dispersed phase. Exercises at the end of each chapterare provided for further study and lead into applications not covered in the text itself. - Treats fluidization as a branch of transport phenomena - Demonstrates how to do transient, multidimensional simulation of multiphase processes - The first book to apply kinetic theory to flow of particulates - Is the only book to discuss numerical stability of multiphase equations and whether or not such equations are well-posed - Explains the origin of bubbles and the concept of critical granular flow - Presents clearly written exercises at the end of each chapter to facilitate understanding and further study