

Engineering Economics By R Panneerselvam

ENGINEERING ECONOMICS PHI Learning Pvt. Ltd.

This thoroughly revised book, now in its second edition, gives a complete coverage of the fundamental concepts and applications of Production Engineering. Divided into six parts, the text covers the various theoretical concepts, design and process of metal cutting, the design and mechanism of various machine tools, and various aspects of precision measurement and manufacturing. The concepts and processes of metal working and the design of press tools, various modern methods of manufacturing, such as ultrasonic machining (USM), electrochemical deburring (ECD), and hot machining are also covered. A variety of worked-out examples and end-of-chapter review questions are provided to strengthen the grasp as well as to test the comprehension of the underlying concepts and principles. The text is extensively illustrated to aid the students in gaining a thorough understanding of various production processes and the principles behind them. The text is intended to serve the needs of the undergraduate students of Mechanical Engineering and Production Engineering. The postgraduate students of Mechanical Engineering and Production Engineering will also find the book highly useful. Key Features • Incorporates a new chapter on Grinding and other Abrasive metal removal processes. • Includes new sections on – Electric motors for machine tools in Chapter 18. – Production of screw threads in Chapter 22. – Linear precision measurement, surface finish, and machine tools in Chapter 23. • Presents several new illustrative examples throughout the book.

Environmental and social impact assessment (ESIA) is an important and often obligatory part of proposing or launching any development project. Delivering a successful ESIA needs not only an understanding of the theory but also a detailed knowledge of the methods for carrying out the processes required. Riki Therivel and Graham Wood bring together the latest advice on best practice from experienced practitioners to ensure an ESIA is carried out effectively and efficiently. This new edition: • explains how an ESIA works and how it should be carried out • demonstrates the links between socio-economic, cultural, environmental and ecological systems and assessments • incorporates the World Bank's IFC performance standards, and best practice examples from developing as well as developed countries • includes new chapters on emerging ESIA topics such as climate change, ecosystem services, cultural impacts, resource efficiency, land acquisition and involuntary resettlement. Invaluable to undergraduate and MSc students of ESIA on planning, ecology, geography and environment courses, this internationally oriented fourth edition of Methods of Environmental and Social Impact Assessment is also of great use to planners, ESIA practitioners and professionals seeking to update their skills.

Designed as a textbook for undergraduate students in various engineering disciplines—Mechanical, Civil, Industrial Engineering, Electronics Engineering and Computer Science—and for postgraduate students in Industrial Engineering and Water Resource Management, this comprehensive and well-organized book, now in its Second Edition, shows how complex economic decisions can be made from a number of given alternatives. It provides the managers not only a sound basis but also a clear-cut approach to making decisions. These decisions will ultimately result in minimizing costs and/or maximizing benefits. What is more, the book adequately illustrates the concepts with numerical problems and Indian cases. While retaining all the chapters of the previous edition, the book adds a number of topics to make it more comprehensive and more student friendly. What's New to This Edition • Discusses different types of costs such as average cost, recurring cost, and life cycle cost. • Deals with different types of cost estimating models, index numbers and capital allowance. • Covers the basics of nondeterministic decision making. • Describes the meaning of cash flows with probability distributions and decision making, and selection of alternatives using simulation. • Discusses the basic concepts of Accounting. This book, which is profusely illustrated with worked-out examples and a number of diagrams and tables, should prove extremely useful not only as a text but also as a reference for those offering courses in such areas as Project Management, Production Management, and Financial Management.

Fundamentals of Materials Science and Engineering takes an integrated approach to the sequence of topics – one specific structure, characteristic, or property type is covered in turn for all three basic material types: metals, ceramics, and polymeric materials. This presentation permits the early introduction of non-metals and supports the engineer's role in choosing materials based upon their characteristics. Using clear, concise terminology that is familiar to students, Fundamentals presents material at an appropriate level for both student comprehension and instructors who may not have a materials background.

The Technology Of Cad/Cam/Cim Deals With The Creation Of Information At Different Stages From Design To Marketing And Integration Of Information And Its Effective Communication Among The Various Activities Like Design, Product Data Management, Process Planning, Production Planning And Control, Manufacturing, Inspection, Materials Handling Etc., Which Are Individually Carried Out Through Computer Software. Seamless Transfer Of Information From One Application To Another Is What Is Aimed At. This Book Gives A Detailed Account Of The Various Technologies Which Form Computer Based Automation Of Manufacturing Activities. The Issues Pertaining To Geometric Model Creation, Standardisation Of graphics Data, Communication, Manufacturing Information Creation And Manufacturing Control Have Been Adequately Dealt With. Principles Of Concurrent Engineering Have Been Explained And Latest Software In The Various Application Areas Have Been Introduced. The Book Is Written With Two Objectives To Serve As A Textbook For Students Studying Cad/Cam/Cim And As A Reference Book For Professional Engineers.

This reference outlines the fundamental concepts and strategies for economic assessments for informed management decisions in industry. The book illustrates how to prepare capital cost and operating expense estimates, profitability analyses, and feasibility studies, and how to execute sensitivity and uncertainty assessments. From financial reports to opportunity costs and engineering trade-offs, Process Engineering Economics considers a wide range of alternatives for

profitable investing and for projecting outcomes in various chemical and engineering fields. It also explains how to monitor costs, finances, and economic limitations at every stage of chemical project design, preparation, and evaluation. For courses in engineering and economics Comprehensively blends engineering concepts with economic theory Contemporary Engineering Economics teaches engineers how to make smart financial decisions in an effort to create economical products. As design and manufacturing become an integral part of engineers' work, they are required to make more and more decisions regarding money. The Sixth Edition helps students think like the 21st century engineer who is able to incorporate elements of science, engineering, design, and economics into his or her products. This text comprehensively integrates economic theory with principles of engineering, helping students build sound skills in financial project analysis. MyEngineeringLab™ not included. Students, if MyEngineeringLab is a recommended/mandatory component of the course, please ask your instructor for the correct ISBN and course ID. MyEngineeringLab should only be purchased when required by an instructor. Instructors, contact your Pearson representative for more information. MyEngineeringLab is an online homework, tutorial, and assessment program designed to work with this text to engage students and improve results. Within its structured environment, students practice what they learn, test their understanding, and pursue a personalized study plan that helps them better absorb course material and understand difficult concepts. Instructors can choose from a wide range of assignment options, including time limits, proctoring, and maximum number of attempts allowed. The bottom line: MyEngineeringLab means less time grading and more time teaching.

Designed primarily as a text for the undergraduate and postgraduate students of industrial engineering, chemical engineering, production engineering, mechanical engineering, and quality engineering and management, it covers fundamentals as well as advanced concepts of Design of Experiments. The text is written in a way that helps students to independently design industrial experiments and to analyze for the inferences. Written in an easy-to-read style, it discusses different experimental design techniques such as completely randomized design, randomized complete block design and Latin square design. Besides this, the book also covers 2^2 , 2^3 , and 3^n factorial experiments; two-stage, three-stage and mixed design with nested factors and factorial factors; different methods of orthogonal array design; and multivariate analysis of variance (MANOVA) for one-way MANOVA and factorial MANOVA. KEY FEATURES : Case Studies to illustrate the concepts and techniques Chapter end questions on prototype reality problems Yates algorithm for 2^n factorial experiments Answers to Selected Questions Engineering Economics - The Basic is designed as a primer for engineering students studying economics.

This book provides an updated and expanded overview of basic concepts of energy economics and explains how simple economic tools can be used to analyse contemporary energy issues in the light of recent developments, such as the Paris Agreement, the UN Sustainable Development Goals and new technological developments in the production and use of energy. The new edition is divided into four parts covering concepts, issues, markets, and governance. Although the content has been thoroughly revised and rationalised to reflect the current state of knowledge, it retains the main features of the first edition, namely accessibility, research-informed presentation, and extensive use of charts, tables and worked examples. This easily accessible reference book allows readers to gain the skills required to understand and analyse complex energy issues from an economic perspective. It is a valuable resource for students and researchers in the field of energy economics, as well as interested readers with an interdisciplinary background.

The landmark project management reference, now in a new edition Now in a Tenth Edition, this industry-leading project management "bible" aligns its streamlined approach to the latest release of the Project Management Institute's Project Management Body of Knowledge (PMI®'s PMBOK® Guide), the new mandatory source of training for the Project Management Professional (PMP®) Certification Exam. This outstanding edition gives students and professionals a profound understanding of project management with insights from one of the best-known and respected authorities on the subject. From the intricate framework of organizational behavior and structure that can determine project success to the planning, scheduling, and controlling processes vital to effective project management, the new edition thoroughly covers every key component of the subject. This Tenth Edition features: New sections on scope changes, exiting a project, collective belief, and managing virtual teams More than twenty-five case studies, including a new case on the Iridium Project covering all aspects of project management 400 discussion questions More than 125 multiple-choice questions (PMI, PMBOK, PMP, and Project Management Professional are registered marks of the Project Management Institute, Inc.)

The book presents a comprehensive study of important topics in Mechanics of pure and applied sciences. It provides knowledge of scalar and vector in optimum depth to make the students understand the concepts of Mechanics in simple, coherent and lucid manner and grasp its principles & theory. It caters to the requirements of students of B.Sc. Pass and Honours courses. Students of engineering disciplines and the ones aspiring for competitive exams such as AIME and others, will also find it useful for their preparations.

This student-friendly text on the current economic issues particular to engineering covers the topics needed to analyze engineering alternatives. Students use both hand-worked and spreadsheet solutions of examples, problems and case studies. In this edition the options have been increased with an expanded spreadsheet analysis component, twice the number of case studies, and virtually all new end-of-chapter problems. The chapters on factor derivation and usage, cost estimation, replacement studies, and after-tax evaluation have been heavily revised. New material is included on public sector projects and cost estimation. A reordering of chapters puts the fundamental topics up front in the text. Many chapters include a special set of problems that prepare the students for the Fundamentals of Engineering (FE) exam. This text provides students and practicing professionals with a solid preparation in the financial understanding of engineering problems and projects, as well as the techniques needed for evaluating and making sound economic decisions. Distinguishing characteristics include learning objectives for each chapter, an easy-to-read writing style, many solved examples, integrated spreadsheets, and case studies throughout the text. Graphical cross-referencing between topics and quick-solve spreadsheet solutions are indicated in the margin throughout the text. While the chapters are progressive, over three-quarters can stand alone, allowing instructors flexibility for meeting course needs. A complete online learning center (OLC) offers supplemental practice problems, spreadsheet exercises, and review questions for the the Fundamentals of Engineering (FE) exam.

This widely adopted and well-established book, now in its Third Edition, provides the students of management and engineering with the latest techniques in production and operations management, considered so vital for maximizing productivity and profitability in business. What distinguishes the text is a comprehensive coverage of topics such as contract laws, capacity requirement planning, vendor evaluation including AHP method, quality function deployment, and enterprise resource planning. The new topics, which are of current interest, along with the characteristic features and easy-to-read style, would enhance the value of this text. The book is primarily intended as a text for postgraduate students of management, undergraduate students of mechanical engineering and undergraduate and postgraduate students of industrial, and production engineering courses. This profusely illustrated and well-organized text with its fine blend of theory and applications would also be useful for the practicing professionals. NEW TO THIS EDITION : Objective Type Questions at the end of each chapter Additional example problems in Chapters 5 and 17 XYZ, VED, FSN, and SDE analyses Process planning case study in Chapter 2 Case Study Questions in Chapters 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 14, and 15 Heuristic to minimise total tardiness in single machine scheduling KEY FEATURES : Focuses on productivity related concepts and techniques Provides solved examples at suitable places Includes sufficient tables and

diagrams to illustrate the concepts Updates the reader with many efficient and modern algorithms Contains Answers to selected questions and Objective type questions

Theory of Elasticity and Plasticity is designed as a textbook for both undergraduate and postgraduate students of engineering in civil, mechanical and aeronautical disciplines. This book has been written with the objective of bringing the concepts of elasticity and plasticity to the students in a simplified and comprehensive manner. The basic concepts, definitions, theory as well as practical applications are discussed in a clear, logical and concise manner for better understanding. Starting with, general relationships between stress, strain and deformations, the book deals with specific problems on plane stress, plane strain and torsion in non-circular sections. Advanced topics such as membrane analogy, beams on elastic foundations and plastic analysis of pressure vessels are also discussed elaborately. For better comprehension, the text is well supported with: ? Large number of worked-out examples in each chapter. ? Well-labelled illustrations. ? Numerous Review Questions that reinforce the understanding of the subject. As all the concepts are covered extensively with a blend of theory and practice, this book will be a useful resource to the students.

The concept of food and nutrition security has evolved and risen to the top of the international policy agenda over the last decade. Yet it is a complex and multi-faceted issue, requiring a broad and inter-disciplinary perspective for full understanding. This Handbook represents the most comprehensive compilation of our current knowledge of food and nutrition security from a global perspective. It is organized to reflect the wide scope of the contents, its four sections corresponding to the accepted current definitional frameworks prevailing in the work of multilateral agencies and mainstream scholarship. The first section addresses the struggles and progression of ideas and debates about the subject in recent years. The other sections focus on three key themes: how food has been, is and should be made available, including by improvements in agricultural productivity; the ways in which politico-economic and social arenas have shaped access to food; and the effects of food and nutrition systems in addressing human health, known as food utilisation. Overall, the volume synthesizes a vast field of information drawn from agriculture, soil science, climatology, economics, sociology, human and physical geography, the nutrition and health sciences, environmental science and development studies.

This text covers the basic techniques and applications of engineering economy for all disciplines in the engineering profession. The writing style emphasizes brief, crisp coverage of the principle or technique discussed in order to reduce the time taken to present and grasp the essentials. The objective of the text is to explain and demonstrate the principles and techniques of engineering economic analysis as applied in different fields of engineering. This brief text includes coverage of multiple attribute evaluation for instructors who want to include non-economic dimensions in alternative evaluation and the discussion of risk considerations in the appendix, compared to Blank's comprehensive text, where these topics are discussed in two unique chapters.

Organized in three parts, this is a concise and reader-friendly introduction of Economics to engineering students who have no prior knowledge of the subject. But, they need to know economic tools to be able to apply them to their main field, i.e., engineering. The treatment of the subject is very simple and takes care of syllabus which is being followed at various engineering institutes. Apart from introducing main branches of Economics, the book also discusses some advance topics such as forecasting, price determination under perfect competition and monopoly, decision making, linear programming and input-output analysis. Subjects such as Operational Research and Accountancy have been discussed which are used in judging economic viability of engineering projects. However, most interesting and invigorating is the discussion on 'Elementary Engineering Economic Problems' which will help students to understand and relate application of Economics to engineering problems. Not only to engineering students, the book will also be helpful to students of science or medicine who want to appear for UPSC examination or pursue MBA programme.

This comprehensive text designed for MBA, MCom, MA (Economics), MA (Sociology) and PhD (Management, Commerce, Economics, and Engineering) courses continues to give complete account of concepts and statistical tools of research methodology in its Second Edition. The textbook also serves as a reference for consultants to carryout projects/consultancies in industries or service organizations. **DISTINGUISHING FEATURES OF THE BOOK** • Written in an easy to read style • Each technique is illustrated with sufficient number of numerical examples • Gives complete account of statistics and aspects of research methodology • Chapter 8 gives complete account of testing of hypotheses • Design and analysis of experiments, advanced multivariate analysis, multidimensional scaling and conjoint analysis, algorithmic research, models for industries and public systems, simulation are unique to this text. • Graded chapter-end questions **NEW TO THIS EDITION** Introduction of a chapter on SPSS (Chapter 17), is new to this edition which gives readers an idea to obtain statistics for different techniques presented in this text. The different screenshots for different modules of SPSS applied to suitable example problems on sample session for data creation, reports, descriptive statistics, tables, compare means, general linear model, correlation, simple regression, nonparametric tests, classify, data reduction and graphs help readers to understand the features of SPSS. **AUDIENCE** • MBA • MCom • MA (Economics) • MA (Sociology) and • PhD (Management, Commerce, Economics, and Engineering)

This work offers a concise, but in-depth coverage of all fundamental topics of engineering economics.

• SSC CGL SOLVED PAPERS consists of past solved papers of SSC CGL from 2010 to 2016. • In all there are 20 Question papers which have been provided year-wise along with detailed solutions. • Practicing these questions, aspirants will come to know about the pattern and toughness of the questions asked in the examination. • In the end, this book will make the aspirants competent enough to crack the uncertainty of success in the Entrance Examination. • The strength of the book lies in the originality of its question papers and Errorless Solutions. The solution of each and every question is provided in detail (step-by-step) so as to provide 100% concept clarity to the students

The near-field earthquake which struck the Hanshin-Awaji area of Japan before dawn on January 17, 1995, in addition to

snatching away the lives of more than 6,000 people, inflicted horrendous damage on the region's infrastructure, including the transportation, communication and lifeline supply network and, of course, on buildings, too. A year earlier, the San Fernando Valley area of California had been hit by another near-field quake, the Northridge Earthquake, which dealt a similarly destructive blow to local infrastructures. Following these two disasters, structural engineers and researchers around the world have been working vigorously to develop methods of design for the kind of structure that is capable of withstanding not only the far-field tectonic earthquakes planned for hitherto, but also the full impact of near-field earthquake. Of the observed types of earthquake damage to steel structures, there are some whose causes are well understood, but many others continue to present us with unresolved problems. To overcome these, it is now urgently necessary for specialists to come together and exchange information. The contents of this volume are selected from the Nagoya Colloquium proceedings will become an important part of the world literature on structural stability and ductility, and will prove a driving force in the development of future stability and ductility related research and design.

Covering detailed discussion of fundamental concepts of economics, the textbook commences with comprehensive explanation of theory of consumer behavior, utility maximization and optimal choice, profit function, cost minimization and cost function. The textbook covers methods including present worth method, future worth method, annual worth method, internal rate of return method, explicit re-investment rate of return method and payout method useful for studying economic studies. A chapter on value engineering discusses important topics such as function analysis systems techniques, the value index, value measurement techniques, innovative phase and constraints analysis in depth. It facilitates the understanding of the concepts through illustrations and solved problems. This text is the ideal resource for Indian undergraduate engineering students in the fields of mechanical engineering, computer science and engineering and electronics engineering for a course on engineering economics/engineering economy.

Designed for use in a standard two-semester engineering thermodynamics course sequence. The first half of the text contains material suitable for a basic Thermodynamics course taken by engineers from all majors. The second half of the text is suitable for an Applied Thermodynamics course in mechanical engineering programs. The text has numerous features that are unique among engineering textbooks, including historical vignettes, critical thinking boxes, and case studies. All are designed to bring real engineering applications into a subject that can be somewhat abstract and mathematical. Over 200 worked examples and more than 1,300 end of chapter problems provide the use opportunities to practice solving problems related to concepts in the text. Provides the reader with clear presentations of the fundamental principles of basic and applied engineering thermodynamics. Helps students develop engineering problem solving skills through the use of structured problem-solving techniques. Introduces the Second Law of Thermodynamics through a basic entropy concept, providing students a more intuitive understanding of this key course topic. Covers Property Values before the First Law of Thermodynamics to ensure students have a firm understanding of property data before using them. Over 200 worked examples and more than 1,300 end of chapter problems offer students extensive opportunity to practice solving problems. Historical Vignettes, Critical Thinking boxes and Case Studies throughout the book help relate abstract concepts to actual engineering applications. For greater instructor flexibility at exam time, thermodynamic tables are provided in a separate accompanying booklet. Available online testing and assessment component helps students assess their knowledge of the topics. Email textbooks@elsevier.com for details.

"All aspects pertaining to algorithm design and algorithm analysis have been discussed over the chapters in this book-- Design and Analysis of Algorithms"--Resource description page.

The different investment analysis approaches require various interest formulas and their values. A fairly large problem involving different types of transactions in its cash-flows may take more time to solve it, if the students compute the values of the related interest formulas and then make substitutions in the respective expressions of the investment analysis. This book gives values of different interest factors, $(F/P, i, n)$, $(P/F, i, n)$, $(F/A, i, n)$, $(A/F, i, n)$, $(P/A, i, n)$, $(A/P, i, n)$ and $(A/G, i, n)$ for different combinations of interest rate (i) and interest period (n) in the form of tables, to serve as an aid for solving problems in "Engineering Economics" in the Examination Hall. These Interest Tables can also be usefully employed for field work while doing engineering economics analysis. The tables will be useful to students of different B.Tech. programmes and to students of M.Com and M.B.A. programmes for solving different investment analysis problems.

The second edition of this well-organized and comprehensive text continues to provide an in-depth coverage of the theory and applications of operations research. It emphasizes the role of operations research not only as an effective decision-making tool, but also as an essential productivity improvement tool to deal with real-world management problems. This New Edition includes new carefully designed numerical examples that help in understanding complex mathematical concepts better. The book is an easy read, explaining the basics of operations research and discussing various optimization techniques such as linear and non-linear programming, dynamic programming, goal programming, parametric programming, integer programming, transportation and assignment problems, inventory control, and network techniques. It also gives a comprehensive account of game theory, queueing theory, project management, replacement and maintenance analysis, and production scheduling. **NEW TO THIS EDITION** Inclusion of quantity discount models for transportation problem. Updated inventory control model and detailed discussion on application of dynamic programming in the fields of cargo loading and single-machine scheduling. Numerous new examples that explain the operations research concepts better. New questions with complete solutions to selected problems. This book, with its many student friendly features, would be eminently suitable as a text for students of engineering (mechanical, production and industrial engineering), management, mathematics, statistics, and postgraduate students of commerce and computer applications (MCA).

Fundamentals of Engineering Economic Analysis offers a powerful, visually-rich approach to the subject—delivering streamlined yet rigorous coverage of the use of economic analysis techniques in engineering design. This award-winning textbook provides an impressive array of pedagogical tools to maximize student engagement and comprehension, including learning objectives, key term definitions, comprehensive case studies, classroom discussion questions, and challenging practice problems. Clear, topically—organized chapters guide students from fundamental concepts of borrowing, lending, investing, and time value of money, to more complex topics such as capitalized and future worth, external rate of return, depreciation, and after-tax economic analysis. This fully-updated second edition features substantial new and revised content that has been thoroughly re-designed to support different learning and teaching styles. Numerous real-world vignettes demonstrate how students will use economics as practicing engineers, while plentiful illustrations, such as cash flow diagrams, reinforce student understanding of underlying concepts. Extensive digital resources now provide an immersive interactive learning environment,

enabling students to use integrated tools such as Excel. The addition of the WileyPLUS platform provides tutorials, videos, animations, a complete library of Excel video lessons, and much more.

Designed as a text book for undergraduate students in various engineering disciplines - mechanical, civil and industrial engineering - and for postgraduate students in industrial engineering and water resource management, this comprehensive and well-organized book shows how complex economic decisions can be made from a number of given alternatives. It provides the managers not only a sound basis but also a clear-cut approach to decision making. These decisions will ultimately result in minimizing costs and/or maximizing benefits to their organizations. What is more, the book adequately illustrates these approaches with numerical problems and Indian cases. After giving an overview of the subject, the text discusses, in a simple and easy-to-read style, such topics as interest formulas and their applications, methods like present worth method of comparison, future worth method, annual equivalent method, rate of return method, and evaluation of public alternatives. Besides, it deals with depreciation, inflation adjusted decisions, and inventory control. Finally, the book analyzes other important areas, for instance, make or buy decision, project management, value analysis/value engineering, and linear programming. A distinguishing feature of the book is that it has an Appendix on interest tables for a wide range of interest rates (0.25% - 50%) and for a period ranging from one year to 100 years. This book, which is profusely illustrated with worked-out examples and diagrams, should prove extremely useful not only as a text book but also as a reference for those offering courses in such management areas as project management, production management and financial management.

This comprehensive text on Quality Management provides ways and means of delivering efficient and effective production/services quality to utmost satisfaction of the customers. Comprising 20 chapters, the book explains the concepts and techniques of quality management supported with related case studies. Numerical examples given in each chapter help students to understand the concept easily. Primarily designed for MBA, ME/MTech (Industrial Engineering, Production Engineering), BE/BTech (Mechanical Engineering and Production Engineering) and MSc (Operations Research and Statistical Quality Control), the book also serves as a reference for

professionals/consultants to carryout projects in quality domain for manufacturing or service organisations. **KEY FEATURES OF THE BOOK**

- Detailed coverage of process and statistical quality control
- Chapters on ANOVA, orthogonal arrays and signal-to-noise ratio
- A chapter on Six Sigma including Shainin techniques
- A chapter on Analytical Hierarchy Process (AHP)
- Presentation of Design of Experiments (DOE) techniques

Audience • MBA • ME/MTech (Industrial Engineering, Production Engineering) • BE/BTech (Mechanical Engineering and Production Engineering) • MSc (Operations Research and Statistical Quality Control)

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