

Sonia Jenifer Rayen, Sathyabama Krishna

Introduction to Data Science

Author :	Sonia Jenifer Rayen, Sathyabama Krishna
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Product Description

In an era where data is the central driver of innovation, Introduction to Data Science offers a comprehensive and structured guide to navigating this transformative field. Designed for a broad audience including students, researchers, and professionals, this book provides a beginner-friendly approach to mastering fundamental concepts, core statistical methods, and essential predictive analytics.

The text seamlessly integrates theoretical principles with practical, real-world applications, empowering readers to not only grasp key concepts but also effectively apply them in diverse scenarios. The curriculum is meticulously structured, beginning with the foundational role and processes of Data Science and advancing through descriptive and inferential statistics, data quality management, and text data handling. It culminates by exploring the challenges and cutting-edge applications of Big Data.

The book demystifies the complete data science lifecycle—from formulating the right research questions and retrieving data to building predictive models, validating results, and deploying final applications. Beyond technical proficiency, it highlights the essential traits of a successful data scientist, such as curiosity, common sense, and communication, making it an invaluable resource for anyone seeking a robust, end-to-end understanding of data-driven decision-making in vital sectors like healthcare, finance, logistics, and AI.

Salient Features:

• Foundational Concepts: Provides a structured, beginner-friendly introduction to the field, covering the need for data science, its core components, and processes.

• Statistical Core: Delves into essential descriptive and inferential statistics, including data distribution analysis, correlation, regression, and crucial hypothesis testing techniques.

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• Data Quality Focus: Dedicated unit on enhancing data quality, covering practical methods like data imputation, standardization, binning, and handling noise and outliers effectively.

• Text Data Analytics: Explores specialized techniques for handling unstructured text data, such as Bag-of-Words, tokenization, regular expressions, and real-world sentiment analysis.

• Predictive Modeling: Introduces the critical modeling phase, emphasizing algorithm selection, execution, and essential diagnostics for building and training performant models.

• Big Data Context: Addresses the challenges and use cases of Big Data, focusing on the three critical V's: Volume, Velocity, and Variety perspective.

• Data Scientist Traits: Highlights the crucial non-technical skills for success in the field, including the importance of curiosity, common sense, and effective communication.

• Real-World Applications: Features practical use cases and business examples across diverse industries like autonomous vehicles, e-commerce, and airline logistics.

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Fundamentals of Python Programming

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Product Description

PROGRAMMING IN PYTHON is an essential, comprehensive resource designed to guide readers from foundational concepts to advanced application development in the world's most versatile programming language. The book's core purpose is to leverage Python's interpreted, high-level nature, which prioritizes readability and ease of use, making complex coding accessible to everyone. It systematically introduces the easy-to-understand syntax and covers crucial programming paradigms, including structured programming, working with data types, expressions, operator precedence, and robust Object-Oriented Programming (OOP) principles like Inheritance, Polymorphism, and Abstraction.

Beyond the fundamentals, this guide provides practical value by diving into the extensive Python ecosystem. Readers will learn to utilize major libraries like NumPy and Pandas for efficient data analysis, explore building Graphical User Interfaces (GUI) using the built-in Tkinter library, and establish database connectivity using PyMongo for MongoDB. Given Python's widespread use in web development, data science, artificial intelligence, and automation, this book is perfectly suited for a wide audience. It is an ideal textbook for students and newcomers seeking to master a powerful first language, and a valuable reference for professionals and developers looking to harness Python for real-world projects and demanding industry roles. Salient Features:

• Foundational Syntax Mastery: Provides a thorough understanding of Python's fundamental building blocks, covering basic data types, complex expressions, operator precedence, and essential control flow statements like if/else and for/while loops.

• Object-Oriented Paradigms: Explores core OOP concepts, including Inheritance, Encapsulation, and Polymorphism (method and operator overloading), with a focus on implementing Abstraction using the ABC module.

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• Data Analysis Libraries: Features detailed chapters on NumPy for efficient numerical array operations and Pandas for structured data manipulation, equipping the reader with crucial skills for data science roles.

• Interactive GUI Development: Guides the reader through creating graphical applications using the built-in Tkinter library, covering essential widgets, layout managers, and handling various user events and bindings.

• Database Connectivity: Introduces practical NoSQL database integration using the PyMongo library. Learn to connect, insert, query, update, and manage documents and entire collections in MongoDB.

• Ecosystem and Tools: A comprehensive reference to Python's rich set of built-in functions, alongside instructions for creating and importing custom modules and managing dependencies using the pip tool.

• Control Flow Structures: Detailed explanation of all sequential control structures, from traditional if-elif-else statements to modern Python match-case statements, for managing program flow efficiently.

• Real-World Applications: Showcases Python's versatility across multiple domains, including scripting for automation, scientific computing, and leveraging major frameworks for modern web development like Django/Flask

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A. Kalaivani, J. Johan Niveda

Database Management System

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Product Description

The book, Database Management System, is an essential resource for navigating the data-driven landscape of the modern technological era. Recognizing that efficient, secure, and easily accessible data management is a critical task for all industries—from e-commerce to finance—this text provides a clear and comprehensive introduction to the field. Its core purpose is to build a strong theoretical foundation in database concepts while equipping readers with practical, real-world skills.

The text offers a structured learning pathway, commencing with foundational principles like the history, architecture, and characteristics of Database Management Systems (DBMS). It then delves into essential topics such as conceptual modeling using the Entity-Relationship (ER) model, relational schema design, and the crucial process of normalization (up to 5NF) to ensure database efficiency and data integrity. A significant portion of the book is dedicated to Structured Query Language (SQL), covering DDL, DML, DCL, and TCL commands, query execution, optimization, and transaction processing, including the vital ACID properties. Critically, the book extends beyond traditional relational systems to address modern trends, dedicating a chapter to Concurrency Control, Recovery Techniques, and NoSQL DBMS.

Intended for undergraduate students in Computer Science, IT, and Data Science, this book is also an invaluable reference for software engineers and data analysts seeking to refine their skills. Through numerous step-by-step explanations, hands-on exercises, and practical implementations using real-world scenarios, the book successfully bridges the gap between academic theory and industry application, preparing readers for real-world database challenges.

Salient Features:

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• ER & Relational Modeling: Presents in-depth coverage of the Entity-Relationship (ER) model and systematic procedures for mapping ER diagrams to a relational schema, incorporating all essential integrity constraints.

• Schema Refinement: Offers a detailed exploration of functional dependencies and normalization techniques (up to 5NF). This knowledge ensures the creation of efficient, scalable database designs that minimize redundancy and anomalies.

• Comprehensive SQL: Provides hands-on instruction for mastering all facets of Structured Query Language (SQL), including DDL, DML, DCL, and TCL commands, complex joins, and advanced subqueries.

• Query Optimization: Dedicated unit on query processing, covering the translation of SQL into relational algebra, and heuristic optimization techniques to improve data retrieval speed and database performance.

• Transaction Integrity: Focuses on the fundamental principles of transaction processing, detailing the ACID properties (Atomicity, Consistency, Isolation, Durability) and methods for ensuring recoverability and serializability.

• Concurrency & Recovery: Explores advanced techniques like Two-Phase Locking (2PL), timestamp protocols for concurrency control, and robust recovery mechanisms such as deferred updates and shadow paging.

• Practical Hands-on Learning: Features dedicated "Practical" sections in every chapter, providing step-by-step implementation of SQL commands, schema design projects, and application of NoSQL data models using industry tools.

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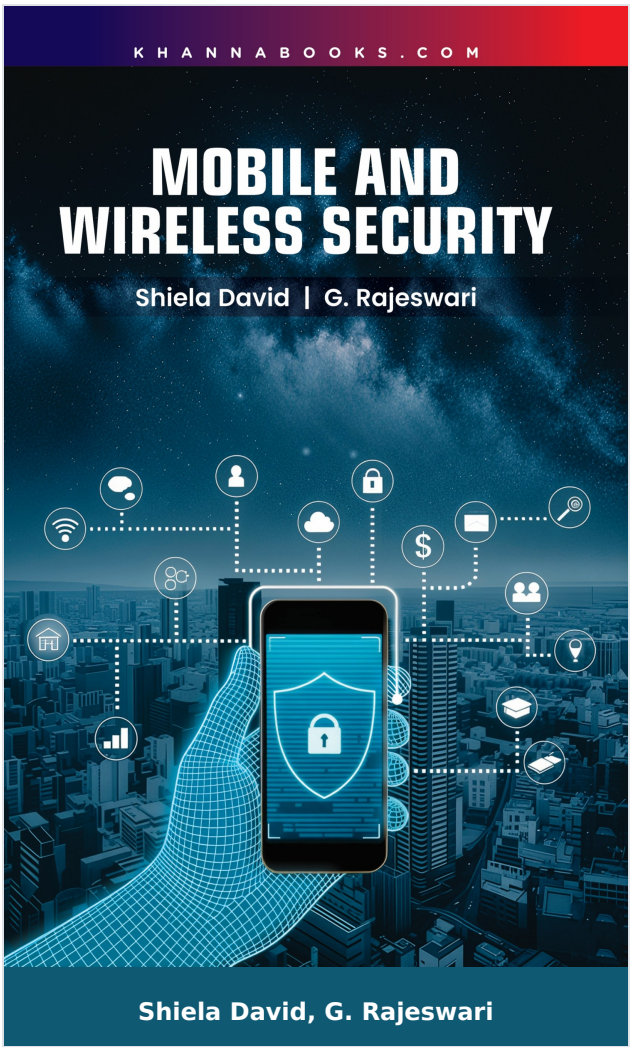

Mobile and Wireless Security

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Product Description

In our modern, interconnected world, where wireless networks and mobile devices have become ubiquitous tools for communication, business, and daily life, the imperative for robust security has never been greater. This handbook, Mobile and Wireless Security, serves as an essential guide, providing an in-depth understanding of this dynamic and critical field, from foundational principles to the newest industry trends.

The core purpose of this material is to illuminate the underlying systems of wireless technology and expose the resultant security threats they face. The book's major goals are to enable readers to grasp the basic features of wireless systems, meticulously examine the necessary security protocols and cryptographic methods, and confidently implement effective security practices across various wireless devices. It thoroughly addresses the vast array of threats, such as unauthorized access, data intrusion, and Denial of Service (DoS) attacks, that compromise modern wireless environments.

This resource is designed for a broad target audience, including IT professionals, cybersecurity experts, academics, students, and any individual or organization—from enterprises to governments—who must proactively safeguard sensitive data and defend against unauthorized access in a mobile-first landscape. By the end of this journey, you will possess the practical knowledge required to apply sophisticated security measures to mobile wireless systems with the confidence needed to secure wireless networks in real-world applications.

Salient Features:

• Foundational Network Models: Delivers a clear overview of the OSI and TCP/IP models, establishing the fundamental theoretical frameworks necessary for understanding how various network protocols interact during end-to-end communication.

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• Wireless Protocol Evolution: Provides a comprehensive examination of essential WLAN security protocols, detailing the weakness of WEP and the evolution through WPA and WPA2 to the robust security standards offered by WPA3.

• Core Cryptography Methods: Covers symmetric and asymmetric cryptography schemes, hash functions, and key secure protocols like SSL/TLS and IPSec, which are crucial for securing data confidentiality, integrity, and non-repudiation.

• Device Security Analysis: Dedicated content analyzes security problems specific to wireless devices, including Laptops and Handsets, covering topics like physical security, application security, and the risks of information leakage.

• Cellular System Defense: Explores security considerations for cellular networks, detailing threats, types of Cellular Fraud, and the security mechanisms employed within systems like GSM and data networks such as GPRS.

• Wireless Threat Landscape: Defines and provides mitigation techniques for pervasive wireless threats, including Eavesdropping, Communication Jamming, Rogue Client Attacks, and vulnerabilities arising from weak cryptographic algorithms.

• Practical LAN Implementation: Offers practical security guidance on deploying Wireless LANs in various organizational structures, including Large Enterprise Campuses, Wireless ISP Designs, and Small Office/Home Office (SOHO) environments.

• Security Best Practices: Outlines actionable strategies for a proactive security stance, emphasizing the need for robust Authentication, ongoing Network Monitoring, regular Firmware/Software Patching, and stringent physical access controls.

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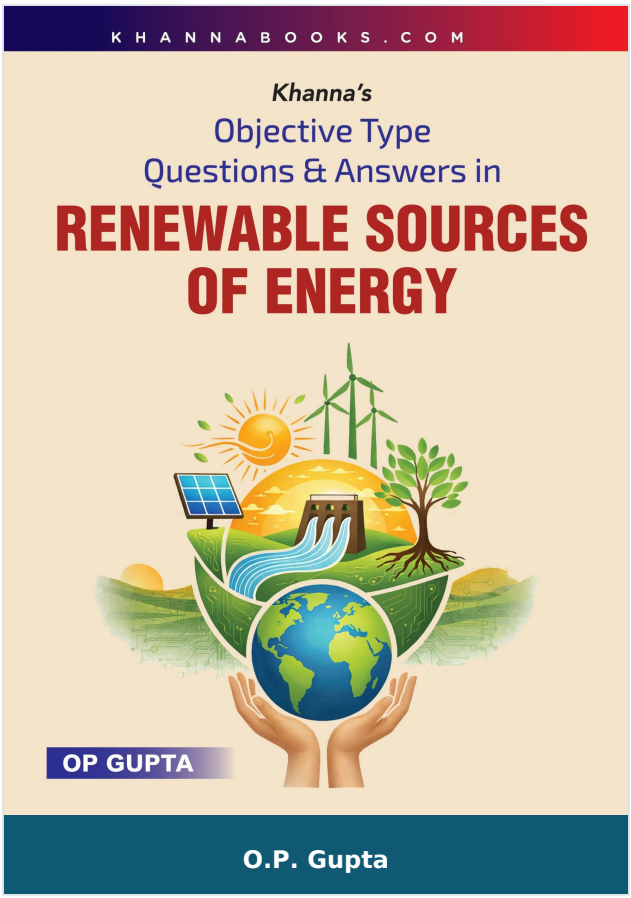

Khanna's Objective Type Questions & Answers in Renewable Sources of Energy

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Product Description

Objective Type Questions and Answers in Renewable Sources of Energy is a comprehensive academic resource designed to provide a deep understanding of the rapidly evolving field of sustainable energy. Authored by Om Prakash Gupta, an experienced professional in human resource development and engineering, this book serves as a vital tool for mastering the theoretical and practical nuances of green technologies. It covers a broad spectrum of topics, including solar, wind, geothermal, biomass, and ocean energy, as well as emerging fields like nuclear fusion and Magneto Hydro Dynamic (MHD) power generation.

The book is specifically tailored to meet the curriculum needs of undergraduate, postgraduate, and diploma students across various engineering branches. It also serves as an essential preparatory guide for competitive associate membership examinations such as AMIE, AMIIM, and AMIICHE. By blending hundreds of objective-type questions with detailed short-answer explanations and an extensive glossary, the text ensures that readers can effectively bridge the gap between classroom learning and professional application. Whether you are a student, a faculty member, or a practicing consultant, this book offers a structured and engaging approach to mastering the clean energy paradigms of the future.

Salient Features

• Comprehensive Topic Coverage: This book provides an exhaustive exploration of non-conventional energy sources, including solar, wind, ocean, geothermal, biomass, hydropower, and nuclear fusion energy systems.

• Diverse Question Formats: Readers benefit from a dual-structured learning approach featuring over a hundred pages of objective-type questions followed by detailed short-answer explanations for conceptual clarity.

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• Exam-Oriented Design: The content is meticulously aligned with the syllabi of major professional bodies and engineering universities, making it an ideal companion for AMIE and competitive exams.

• Technical Glossary Included: A specialized section dedicated to a glossary of terms ensures that students and professionals can quickly master the complex terminology used in renewable energy industries.

• Practical Working Principles: The book includes descriptive answers and sketches that explain the mechanics of advanced systems like OTEC, parabolic dish collectors, and geothermal flash steam plants.

• Environmental Impact Analysis: Beyond technical mechanics, the text addresses critical environmental considerations, such as waste treatment and the ecological benefits of moving away from fossil fuels.

• Professional Reference Value: While primarily academic, the book serves as a reliable reference for practicing engineers and consultants looking to refresh their knowledge on sustainable energy applications.

• Emerging Technology Insights: The content dives into modern energy conversion devices, offering specific insights into fuel cells, thermionic converters, and Magneto Hydro Dynamic (MHD) generators.

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Author

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O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practising experience of efficient Ennergy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees

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(Technical), he has also visited england and france on a study tour sponsored by United Nations Development Programme (UNDP) to study the scope of energy conservation in steel plants in 1987.

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B. Ankayarkanni, D. Usha Nandini, A. Mary Posonia, V. Ulagamuthalvi

Compiler Design

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Product Description

Compiler Design offers a comprehensive and organized introduction to the foundational principles, techniques, and practical tools necessary for constructing a compiler. Serving as an essential bridge between human-readable high-level programming languages and machine instructions, this book aims to unravel the complexity of the translation process and demystify compiler construction for both students and academics.

The book systematically guides readers through the entire compiler lifecycle, detailing each major phase: Lexical Analysis, Syntax Parsing, Semantic Analysis, Intermediate Code Generation, Code Optimization, and Final Code Generation. It adopts an approachable, academic tone, striving to simplify both fundamental ideas and advanced concepts by integrating theoretical foundations with practical implementations. For enhanced comprehension, the material is reinforced with a combination of theoretical discussions and numerous solved numerical problems. Furthermore, a strong emphasis is placed on practical skill development, featuring dedicated coverage of industry-standard tools like LEX and YACC, ensuring the target audience—computer science students and professors—gains hands-on experience in building real-world compilers. This indispensable resource provides a clear pathway to mastering the art and science of transforming source code into efficient, executable programs.

Salient Features:

• Systematic Phase Coverage: Presents the compiler's structure through distinct, organized units, detailing the functionality of the analysis-synthesis model from scanning to code generation.

• Practical Tool Integration: Provides detailed sections on using LEX and YACC (Yet Another Compiler Compiler), giving students hands-on experience in generating practical Lexical Analyzers and Parsers.

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• Comprehensive Parsing Methods: Explores a full range of parsing techniques, including Top-Down (LL(1)) and sophisticated Bottom-Up (LR, SLR) parsing, complete with error handling and recovery strategies.

• Intermediate Code Representation: Dedicated unit focusing on Syntax-Directed Translation (SDT), implementing three-address code, and handling complex programming constructs like procedure calls and switch-case statements.

• Advanced Optimization Techniques: Covers crucial optimization strategies like Data Flow Analysis, Loop Optimization, and the use of Directed Acyclic Graphs (DAGs) for efficient, high-speed target code generation.

• Efficient Code Generation: Discusses critical implementation issues such as managing Run-Time Storage, optimal Register Allocation and Assignment, and the final conversion of assembly code to machine code.

• Formal Language Foundation: Clearly explains the role of Formal Languages, covering Regular Expressions and both Deterministic and Non-Deterministic Finite Automata (DFA/NFA) conversions in lexical design.

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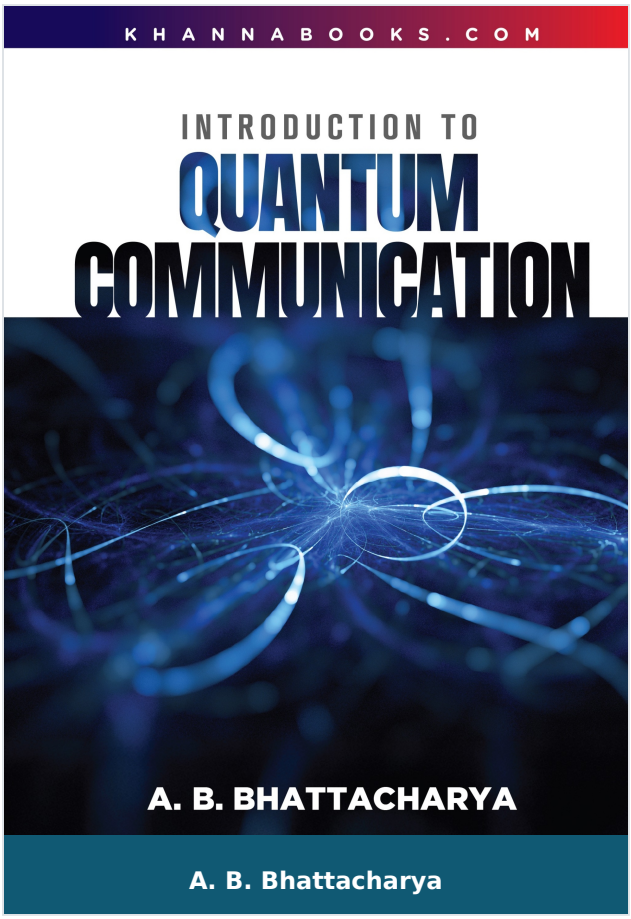

Introduction to Quantum Communication

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Product Description

Explore the unbreakable Future of Communication

Welcome to a new era where communication is no longer limited by classical boundaries. “Introduction to quantum communication” is your definitive guide to understanding the intricate and revolutionary field that merges quantum physics with information technology.

From the foundations of quantum mechanics to the cutting-edge protocols and technologies that power secure quantum networks, this book offers a clear, structured, and comprehensive journey through the quantum realm, whether you’re a student, researcher, or tech enthusiast, you’ll discover how photons, entanglement, and no-cloning theorems are reshaping the way we think about privacy, data transfer, and global connectivity.

What you’ll learn inside:

- The fundamental difference between classical and quantum communication systems
- The secrets behind quantum key distribution (BB84, E91, B92, DI-QKD)
- Practical implementations like quantum teleportation and quantum internet
- The role of entanglement, dense coding, secret sharing, and quantum bit commitment
- Security threats such as eavesdropping and their quantum countermeasures
- Future directions: satellite-based QKD, post-quantum cryptography, and ethical implications

Each Chapter Includes:

- Numerical problems with solutions
- Short questions & Answers

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- Multiple choice questions
- Project ideas for deeper exploration

Bridging physics and information science, this book equips you with the knowledge to understand and participate in the communication revolution of tomorrow.

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Prof. A. B. Bhattacharya did his MSc and PhD degree from the University of Calcutta in Physics and Post-doc from the Massachusetts Institute of Technology (MIT), Cambridge, USA. He worked in close collaboration with the leading laboratories like Lincoln Laboratory; Milestone Hill Observatory; Earth, Atmospheric and Planetary Sciences division of MIT and many other well recognized laboratories in India and abroad. He served as Professor & Head of the Department of Physics, University of Kalyani; Dean of Research and Head of the ECE Department, Techno India University; Pro Vice Chancellor of JIS University and Director of Brainware University. He has published 32 text books for

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Science and Engineering students, two popular books for general readers and over 400 research articles in reputed International Journals. Under his supervision 24 scholars received their doctoral degree. He is a fellow of the Institute of Electronics and Telecommunication Engineers and member of many scientific organizations. India International Friendship Society awarded him the prestigious "Shiksha Ratna Award" and Certificate of Excellence for meritorious services, outstanding performance and significant contribution to education. The International Institute of Success Awareness hon0red him with their globally recognized "Glory of India Gold Medal" for his outstanding contribution to the national stature of India. A few words from the certificate issued by Prof. Williams of MIT may be quoted "Our collaborative effort was directed at the wavelength dependence of radar echoes observations with the Millstone Hill UHF radar in Westford. He made use of the Charles River Data System computer in the Weather Radar Laboratory for these calculations. His results help to make a convincing case that the volume reflectivity associated with lighting is a diminishing function of radar wavelength, contrary to contemporary thinking". Dr.

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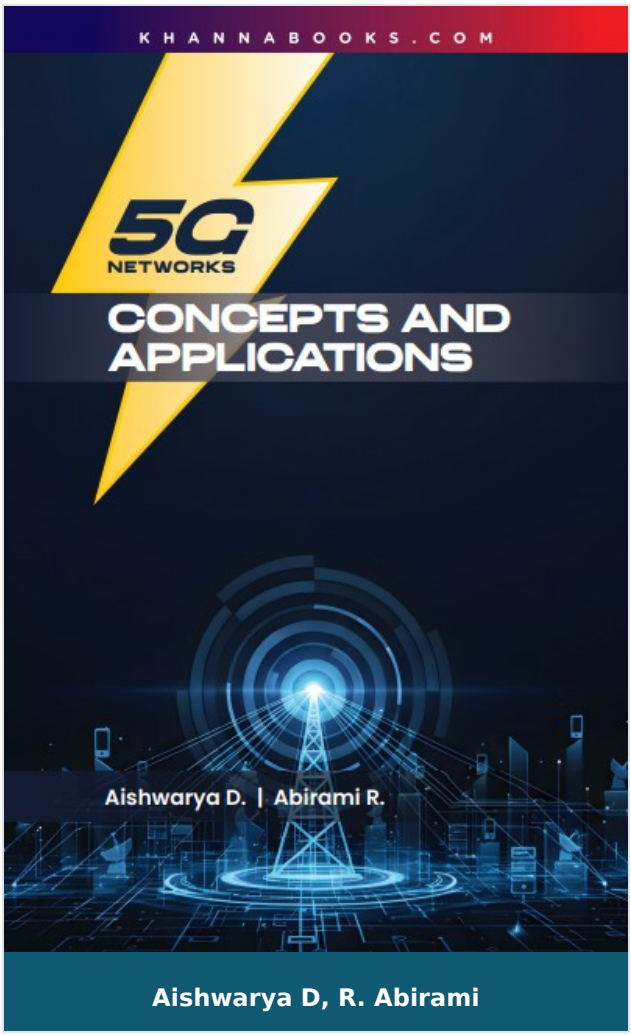

5G Networks: Concepts and Applications

Author :	Aishwarya D, R. Abirami
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Product Description

5G Networks: Concepts and Applications

5G: More Than Just Faster Internet

The Fifth Generation of wireless technology, or 5G, is far more than a simple speed boost for your smartphone; it represents a revolutionary shift in how the world connects, communicates, and innovates.

This book is your comprehensive guide to understanding this technological breakthrough. It starts by tracing the journey of mobile communication, from the analog voice calls of 1G and the text messages of 2G to the high-speed streaming of 4G LTE.

You will then dive deep into the heart of 5G, learning about its core features like ultra-fast speeds (up to 10Gbps) and near-zero latency (as low as 1 millisecond). The text clearly explains how these capabilities are transforming major industries:

- Healthcare: Enabling life-saving remote surgeries with robotic precision.
- Transportation: Powering autonomous vehicles that communicate instantly to ensure safety.
- Smart Cities: Managing massive amounts of connected devices, from traffic lights to smart grids.

Whether you are a student, an engineer, or a business leader, this book will equip you with the knowledge to understand both the technical foundations and the immense opportunities unlocked by the 5G network.

Salient Features:

This book is a vital resource designed to demystify 5G and prepare you for the future of connectivity. Key features include:

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- **Generational Overview**: A clear, concise breakdown of the evolution of mobile networks from 1G through the cutting-edge concepts of 6G and beyond.
- **Core 5G Technologies Explained**: Detailed explanations of the crucial technologies that make 5G possible, including Massive MIMO, Beamforming (focused signals), and Network Slicing (custom virtual networks).
- **The Internet of Things (IoT) Blueprint**: A dedicated look at how 5G acts as the essential backbone for the massive growth of IoT, supporting up to a million devices per square kilometer.
- S**pectrum Analysis**: Comprehensive coverage of the three main frequency bands: Low-Band (wide coverage), Mid-Band (balanced speed), and High-Band/mmWave (fiber-like speeds).
- **Real-World Applications**: In-depth case studies and examples of 5G use cases, such as Extreme Mobile Broadband (eMBB) for 4K/8K video streaming and its role in industrial automation and precision agriculture.

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- 5G: A network of opportunity
- IoT applications
- Quality of service

Author

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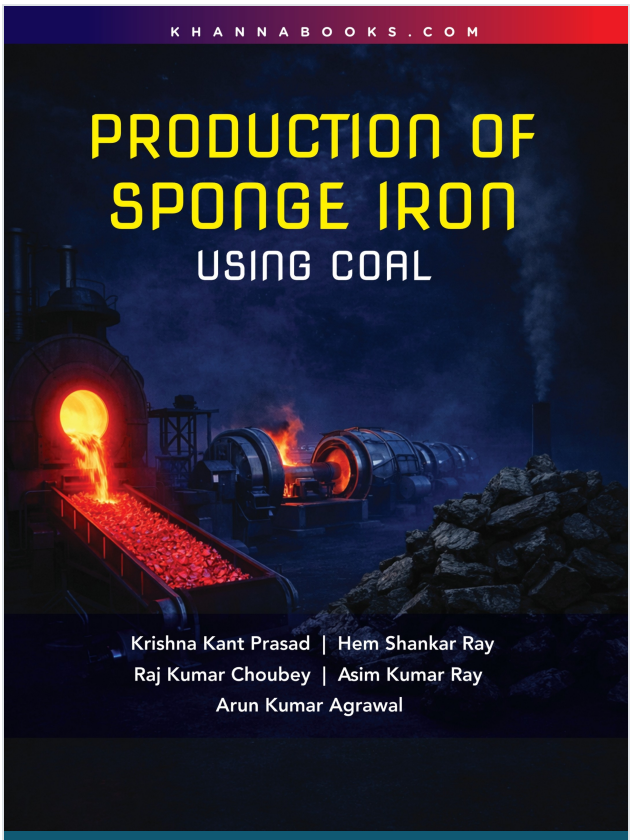

Krishna Kant Prasad, Hem Shankar Ray, Raj Kumar Choubey, Asim Kumar Ray, Arun Kumar Agarwal

Production of Sponge Iron Using COAL

Author :	Krishna Kant Prasad, Hem Shankar Ray, Raj Kumar Choubey, Asim Kumar Ray, Arun Kumar Agarwal
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Product Description

Production of Sponge Iron Using COAL

Production of Sponge Iron using Coal: Rotary Kiln, Tunnel Kiln and using Gas from Coal is a definitive technical guide that explores India's global leadership in the coal-based direct reduction of iron ore. While international markets often rely on gas-based shaft processes, this book highlights how India has pioneered and perfected the use of rotary kilns to utilize abundant, high-ash non-coking coal-resources often dismissed by foreign experts as "muck". The text provides an exhaustive analysis of the thermodynamic, kinetic, and aerodynamic principles that govern the solid-state reduction of iron oxides.

The book serves as a vital bridge between theoretical research and industrial application, documenting decades of expertise from leading metallurgists. It broadens the traditional focus on rotary kilns to include emerging commercial successes in tunnel kiln technology and coal gasification-based shaft furnaces. Beyond technical specifications, the authors connect modern engineering with India's ancient metallurgical heritage, such as the storied Iron Pillar of Delhi. This work is an essential resource for metallurgical students, researchers, industry professionals, and entrepreneurs seeking to understand the economic and technical nuances of sustainable ironmaking in coal-rich regions.

Salient Features

- Rotary Kiln Dominance: Detailed analysis of the rotary kiln's primary role in India, covering its versatility in processing lump hematite and its unique operational strengths and weaknesses.
- Scientific Process Modeling: Comprehensive chapters on mathematical modeling, CFD analysis, and reaction kinetics that allow for precise control over heat transfer and solid movement.

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- Alternative Reduction Technologies: In-depth exploration of tunnel kilns as a viable solution for reducing magnetite and iron ore fines, filling a critical gap in traditional kiln operations.
- Coal Gasification Insights: Evaluation of the economic and technical feasibility of converting coal into reducing gas (CO and H) to supplement production in shaft furnaces.
- Resource Optimization: Strategies for utilizing high-ash Indian coal and recirculating char to enhance energy efficiency and reduce the environmental footprint of ironmaking.
- Practical Engineering Focus: Guidance on plant design, refractory management, and overcoming common industrial hurdles like accretion or "ring formation" inside kilns.
- Historical Contextualization: A unique addendum on India's ancient ironmaking legacy, offering a perspective on the longevity and evolution of sponge iron technology.
- Future-Ready Strategies: Critical projections on hydrogen-based ironmaking and the integration of sponge iron into blast furnaces to reduce costly metallurgical coke consumption.

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- Addendum

Author

Krishna Kant Prasad

Dr. Krishna Kant Prasad (born on 24th January 1945 in Bhagalpur, Bihar), after completing B.Sc. Hons. (Chem.) from Bhagalpur University, he did his B.E., M.E. and Ph.D. in Metallurgical Engineering from the Indian Institute of Science, Bangalore. After brief teaching stints at the Banaras Hindu University and MR Engineering College, Jaipur he joined R&D Division of Tata Steel, Jamshedpur in 1972. He moved to RDCIS, SAIL, Ranchi in 1981 as in-charge of R&D activities in the Sponge Iron Pilot Plant Complex and since then he was actively involved in steering R&D activities both in Sponge Iron Making and Alternate Iron Making areas. He retired from SAIL, in January 2006. Thereafter, he served as a visiting professor in the Department of Metallurgical Engineering in IT (now IIT), BHU, Varanasi, for two and then joined NITK (National Institute of Technology Karnataka) in Surathkal, initially as the Ministry of Steel Chair Professor, and then in various capacities - all equivalent to a visiting professor - for seven and a half years. Dr. Prasad has guided four Ph.D. students. He has to his credit over 130 research papers, five registered copyrights and holds two patents on sponge iron making. He has authored four books entitled Sponge Iron Making in Rotary Kiln, Chemical and Metallurgical Thermodynamics, Advances in Rotary Kiln Sponge Iron Plant and Integrated Iron- and Steelmaking. He has also edited two books - "Trends in Beneficiation and Agglomeration of Iron Ore' and 'Steel Plant Technologies: An Overview. He is life member of the Indian Institute of Metals, Electrochemical Society of India and the Computer Society of India. E-mail: kkpmprnc@gmail.com. Professor

Hem Shankar Ray

Hem Shankar Ray (born on 19th June 1940, Jabalpur, Madhya Pradesh) unfortunately left for his heavenly abode on 28th April 2023 just as the preparation of the manuscript

started. Prof. H. S. Ray is widely regarded as one of the greatest minds of the Indian scientific community and a very well-known name in the field of Extractive Metallurgy. He obtained his B.Tech. (Hons.) in Metallurgical Engineering from the Indian Institute of Technology, Kharagpur (1962) and M.A.Sc. and Ph.D. degrees from the University of Toronto, Canada (1963, 67). He was with I.I.T. Kanpur from 1967-80 as Lecturer and Asst. Professor. In between he served as Manager/Senior Technologist - Research and Development, Pilkington Research Centre, Lathom, England (1977-1979). He then served as Professor of Metallurgical Engineering (1980-1990) and Dean of Students Affairs (1988-90) at the Indian Institute of Technology, Kharagpur. Prof. Ray served the Regional Research Laboratory, Bhubaneswar (now IMMTD) as Director from 1990-2000 (two terms). On retirement he served as an Emeritus Scientist at the Central Glass and Ceramic Research Institute, Calcutta. He holds several patents including 2 U.S. patents to his credit. His areas of interest included thermal analysis, kinetics, extractive metallurgy, energy and R&D administration. He guided about 40 Ph.D. students and 20 M.Tech. students for their thesis work. He has published about 500 papers in reviewed journals and conference proceedings and over 26 books. He also edited 15 Conference proceedings and written about 50 technical reports. He also wrote numerous other non-technical articles, editorials, etc. Prof. Ray received several awards in recognition of his work and these include the National Metallurgists Day Award, G.D. Birla Award and two Kamani Gold Medals of the Indian Institute of Metals. He received the Distinguished Alumni award from IIT Kharagpur, which, interestingly, he shared that year with the Google CEO, Sundar Pichai. He served several companies and R&D laboratories as consultant or member of Boards/Research Councils. He was associated with several Professional Bodies and served as President, Indian Institute of Mineral Engineers and Indian Thermal Analysis Society; also, as a Vice President of the Millennium Institute of Energy and Environment Management and was an Editor of a popular science magazine Everyman's Science. He also served in several other institutions in various capacities. He was deeply involved with professional bodies such as IIM (Indian Institute of Metals),

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Raj Kumar Choubey

Raj Kumar Choubey , was born on August 11, 1954 at Sikariya, Bhojpur, Bihar (unfortunately he passed away on February 19, 2024). He passed B.Sc. from the University of Burdwan in 1974 and Bachelor of Engineering from MREC (now MNIT) in Jaipur Rajasthan in the year 1980. He joined M/s Jaipur Metals and Electricals in 1980 and operated the first induction furnace of India. In 1982 he joined M/s Hindustan Motors and served till the year 2000. There he developed various grades of automobile grade steel and was a part of the team who fabricated the first Diesel Engine for automobiles in India. Thereafter he decided to be a start-up entrepreneur. His portfolio lately read: Owner -

Metcon Power Consultant & Engineers, Kolkata, having global clients base including Tata Steel and Jindal Steel. Director - Bhagwati Power & Steel Limited, Raipur, CG. Director - RNT Medicare Private Limited, Kolkata. Partner - Premier Hygienic Services, Kolkata. He involved himself in innovation and setting up commercial plants based on self developed technology for: Manufacturing DRI (Sponge Iron) from Mill Scale, DRI through Tunnel Kiln Technology, Development of Metallic Saggers for reduction of Iron Ore, Process for reduction of Chromite Ore at lower temperature, Extraction of liquid fuel from waste plastic, Recycling of Steel Plant wastes Development of Binders for agglomeration Address: Metcon House, North Bazar, Post: Andal - 713321, District: Paschim Bardhman, West Bengal. Email: choubey@metconpower.in, Website: www.metconpower.in. Dr.

Asim Kumar Ray

Dr. Asim Kumar Ray was born at Calcutta in 1952. He graduated with Honours in Chemical Engineering from Jadavpur University in 1974. He did his Masters in Chemical Engineering from IIT Kanpur and Ph. D. in Metallurgical Engineering from IIT Kharagpur. After a brief stay of about one and a half year each at Indian Iron and Steel Company, Burnpur and Indian Oil Corporation, he joined Research & Development Centre for Iron & Steel (RDCIS), SAIL, Ranchi in 1978. After a long stay at RDCIS, SAIL, Ranchi, he assumed charge of General Manager (Quality) at Durgapur Steel Plant (DSP), SAIL in 2008. Dr Ray was instrumental in commissioning Sponge Iron Pilot Plant and associated Process Research Laboratory and carried out R & D activities related to Sponge Iron & other Alternate Iron Making processes, Steelmaking and Continuous Casting. He established Computational Laboratory at RDCIS and carried out mathematical and physical simulation of different metallurgical processes. He steered several projects on process improvement and product development in all SAIL plants. Under his leadership, DSP had received several awards on Quality including prestigious Golden Peacock Award on Quality -2010 of Institution of Directors (IOD). Dr. Ray retired from SAIL in December 2012. Presently, Dr. Ray is with M/s Lechler (India) Pvt. Ltd. Dr. Ray has co-authored the Book on "Rotary

Kiln Sponge Ironmaking". He has to his credit about 140 research publications and three patents. Shri Arun Kumar Agrawal , born in 1963, is a 1985 metallurgical engineering graduate from the then Institute of Technology, Banaras Hindu University (IT-BHU - now IIT-BHU), Varanasi. He joined MECON Limited, Ranchi in the year 1986 as Management Trainee (Technical) after one year stint in Hindustan Aluminium Co. (Hindalco - Aditya Birla Group) at Renukoot in Uttar Pradesh. He joined the Iron Making Division of MECON and was deeply involved in the basic engineering and design, detailed engineering, consultancy and project management as well as site services of various Iron Making Projects particularly DR (Direct reduction) projects - both coal and gas based. In Blast Furnace area, he was the co-ordinator for NMDC Blast Furnace in Nagarnar and 1.2 mtpa Blast Furnace Complex of M/s PTKS, Indonesia. He was involved in engineering of a number of coal and gas-based DR projects, most prominent being world's first syngas-based DR plant in Angul for JSPL. He possesses over 37 years of varied and rich experiences in Iron and Steel technology, conceptualisation of projects along the entire value chain and development of process flow sheets, making and guiding the preparation of multitudes of reports, etc. Besides he has rendered expert services to Ministry of Steel (MOS) by being part of several committees, policy and norms formulation and their subsequent regulation as well as handling of diverse technical queries. In the process he immensely contributed to the development and growth of Indian Steel Industry. Shri Agrawal was deeply involved in all business verticals of MECON Limited, both technical & commercial. During his illustrious career, he displayed rare strategic insight and business acumen for enhancing company's business prospects. Shri Agrawal rose to the level of Director (Technical) of MECON in June, 2020 and continued for three years before superannuation in 2023. Under his leadership, a new Design Cell was created to develop specific tailor-made innovative designs and engineering solutions for new application and import substitutions. He was instrumental in launching of company's in-house prestigious quarterly technical journal "Techquest" to provide platform for sharing technical knowledge as well as unique design, engineering & project experiences and site based

solutions among the engineers to help them learn from each other's experience and make constant improvement in their subsequent endeavours.

Arun Kumar Agarwal

Dr. Krishna Kant Prasad (born on 24th January 1945 in Bhagalpur, Bihar), after completing B.Sc. Hons. (Chem.) from Bhagalpur University, he did his B.E., M.E. and Ph.D. in Metallurgical Engineering from the Indian Institute of Science, Bangalore. After brief teaching stints at the Banaras Hindu University and MR Engineering College, Jaipur he joined R&D Division of Tata Steel, Jamshedpur in 1972. He moved to RDCIS, SAIL, Ranchi in 1981 as in-charge of R&D activities in the Sponge Iron Pilot Plant Complex and since then he was actively involved in steering R&D activities both in Sponge Iron Making and Alternate Iron Making areas. He retired from SAIL, in January 2006. Thereafter, he served as a visiting professor in the Department of Metallurgical Engineering in IT (now IIT), BHU, Varanasi, for two and then joined NITK (National Institute of Technology Karnataka) in Surathkal, initially as the Ministry of Steel Chair Professor, and then in various capacities - all equivalent to a visiting professor - for seven and a half years. Dr. Prasad has guided four Ph.D. students. He has to his credit over 130 research papers, five registered copyrights and holds two patents on sponge iron making. He has authored four books entitled Sponge Iron Making in Rotary Kiln, Chemical and Metallurgical Thermodynamics, Advances in Rotary Kiln Sponge Iron Plant and Integrated Iron- and Steelmaking. He has also edited two books - "Trends in Beneficiation and Agglomeration of Iron Ore' and 'Steel Plant Technologies: An Overview. He is life member of the Indian Institute of Metals, Electrochemical Society of India and the Computer Society of India. E-mail: kkpmprnc@gmail.com. Professor Hem Shankar Ray (born on 19th June 1940, Jabalpur, Madhya Pradesh) unfortunately left for his heavenly abode on 28th April 2023 just as the preparation of the manuscript started. Prof. H. S. Ray is widely regarded as one of the greatest minds of the Indian scientific community and a very well-known name in the field of Extractive Metallurgy. He obtained his B.Tech. (Hons.) in Metallurgical Engineering

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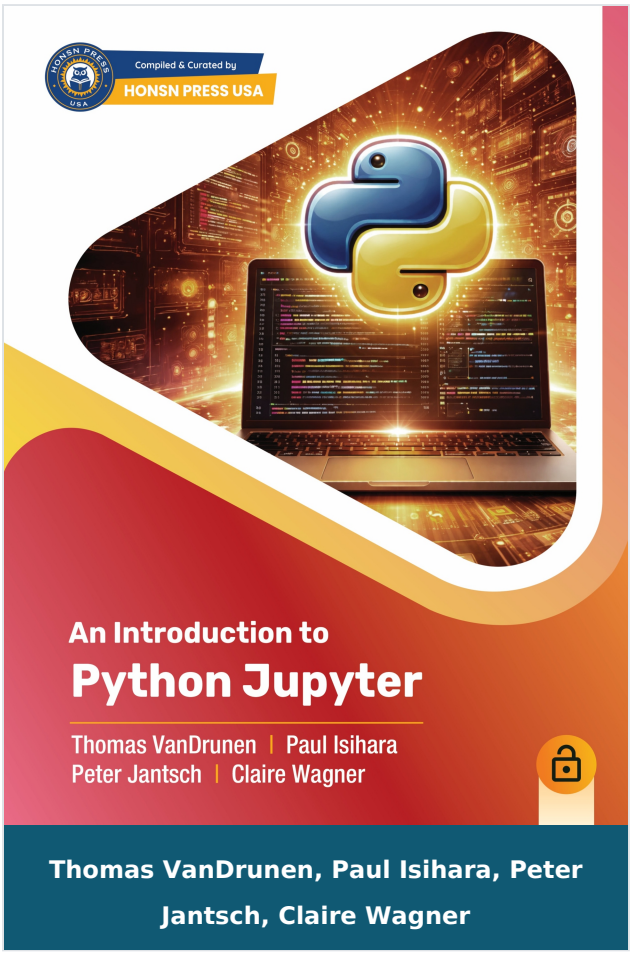

An Introduction to Python Jupyter (HONSN PRESS USA)

Author :	Thomas VanDrunen, Paul Isihara, Peter Jantsch, Claire Wagner
ISBN 13 :	978-93-74546-65-9
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Product Description

An Introduction to Python Jupyter Notebooks for College Math Teachers” is a comprehensive and evolving classroom resource designed to bridge the gap between theoretical collegiate mathematics and practical computational application. This text serves as an essential guide for college math teachers and their students seeking to seamlessly integrate the power of Python and Jupyter Notebooks (JNBs) into their curriculum. Unlike traditional textbooks, this entire work is presented in the form of modular Jupyter Notebooks, with each section structured for interactive engagement. This format allows for the direct input and execution of Python code alongside explanatory text, charts, and multimedia resources, making mathematical concepts immediately demonstrable and reproducible.

The book’s core theme is to enrich and enliven the study of mathematics using this cutting-edge tool. It offers immense practical value by covering a wide range of collegiate mathematics, from foundational Python programming and Exploratory Data Analysis (EDA) to advanced topics in Calculus, Linear Algebra, Statistical Inference, Differential Equations, and Complex Variables. Crucially, it connects these abstract concepts to complex real-world societal applications, such as modeling disease spread (COVID-19), analyzing urban data, and groundwater flow. Each chapter is designed to be read independently and includes dedicated JNB labs with solutions, providing a flexible framework for experienced educators to modify and tailor content to their specific courses, ultimately serving as a useful starting point to harness computational power for mathematical education.

Salient Features

- Interactive Learning Format: The entire book is written as modular Jupyter Notebooks, allowing for immediate, interactive execution of code alongside

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explanatory content, which is ideal for classroom use.

- Comprehensive Curricula Integration: The content seamlessly integrates Python programming with core college mathematics, including Calculus, Linear Algebra, Probability, and Statistical Inference for multiple course levels.
- Foundational Coding Guide: Provides a detailed Python Programming Guide, introducing essential concepts like data types, control flow, functions, and working with libraries such as NumPy and Pandas.
- Applied Data Science: Dedicated chapters on Exploratory Data Analysis (EDA) and Advanced Data Analysis provide hands-on experience in real-world data investigation and text classification using Python.
- Societal Modeling Applications: Features extensive application-based chapters, such as using Differential Equations to model public health issues (e.g., COVID-19) and Complex Variables for groundwater analysis.
- Practical Lab Exercises: Every chapter includes a dedicated Jupyter Notebook Lab and corresponding solutions, offering practical exercises that teachers can customize and students can use for independent practice.
- Optimization & Systems: Explores modern quantitative techniques like Linear Algebra for Optimization, K-means Clustering, and introduces the fundamental concepts of Complex Systems and Statistical Physics.

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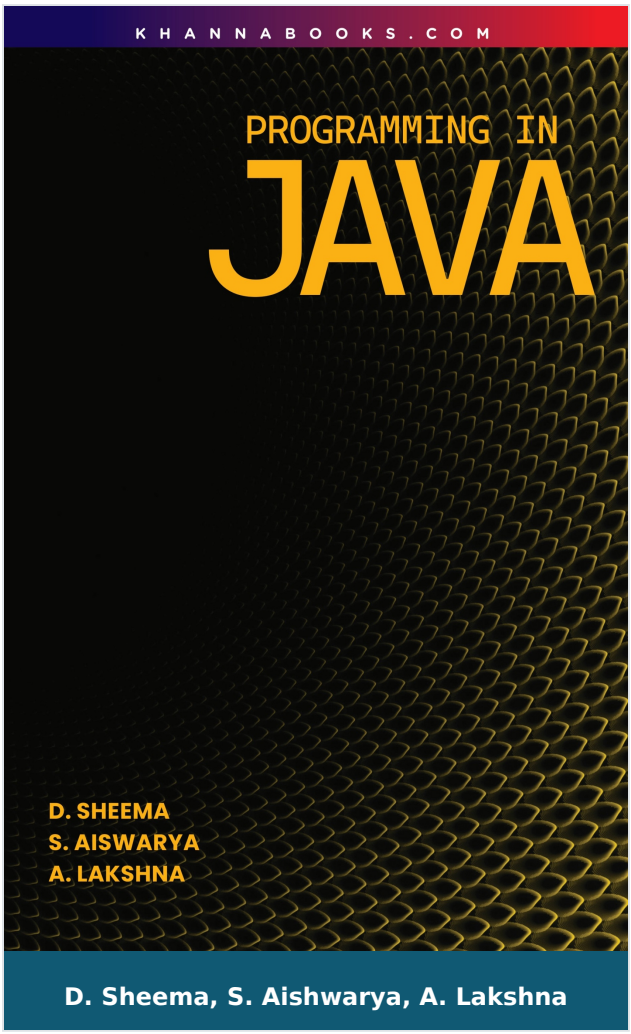

Programming in Java

Author :	D. Sheema, S. Aishwarya, A. Lakshna
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Product Description

This book is your complete resource for learning Programming in Java. Designed for both students and aspiring developers, it offers a robust and comprehensive path to mastering the Java language. You will start by building a strong foundation in Java basics, including the concepts of the Java Virtual Machine (JVM) and bytecode that enable its famous platform independence. The book then systematically covers the core principles of Object-Oriented Programming (OOP), such as inheritance, polymorphism, and encapsulation. By progressing to advanced topics like exception handling, I/O programming, Collections, and database connectivity (JDBC), you will gain the skills necessary to develop secure, high-performance applications.

Salient Features:

• Foundation to Advanced: Provides a clear, step-by-step learning curve, covering all topics from Java basics, data types, and tokens to enterprise technologies like JDBC, Servlets, and JSP.

• Write Once, Run Anywhere: Detailed explanation of the Java Virtual Machine (JVM) and Bytecode, highlighting the language's key feature of platform independence (WORA).

• Object-Oriented Mastery: In-depth coverage of OOP concepts including Classes, Objects, Inheritance, Method Overloading, and Method Overriding, with clear code examples.

• Focus on Robustness and Security: Emphasis on Java's built-in features for early error checking, runtime safety, and security mechanisms to protect applications.

• Practical Learning: Includes real-world examples and step-by-step instructions for setting up the Java Development Kit (JDK) and compiling and running your first programs.

• Key Programming Constructs: Thorough discussions on essential structures like Java Tokens, Access Modifiers, Operators, Control Flow Statements, and Exception Handling for writing efficient code.

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- File Streams and Collections Framework
- GUI Programming, Database Connectivity, Server-Side Programming

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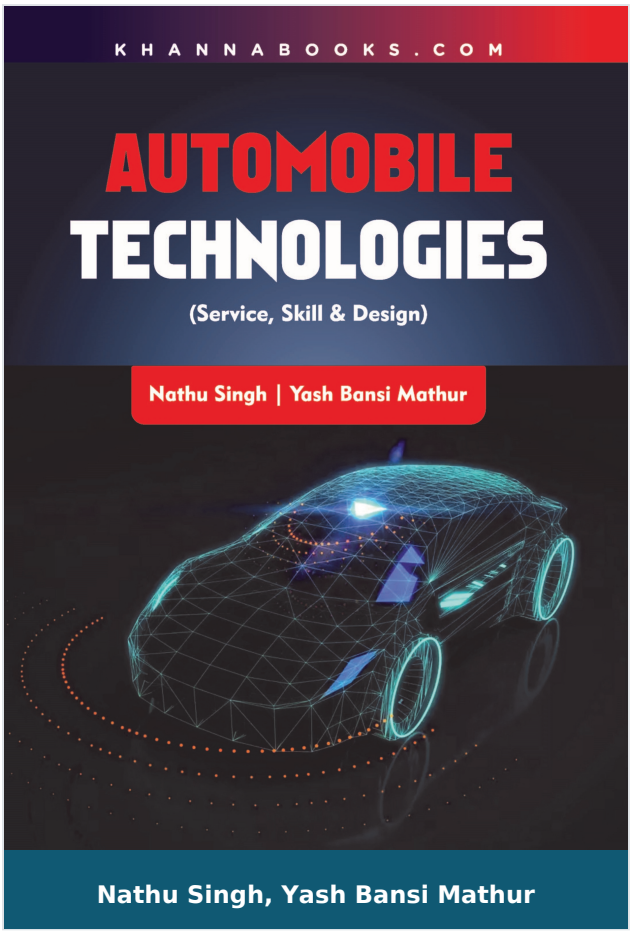

Automobile Technologies (Service, Skill & Design)

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Product Description

To award Certificate/Diploma/Advanced Diploma/ Degree level Professional courses to the technicians and engineers and to provide vertical mobility vertical mobility in the Service, Skills and Design stream of automotive sector, some model curriculum has been designed by the Technical Boards and Technical Universities has included in the book. The book consists of Motor Vehicle Technology, Automotive Systems, Drawing and Design. These systems are very useful for all level of technicians covering some practical and theoretical knowledge and technics of Automotive field. After studying the book, the person would acquire relevant and appropriate technical skill together with the professional competencies in the automotive fields, so that he may properly prepare to take gainful employment in the field.

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- Free hand Diagram of the Main Systems of the Vehicle
- Drafting of Sectional Views of the Main Assemblies
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- Design of the Main Components of an Automobile Engine

Author

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