

Blockchain Applications A Hands On Approach Full Online

Explore distributed ledger technology, decentralization, and smart contracts and develop real-time decentralized applications with Ethereum and Solidity Key Features Get to grips with the underlying technical principles and implementations of blockchain Build powerful applications using Ethereum to secure transactions and create smart contracts Gain advanced insights into cryptography and cryptocurrencies Book Description Blockchain technology is a distributed ledger with applications in industries such as finance, government, and media. This Learning Path is your guide to building blockchain networks using Ethereum, JavaScript, and Solidity. You will get started by understanding the technical foundations of blockchain technology, including distributed systems, cryptography and how this digital ledger keeps data secure. Further into the chapters, you'll gain insights into developing applications using Ethereum and Hyperledger. As you build on your knowledge of Ether security, mining , smart contracts, and Solidity, you'll learn how to create robust and secure applications that run exactly as programmed without being affected by fraud, censorship, or third-party interference. Toward the concluding chapters, you'll explore how blockchain solutions can be implemented in applications such as IoT apps, in addition to its use in currencies. The Learning Path will also highlight how you can increase blockchain scalability and even discusses the future scope of this fascinating and powerful technology. By the end of this Learning Path, you'll be equipped with the skills you need to tackle pain points encountered in the blockchain life cycle and confidently design and deploy decentralized applications. This Learning Path includes content from the following Packt products: Mastering Blockchain - Second Edition by Imran Bashir Building Blockchain Projects by Narayan Prusty What you will learn Understand why decentralized applications are important Discover the mechanisms behind bitcoin and alternative cryptocurrencies Master how cryptography is used to secure data with the help of examples Maintain, monitor, and manage your blockchain solutions Create Ethereum wallets Explore research topics and the future scope of blockchain technology Who this book is for This Learning Path is designed for blockchain developers who want to build decentralized applications and smart contracts from scratch using Hyperledger. Basic familiarity with any programming language will be useful to get started with this Learning Path.

We have written this textbook, as part of our expanding "A Hands-On Approach"(TM) series, to serve as a textbook for senior-level and graduate-level courses on financial and regulation technologies, business analytics, Internet of Things, and cryptocurrency. This book addresses main issues concerned with the future learning, learning and academic analytics, virtual world and smart user interface, and mobile learning. This book gathers the newest research results of smart learning environments from the aspects of learning, pedagogies, and technologies in learning. It examines the advances in technology development and changes in the field of education that has been affecting and reshaping the learning environment. Then, it proposes that under the changed technological situations, smart learning systems, no matter what platforms (i.e., personal computers, smart phones, and tablets) they are running at, should be aware of the preferences and needs that their users (i.e., the learners and teachers) have, be capable of providing their users with the most appropriate services, helps to

enhance the users' learning experiences, and to make the learning efficient. Develop real-time practical DApps using Ethereum and JavaScript About This Book Create powerful, end-to-end applications for Blockchain using Ethereum Write your first program using the Solidity programming language Change the way you think and design your applications by using the all new database-Blockchain Who This Book Is For This book is for JavaScript developers who now want to create tamper-proof data (and transaction) applications using Blockchain and Ethereum. Those who are interested in cryptocurrencies and the logic and database empowering it will find this book extremely useful. What You Will Learn Walk through the basics of the Blockchain technology Implement Blockchain's technology and its features, and see what can be achieved using them Build DApps using Solidity and Web3.js Understand the geth command and cryptography Create Ethereum wallets Explore consortium blockchain In Detail Blockchain is a decentralized ledger that maintains a continuously growing list of data records that are secured from tampering and revision. Every user is allowed to connect to the network, send new transactions to it, verify transactions, and create new blocks, making it permission-less. This book will teach you what Blockchain is, how it maintains data integrity, and how to create real-world Blockchain projects using Ethereum. With interesting real-world projects, you will learn how to write smart contracts which run exactly as programmed without any chance of fraud, censorship, or third-party interference, and build end-to-end applications for Blockchain. You will learn about concepts such as cryptography in cryptocurrencies, ether security, mining , smart contracts, solidity, and more. You will also learn about web sockets, various API services for Ethereum, and much more. The blockchain is the main technical innovation of bitcoin, where it serves as the public ledger for bitcoin transactions. Style and approach This is a project-based guide that not only gets you up and running with Blockchain, but also lets you create intuitive real-world applications that will make you an independent Blockchain developer.

Distributed ledgers, decentralization and smart contracts explained About This Book Get to grips with the underlying technical principles and implementations of blockchain. Build powerful applications using Ethereum to secure transactions and create smart contracts. Explore cryptography, mine cryptocurrencies, and solve scalability issues with this comprehensive guide. Who This Book Is For This book appeals to those who wish to build fast, highly secure, transactional applications. This book is for those who are familiar with the concept of blockchain and are comfortable with a programming language. What You Will Learn Master the theoretical and technical foundations of blockchain technology Fully comprehend the concept of decentralization, its impact and relationship with blockchain technology Experience how cryptography is used to secure data with practical examples Grasp the inner workings of blockchain and relevant mechanisms behind Bitcoin and alternative cryptocurrencies Understand theoretical foundations of smart contracts Identify and examine applications of blockchain technology outside of currencies Investigate alternate blockchain solutions including Hyperledger, Corda, and many more Explore research topics and future scope of blockchain technology In Detail Blockchain is a distributed database that enables permanent, transparent, and secure storage of data. The blockchain technology is the backbone of cryptocurrency – in fact, it's the shared public ledger upon which the entire Bitcoin network relies – and it's gaining popularity with people who work in finance,

government, and the arts. Blockchain technology uses cryptography to keep data secure. This book gives a detailed description of this leading technology and its implementation in the real world. This book begins with the technical foundations of blockchain, teaching you the fundamentals of cryptography and how it keeps data secure. You will learn about the mechanisms behind cryptocurrencies and how to develop applications using Ethereum, a decentralized virtual machine. You will explore different blockchain solutions and get an exclusive preview into Hyperledger, an upcoming blockchain solution from IBM and the Linux Foundation. You will also be shown how to implement blockchain beyond currencies, scalability with blockchain, and the future scope of this fascinating and powerful technology. Style and approach This comprehensive guide allows you to build smart blockchain applications and explore the power of this database. The book will let you quickly brush up on the basics of the blockchain database, followed by advanced implementations of blockchain in currency, smart contracts, decentralization, and so on.

Handbook of Research on Blockchain Technology presents the latest information on the adaptation and implementation of Blockchain technologies in real world business, scientific, healthcare and biomedical applications. The book's editors present the rapid advancements in existing business models by applying Blockchain techniques. Novel architectural solutions in the deployment of Blockchain comprise the core aspects of this book. Several use cases with IoT, biomedical engineering, and smart cities are also incorporated. As Blockchain is a relatively new technology that exploits decentralized networks and is used in many sectors for reliable, cost-effective and rapid business transactions, this book is a welcomed addition on existing knowledge. Financial services, retail, insurance, logistics, supply chain, public sectors and biomedical industries are now investing in Blockchain research and technologies for their business growth. Blockchain prevents double spending in financial transactions without the need of a trusted authority or central server. It is a decentralized ledger platform that facilitates verifiable transactions between parties in a secure and smart way. Presents the evolution of blockchain, from fundamental theories, to present forms Explains the concepts of blockchain related to cloud/edge computing, smart healthcare, smart cities and Internet of Things (IoT) Provides complete coverage of the various tools, platforms and techniques used in blockchain Explores smart contract tools and consensus algorithms Covers a variety of applications with real world case studies in areas such as biomedical engineering, supply chain management, and tracking of goods and delivery

This book will teach you to build an online gaming app using Ethereum. Each section will introduce you to blockchain programming concepts for creating an online game, followed by practical exercises that you can implement as independent assignments. You will acquire core blockchain app development skills and deploy your app to the internet.

Summary Building Ethereum Dapps introduces you to decentralized applications based on the Ethereum blockchain platform. In this book, you'll learn the principles of Dapps development by rolling up your sleeves and actually building a few! Foreword by Thomas Bertani. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Imagine unbreakably secure applications that handle personal and business transactions without any central

agency controlling the process. Decentralized applications, or Dapps, do just this, shifting power to users. The Ethereum blockchain platform provides the tools you need to build Dapps, including an innovative "smart contracts" model and Solidity, a Dapp-aware JavaScript-like programming language. About the Book Building Ethereum Dapps teaches Dapps development on the Ethereum blockchain platform. You'll begin with a mental model of how Dapps operate, and then dive into designing and implementing smart contracts in Ethereum's Solidity language. You'll explore Ethereum smart contract development tools, like Truffle and Web3, and pick up best practices for design and security. Practical exercises throughout give you valuable hands-on experience. What's inside Ethereum's key components Implementing smart contracts in Solidity Communicating with a smart contract in Web3 Developing Dapps with Truffle Best practices for design and security improvement About the Reader For developers with intermediate experience in JavaScript or an OO language. Familiarity with blockchain concepts is helpful. About the Author Roberto Infante is a software development consultant who specializes in finance. He currently works on financial risk management systems and on blockchain technology. Table of Contents PART 1 A first look at decentralized applications Understanding the blockchain The Ethereum platform Deploying your first smart contract PART 2 Programming smart contracts in Solidity Writing more complex smart contracts Generalizing functionality with abstract contracts and interfaces Managing smart contracts with Web3.js PART 3 The Ethereum ecosystem Unit testing contracts with Mocha Improving the development cycle with Truffle Putting it all together: Building a complete voting Dapp PART 4 Making a Dapp production ready Security considerations Conclusions

Leverage the power of Hyperledger Fabric to develop Blockchain-based distributed ledgers with ease Key Features Write your own chaincode/smart contracts using Golang on hyperledger network Build and deploy decentralized applications (DApps) Dive into real world blockchain challenges such as integration and scalability Book Description Blockchain and Hyperledger technologies are hot topics today. Hyperledger Fabric and Hyperledger Composer are open source projects that help organizations create private, permissioned blockchain networks. These find application in finance, banking, supply chain, and IoT among several other sectors. This book will be an easy reference to explore and build blockchain networks using Hyperledger technologies. The book starts by outlining the evolution of blockchain, including an overview of relevant blockchain technologies. You will learn how to configure Hyperledger Fabric and become familiar with its architectural components. Using these components, you will learn to build private blockchain networks, along with the applications that connect to them. Starting from principles first, you'll learn to design and launch a network, implement smart contracts in chaincode and much more. By the end of this book, you will be able to build and deploy your own decentralized applications, handling the key pain points encountered in the blockchain life cycle. What you will learn Discover why blockchain is a game changer in the technology landscape Set up blockchain networks using basic Hyperledger Fabric deployment Understand the considerations for creating

decentralized applications Learn to integrate business networks with existing systems Write Smart Contracts quickly with Hyperledger Composer Design transaction model and chaincode with Golang Deploy Composer REST Gateway to access the Composer transactions Maintain, monitor, and govern your blockchain solutions Who this book is for The book benefits business leaders as it provides a comprehensive view on blockchain business models, governance structure, and business design considerations of blockchain solutions.

Technology leaders stand to gain a lot from the detailed discussion around the technology landscape, technology design, and architecture considerations in the book. With model-driven application development, this guide will speed up understanding and concept development for blockchain application developers. The simple and well organized content will put novices at ease with blockchain concepts and constructs.

Bitcoin is starting to come into its own as a digital currency, but the blockchain technology behind it could prove to be much more significant. This book takes you beyond the currency ("Blockchain 1.0") and smart contracts ("Blockchain 2.0") to demonstrate how the blockchain is in position to become the fifth disruptive computing paradigm after mainframes, PCs, the Internet, and mobile/social networking. Author Melanie Swan, Founder of the Institute for Blockchain Studies, explains that the blockchain is essentially a public ledger with potential as a worldwide, decentralized record for the registration, inventory, and transfer of all assets—not just finances, but property and intangible assets such as votes, software, health data, and ideas. Topics include: Concepts, features, and functionality of Bitcoin and the blockchain Using the blockchain for automated tracking of all digital endeavors Enabling censorship-resistant organizational models Creating a decentralized digital repository to verify identity Possibility of cheaper, more efficient services traditionally provided by nations Blockchain for science: making better use of the data-mining network Personal health record storage, including access to one's own genomic data Open access academic publishing on the blockchain This book is part of an ongoing O'Reilly series. Mastering Bitcoin: Unlocking Digital Crypto-Currencies introduces Bitcoin and describes the technology behind Bitcoin and the blockchain. Blockchain: Blueprint for a New Economy considers theoretical, philosophical, and societal impact of cryptocurrencies and blockchain technologies.

Discover the advanced features of Solidity that will help you write high-quality code and develop secure smart contracts with the latest ERC standards Key Features Delve into Solidity and understand control structures, function calls, and variable scopes Explore tools for developing, testing, and debugging your blockchain applications Learn advanced design patterns and best practices for writing secure smart contracts Book Description Solidity is among the most popular and contract-oriented programming languages used for writing decentralized applications (DApps) on Ethereum blockchain. If you're looking to perfect your skills in writing professional-grade smart contracts using Solidity, this

book can help. You will get started with a detailed introduction to blockchain, smart contracts, and Ethereum, while also gaining useful insights into the Solidity programming language. A dedicated section will then take you through the different Ethereum Request for Comments (ERC) standards, including ERC-20, ERC-223, and ERC-721, and demonstrate how you can choose among these standards while writing smart contracts. As you approach later chapters, you will cover the different smart contracts available for use in libraries such as OpenZeppelin. You'll also learn to use different open source tools to test, review and improve the quality of your code and make it production-ready. Toward the end of this book, you'll get to grips with techniques such as adding security to smart contracts, and gain insights into various security considerations. By the end of this book, you will have the skills you need to write secure, production-ready smart contracts in Solidity from scratch for decentralized applications on Ethereum blockchain. What you will learn Test and debug smart contracts with Truffle, Ganache, Remix, and MetaMask Gain insights into maintaining code quality with different tools Get up to speed with ERC standards such as ERC-20 and ERC-721 Become adept at using design patterns while writing smart contracts Use MultiSignature (MultiSig) wallets and improve the security of contracts Use Oracle services to fetch information from outside the blockchain Who this book is for This book is for developers and data scientists who want to learn Ethereum, blockchain, and Solidity to write smart contracts and develop production-ready code. Basic knowledge of Solidity is assumed.

Learn quick and effective techniques to get up and running with building blockchain including Ethereum and Hyperledger Fabric. Key Features Understand the key concepts of decentralized applications and consensus algorithms Learn key concepts of Ethereum and Solidity programming Practical guide to get started with build efficient Blockchain applications with Ethereum and Hyperledger Book Description Blockchain is a technology that powers the development of decentralized applications. This technology allows the construction of a network with no single control that enables participants to make contributions to and receive benefits from the network directly. This book will give you a thorough overview of blockchain and explain how a blockchain works. You will begin by going through various blockchain consensus mechanisms and cryptographic hash functions. You will then learn the fundamentals of programming in Solidity – the defacto language for developing decentralized applications in Ethereum. After that, you will set up an Ethereum development environment and develop, package, build, and test campaign-decentralized applications. The book also shows you how to set up Hyperledger composer tools, analyze business scenarios, design business models, and write a chain code. Finally, you will get a glimpse of how blockchain is actually used in different real-world domains. By the end of this guide, you will be comfortable working with basic blockchain frameworks, and develop secure, decentralized applications in a hassle-free manner. What you will learn Understand how blockchain hashing

works Write and test a smart contract using Solidity Develop and test a decentralized application Build and test your application using Hyperledger Fabric Implement business network using Hyperledger Composer Test and interact with business network applications Who this book is for The book is for developers, analysts, or anyone looking to learn about Blockchain in a quick and easy manner.

A practical blockchain handbook designed to take you through implementing and re-engineering banking and financial solutions and workflows using eight step-by-step projects Key Features Implement various end-to-end blockchain projects and learn to enhance present-day financial solutions Use Ethereum, Hyperledger, and Stellar to build public and private decentralized applications Address complex challenges faced in the BFSI domain using different blockchain platform services Book Description Blockchain technology will continue to play an integral role in the banking and finance sector in the coming years. It will enable enterprises to build transparent and secure business processes. Experts estimate annual savings of up to 20 billion dollars from this technology. This book will help you build financial apps using blockchain, guiding you through enhancing popular products and services in the banking and finance sector. The book starts by explaining the essential concepts of blockchain, and the impact of blockchain technology on the BFSI sector. Next, you'll delve into re-designing existing banking processes and building new financial apps using blockchain. To accomplish this, you'll work through eight blockchain projects. By demonstrating the entire process, the book helps you understand everything from setting up the environment and building frontend portals to system integration and testing apps. You will gain hands-on experience with the Ethereum, Hyperledger Fabric, and Stellar to develop private and public decentralized apps. Finally, you'll learn how to use ancillary platforms and frameworks such as IPFS, Truffle OpenZeppelin, and MetaMask. By the end of this blockchain book, you'll have an in-depth understanding of how to leverage distributed ledgers and smart contracts for financial use cases. What you will learn Design and implement blockchain solutions in a BFSI organization Explore common architectures and implementation models for enterprise blockchain Design blockchain wallets for multi-purpose applications using Ethereum Build secure and fast decentralized trading ecosystems with Blockchain Implement smart contracts to build secure process workflows in Ethereum and Hyperledger Fabric Use the Stellar platform to build KYC and AML-compliant remittance workflows Map complex business workflows and automate backend processes in a blockchain architecture Who this book is for This book is for blockchain and Dapps developers, or anyone looking for a guide to building innovative and highly secure solutions in the fintech domain using real-world use cases. Developers working in financial enterprises and banks, and solution architects looking to build brand new process flows using blockchain technology will also find the book useful. Experience with Solidity programming and prior knowledge of finance and trade are required to

get the most out of this book.

This book is for Python developers to implement various components of end-to-end decentralized applications such as cryptocurrencies, smart contracts, wallet and more. You will use the example-based approach using various libraries from Python ecosystem to build efficient and powerful blockchain applications at work or projects.

Ready to dive into smart contract development for the blockchain? With this practical guide, experienced engineers and beginners alike will quickly learn the entire process for building smart contracts for Ethereum—the open source blockchain-based distributed computing platform. You'll get up to speed with the fundamentals and quickly move into builder mode. Kevin Solorio, Randall Kanna, and Dave Hoover show you how to create and test your own smart contract, create a frontend for users to interact with, and more. It's the perfect resource for people who want to break into the smart contract field but don't know where to start. In four parts, this book helps you: Explore smart contract fundamentals, including the Ethereum protocol, Solidity programming language, and the Ethereum Virtual Machine Dive into smart contract development using Solidity and gain experience with Truffle framework tools for deploying and testing your contracts Use Web3 to connect your smart contracts to an application so users can easily interact with the blockchain Examine smart contract security along with free online resources for smart contract security auditing

Can blockchain solve your biggest business problem? While the world is transfixed by bitcoin mania, your competitors are tuning out the noise and making strategic bets on blockchain. Your rivals are effortlessly tracking every last link in their supply chains. They're making bureaucratic paper trails obsolete while keeping their customers' data safer and discovering new ways to use this next foundational technology to sustain their competitive advantage. What should you be doing with blockchain now to ensure that your business is poised for success? "Blockchain: The Insights You Need from Harvard Business Review" brings you today's most essential thinking on blockchain, explains how to get the right initiatives started at your company, and prepares you to seize the opportunity of the coming blockchain wave. Business is changing. Will you adapt or be left behind? Get up to speed and deepen your understanding of the topics that are shaping your company's future with the Insights You Need from Harvard Business Review series. Featuring HBR's smartest thinking on fast-moving issues--blockchain, cybersecurity, AI, and more--each book provides the foundational introduction and practical case studies your organization needs to compete today and collects the best research, interviews, and analysis to get it ready for tomorrow. You can't afford to ignore how these issues will transform the landscape of business and society. The Insights You Need series will help you grasp these critical ideas--and prepare you and your company for the future.

This book on computer security threats explores the computer security threats and includes a broad set of solutions to defend the computer systems from these threats. The book is

triggered by the understanding that digitalization and growing dependence on the Internet poses an increased risk of computer security threats in the modern world. The chapters discuss different research frontiers in computer security with algorithms and implementation details for use in the real world. Researchers and practitioners in areas such as statistics, pattern recognition, machine learning, artificial intelligence, deep learning, data mining, data analytics and visualization are contributing to the field of computer security. The intended audience of this book will mainly consist of researchers, research students, practitioners, data analysts, and business professionals who seek information on computer security threats and its defensive measures.

This book provides a comprehensive introduction to blockchain and distributed ledger technology. Intended as an applied guide for hands-on practitioners, the book includes detailed examples and in-depth explanations of how to build and run a blockchain from scratch.

Through its conceptual background and hands-on exercises, this book allows students, teachers and crypto enthusiasts to launch their first blockchain while assuming prior knowledge of the underlying technology. How do I build a blockchain? How do I mint a cryptocurrency? How do I write a smart contract? How do I launch an initial coin offering (ICO)? These are some of questions this book answers. Starting by outlining the beginnings and development of early cryptocurrencies, it provides the conceptual foundations required to engineer secure software that interacts with both public and private ledgers. The topics covered include consensus algorithms, mining and decentralization, and many more. "This is a one-of-a-kind book on Blockchain technology. The authors achieved the perfect balance between the breadth of topics and the depth of technical discussion. But the real gem is the set of carefully curated hands-on exercises that guide the reader through the process of building a Blockchain right from Chapter 1." Volodymyr Babich, Professor of Operations and Information Management, McDonough School of Business, Georgetown University "An excellent introduction of DLT technology for a non-technical audience. The book is replete with examples and exercises, which greatly facilitate the learning of the underlying processes of blockchain technology for all, from students to entrepreneurs." Serguei Netessine, Dhirubhai Ambani Professor of Innovation and Entrepreneurship, The Wharton School, University of Pennsylvania "Whether you want to start from scratch or deepen your blockchain knowledge about the latest developments, this book is an essential reference. Through clear explanations and practical code examples, the authors take you on a progressive journey to discover the technology foundations and build your own blockchain. From an operations perspective, you can learn the principles behind the distributed ledger technology relevant for transitioning towards blockchain-enabled supply chains. Reading this book, you'll get inspired, be able to assess the applicability of blockchain to supply chain operations, and learn from best practices recognized in real-world examples." Ralf W. Seifert, Professor of Technology and Operations Management at EPFL and Professor of Operations Management at IMD

There's a lot more to the blockchain than mining Bitcoin. This secure system for registering and verifying ownership and identity is perfect for supply chain logistics, health records, and other sensitive data management tasks. Blockchain in Action unlocks the full potential of this revolutionary technology, showing you how to build your own decentralized apps for secure applications including digital democracy, private auctions, and electronic record management.

Summary There's a lot more to the blockchain than mining Bitcoin. This secure system for registering and verifying ownership and identity is perfect for supply chain logistics, health records, and other sensitive data management tasks. Blockchain in Action unlocks the full potential of this revolutionary technology, showing you how to build your own decentralized apps for secure applications including digital democracy, private auctions, and electronic record management. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Blockchain is more than just

There's a lot more to the blockchain than mining Bitcoin. This secure system for registering and verifying ownership and identity is perfect for supply chain logistics, health records, and other sensitive data management tasks. Blockchain in Action unlocks the full potential of this revolutionary technology, showing you how to build your own decentralized apps for secure applications including digital democracy, private auctions, and electronic record management.

Summary There's a lot more to the blockchain than mining Bitcoin. This secure system for registering and verifying ownership and identity is perfect for supply chain logistics, health records, and other sensitive data management tasks. Blockchain in Action unlocks the full potential of this revolutionary technology, showing you how to build your own decentralized apps for secure applications including digital democracy, private auctions, and electronic record management. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Blockchain is more than just

the tech behind Bitcoin—much more! Combining impenetrable security, decentralized transactions, and independently verifiable supply chains, blockchain applications have transformed currency, digital identity, and logistics. Platforms such as Ethereum and Hyperledger make it easy to get started by using familiar programming languages. About the book *Blockchain in Action* teaches you how to design and build blockchain-based decentralized apps, and is written in a clear, jargon-free style. First, you'll get an overview of how blockchain works. Next, you'll code your first smart contract using Ethereum and Solidity, adding a web interface, trust validation, and other features until your app is ready for deployment. The only thing you need to get started is standard hardware and open source software. What's inside *Blockchain in Action* compared with other distributed systems development in Solidity Identity, privacy, and security On-chain and off-chain data and operations About the reader For programmers who know JavaScript. About the author Bina Ramamurthy has thirty years of experience teaching distributed systems, data science, peer-to-peer networking, and blockchain. Table of Contents PART 1 - GETTING STARTED WITH BLOCKCHAIN PROGRAMMING 1 Blockchain basics 2 Smart contracts 3 Techniques for trust and integrity 4 From smart contracts to Dapps PART 2 - TECHNIQUES FOR END-TO-END DAPP DEVELOPMENT 5 Security and privacy 6 On-chain and off-chain data 7 Web3 and a channel Dapp 8 Going public with Infura PART 3 - A ROADMAP AND THE ROAD AHEAD 9 Tokenization of assets 10 Testing smart contracts 11 A roadmap to Dapp development 12 Blockchain: The Road ahead

An expert guide to implementing fast, secure, and scalable decentralized applications that work with thousands of users in real time Key Features Implement advanced features of the Ethereum network to build powerful decentralized applications Build smart contracts on different domains using the programming techniques of Solidity and Vyper Explore the architecture of Ethereum network to understand advanced use cases of blockchain development Book Description Ethereum is one of the commonly used platforms for building blockchain applications. It's a decentralized platform for applications that can run exactly as programmed without being affected by fraud, censorship, or third-party interference. This book will give you a deep understanding of how blockchain works so that you can discover the entire ecosystem, core components, and its implementations. You will get started by understanding how to configure and work with various Ethereum protocols for developing dApps. Next, you will learn to code and create powerful smart contracts that scale with Solidity and Vyper. You will then explore the building blocks of the dApps architecture, and gain insights on how to create your own dApp through a variety of real-world examples. The book will even guide you on how to deploy your dApps on multiple Ethereum instances with the required best practices and techniques. The next few chapters will delve into advanced topics such as, building advanced smart contracts and multi-page frontends using Ethereum blockchain. You will also focus on implementing machine learning techniques to build decentralized autonomous applications, in addition to covering several use cases across a variety of domains such as, social media and e-commerce. By the end of this book, you will have the expertise you need to build decentralized autonomous applications confidently. What you will learn Apply scalability solutions on dApps with Plasma and state channels Understand the important metrics of blockchain for analyzing and determining its state Develop a decentralized web application using React.js and Node.js Create oracles with Node.js to provide external data to smart contracts Get to grips with using Etherscan and block explorers for various transactions Explore web3.js, Solidity, and Vyper for dApps communication Deploy apps with multiple Ethereum instances including TestRPC, private chain, test chain, and mainnet Who this book is for This book is for anyone who wants to build fast, highly secure, and transactional decentralized applications. If you are an Ethereum developer looking to perfect your existing skills in building powerful blockchain applications, then this book is for you. Basic knowledge of

Ethereum and blockchain is necessary to understand the concepts covered in this book. Develop blockchain application with step-by-step instructions, working example and helpful recommendations Key Features Understanding the blockchain technology from the cybersecurity perspective Developing cyber security solutions with Ethereum blockchain technology Understanding real-world deployment of blockchain based applications Book Description Blockchain technology is being welcomed as one of the most revolutionary and impactful innovations of today. Blockchain technology was first identified in the world's most popular digital currency, Bitcoin, but has now changed the outlook of several organizations and empowered them to use it even for storage and transfer of value. This book will start by introducing you to the common cyberthreat landscape and common attacks such as malware, phishing, insider threats, and DDoS. The next set of chapters will help you to understand the workings of Blockchain technology, Ethereum and Hyperledger architecture and how they fit into the cybersecurity ecosystem. These chapters will also help you to write your first distributed application on Ethereum Blockchain and the Hyperledger Fabric framework. Later, you will learn about the security triad and its adaptation with Blockchain. The last set of chapters will take you through the core concepts of cybersecurity, such as DDoS protection, PKI-based identity, 2FA, and DNS security. You will learn how Blockchain plays a crucial role in transforming cybersecurity solutions. Toward the end of the book, you will also encounter some real-world deployment examples of Blockchain in security cases, and also understand the short-term challenges and future of cybersecurity with Blockchain. What you will learn Understand the cyberthreat landscape Learn about Ethereum and Hyperledger Blockchain Program Blockchain solutions Build Blockchain-based apps for 2FA, and DDoS protection Develop Blockchain-based PKI solutions and apps for storing DNS entries Challenges and the future of cybersecurity and Blockchain Who this book is for The book is targeted towards security professionals, or any stakeholder dealing with cybersecurity who wants to understand the next-level of securing infrastructure using Blockchain. Basic understanding of Blockchain can be an added advantage.

Learn the foundations of blockchain technology - its core concepts and algorithmic solutions across cryptography, peer-to-peer technology, and game theory. Key Features Learn the core concepts and foundations of the blockchain and cryptocurrencies Understand the protocols and algorithms behind decentralized applications Master how to architect, build, and optimize blockchain applications Book Description Blockchain technology is a combination of three popular concepts: cryptography, peer-to-peer networking, and game theory. This book is for anyone who wants to dive into blockchain from first principles and learn how decentralized applications and cryptocurrencies really work. This book begins with an overview of blockchain technology, including key definitions, its purposes and characteristics, so you can assess the full potential of blockchain. All essential aspects of cryptography are then presented, as the backbone of blockchain. For readers who want to study the underlying algorithms of blockchain, you'll see Python implementations throughout. You'll then learn how blockchain architecture can create decentralized applications. You'll see how blockchain achieves decentralization through peer-to-peer networking, and how a simple blockchain can be built in a P2P network. You'll learn how these elements can implement a cryptocurrency such as Bitcoin, and the wider applications of blockchain work through smart contracts. Blockchain optimization techniques, and blockchain security strategies are then presented. To complete this foundation, we consider blockchain applications in the financial and non-financial sectors, and also analyze the future of blockchain. A study of blockchain use cases includes supply chains, payment systems, crowdfunding, and DAOs, which rounds out your foundation in blockchain technology. What you will learn The core concepts and technical foundations of blockchain The algorithmic principles and solutions that make up blockchain and cryptocurrencies Blockchain cryptography explained in detail How to realize blockchain

projects with hands-on Python code How to architect the blockchain and blockchain applications Decentralized application development with MultiChain, NEO, and Ethereum Optimizing and enhancing blockchain performance and security Classical blockchain use cases and how to implement them Who this book is for This book is for anyone who wants to dive into blockchain technology from first principles and build a foundational knowledge of blockchain. Familiarity with Python will be helpful if you want to follow how the blockchain protocols are implemented. For readers who are blockchain application developers, most of the applications used in this book can be executed on any platform.

Demystify architecting complex blockchain applications in enterprise environments Architecting Enterprise Blockchain Solutions helps engineers and IT administrators understand how to architect complex blockchain applications in enterprise environments. The book takes a deep dive into the intricacies of supporting and securing blockchain technology, creating and implementing decentralized applications, and incorporating blockchain into an existing enterprise IT infrastructure. Blockchain is a technology that is experiencing massive growth in many facets of business and the enterprise. Most books around blockchain primarily deal with how blockchains are related to cryptocurrency or focus on pure blockchain development. This book teaches what blockchain technology is and offers insights into its current and future uses in high performance networks and complex ecosystems. • Provides a practical, hands-on approach • Demonstrates the power and flexibility of enterprise blockchains such as Hyperledger and R3 Corda • Explores how blockchain can be used to solve complex IT support and infrastructure problems • Offers numerous hands-on examples and diagrams Get ready to learn how to harness the power and flexibility of enterprise blockchains!

Blockchain is a distributed database that enables permanent, transparent, and secure storage of data. The blockchain technology is the backbone of cryptocurrency and it is gaining popularity with people who work in the finance, government, and arts sectors. This book is an up-to-date, one-stop guide to this leading technology and its ...

Before we start with a formal introduction to blockchain, let us take you for a moment to a possible future that should realize sooner than we expect. You are on a vacation outside your home country, at a shopping mall and receive a notification saying there is a sale on luxurious watches. You haven't been to this store before. You pick up a watch and you wonder if the watch is genuine and worth the price. You start a mobile application and place it on the watch. The application recognizes the watch and displays the complete lifecycle of the watch like where it was manufactured and the GPS coordinates, where it was designed, what is the warranty period, how much custom duty you need to pay (if any) if you bring this watch back to your home country and even showing and comparing similar watches. You purchase the watch based on these details and now feel even more connected to the watch brand and establish a trust with the shopping store for selling genuine products. Let's consider a complex B2B process like an international trade finance which currently takes days to complete the trade process. If the entire workflow is automated, self regulated and equipped with enough consensus between various parties carrying out the trade, it can provide a window of opportunity for new buyers and sellers to handshake, implement and execute trade seamlessly with lot of trust and confidence. In the above scenarios that we described earlier and possibly in all our future applications, data would be a central point for businesses, consumers, and even

system interaction. Now in a data-driven world, you need to establish trust and compliance between parties, you need governance, regulation and accountability through automated workflow and digital contracts rather than central authority and finally a piece of technology that can enable to realize this goal. Once these basic parameters are enabled, it opens endless opportunities to move any value (from services to digital assets) across the network in a secure and transparent way. The technology enabler that can aid in realizing this opportunity is blockchain. We view blockchain as an enabler to provide consensus on data. The consensus can be between B2B, B2C or C2C. We call blockchain an enabler, as blockchain alone will not lead to realizing the opportunities we talked about earlier. The combinatorial power of blockchain, smart contracts, and technologies like IoT & Artificial Intelligence would enable to deliver value-driven intelligent applications. While we described our vision, we are probably at the first generation of blockchain implementation where technologies are still evolving, and use cases are being realized. Through this book, we aim to provide a reference guide for building blockchain applications. The book comprises of three chapters. In Chapter 1, we will provide a neutral vision and architecture for blockchain, without getting into vendor specific details. In chapter 2 and 3, we will demonstrate the working of two widely used blockchain implementations - Ethereum and IBM Hyperledger Fabric respectively. To summarize, as part of the book, we will cover the following - 1. A vendor-neutral architecture for building any blockchain applications. 2. A detailed introduction to Ethereum and its core components. We will set up a local instance of Ethereum and build end-to-end application on Ethereum blockchain using a hands-on approach. At the end, we would cover topics around extension to Ethereum blockchain, integration with the external world and the future of smart contracts. 3. A detailed introduction to IBM Hyperledger Fabric and its core components. We would cover the enterprise capabilities provided by Fabric 1.0. At the end, we would set up a local instance of Fabric and build an end-to-end application on Fabric using a hands-on approach.

Design, architect, and build Blockchain applications with Azure in industrial scenarios to revolutionize conventional processes and data security. This book will empower you to build better decentralized applications that have stronger encryption, better architectures, and effective deployment structures over the cloud. You'll start with an overview of Blockchain, distributed networks, Azure components in Blockchain, such as Azure Workbench, and independent Blockchain-as-a-service solutions. Next, you'll move on to aspects of Blockchain transactions where the author discusses encryption and distribution along with practical examples. You'll cover permissioned Blockchains and distributed ledgers with the help of use cases of financial institutions, followed by code and development aspects of smart contracts. Here, you will learn how to utilise the templates provided by Azure Resource Manager to quickly develop an Ethereum-based smart contract. Further, you will go through Blockchain points of

integration, where the author demonstrates enterprise integration, automated processing of smart contracts, and lifecycle events. Finally, you will go through every deployment of HyperLedger, Ethereum, and other decentralized ledger examples over Azure, thus understanding the elements of creation, design, development, security, and deployment. After reading *Unlocking Blockchain on Azure* you will be able to design and develop Blockchain applications in Azure to decentralize social networks, financial organisations, and data. You'll be able to implement encryption over a Blockchain and have full control over shared instances digitally. You will be able to program smart contracts to digitize rules and trigger timely transactions. What You Will Learn Build decentralized applications Program, design, and deploy dynamic smart contracts Model Blockchains in the form of token economics, hybrid networks, and infrastructure Develop end-to-end encryption and distributed systems Who This Book Is For Developers and solutions architects who want to develop Blockchain applications in Azure and decentralize applications in different scenarios.

Book Description This book is a part of *Knoldus Rust Programming Series*. There is a lot of hype surrounding the concept of the blockchain, but what does this term actually mean? What is blockchain? How does it work under the hood? What are Blockchain's real-world use cases? How you can build your own blockchain application? You will get these answers in this book. This book begins with the basic concepts of the blockchain (such as block, transactions, mining, reward, proof of work), teaching you the fundamentals of cryptography and how blockchain works under the hood. This book serves as a practical guide to developing an application with Rust to interact with the various building blocks of blockchain applications. This book gives an overview of this leading blockchain technology and its implementation in the real world. Some people think that it's difficult to grasp how blockchain works and the complexity of maintaining the blockchain. If you also think the same, this book is for you. This book will walk you through the essentials of how blockchain technology works, using simple explanations and examples along the way. Rust was selected as the basis for this book attributing to its wide popularity, ease of understanding and learning for those who haven't used it. Rust has been the "most loved programming language" in the Stack Overflow Developer Survey every year since 2016. Not only it does provide a unique combination of performance and security, but it also empowers developers with the tools to start shipping their code faster. What You'll Learn What is Blockchain Why do we need Blockchain Blockchain real-world use cases Bitcoin cryptocurrency: Most Popular Application of Blockchain How Blockchain works under the hood What is Rust and Why Rust programming language is preferred for Blockchain development Create Blockchain application using Rust By the end of this book, you'll be well-versed in blockchain programming and be able to build end-to-end applications using Rust. Who This Book Is For If you are a Rust developer or you have a basic understanding of Rust programming language and you want to enter the world of blockchain, this

book is for you. This book will provide you step by step guide for developing blockchain application using Rust About The Author Ayush Kumar Mishra is a Sr. Lead Software Consultant based in India. He is currently working with Knoldus, an organization where knowledge sharing and upskilling each Knolder is a way of life, which is the only organization to be partners with Lightbend, Databricks, Confluent and Datastax to deliver high-quality reactive products to its global clients. He has total 11 years of working experience. He has been working in Rust for more than 2 years. He is also a DataStax certified Cassandra developer. He loves to troubleshoot complex problems and look for the best solutions. In his career, he has successfully developed and delivered various applications with Scala, Lagom, Akka HTTP, Java, Rust. He has been involved in Blockchain technology for the last couple of months.

Internet of Things (IoT) refers to physical and virtual objects that have unique identities and are connected to the internet to facilitate intelligent applications that make energy, logistics, industrial control, retail, agriculture and many other domains "smarter". Internet of Things is a new revolution of the Internet that is rapidly gathering momentum driven by the advancements in sensor networks, mobile devices, wireless communications, networking and cloud technologies. Experts forecast that by the year 2020 there will be a total of 50 billion devices/things connected to the internet. This book is written as a textbook on Internet of Things for educational programs at colleges and universities, and also for IoT vendors and service providers who may be interested in offering a broader perspective of Internet of Things to accompany their own customer and developer training programs. The typical reader is expected to have completed a couple of courses in programming using traditional high-level languages at the college-level, and is either a senior or a beginning graduate student in one of the science, technology, engineering or mathematics (STEM) fields. Like our companion book on Cloud Computing, we have tried to write a comprehensive book that transfers knowledge through an immersive "hands on" approach, where the reader is provided the necessary guidance and knowledge to develop working code for real-world IoT applications. Additional support is available at the book's website: www.internet-of-things-book.com Organization The book is organized into 3 main parts, comprising of a total of 11 chapters. Part I covers the building blocks of Internet of Things (IoTs) and their characteristics. A taxonomy of IoT systems is proposed comprising of various IoT levels with increasing levels of complexity. Domain specific Internet of Things and their real-world applications are described. A generic design methodology for IoT is proposed. An IoT system management approach using NETCONF-YANG is described. Part II introduces the reader to the programming aspects of Internet of Things with a view towards rapid prototyping of complex IoT applications. We chose Python as the primary programming language for this book, and an introduction to Python is also included within the text to bring readers to a common level of expertise. We describe packages, frameworks and cloud services including the WAMP-

AutoBahn, Xively cloud and Amazon Web Services which can be used for developing IoT systems. We chose the Raspberry Pi device for the examples in this book. Reference architectures for different levels of IoT applications are examined in detail. Case studies with complete source code for various IoT domains including home automation, smart environment, smart cities, logistics, retail, smart energy, smart agriculture, industrial control and smart health, are described. Part III introduces the reader to advanced topics on IoT including IoT data analytics and Tools for IoT. Case studies on collecting and analyzing data generated by Internet of Things in the cloud are described.

Find out what Blockchain is, how it works, and what it can do for you Blockchain is the technology behind Bitcoin, the revolutionary 'virtual currency' that's changing the way people do business. While Bitcoin has enjoyed some well-deserved hype, Blockchain may be Bitcoin's most vital legacy. Blockchain For Dummies is the ideal starting place for business pros looking to gain a better understanding of what Blockchain is, how it can improve the integrity of their data, and how it can work to fundamentally change their business and enhance their data security. Blockchain For Dummies covers the essential things you need to know about this exciting technology's promise of revolutionizing financial transactions, data security, and information integrity. The book covers the technologies behind Blockchain, introduces a variety of existing Blockchain solutions, and even walks you through creating a small but working Blockchain-based application. Blockchain holds the promise to revolutionize a wide variety of businesses. Get in the know about Blockchain now with Blockchain For Dummies and be ready to make the changes to business that your colleagues and competitors will later wish they'd done. Discover ten ways Blockchain can change business Find out how to apply a Blockchain solution See how to make data more secure Learn how to work with vendors Filled with vital information and tips on how this paradigm-changing technology can transform your business for the better, this book will not only show you Blockchain's full potential, but your own as well!

Artificial intelligence (AI) is taking an increasingly important role in our society. From cars, smartphones, airplanes, consumer applications, and even medical equipment, the impact of AI is changing the world around us. The ability of machines to demonstrate advanced cognitive skills in taking decisions, learn and perceive the environment, predict certain behavior, and process written or spoken languages, among other skills, makes this discipline of paramount importance in today's world. Although AI is changing the world for the better in many applications, it also comes with its challenges. This book encompasses many applications as well as new techniques, challenges, and opportunities in this fascinating area.

A Developer's Guide to Blockchain Programming Fundamentals Blockchain development is entering a period of explosive growth, as real applications gain traction throughout multiple industries and cryptocurrencies earn greater

acceptance throughout the financial sector. Blockchain represents one of the most promising opportunities for developers to advance and succeed. Building Blockchain Apps is an accessible guide to today's most advanced and robust blockchain programming models and architectures. Building on his pioneering experience, Michael Juntao Yuan covers a wide range of blockchain application development paradigms. The book starts with a concise introduction to blockchain and smart contract technologies. It then guides you through application development on Ethereum-compatible smart contract platforms. Ethereum is the largest and most robust blockchain ecosystem in the world. Coverage includes Ethereum topics such as tools, application frameworks, internal data structures, external data interfaces, and future roadmap An introduction to new blockchain data protocol based on ElasticSearch, which provides insights into the current state of smart contracts and enables new application designs How to build an application-specific smart contract protocol by modifying and customizing the open source Ethereum Virtual Machine and its programming language tools How to extend and support language features that are most suitable for particular kinds of smart contracts (e.g., smart contracts for e-commerce marketplaces) with the open source Lity project How to customize and change the blockchain consensus layer beneath the application layer via the popular Tendermint and Cosmos SDK frameworks A survey of cryptocurrency and financial topics from the developers' point of view, providing an analytical framework for valuating cryptocurrencies and explaining the roles of crypto exchanges Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details. This book covers all the relevant concepts and phases of the blockchain development cycle. It will walk you through a step-by-step process to build three blockchain projects with differing complexity levels and hurdles. By the end of this book, you will be ready to tackle common issues in the blockchain ecosystem. Blockchain technology continues to disrupt a wide variety of organizations, from small businesses to the Fortune 500. Today hundreds of blockchain networks are in production, including many built with Hyperledger Fabric. This practical guide shows developers how the latest version of this blockchain infrastructure provides an ideal foundation for developing enterprise blockchain applications or solutions. Authors Matt Zand, Xun Wu, and Mark Anthony Morris demonstrate how the versatile design of Hyperledger Fabric 2.0 satisfies a broad range of industry use cases. Developers with or without previous Hyperledger experience will discover why no other distributed ledger technology framework enjoys such wide adoption by cloud service providers such as Amazon, Alibaba, IBM, Google, and Oracle. Walk through the architecture and components of Hyperledger Fabric 2.0 Migrate your current Hyperledger Fabric projects to version 2.0 Develop blockchain applications on the Hyperledger platform with Node.js Deploy and integrate Hyperledger on Amazon Managed Blockchain, IBM Cloud, and Oracle Cloud Develop blockchain applications with Hyperledger Aries, Avalon,

Besu, and Grid Build end-to-end blockchain supply chain applications with Hyperledger

Blockchain Applications A Hands-on Approach Blockchain Applications A Hands-On Approach Vpt

An enterprise blockchain or distributed ledger technology (DLT) is very much like a shared document stored on a cloud drive. There are just two differences. First, there is no master copy of this document stored with an escrow or arbiter, and second, any change to the document happens only after it has been signed off by all required stakeholders. This allows businesses to form a peer-to-peer network and establish a common ground of truth without giving up its control in hands of a single organization. The decentralized nature of the ledger combined with version control or immutability of the stored data is perfect for fast account reconciliation, secure tracking and tracing of products, and transparent records with no costly third-party auditing. This book teaches you how to build such decentralized applications. What's Inside:*

* Covers v2.0 of Fabric. Examples written in TypeScript and JavaScript* Deploying to production across multiple nodes using Docker* Securing communications with TLS* Handling Data Privacy*

Comprehensive coverage of Fabric CA Server and Client* Bonus chapters on Bitcoin and LDAP The author has done justice to it by really starting from the basics and explaining with wit the core concepts and taking the reader slowly to the core of Fabric. - Satej Sahu, Senior Enterprise Architect, Honeywell A very beginner friendly introduction to a massive amount of data needed to operate in the blockchain world. - Gregory Reshetniak, Product Owner, Ocado Technology A detailed bible about Hyperledger Fabric. This book is mandatory in the blockchain world. - Krzysztof Kamyczek, Architect Software Developer, Luxoft The future will be increasingly distributed. As the publicity surrounding Bitcoin and blockchain has shown, distributed technology and business models are gaining popularity. Yet the disruptive potential of this technology is often obscured by hype and misconception. This detailed guide distills the complex, fast moving ideas behind blockchain into an easily digestible reference manual, showing what's really going on under the hood. Finance and technology pros will learn how a blockchain works as they explore the evolution and current state of the technology, including the functions of cryptocurrencies and smart contracts. This book is for anyone evaluating whether to invest time in the cryptocurrency and blockchain industry. Go beyond buzzwords and see what the technology really has to offer. Learn why Bitcoin was fundamentally important in blockchain's birth Explore altcoin and alternative blockchain projects to understand what's possible Understand the challenges of scaling and forking a blockchain Learn what Ethereum and other blockchains offer Examine emerging business uses for blockchain beyond cryptocurrency Discover where the future lies in this exciting new technology

Learn the foundations of blockchain technology - its core concepts and algorithmic solutions across cryptography, peer-to-peer technology, and game

theory. Key Features Learn the core concepts and foundations of the blockchain and cryptocurrencies Understand the protocols and algorithms behind decentralized applications Master how to architect, build, and optimize blockchain applications Book Description Blockchain technology is a combination of three popular concepts: cryptography, peer-to-peer networking, and game theory. This book is for anyone who wants to dive into blockchain from first principles and learn how decentralized applications and cryptocurrencies really work. This book begins with an overview of blockchain technology, including key definitions, its purposes and characteristics, so you can assess the full potential of blockchain. All essential aspects of cryptography are then presented, as the backbone of blockchain. For readers who want to study the underlying algorithms of blockchain, you'll see Python implementations throughout. You'll then learn how blockchain architecture can create decentralized applications. You'll see how blockchain achieves decentralization through peer-to-peer networking, and how a simple blockchain can be built in a P2P network. You'll learn how these elements can implement a cryptocurrency such as Bitcoin, and the wider applications of blockchain work through smart contracts. Blockchain optimization techniques, and blockchain security strategies are then presented. To complete this foundation, we consider blockchain applications in the financial and non-financial sectors, and also analyze the future of blockchain. A study of blockchain use cases includes supply chains, payment systems, crowdfunding, and DAOs, which rounds out your foundation in blockchain technology. What you will learn The core concepts and technical foundations of blockchain The algorithmic principles and solutions that make up blockchain and cryptocurrencies Blockchain cryptography explained in detail How to realize blockchain projects with hands-on Python code How to architect the blockchain and blockchain applications Decentralized application development with MultiChain, NEO, and Ethereum Optimizing and enhancing blockchain performance and security Classical blockchain use cases and how to implement them Who this book is for This book is for anyone who wants to dive into blockchain technology from first principles and build a ...

Blockchain technology is a combination of three popular concepts: cryptography, peer-to-peer networking, and game theory. This book is for anyone who wants to dive into blockchain from first principles and learn how decentralized applications and cryptocurrencies really work. Learn blockchain from first concepts to algorithms explained in Python.

[Copyright: cfefc2dd4f2b0215d4e90e62df5c1090](https://www.cfdigital.com/2015/04/20/2015-04-20-1090)