Cryptography And Network Security Drive

The 1st International Conference on “Applied Cryptography and Network Se- rity” (ACNS 2003) was sponsored and organized by ICISA (International C- munications and Information Security Association), in cooperation with MiAn Pte. Ltd. and the Kunming government. It was held in Kunming, China in - tober 2003. The conference proceedings was published as Volume 2846 of the Lecture Notes in Computer Science (LNCS) series of Springer-Verlag. The conference received 191 submissions, from 24 countries and regions; 32 of these papers were accepted, representing 15 countries and regions (acceptance rate of 16.75%). In this volume you will ?nd the revised versions of the - cepted papers that were presented at the conference. In addition to the main track of presentations of accepted papers, an additional track was held in the conference where presentations of an industrial and technical nature were given. These presentations were also carefully selected from a large set of presentation proposals. This new international conference series is the result of the vision of Dr. Yongfei Han. The conference concentrates on current developments that advance the - eas of applied cryptography and its application to systems and network security. The goal is to represent both academic research works and developments in - dustrial and technical frontiers. We thank Dr. Han for initiating this conference and for serving as its General Chair.

Written in an easy-to-understand style, this textbook, now in its third edition, continues to discuss in detail important concepts and major developments in network security and management. It is designed for a one-semester course for undergraduate students of Computer Science, Information Technology, and undergraduate and postgraduate students of

Computer Applications. Students are first exposed to network security principles, organizational policy and security infrastructure, and then drawn into some of the deeper issues of cryptographic algorithms and protocols underlying network security applications. Encryption methods, secret key and public key cryptography, digital signature and other security mechanisms are emphasized. Smart card, biometrics, virtual private networks, trusted operating systems, pretty good privacy, database security, and intrusion detection systems are comprehensively covered. An in-depth analysis of technical issues involved in security management, risk management and security and law is presented. In the third edition, two new chapters—one on Information Systems Security and the other on Web Security—and many new sections such as digital signature, Kerberos, public key infrastructure, software security and electronic mail security have been included. Additional matter has also been added in many existing sections. KEY FEATURES : Extensive use of block diagrams throughout helps explain and clarify the concepts discussed. About 250 questions and answers at the end of the book facilitate fruitful revision of the topics covered. Includes a glossary of important terms. KEY FEATURES : Extensive use of block diagrams throughout helps explain and clarify the concepts discussed. About 250 questions and answers at the end of the book facilitate fruitful revision of the topics covered. Includes a glossary of important terms.

In the era of Internet of Things (IoT), and with the explosive worldwide growth of electronic data volume and the associated needs of processing, analyzing, and storing this data, several new challenges have emerged. Particularly, there is a need for novel schemes of secure authentication, integrity protection, encryption, and non-repudiation to protect the privacy of sensitive data and to secure systems. Lightweight symmetric key cryptography and adaptive

network security algorithms are in demand for mitigating these challenges. This book presents state-of-the-art research in the fields of cryptography and security in computing and communications. It covers a wide range of topics such as machine learning, intrusion detection, steganography, multi-factor authentication, and more. It is a valuable reference for researchers, engineers, practitioners, and graduate and doctoral students working in the fields of cryptography, network security, IoT, and machine learning.

Stallings provides a survey of the principles and practice of cryptography and network security. This edition has been updated to reflect the latest developments in the field. It has also been extensively reorganized to provide the optimal sequence for classroom instruction and self-study.

Network Security Essentials, Third Edition is a thorough, up-to-date introduction to the deterrence, prevention, detection, and correction of security violations involving information delivery across networks and the Internet.

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. The Principles and Practice of Cryptography and Network Security Stallings' Cryptography and Network Security, Seventh Edition, introduces the reader to the compelling and evolving field of cryptography and network security. In an age of viruses and hackers, electronic eavesdropping, and electronic fraud on a global scale, security is paramount. The purpose of this book is to provide a practical survey of both the principles and practice of cryptography and network security. In the first part of the book, the basic issues to be addressed by a network security capability are explored by providing a tutorial and survey of cryptography and network security technology.

The latter part of the book deals with the practice of network security: practical applications that have been implemented and are in use to provide network security. The Seventh Edition streamlines subject matter with new and updated material — including Sage, one of the most important features of the book. Sage is an open-source, multiplatform, freeware package that implements a very powerful, flexible, and easily learned mathematics and computer algebra system. It provides hands-on experience with cryptographic algorithms and supporting homework assignments. With Sage, the reader learns a powerful tool that can be used for virtually any mathematical application. The book also provides an unparalleled degree of support for the reader to ensure a successful learning experience.

This reference work looks at modern concepts of computer security. It introduces the basic mathematical background necessary to follow computer security concepts before moving on to modern developments in cryptography. The concepts are presented clearly and illustrated by numerous examples. Subjects covered include: private-key and public-key encryption, hashing, digital signatures, authentication, secret sharing, group-oriented cryptography, and many others. The section on intrusion detection and access control provide examples of security systems implemented as a part of operating system. Database and network security is also discussed. The final chapters introduce modern e- business systems based on digital cash.

This book elaborates the basic and advanced concepts of cryptography and network security issues. It is user friendly since each chapter is modelled with several case studies and illustration. All algorithms are explained with various algebraic structures to map the theoretical concepts of cryptography with modern algebra. Moreover, all the concepts are explained with

the secure multicast communication scenarios that deal with one to many secure communications.

This practical guide to modern encryption breaks down the fundamental mathematical concepts at the heart of cryptography without shying away from meaty discussions of how they work. You'll learn about authenticated encryption, secure randomness, hash functions, block ciphers, and public-key techniques such as RSA and elliptic curve cryptography. You'll also learn: - Key concepts in cryptography, such as computational security, attacker models, and forward secrecy - The strengths and limitations of the TLS protocol behind HTTPS secure websites - Quantum computation and post-quantum cryptography - About various vulnerabilities by examining numerous code examples and use cases - How to choose the best algorithm or protocol and ask vendors the right questions Each chapter includes a discussion of common implementation mistakes using real-world examples and details what could go wrong and how to avoid these pitfalls. Whether you're a seasoned practitioner or a beginner looking to dive into the field, Serious Cryptography will provide a complete survey of modern encryption and its applications.

This book provides an overview on various methodologies and procedures of cryptography. In the times of escalating worldwide development of electronic data storage and communications, efficient security of information has become a crucial need. The most efficient tool for the protection of information is cryptography, used in a combination with other tools for assuring the security of information in all of its applications, including user authentication, data integrity and confidentiality. This book is a compilation of in-depth research work in the field of cryptography. It describes some of the crucial challenges faced by the present computing

world as well as a few techniques to defend against these challenges. It aims at serving as a useful source of reference for engineers, graduate and doctoral students, researchers, faculty members of universities, etc.

Cryptography and Network SecurityPrinciples and PracticePrentice Hall

Unlike data communications of the past, today's networks consist of numerous devices that handle the data as it passes from the sender to the receiver. However, security concerns are frequently raised in circumstances where interconnected computers use a network not controlled by any one entity or organization. Introduction to Network Security exam

Cryptography is now ubiquitous – moving beyond the traditional environments, such as government communications and banking systems, we see cryptographic techniques realized in Web browsers, e-mail programs, cell phones, manufacturing systems, embedded software, smart buildings, cars, and even medical implants. Today's designers need a comprehensive understanding of applied cryptography. After an introduction to cryptography and data security, the authors explain the main techniques in modern cryptography, with chapters addressing stream ciphers, the Data Encryption Standard (DES) and 3DES, the Advanced Encryption Standard (AES), block ciphers, the RSA cryptosystem, public-key cryptosystems based on the discrete logarithm problem, elliptic-curve cryptography (ECC), digital signatures, hash functions, Message Authentication Codes (MACs), and methods for key establishment, including certificates and public-key infrastructure (PKI). Throughout the book, the authors focus on communicating the essentials and keeping the mathematics to a minimum, and they move quickly from explaining the foundations to describing practical implementations, including recent topics such as lightweight ciphers for RFIDs and mobile devices, and current key-length

recommendations. The authors have considerable experience teaching applied cryptography to engineering and computer science students and to professionals, and they make extensive use of examples, problems, and chapter reviews, while the book's website offers slides, projects and links to further resources. This is a suitable textbook for graduate and advanced undergraduate courses and also for self-study by engineers.

Now the most used texbook for introductory cryptography courses in both mathematics and computer science, the Third Edition builds upon previous editions by offering several new sections, topics, and exercises. The authors present the core principles of modern cryptography, with emphasis on formal definitions, rigorous proofs of security.

Cryptography is ubiquitous and plays a key role in ensuring data secrecy and integrity as well as in securing computer systems more broadly. Introduction to Modern Cryptography provides a rigorous yet accessible treatment of this fascinating subject. The authors introduce the core principles of modern cryptography, with an emphasis on formal defini

This book introduces readers to the tools needed to protect IT resources and communicate with security specialists when there is a security problem. The book covers a wide range of security topics including Cryptographic Technologies, Network Security, Security Management, Information Assurance, Security Applications, Computer Security, Hardware Security, and Biometrics and Forensics. It introduces the concepts, techniques, methods, approaches, and trends needed by security specialists to improve their security skills and capabilities. Further, it provides a glimpse into future directions where security techniques, policies, applications, and theories are headed. The book represents a collection of carefully selected and reviewed chapters written by diverse security experts in the listed fields and edited by prominent security

researchers. Complementary slides are available for download on the book's website at Springer.com.

The shortcomings of modern cryptography and its weaknesses against computers that are becoming more powerful necessitate serious consideration of more robust security options. Quantum cryptography is sound, and its practical implementations are becoming more mature. Many applications can use quantum cryptography as a backbone, including key distribution, secure direct communications, large prime factorization, e-commerce, e-governance, quantum internet, and more. For this reason, quantum cryptography is gaining interest and importance among computer and security professionals. Quantum Cryptography and the Future of Cyber Security is an essential scholarly resource that provides the latest research and advancements in cryptography and cyber security through quantum applications. Highlighting a wide range of topics such as e-commerce, machine learning, and privacy, this book is ideal for security analysts, systems engineers, software security engineers, data scientists, vulnerability analysts, professionals, academicians, researchers, security professionals, policymakers, and students.

This revised third edition presents the subject with the help of learning objectives (LO) guided by Bloom's Taxonomy and supports outcome-based learning. It discusses concepts from elementary to advanced levels with focus on mathematical preliminaries. Numerous solved examples, algorithms, illustrations & usage of fictitious characters make the text interesting and simple to read. Salient Features: Dedicated section on Elementary Mathematics Pseudo codes used to illustrate implementation of algorithm Includes new topics on Shannon's theory and Perfect Secrecy, Unicity Distance and Redundancy of Language Interesting elements

introduced through QR codes - Solutions to select chapter-end problems (End of every chapter) - 19 Proofs of theorems (Appendix Q) - Secured Electronic Transaction (Appendix R) Enhanced Pedagogical Features: - Solved Examples: 260 - Exercises: 400 - Review Questions: 200 - Illustration: 400

This book will help you increase your understanding of potential threats, learn how to apply practical mitigation options, and react to attacks quickly. It will teach you the skills and knowledge you need to design, develop, implement, analyze, and maintain networks and network protocols.--[book cover].

Network Security and Cryptography introduces the basic concepts in computer networks and the latest trends and technologies in cryptography and network security. The book is a definitive guide to the principles and techniques of cryptography and network security, and introduces basic concepts in computer networks such as classical cipher schemes, public key cryptography, authentication schemes, pretty good privacy, and Internet security. It features the latest material on emerging technologies, related to IoT, cloud computing, SCADA, blockchain, smart grid, big data analytics, and more. Primarily intended as a textbook for courses in computer science and electronics & communication, the book also serves as a basic reference and refresher for professionals in these areas. FEATURES: • Includes the latest material on emerging technologies, related to IoT, cloud computing, smart grid, big data analytics, blockchain, and more • Features separate chapters on the mathematics related to network security and cryptography • Introduces basic concepts in computer networks including classical cipher schemes, public key cryptography, authentication schemes, pretty good privacy, Internet security services, and system security • Includes end of chapter review

questions

This book elaborates the basic and advanced concepts of cryptography and network security issues. It is user friendly since each chapter is modelled with several case studies and illustration. All algorithms are explained with various algebraic structures

Pearson brings to you the revised edition of Cryptography and Network Security by Stallings. In an age of viruses and hackers, electronic eavesdropping, and electronic fraud on a global scale, security is paramount. The purpose of this book is to provide

Applied Cryptography for Cyber Security and Defense: Information Encryption and Cyphering applies the principles of cryptographic systems to real-world scenarios, explaining how cryptography can protect businesses' information and ensure privacy for their networks and databases. It delves into the specific security requirements within various emerging application areas and discusses procedures for engineering cryptography into system design and implementation.

As a cybersecurity professional, discover how to implement cryptographic techniques to help your organization mitigate the risks of altered, disclosed, or stolen data Key Features Discover how cryptography is used to secure data in motion as well as at rest Compare symmetric with asymmetric encryption and learn how a hash is used Get to grips with different types of cryptographic solutions along with common applications Book Description In today's world, it is important to have confidence in your data storage and transmission strategy. Cryptography can provide you with this confidentiality, integrity, authentication, and non-repudiation. But are you aware of just what exactly is involved in using cryptographic techniques? Modern Cryptography for Cybersecurity Professionals helps you to gain a better understanding of the

cryptographic elements necessary to secure your data. The book begins by helping you to understand why we need to secure data and how encryption can provide protection, whether it be in motion or at rest. You'll then delve into symmetric and asymmetric encryption and discover how a hash is used. As you advance, you'll see how the public key infrastructure (PKI) and certificates build trust between parties, so that we can confidently encrypt and exchange data. Finally, you'll explore the practical applications of cryptographic techniques, including passwords, email, and blockchain technology, along with securely transmitting data using a virtual private network (VPN). By the end of this cryptography book, you'll have gained a solid understanding of cryptographic techniques and terms, learned how symmetric and asymmetric encryption and hashed are used, and recognized the importance of key management and the PKI. What you will learn Understand how network attacks can compromise data Review practical uses of cryptography over time Compare how symmetric and asymmetric encryption work Explore how a hash can ensure data integrity and authentication Understand the laws that govern the need to secure data Discover the practical applications of cryptographic techniques Find out how the PKI enables trust Get to grips with how data can be secured using a VPN Who this book is for This book is for IT managers, security professionals, students, teachers, and anyone looking to learn more about cryptography and understand why it is important in an organization as part of an overall security framework. A basic understanding of encryption and general networking terms and concepts is needed to get the most out of this book.

Most applications these days are at least somewhat network aware, but how do you protect those applications against common network security threats? Many developers are turning to

OpenSSL, an open source version of SSL/TLS, which is the most widely used protocol for secure network communications.The OpenSSL library is seeing widespread adoption for web sites that require cryptographic functions to protect a broad range of sensitive information, such as credit card numbers and other financial transactions. The library is the only free, full-featured SSL implementation for C and C++, and it can be used programmatically or from the command line to secure most TCP-based network protocols.Network Security with OpenSSL enables developers to use this protocol much more effectively. Traditionally, getting something simple done in OpenSSL could easily take weeks. This concise book gives you the guidance you need to avoid pitfalls, while allowing you to take advantage of the library?s advanced features. And, instead of bogging you down in the technical details of how SSL works under the hood, this book provides only the information that is necessary to use OpenSSL safely and effectively. In step-by-step fashion, the book details the challenges in securing network communications, and shows you how to use OpenSSL tools to best meet those challenges.As a system or network administrator, you will benefit from the thorough treatment of the OpenSSL command-line interface, as well as from step-by-step directions for obtaining certificates and setting up your own certification authority. As a developer, you will further benefit from the in-depth discussions and examples of how to use OpenSSL in your own programs. Although OpenSSL is written in C, information on how to use OpenSSL with Perl, Python and PHP is also included.OpenSSL may well answer your need to protect sensitive data. If that?s the case, Network Security with OpenSSL is the only guide available on the subject.

Computer Security: Principles and Practice, 2e, is ideal for courses in Computer/Network

Security. In recent years, the need for education in computer security and related topics has grown dramatically – and is essential for anyone studying Computer Science or Computer Engineering. This is the only text available to provide integrated, comprehensive, up-to-date coverage of the broad range of topics in this subject. In addition to an extensive pedagogical program, the book provides unparalleled support for both research and modeling projects, giving students a broader perspective. The Text and Academic Authors Association named Computer Security: Principles and Practice, 1e, the winner of the Textbook Excellence Award for the best Computer Science textbook of 2008.

The main objective of this book is to cater to the need of a quality textbook for education in the field of information security. The present third edition of the book covers the principles, design, and implementation of various algorithms in cryptography and information security domain. The book is a comprehensive work with a perfect balance and systematic presentation of the theoretical and practical aspects. The pre-requisite of the cryptography are the fundamentals of the mathematical background. The book covers all such relevant methods and theorems, which are helpful to the readers to get the necessary mathematical base for the understanding of the cryptographic algorithms. It provides a clear analysis of different algorithms and techniques. NEW TO THE THIRD EDITION • New chapters on o Cyber Laws o Vulnerabilities in TCP/IP Model • Revised sections on o Digital signature o Attacks against digital signature • Introduction to some open source tools like Nmap, Zenmap, port scanner, network scanner and wireshark • Revised section on block cipher modes of operation • Coverage of Simplified Data Encryption Standard (S-DES) and Simplified Advanced Encryption Standard (S-AES) with examples • Elaborated section on Linear Cryptanalysis and Differential Cryptanalysis •

New solved problems and a topic “primitive roots” in number theory • Chapter on public key cryptosystems with various attacks against RSA algorithm • New topics on Ransomware, Darknet, and Darkweb as per the current academic requirement • Revised chapter on Digital Forensics The book is intended for the undergraduate and postgraduate students of computer science and engineering (B.Tech/M.Tech), undergraduate and postgraduate students of computer science (B.Sc. / M.Sc. Computer Science), and information technology (B.Sc. / M.Sc. IT) and the students of Master of Computer Applications (MCA).

This book provides a practical, up-to-date, and comprehensive survey of network-based and Internet-based security applications and standards. This books covers e-mail security, IP security, Web security, and network management security. It also includes a concise section on the discipline of cryptography—covering algorithms and protocols underlying network security applications, encryption, hash functions, digital signatures, and key exchange. For system engineers, engineers, programmers, system managers, network managers, product marketing personnel, and system support specialists.

For one-semester, undergraduate- or graduate-level courses in Cryptography, Computer Security, and Network Security. The book is suitable for self-study and so provides a solid and up-to-date tutorial. The book is also a comprehensive treatment of cryptography and network security and so is suitable as a reference for a system engineer, programmer, system manager, network manager, product marketing personnel, or system support specialist. ¿ A practical survey of cryptography and network security with unmatched support for instructors and students ¿ In this age of

universal electronic connectivity, viruses and hackers, electronic eavesdropping, and electronic fraud, security is paramount. This text provides a practical survey of both the principles and practice of cryptography and network security. First, the basic issues to be addressed by a network security capability are explored through a tutorial and survey of cryptography and network security technology. Then, the practice of network security is explored via practical applications that have been implemented and are in use today. An unparalleled support package for instructors and students ensures a successful teaching and learning experience.¿

A must for working network and security professionals as well as anyone in IS seeking to build competence in the increasingly important field of security Written by three high-profile experts, including Eric Cole, an ex-CIA security guru who appears regularly on CNN and elsewhere in the media, and Ronald Krutz, a security pioneer who cowrote The CISSP Prep Guide and other security bestsellers Covers everything from basic security principles and practices to the latest security threats and responses, including proven methods for diagnosing network vulnerabilities and insider secrets for boosting security effectiveness

The classic guide to network security—now fully updated!"Bob and Alice are back!" Widely regarded as the most comprehensive yet comprehensible guide to network security, the first edition of Network Security received critical acclaim for its lucid and witty explanations of the inner workings of network security protocols. In the second

edition, this most distinguished of author teams draws on hard-won experience to explain the latest developments in this field that has become so critical to our global network-dependent society. Network Security, Second Edition brings together clear, insightful, and clever explanations of every key facet of information security, from the basics to advanced cryptography and authentication, secure Web and email services, and emerging security standards. Coverage includes: All-new discussions of the Advanced Encryption Standard (AES), IPsec, SSL, and Web security Cryptography: In-depth, exceptionally clear introductions to secret and public keys, hashes, message digests, and other crucial concepts Authentication: Proving identity across networks, common attacks against authentication systems, authenticating people, and avoiding the pitfalls of authentication handshakes Core Internet security standards: Kerberos 4/5, IPsec, SSL, PKIX, and X.509 Email security: Key elements of a secure email system-plus detailed coverage of PEM, S/MIME, and PGP Web security: Security issues associated with URLs, HTTP, HTML, and cookies Security implementations in diverse platforms, including Windows, NetWare, and Lotus Notes The authors go far beyond documenting standards and technology: They contrast competing schemes, explain strengths and weaknesses, and identify the crucial errors most likely to compromise secure systems. Network Security will appeal to a wide range of professionals, from those who design or evaluate security systems to system administrators and programmers who want a better understanding of this important

field. It can also be used as a textbook at the graduate or advanced undergraduate level.

This text provides a practical survey of both the principles and practice of cryptography and network security. First, the basic issues to be addressed by a network security capability are explored through a tutorial and survey of cryptography and network security technology. Then, the practice of network security is explored via practical applications that have been implemented and are in use today.

As industries are rapidly being digitalized and information is being more heavily stored and transmitted online, the security of information has become a top priority in securing the use of online networks as a safe and effective platform. With the vast and diverse potential of artificial intelligence (AI) applications, it has become easier than ever to identify cyber vulnerabilities, potential threats, and the identification of solutions to these unique problems. The latest tools and technologies for AI applications have untapped potential that conventional systems and human security systems cannot meet, leading AI to be a frontrunner in the fight against malware, cyber-attacks, and various security issues. However, even with the tremendous progress AI has made within the sphere of security, it's important to understand the impacts, implications, and critical issues and challenges of AI applications along with the many benefits and emerging trends in this essential field of security-based research. Research Anthology on Artificial Intelligence Applications in Security seeks to address the fundamental advancements and

technologies being used in AI applications for the security of digital data and information. The included chapters cover a wide range of topics related to AI in security stemming from the development and design of these applications, the latest tools and technologies, as well as the utilization of AI and what challenges and impacts have been discovered along the way. This resource work is a critical exploration of the latest research on security and an overview of how AI has impacted the field and will continue to advance as an essential tool for security, safety, and privacy online. This book is ideally intended for cyber security analysts, computer engineers, IT specialists, practitioners, stakeholders, researchers, academicians, and students interested in AI applications in the realm of security research.

This book constitutes the refereed proceedings of the 5th International Conference on Applied Cryptography and Network Security, ACNS 2007, held in Zhuhai, China, June 2007. The 31 revised full papers cover signature schemes, computer and network security, cryptanalysis, group-oriented security, cryptographic protocols, anonymous authentication, identity-based cryptography, and security in wireless, ad-hoc, and peer-to-peer networks.

An all-practical guide to the cryptography behind common tools and protocols that will help you make excellent security choices for your systems and applications. In Real-World Cryptography, you will find: Best practices for using cryptography Diagrams and explanations of cryptographic algorithms Implementing digital signatures and zero-

knowledge proofs Specialized hardware for attacks and highly adversarial environments Identifying and fixing bad practices Choosing the right cryptographic tool for any problem Real-World Cryptography reveals the cryptographic techniques that drive the security of web APIs, registering and logging in users, and even the blockchain. You'll learn how these techniques power modern security, and how to apply them to your own projects. Alongside modern methods, the book also anticipates the future of cryptography, diving into emerging and cutting-edge advances such as cryptocurrencies, and post-quantum cryptography. All techniques are fully illustrated with diagrams and examples so you can easily see how to put them into practice. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Cryptography is the essential foundation of IT security. To stay ahead of the bad actors attacking your systems, you need to understand the tools, frameworks, and protocols that protect your networks and applications. This book introduces authentication, encryption, signatures, secret-keeping, and other cryptography concepts in plain language and beautiful illustrations. About the book Real-World Cryptography teaches practical techniques for day-to-day work as a developer, sysadmin, or security practitioner. There's no complex math or jargon: Modern cryptography methods are explored through clever graphics and real-world use cases. You'll learn building blocks like hash functions and signatures; cryptographic protocols like HTTPS and secure messaging; and cutting-edge advances

like post-quantum cryptography and cryptocurrencies. This book is a joy to read—and it might just save your bacon the next time you're targeted by an adversary after your data. What's inside Implementing digital signatures and zero-knowledge proofs Specialized hardware for attacks and highly adversarial environments Identifying and fixing bad practices Choosing the right cryptographic tool for any problem About the reader For cryptography beginners with no previous experience in the field. About the author David Wong is a cryptography engineer. He is an active contributor to internet standards including Transport Layer Security. Table of Contents PART 1 PRIMITIVES: THE INGREDIENTS OF CRYPTOGRAPHY 1 Introduction 2 Hash functions 3 Message authentication codes 4 Authenticated encryption 5 Key exchanges 6 Asymmetric encryption and hybrid encryption 7 Signatures and zero-knowledge proofs 8 Randomness and secrets PART 2 PROTOCOLS: THE RECIPES OF CRYPTOGRAPHY 9 Secure transport 10 End-to-end encryption 11 User authentication 12 Crypto as in cryptocurrency? 13 Hardware cryptography 14 Post-quantum cryptography 15 Is this it? Next-generation cryptography 16 When and where cryptography fails