

SMART CARD SECURITY

Intro

- Physical/ PACS (E lock, credit cards, IC Card)
- Portable ID (claim) & Authentication (proof)
- Type-II (Something U Have), PIN (read)
- Part of Multi-factor (not alone, SSO password)
- **DoD CAC**/ PIV Cards (Pic+, Wear/ Login, Dual F)
- PKI Certificates/keys -(Crypto/ HSM, Sign email)
- App data, access accountability, evac, websites

Contact

- No own power
- Inserted – Electric Read

Contactless

- RFID Cards (Wireless, Transponder)
- No own power
- Antenna wire - EM Field (Power, I/O)

Design

- IC Chip (Memory) & Microprocessor
- **Power/ Timing Side Channel** (Algo/ Electronics/RF)
- **Micro-probing** - Microscope to electrical contact with bus lines (Override, Delete, DFA 2004 AES IC)
- Temper resistance (PIN Encrypt/ wipe)
- Strip (2mm)/ Diagonal (chip, bar-code, magnetic)
- **Reader cost, Magnetic** - Passive (No IC/ Processor)

- Hybrid - 2 Chips
- Combi - 1 Chip



Smart Card Security And Applications

Gupta, B. B.,Agrawal, Dharma P.



Smart Card Security And Applications:

Smart Card Security and Applications, Second Edition Mike Hendry, 2001 This extensively updated edition of the popular book offers a current overview of the ways smart cards address the computer security issues of today's varied applications Brand new discussions on multiapplication operating systems computer networks and the Internet are included to keep technical and business professionals abreast of the latest developments in this field Smart Cards, Tokens, Security and Applications Keith Mayes, Konstantinos Markantonakis, 2017-05-18 This book provides a broad overview of the many card systems and solutions that are in practical use today This new edition adds content on RFIDs embedded security attacks and countermeasures security evaluation javacards banking or payment cards identity cards and passports mobile systems security and security management A step by step approach educates the reader in card types production operating systems commercial applications new technologies security design attacks application development deployment and lifecycle management By the end of the book the reader should be able to play an educated role in a smart card related project even to programming a card application This book is designed as a textbook for graduate level students in computer science It is also as an invaluable post graduate level reference for professionals and researchers This volume offers insight into benefits and pitfalls of diverse industry government financial and logistics aspects while providing a sufficient level of technical detail to support technologists information security specialists engineers and researchers **Smart Card Security** B.B. Gupta, Megha Quamara, 2019-08-08 Smart Card Security Applications Attacks and Countermeasures provides an overview of smart card technology and explores different security attacks and countermeasures associated with it It covers the origin of smart cards types of smart cards and how they work It discusses security attacks associated with hardware software data and users that are a part of smart card based systems The book starts with an introduction to the concept of smart cards and continues with a discussion of the different types of smart cards in use today including various aspects regarding their configuration underlying operating system and usage It then discusses different hardware and software level security attacks in smart card based systems and applications and the appropriate countermeasures for these security attacks It then investigates the security attacks on confidentiality integrity and availability of data in smart card based systems and applications including unauthorized remote monitoring communication protocol exploitation denial of service DoS attacks and so forth and presents the possible countermeasures for these attacks The book continues with a focus on the security attacks against remote user authentication mechanisms in smart card based applications and proposes a possible countermeasure for these attacks Then it covers different communication standards for smart card based applications and discusses the role of smart cards in various application areas as well as various open source tools for the development and maintenance of smart card based systems and applications The final chapter explains the role of blockchain technology for securing smart card based transactions and quantum cryptography for designing secure smart card based algorithms Smart

Card Security Applications Attacks and Countermeasures provides you with a broad overview of smart card technology and its various applications

Smart Card Security and Applications Mike Hendry, 2001 Annotation This extensively updated edition of the popular book offers a current overview of the ways smart cards address the computer security issues of today's varied applications Brand new discussions on multiapplication operating systems computer networks and the Internet are included to keep technical and business professionals abreast of the latest developments in this field

Smart Card Applications Wolfgang Rankl, 2007-04-30 A practical guide to the specification design and programming of smart card systems for working applications More than 3 billion smartcards are produced every year Generally defined as any pocket sized card with embedded integrated circuits or chips they have a huge number of applications including travel cards chip and pin cards pet tags mobile phone SIMs and pallet trackers Now with modern Smart Card technology such as Java Card and Basic Card it is possible for everyone to create his or her own applications on a smart card This book provides generic solutions for programming smart cards enabling the creation of working applications and systems Key features Presents a comprehensive introduction to the topic of smart cards explaining component elements and the smart card microcontrollers Sets out information on operating systems with case studies of a range of applications including credit card security mobile phones and transport payment cards Gives detailed advice on the monitoring of smart card applications recognizing potential attacks on security and improving system integrity Provides modules and examples so that all types of systems can be built up from a small number of individual components Offers guidelines on avoiding and overcoming design errors Ideal for practising engineers and designers looking to implement smart cards in their business it is also a valuable reference for postgraduate students taking courses on embedded system and smart card design

Multi-application Smart Cards Mike Hendry, 2007-06-28 Multi application smart cards have yet to realise their enormous potential partly because few people understand the technology market and behavioural issues involved Here Mike Hendry sets out to fill this knowledge gap with a comprehensive and accessible guide Following a review of the state of the art in smart card technology the book describes the business requirements of each smart card using sector and the systems required to support multiple applications Implementation aspects including security are treated in detail and numerous international case studies cover identity telecoms banking and transportation applications Lessons are drawn from these studies to help deliver more successful projects in the future Invaluable for users and integrators specifying evaluating and integrating multi application systems the book will also be useful to terminal card and system designers network IT and security managers and software specialists

Handbook of Research on Cloud Computing and Big Data Applications in IoT Gupta, B. B., Agrawal, Dharma P., 2019-04-12 Today cloud computing big data and the internet of things IoT are becoming indubitable parts of modern information and communication systems They cover not only information and communication technology but also all types of systems in society including within the realms of business finance industry manufacturing and management Therefore it is

critical to remain up to date on the latest advancements and applications as well as current issues and challenges The Handbook of Research on Cloud Computing and Big Data Applications in IoT is a pivotal reference source that provides relevant theoretical frameworks and the latest empirical research findings on principles challenges and applications of cloud computing big data and IoT While highlighting topics such as fog computing language interaction and scheduling algorithms this publication is ideally designed for software developers computer engineers scientists professionals academicians researchers and students

Smart Card Research and Advanced Applications Stefan Mangard,2013-03-14 This book constitutes the thoroughly refereed post conference proceedings of the 11th International Conference on Smart Card Research and Advanced Applications CARDIS 2012 held in Graz Austria in November 2012 The 18 revised full papers presented together with an invited talk were carefully reviewed and selected from 48 submissions The papers are organized in topical sections on Java card security protocols side channel attacks implementations and implementations for resource constrained devices

Smart Card Research and Advanced Applications Dieter Gollmann,Jean-Louis Lanet,Julien Iguchi-Cartigny,2010-04-11 This book constitutes the refereed proceedings of the 9th IFIP WG 8 8 11 2 International Conference on Smart Card Research and Advanced Application CARDIS 2010 held in Passau Germany in April 2010 The 16 revised full papers presented were carefully reviewed and selected from numerous submissions The papers are organized in topical sections on mathematical algorithms side channel analysis systems logical attacks fault analysis and privacy

Foundations and Practice of Security Joaquin Garcia-Alfaro,Pascal Lafourcade,2012-01-09 This book constitutes the carefully refereed and revised selected papers of the 4th Canada France MITACS Workshop on Foundations and Practice of Security FPS 2011 held in Paris France in May 2011 The book contains a revised version of 10 full papers accompanied by 3 keynote addresses 2 short papers and 5 ongoing research reports The papers were carefully reviewed and selected from 30 submissions The topics covered are pervasive security and threshold cryptography encryption cryptanalysis and automatic verification and formal methods in network security

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