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Encryption and Signature, Revisited -- Introduction -- Our Contribution -- Further Related Work -- Preliminaries -- Combined Signature and Encryption Schemes -- A Cartesian Product Construction -- An Insecure CSE Scheme whose Components are Secure -- A Generic Construction from IBE -- A More Efficient Construction -- Comparison of Schemes -- Conclusions and Future Research -- References -- Polly Cracker, Revisited -- Introduction -- Related Work -- Preliminaries -- Gröbner Basis and Ideal Membership Problems -- Symmetric Polly Cracker: Noise-Free Version -- Homomorphic Symmetric Encryption -- The Scheme -- Security -- Symmetric-to-Asymmetric Conversion -- Gröbner Bases with Noise -- Hardness Assumptions and Justifications -- Polly Cracker with Noise -- References -- Database Privacy -- Oblivious RAM with $O((\log N)^3)$ Worst-Case Cost -- Introduction -- Our Contributions -- Related Work -- Preliminaries -- Defining O-RAM with Enriched Operations -- Relationship with the Standard O-RAM Definition -- Implementing Enriched Semantics -- Encryption and Authentication -- Two Simple O-RAM Constructions with Deterministic Guarantees -- Basic Construction -- Overview of the Binary Tree Construction -- Detailed Construction -- Security Analysis -- Asymptotic Performance of the Basic Construction -- Recursive Construction and How to Achieve the Desired Asymptotics. Recursive O-RAM Construction: $O(1)$ Client-Side Storage -- References -- Noiseless Database Privacy -- Introduction -- Our Privacy Notion -- Boolean Queries -- The No Auxiliary Information Setting -- Handling Auxiliary Information -- Handling Multiple Queries in Adversarial Refreshment Model -- Real Queries -- Sums of Functions of Database Rows -- Privacy Analysis of $\sum_{i=1}^n a_{ij} t_j$ -- Privacy under Multiple Queries on Changing Databases -- References -- Hash Function -- The Preimage Security of Double-Block-Length Compression Functions -- Introduction -- The Model -- An Example Case -- Preimage Security Results for Hirose's Scheme -- Preimage Security Results for Abreast-DM -- Preimage Security Results for Tandem-DM -- Conclusion -- References -- Rebound Attack on JH42 -- Introduction -- Preliminaries -- The JH42 Hash Function -- Properties of the Linear Transformation L -- Observations on the Compression Function -- The Rebound Attack -- Semi-free-start Internal Near-Collisions -- Matching the Active Bytes -- Matching the Passive Bytes -- Outbound Phase -- Distinguishers on JH -- Distinguishers on the Reduced Round Internal Permutation -- Distinguishers on the Full Internal Permutation -- Distinguishers on the Full Compression Function -- Conclusion -- References -- Second-Order Differential Collisions for Reduced SHA-256 -- Introduction -- Higher-Order Differential Collisions for Compression Functions -- Second-Order Differential Collision for Block-Cipher-Based Compression Functions -- Related Work -- Application to SHA-256 -- Description of SHA-256 -- Differential Characteristics -- Complexity of the Attack -- Applications to Related Primitives -- Application to SHA-512 -- Application to SHACAL-2 -- Conclusions -- References -- Finding SHA-2 Characteristics: Searching through a Minefield of Contradictions -- Introduction. Description of SHA-256 -- Basic Attack Strategy -- Determining a Starting Point -- Searching for Valid Differential Characteristics and Conforming Message Pairs in SHA-2 -- Difference and Condition Propagation in SHA-2 -- Alternative Description of SHA-2 -- Generalized Conditions -- Efficiently Implementing the Propagation of Generalized Conditions -- Two-Bit Conditions -- Inconsistency Checks -- Searching for Differential Characteristics -- Search Strategy -- Results -- Conclusions and Future Work -- References -- Symmetric Key Encryption -- Cryptanalysis of ARMADILLO2 -- Introduction --

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Sommario/riassunto

This book constitutes the proceedings of the 17th International Conference on the Theory and Application of Cryptology and Information Security, ASIACRYPT 2011, held in Seoul, Korea, in December 2011. The 40 revised papers included in this volume were carefully reviewed and selected from 266 submissions. The contributions are organized in topical sections on lattices and quantum cryptography; public key encryption; database privacy; hash function; symmetric key encryption; zero knowledge proof; universal composability; foundation; secure computation and secret sharing; public key signature; and leakage resilient cryptography.
