Practical Reverse Engineering Download

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Security Warrior McGraw Hill Professional
Reverse engineering encompasses a wide spectrum of activities aimed at extracting information on the function, structure, and behavior of man-made or natural artifacts. Increases in data sources, processing power, and improved data mining and processing algorithms have opened new fields of application for reverse engineering. In this book, we present twelve applications of reverse engineering in the software engineering, shape engineering, and medical and life sciences application domains. The book can serve as a guideline to practitioners in the above fields to the state-of-the-art in reverse engineering techniques, tools, and use-cases, as well as an overview of open challenges for reverse engineering researchers.
Malware Forensics Packt Publishing Ltd
Take a practioner ' s approach in analyzing the Internet of Things (IoT) devices and the security issues facing an IoT architecture. You ' ll review the architecture's central components, from hardware communication interfaces, such as UARTand SPI, to radio protocols, such as BLE or ZigBee. You'll also learn to assess a device physically by opening it, looking at the PCB, and identifying the chipsets and interfaces. You'll then use that information to gain entry to the device or to perform other actions, such as dumping encryption keys and firmware. As the IoT rises to one of the most popular tech trends, manufactures need to take necessary steps to secure devices and protect them from attackers. The IoT Hacker's Handbook breaks down the Internet of Things, exploits it, and reveals how these devices can be built securely. What You ' ll LearnPerform a threat model of a real-world IoT device and locate all possible attacker entry points Use reverse engineering of firmware binaries to identify security issues Analyze,assess, and identify security issues in exploited ARM and MIPS based binariesSniff, capture, and

exploit radio communication protocols, such as Bluetooth Low Energy (BLE), and ZigBee Who This Book is For Those interested in learning about IoT security, such as pentesters working in different domains, embedded device developers, or IT people wanting to move to an Internet of Things security role.

Practical Binary Analysis No Starch Press

At its core, information security deals with the secure and accurate transfer of information. While information security has long been important, it was, perhaps, brought more clearly into mainstream focus with the so-called “Y2K” issue. Te Y2K scare was the fear that c- puter networks and the systems that are controlled or operated by sofware would fail with the turn of the millennium, since their clocks could lose synchronization by not recognizing a number (instruction) with three zeros. A positive outcome of this scare was the creation of several Computer Emergency Response Teams (CERTs) around the world that now work - operatively to exchange expertise and information, and to coordinate in case major problems should arise in the modern IT environment. Te terrorist attacks of 11 September 2001 raised security concerns to a new level. Te - ternational community responded on at least two fronts; one front being the transfer of reliable information via secure networks and the other being the collection of information about - tential terrorists. As a sign of this new emphasis on security, since 2001, all major academic publishers have started technical journals focused on security, and every major communi-tions conference (for example, Globecom and ICC) has organized workshops and sessions on security issues. In addition, the IEEE has created a technical committee on Communication and Information Security. Te ?rst editor was intimately involved with security for the Athens Olympic Games of 2004.

The Ghidra Book Penguin Random House LLC (No Starch)

Hack your antivirus software to stamp out future vulnerabilities The Antivirus Hacker's Handbook guides you through the process of reverse engineering antivirus software. You explore how to detect and exploit vulnerabilities that can be leveraged to improve future software design, protect your network, and anticipate attacks that may sneak through your antivirus' line of defense. You'll begin building your knowledge by diving into the reverse engineering process, which details how to start from a finished antivirus software program and work your way back through its development using the functions and other key elements of the software. Next, you leverage your new knowledge about software development to evade, attack, and exploit antivirus software—all of which can help you strengthen your network and protect your data. While not all viruses are damaging, understanding how to better protect your computer against them can help you maintain the integrity of your network. Discover how to reverse engineer your antivirus

software Explore methods of antivirus software evasion Consider different ways to attack and exploit antivirus software Understand the current state of the antivirus software market, and get recommendations for users and vendors who are leveraging this software The Antivirus Hacker's Handbook is the essential reference for software reverse engineers, penetration testers, security researchers, exploit writers, antivirus vendors, and software engineers who want to understand how to leverage current antivirus software to improve future applications.

Practical Deep Learning for Cloud, Mobile, and Edge "O'Reilly Media, Inc."

This text introduces the spirit and theory of hacking as well as the science behind it all; it also provides some core techniques and tricks of hacking so you can think like a hacker, write your own hacks or thwart potential system attacks.

Hacking the Xbox Cambridge University Press

The process of reverse engineering has proven infinitely useful for analyzing Original Equipment Manufacturer (OEM) components to duplicate or repair them, or simply improve on their design. A guidebook to the rapid-fire changes in this area, Reverse Engineering: Technology of Reinvention introduces the fundamental principles, advanced methodologies, and other essential aspects of reverse engineering. The book ' s primary objective is twofold: to advance the technology of reinvention through reverse engineering and to improve the competitiveness of commercial parts in the aftermarket. Assembling and synergizing material from several different fields, this book prepares readers with the skills, knowledge, and abilities required to successfully apply reverse engineering in diverse fields ranging from aerospace, automotive, and medical device industries to academic research, accident investigation, and legal and forensic analyses. With this mission of preparation in mind, the author offers real-world examples to: Enrich readers ' understanding of reverse engineering processes, empowering them with alternative options regarding part production Explain the latest technologies, practices, specifications, and regulations in reverse engineering Enable readers to judge if a "duplicated or repaired" part will meet the design functionality of the OEM part This book sets itself apart by covering seven key subjects: geometric measurement, part evaluation, materials identification, manufacturing process verification, data analysis, system compatibility, and intelligent property protection. Helpful in making new, compatible products that are cheaper than others on the market, the author provides the tools to uncover or clarify features of commercial products that were either previously unknown, misunderstood, or not used in the most effective way.

What Would Google Do? CRC Press

"This book builds on a series of published articles...these articles grew out of a dissertation written under the auspices of Markus Wild and Martin Kusch"-- Acknowledgement.

Advanced Windows Debugging John Wiley & Sons

A guide to rootkits describes what they are, how they work, how to build them, and how to detect them.

Practical Reverse Engineering Packt Publishing Ltd

More practical less theory KEY FEATURES ● In-depth practical demonstration with multiple examples of reverse engineering concepts. ● Provides a step-by-step approach to reverse engineering, including assembly instructions. ● Helps security researchers to crack application code and logic using reverse engineering open source tools. ● Reverse engineering strategies for simple-to-complex applications like Wannacry ransomware and Windows calculator. DESCRIPTION The book ' Implementing Reverse Engineering ' begins with a step-by-step explanation of the fundamentals of reverse engineering. You will learn how to use reverse engineering to find bugs and hacks in real-world applications. This book is divided into three sections. The first section is an exploration of the reverse engineering process. The second section explains

reverse engineering of applications, and the third section is a collection of real-world use-cases with solutions. The first section introduces the basic concepts of a computing system and the data building blocks of the computing system. This section also includes open-source tools such as CFF Explorer, Ghidra, Cutter, and x32dbg. The second section goes over various reverse engineering practicals on various applications to give users hands-on experience. In the third section, reverse engineering of Wannacry ransomware, a well-known Windows application, and various exercises are demonstrated step by step. In a very detailed and step-by-step manner, you will practice and understand different assembly instructions, types of code calling conventions, assembly patterns of applications with the printf function, pointers, array, structure, scanf, strcpy function, decision, and loop control structures. You will learn how to use open-source tools for reverse engineering such as portable executable editors, disassemblers, and debuggers. WHAT YOU WILL LEARN ● Understand different code calling conventions like CDECL, STDCALL, and FASTCALL with practical illustrations. ● Analyze and break WannaCry ransomware using Ghidra. ● Using Cutter, reconstruct application logic from the assembly code. ● Hack the Windows calculator to modify its behavior. WHO THIS BOOK IS FOR This book is for cybersecurity researchers, bug bounty hunters, software developers, software testers, and software quality assurance experts who want to perform reverse engineering for advanced security from attacks. Interested readers can also be from high schools or universities (with a Computer Science background). Basic programming knowledge is helpful but not required. TABLE OF CONTENTS 1. Impact of Reverse Engineering 2. Understanding Architecture of x86 machines 3. Up and Running with Reverse Engineering tools 4. Walkthrough on Assembly Instructions 5. Types of Code Calling Conventions 6. Reverse Engineering Pattern of Basic Code 7. Reverse Engineering Pattern of the printf() Program 8. Reverse Engineering Pattern of the Pointer Program 9. Reverse Engineering Pattern of the Decision Control Structure 10. Reverse Engineering Pattern of the Loop Control Structure 11. Array Code Pattern in Reverse Engineering 12. Structure Code Pattern in Reverse Engineering 13. Scanf Program Pattern in Reverse Engineering 14. strcpy Program Pattern in Reverse Engineering 15. Simple Interest Code Pattern in Reverse Engineering 16. Breaking Wannacry Ransomware with Reverse Engineering 17. Generate Pseudo Code from the Binary File 18. Fun with Windows Calculator Using Reverse Engineering

Gray Hat Python No Starch Press

In a book that's one part prophecy, one part thought experiment, one part manifesto, and one part survival manual, internet impresario and blogging pioneer Jeff Jarvis reverse-engineers Google, the fastest-growing company in history, to discover forty clear and straightforward rules to manage and live by. At the same time, he illuminates the new worldview of the internet generation: how it challenges and destroys—but also opens up—vast new opportunities. His findings are counterintuitive, imaginative, practical, and above all visionary, giving readers a glimpse of how everyone and everything—from corporations to governments, nations to individuals—must evolve in the Google era. What Would Google Do? is an astonishing, mind-opening book that, in the end, is not about Google. It's about you.

Rootkits No Starch Press

Detect potentials bugs in your code or program and develop your own tools using the Ghidra reverse engineering framework developed by the NSA project Key FeaturesMake the most of Ghidra on different platforms such as Linux, Windows, and macOSLeverage a variety of plug-ins and extensions to perform disassembly, assembly, decompilation, and scriptingDiscover how you can meet your cybersecurity needs by creating custom patches and toolsBook Description Ghidra, an open source software reverse engineering (SRE) framework created by the NSA research directorate, enables users to analyze compiled code on any platform, whether Linux, Windows, or macOS. This book is a starting point for developers interested in leveraging Ghidra to create patches and extend tool capabilities to meet their cybersecurity needs. You'll begin by installing Ghidra and exploring its features,

and gradually learn how to automate reverse engineering tasks using Ghidra plug-ins. You'll then see how to set up an environment to perform malware analysis using Ghidra and how to use it in the headless mode. As you progress, you'll use Ghidra scripting to automate the task of identifying vulnerabilities in executable binaries. The book also covers advanced topics such as developing Ghidra plug-ins, developing your own GUI, incorporating new process architectures if needed, and contributing to the Ghidra project. By the end of this Ghidra book, you'll have developed the skills you need to harness the power of Ghidra for analyzing and avoiding potential vulnerabilities in code and networks. What you will learnGet to grips with using Ghidra's features, plug-ins, and extensionsUnderstand how you can contribute to GhidraFocus on reverse engineering malware and perform binary auditingAutomate reverse engineering tasks with Ghidra plug-insBecome well-versed with developing your own Ghidra extensions, scripts, and featuresAutomate the task of looking for vulnerabilities in executable binaries using Ghidra scriptingFind out how to use Ghidra in the headless modeWho this book is for This SRE book is for developers, software engineers, or any IT professional with some understanding of cybersecurity essentials. Prior knowledge of Java or Python, along with experience in programming or developing applications, is required before getting started with this book.

The Antivirus Hacker's Handbook Apress

Practical Reverse EngineeringJohn Wiley & Sons

Practical Statistics for Data Scientists No Starch Press

Analyzing how hacks are done, so as to stop them in the future Reverse engineering is the process of analyzing hardware or software and understanding it, without having access to the source code or design documents. Hackers are able to reverse engineer systems and exploit what they find with scary results. Now the good guys can use the same tools to thwart these threats. Practical Reverse Engineering goes under the hood of reverse engineering for security analysts, security engineers, and system programmers, so they can learn how to use these same processes to stop hackers in their tracks. The book covers x86, x64, and ARM (the first book to cover all three); Windows kernel-mode code rootkits and drivers; virtual machine protection techniques; and much more. Best of all, it offers a systematic approach to the material, with plenty of hands-on exercises and real-world examples. Offers a systematic approach to understanding reverse engineering, with hands-on exercises and real-world examples Covers x86, x64, and advanced RISC machine (ARM) architectures as well as deobfuscation and virtual machine protection techniques Provides special coverage of Windows kernel-mode code (rootkits/drivers), a topic not often covered elsewhere, and explains how to analyze drivers step by step Demystifies topics that have a steep learning curve Includes a bonus chapter on reverse engineering tools Practical Reverse Engineering: Using x86, x64, ARM, Windows Kernel, and Reversing Tools provides crucial, up-to-date guidance for a broad range of IT professionals.

Reverse Engineering Code with IDA Pro John Wiley & Sons

Stop manually analyzing binary! Practical Binary Analysis is the first book of its kind to present advanced binary analysis topics, such as binary instrumentation, dynamic taint analysis, and symbolic execution, in an accessible way. As malware increasingly obfuscates itself and applies anti-analysis techniques to thwart our analysis, we need more sophisticated methods that allow us to raise that dark curtain designed to keep us out--binary analysis can help. The goal of all binary analysis is to determine (and possibly modify) the true properties of binary programs to understand what they really do, rather than what we think they should do. While reverse engineering and disassembly are critical first steps in many forms of binary analysis, there is much more to be learned. This hands-on guide teaches you how to tackle the fascinating but challenging

topics of binary analysis and instrumentation and helps you become proficient in an area typically only mastered by a small group of expert hackers. It will take you from basic concepts to state-of-the-art methods as you dig into topics like code injection, disassembly, dynamic taint analysis, and binary instrumentation. Written for security engineers, hackers, and those with a basic working knowledge of C/C++ and x86-64, Practical Binary Analysis will teach you in-depth how binary programs work and help you acquire the tools and techniques needed to gain more control and insight into binary programs. Once you've completed an introduction to basic binary formats, you'll learn how to analyze binaries using techniques like the GNU/Linux binary analysis toolchain, disassembly, and code injection. You'll then go on to implement profiling tools with Pin and learn how to build your own dynamic taint analysis tools with libdft and symbolic execution tools using Triton. You'll learn how to: - Parse ELF and PE binaries and build a binary loader with libbfd - Use data-flow analysis techniques like program tracing, slicing, and reaching definitions analysis to reason about runtime flow of your programs - Modify ELF binaries with techniques like parasitic code injection and hex editing - Build custom disassembly tools with Capstone - Use binary instrumentation to circumvent anti-analysis tricks commonly used by malware - Apply taint analysis to detect control hijacking and data leak attacks - Use symbolic execution to build automatic exploitation tools With exercises at the end of each chapter to help solidify your skills, you'll go from understanding basic assembly to performing some of the most sophisticated binary analysis and instrumentation. Practical Binary Analysis gives you what you need to work effectively with binary programs and transform your knowledge from basic understanding to expert-level proficiency.

Bioinspiration and Biomimicry in Chemistry John Wiley & Sons

Whether you ’ re a software engineer aspiring to enter the world of deep learning, a veteran data scientist, or a hobbyist with a simple dream of making the next viral AI app, you might have wondered where to begin. This step-by-step guide teaches you how to build practical deep learning applications for the cloud, mobile, browsers, and edge devices using a hands-on approach. Relying on years of industry experience transforming deep learning research into award-winning applications, Anirudh Koul, Siddha Ganju, and Meher Kasam guide you through the process of converting an idea into something that people in the real world can use. Train, tune, and deploy computer vision models with Keras, TensorFlow, Core ML, and TensorFlow Lite Develop AI for a range of devices including Raspberry Pi, Jetson Nano, and Google Coral Explore fun projects, from Silicon Valley ’ s Not Hotdog app to 40+ industry case studies Simulate an autonomous car in a video game environment and build a miniature version with reinforcement learning Use transfer learning to train models in minutes Discover 50+ practical tips for maximizing model accuracy and speed, debugging, and scaling to millions of users

Reverse Engineering "O'Reilly Media, Inc."

Rootkits and Bootkits will teach you how to understand and counter sophisticated, advanced threats buried deep in a machine ’ s boot process or UEFI firmware. With the aid of numerous case studies and professional research from three of the world ’ s leading security experts, you ’ ll trace malware development over time from rootkits like TDL3 to present-day UEFI implants and examine how they infect a system, persist through reboot, and evade security software. As you inspect and dissect real malware, you ’ ll learn: • How Windows boots—including 32-bit, 64-bit, and UEFI mode—and where to find vulnerabilities • The details of boot process security mechanisms like Secure Boot, including an overview of Virtual Secure Mode (VSM) and Device Guard • Reverse engineering and forensic techniques for analyzing real malware, including bootkits like Rovnix/Carberp, Gapz, TDL4, and the infamous rootkits TDL3 and Festi • How to

perform static and dynamic analysis using emulation and tools like Bochs and IDA Pro • How to better understand the delivery stage of threats against BIOS and UEFI firmware in order to create detection capabilities • How to use virtualization tools like VMware Workstation to reverse engineer bootkits and the Intel Chipsec tool to dig into forensic analysis Cybercrime syndicates and malicious actors will continue to write ever more persistent and covert attacks, but the game is not lost. Explore the cutting edge of malware analysis with Rootkits and Bootkits. Covers boot processes for Windows 32-bit and 64-bit operating systems.

Reversing Practical Reverse Engineering A guide to using the Ghidra software reverse engineering tool suite. The result of more than a decade of research and development within the NSA, the Ghidra platform was developed to address some of the agency's most challenging reverse-engineering problems. With the open-source release of this formerly restricted tool suite, one of the world's most capable disassemblers and intuitive decompilers is now in the hands of cybersecurity defenders everywhere -- and The Ghidra Book is the one and only guide you need to master it. In addition to discussing RE techniques useful in analyzing software and malware of all kinds, the book thoroughly introduces Ghidra's components, features, and unique capacity for group collaboration. You'll learn how to: • Navigate a disassembly • Use Ghidra's built-in decompiler to expedite analysis • Analyze obfuscated binaries • Extend Ghidra to recognize new data types • Build new Ghidra analyzers and loaders • Add support for new processors and instruction sets • Script Ghidra tasks to automate workflows • Set up and use a collaborative reverse engineering environment Designed for beginner and advanced users alike, The Ghidra Book will effectively prepare you to meet the needs and challenges of RE, so you can analyze files like a pro.

Product Design "O'Reilly Media, Inc." Malware analysis is big business, and attacks can cost a company dearly. When malware breaches your defenses, you need to act quickly to cure current infections and prevent future ones from occurring. For those who want to stay ahead of the latest malware, Practical Malware Analysis will teach you the tools and techniques used by professional analysts. With this book as your guide, you'll be able to safely analyze, debug, and disassemble any malicious software that comes your way. You'll learn how to: – Set up a safe virtual environment to analyze malware – Quickly extract network signatures and host-based indicators – Use key analysis tools like IDA Pro, OllyDbg, and WinDbg – Overcome malware tricks like obfuscation, anti-disassembly, anti-debugging, and anti-virtual machine techniques – Use your newfound knowledge of Windows internals for malware analysis – Develop a methodology for unpacking malware and get practical experience with five of the most popular packers – Analyze special cases of malware with shellcode, C++, and 64-bit code Hands-on labs throughout the book challenge you to practice and synthesize your skills as you dissect real malware samples, and pages of detailed dissections offer an over-the-shoulder look at how the pros do it. You'll learn how to crack open malware to see how it really works, determine what damage it has done, thoroughly clean your network, and ensure that the malware never comes back. Malware analysis is a cat-and-mouse game with rules that are constantly changing, so make sure you have the fundamentals. Whether you're tasked with securing one network or a thousand networks, or you're making a living as a malware analyst, you'll find what you need to succeed in Practical Malware Analysis.

Rootkits and Bootkits oshean collins
Discover the techniques behind beautiful design by deconstructing designs to understand them The term 'hacker' has been redefined to consist of anyone who has an insatiable curiosity as to how things work—and how they can try to make them better. This book is aimed at hackers of all skill levels and explains the classical principles and techniques behind beautiful designs by deconstructing those designs in order to understand what makes them so remarkable. Author and designer David Kadavy provides you with the framework for understanding good design and places a special emphasis on interactive mediums. You'll explore color theory, the role of proportion and geometry in design, and the relationship between medium and form. Packed with unique reverse engineering design examples, this book inspires and encourages you to discover and create new beauty in a variety of formats. Breaks down and studies the classical principles and techniques behind the creation of beautiful design Illustrates cultural and contextual considerations in communicating to a specific audience Discusses why design is important, the purpose of design, the various constraints of design, and how today's fonts are designed with the screen in mind Dissects the elements of color, size, scale, proportion, medium, and form Features a unique range of examples, including the graffiti in the ancient city of Pompeii, the lack of the color black in Monet's art, the style and sleekness of the iPhone, and more By the end of this book, you'll be able to apply the featured design principles to your own web designs, mobile apps, or other digital work.

System Engineering Analysis, Design, and Development John Wiley & Sons
A serious source of information for those looking to reverse engineer business deals It ' s clear from the current turbulence on Wall Street that the inner workings of its most complex transactions are poorly understood. Wall Street deals parse risk using intricate legal terminology that is difficult to translate into an analytical model. Reverse Engineering Deals on Wall Street: A Step-By-Step Guide takes readers through a detailed methodology of deconstructing the public deal documentation of a modern Wall Street transaction and applying the deconstructed elements to create a fully dynamic model that can be used for risk and investment analysis. Appropriate for the current market climate, an actual residential mortgage backed security (RMBS) transaction is taken from prospectus to model by the end of the book. Step by step, Allman walks the reader through the reversing process with textual excerpts from the prospectus and discussions on how it directly transfers to a model. Each chapter begins with a discussion of concepts with exact references to an example prospectus, followed by a section called "Model Builder," in which Allman translates the theory into a fully functioning model for the example deal. Also included is valuable VBA code and detailed explanation that shows proper valuation methods including loan level amortization and full trigger modeling. Aside from investment analysis this text can help anyone who wants to keep track of the competition, learn from others public transactions, or set up a system to audit one ' s own models. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.