Advanced Reverse Engineering Of Software Version 1

Malware Reverse Engineering
The Secret Life of Programs
The REDO Compendium
Reverse Engineering
Reverse Engineering Code with IDA Pro
Practical Malware Analysis
Advanced Manufacturing Technology for Medical Applications
Ghidra Software Reverse Engineering for Beginners
Functional Reverse Engineering of Strategic and Non-Strategic Machine Tools
Reversing
Proceedings, Seventh Working Conference on Reverse Engineering
Advanced Symbolic Analysis for Compilers
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x86 Software Reverse-Engineering, Cracking, and Counter-Measures
Model Driven Architecture for Reverse Engineering Technologies: Strategic Directions and System Evolution
Advanced Apple Debugging & Reverse Engineering (Fourth Edition)
Reverse Engineering
Mastering Reverse Engineering
Reverse Engineering of Object Oriented Code
Implementing Reverse Engineering
Advanced Apple Debugging & Reverse Engineering Second Edition
Reverse Engineering and Software Maintenance
Rootkits and Bootkits
Advanced Concepts, Life Cycle Models and Tools for Object-oriented Software Development
Practical Reverse Engineering
The Development of Advanced Method in Reverse Engineering Technique for Software Maintenance
The Antivirus Hacker's Handbook
Software Reverse Engineering
Reverse Engineering
Functional Reverse Engineering of Machine Tools
Write Great Code, Volume 1
Hacker Disassembling Uncovered: Powerful Techniques To Safeguard Your Programming
Constraint-Based Design Recovery for Software Reengineering
Learning Linux Binary Analysis
Advanced Reverse Engineering Techniques for Binary Code Security Retrofitting and Analysis

Reverse Engineering of Object Oriented Code
Reverse Engineering
Advanced Apple Debugging & Reverse Engineering
The Ghidra Book
Software Reuse and Reverse Engineering in Practice

ADRIENNE BATES

Malware Reverse Engineering No Starch Press
If you want to master the art and science of reverse engineering code with IDA Pro for security R&D or software debugging, this is the book for you. Highly organized and sophisticated criminal entities are constantly developing more complex, obfuscated, and armored viruses, worms, Trojans, and botnets. IDA Pro's interactive interface and programmable development language provide you with complete control over code disassembly and debugging. This is the only book which focuses exclusively on the world's most powerful and popular took for reverse engineering code. - Reverse Engineer REAL Hostile Code To follow along with this chapter, you must download a file called !DANGER!INFECTEDMALWARE!DANGER!.. 'nuff said - Portable Executable (PE) and Executable and Linking Formats (ELF) Understand the physical layout of PE and ELF files, and analyze the components that are essential to reverse engineering - Break Hostile Code Armor and Write your own Exploits Understand execution flow, trace functions, recover hard coded passwords, find vulnerable functions, backtrace execution, and craft a buffer overflow - Master Debugging Debug in IDA Pro, use a debugger while reverse engineering, perform heap and stack access modification, and use other debuggers - Stop Anti-Reversing Anti-reversing, like reverse engineering or coding in assembly, is an art form. The trick of course is to try to stop the person reversing the application. Find out how! - Track a Protocol through a Binary and Recover its Message Structure Trace execution flow from a read event, determine the structure of a protocol, determine if the protocol has any undocumented messages, and use IDA Pro to determine the functions that process a particular message - Develop IDA Scripts and Plug-ins Learn the basics of IDA scripting and syntax, and write IDC scripts and plug-ins to automate even the most complex tasks
The Secret Life of Programs Tectum Verlag DE
Assesses the benefits of reverse engineering as a workable strategy for software maintenance. Describes and analyzes the methodological issues and tools which support reverse engineering, explaining how--and when--the REDO method might best be employed. Provides useful information for developing a ``cookbook'' of reverse engineering procedures, tailor-made for the individual company. Gives advice on how CASE tools might be used to support the methodology.
The REDO Compendium CRC Press
Uncover the secrets of Linux binary analysis with this handy guide About This Book Grasp the intricacies of the ELF binary format of UNIX and Linux Design tools for reverse engineering and binary forensic analysis Insights into UNIX and Linux memory infections, ELF

viruses, and binary protection schemes Who This Book Is For If you are a software engineer or reverse engineer and want to learn more about Linux binary analysis, this book will provide you with all you need to implement solutions for binary analysis in areas of security, forensics, and antivirus. This book is great for both security enthusiasts and system level engineers. Some experience with the C programming language and the Linux command line is assumed. What You Will Learn Explore the internal workings of the ELF binary format Discover techniques for UNIX Virus infection and analysis Work with binary hardening and software anti-tamper methods Patch executables and process memory Bypass anti-debugging measures used in malware Perform advanced forensic analysis of binaries Design ELF-related tools in the C language Learn to operate on memory with ptrace In Detail Learning Linux Binary Analysis is packed with knowledge and code that will teach you the inner workings of the ELF format, and the methods used by hackers and security analysts for virus analysis, binary patching, software protection and more. This book will start by taking you through UNIX/Linux object utilities, and will move on to teaching you all about the ELF specimen. You will learn about process tracing, and will explore the different types of Linux and UNIX viruses, and how you can make use of ELF Virus Technology to deal with them. The latter half of the book discusses the usage of Kprobe instrumentation for kernel hacking, code patching, and debugging. You will discover how to detect and disinfect kernel-mode rootkits, and move on to analyze static code. Finally, you will be walked through complex userspace memory infection analysis. This book will lead you into territory that is uncharted even by some experts; right into the world of the computer hacker. Style and approach The material in this book provides detailed insight into the arcane arts of hacking, coding, reverse engineering Linux executables, and dissecting process memory. In the computer security industry these skills are priceless, and scarce. The tutorials are filled with knowledge gained through first hand experience, and are complemented with frequent examples including source code.

Reverse Engineering IEEE Computer Society Press

The objective of program analysis is to automatically determine the p- perties of a program. Tools of software development, such as compilers, p- formance estimators, debuggers, reverse-engineering tools, program veri?- tion/testing/proving systems, program comprehension systems, and program specializationtoolsarelargelydependentonprogramanalysis. Advancedp- gram analysis can: help to ?nd program errors; detect and tune performan- critical code regions; ensure assumed constraints on data are not violated; tailor a generic program to suit a speci?c application; reverse-engineer so- ware modules, etc. A prominent program analysis technique is symbolic a- lysis, which has attracted substantial attention for many years as it is not dependent on executing a program to examine the semantics of a program, and it can yield very elegant formulations of many analyses. Moreover, the complexity of symbolic analysis can be largely independent of the input data size of a program and of the size of the machine on which the program is being executed. In this book

we present novel symbolic control and data ?ow repres- tation techniques as well as symbolic techniques and algorithms to analyze and optimize programs. Program contexts which de?ne a new symbolic - scription of program semantics for control and data ?ow analysis are at the center of our approach. We have solved a number of problems encountered in program analysis by using program contexts. Our solution methods are e?cient, versatile, uni?ed, and more general (they cope with regular and irregular codes) than most existing methods.

Reverse Engineering Code with IDA Pro McGraw-Hill Companies

Going beyond the issues of analyzing and optimizing programs as well as creating the means of protecting information, this guide takes on the programming problem of, once having found holes in a program, how to go about disassembling it without its source code. Covered are the hacking methods used to analyze programs using a debugger and disassembler. These methods include virtual functions, local and global variables, branching, loops, objects and their hierarchy, and mathematical operators. Also covered are methods of fighting disassemblers, self-modifying code in operating systems, and executing code in the stack. Advanced disassembler topics such as optimizing compilers and movable code are discussed as well.

Practical Malware Analysis John Wiley & Sons

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.

Advanced Manufacturing Technology for Medical Applications Springer Science & Business Media

A primer on the underlying technologies that allow computer programs to work. Covers topics like computer hardware, combinatorial logic, sequential logic, computer architecture, computer anatomy, and Input/Output. Many coders are unfamiliar with the underlying

technologies that make their programs run. But why should you care when your code appears to work? Because you want it to run well and not be riddled with hard-to-find bugs. You don't want to be in the news because your code had a security problem. Lots of technical detail is available online but it's not organized or collected into a convenient place. In The Secret Life of Programs, veteran engineer Jonathan E. Steinhart explores--in depth--the foundational concepts that underlie the machine. Subjects like computer hardware, how software behaves on hardware, as well as how people have solved problems using technology over time. You'll learn: How the real world is converted into a form that computers understand, like bits, logic, numbers, text, and colors The fundamental building blocks that make up a computer including logic gates, adders, decoders, registers, and memory Why designing programs to match computer hardware, especially memory, improves performance How programs are converted into machine language that computers understand How software building blocks are combined to create programs like web browsers Clever tricks for making programs more efficient, like loop invariance, strength reduction, and recursive subdivision The fundamentals of computer security and machine intelligence Project design, documentation, scheduling, portability, maintenance, and other practical programming realities. Learn what really happens when your code runs on the machine and you'll learn to craft better, more efficient code.

Ghidra Software Reverse Engineering for Beginners John Wiley & Sons

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.

Functional Reverse Engineering of Strategic and Non-Strategic Machine Tools John Wiley & Sons

Attacks take place everyday with computers connected to the internet, because of worms, viruses or due to vulnerable software. These attacks result in a loss of millions of dollars to businesses across the world. Identifying Malicious Code through Reverse Engineering provides information on reverse engineering and concepts that can be used to identify the malicious patterns in vulnerable software. The malicious patterns are used to develop signatures to prevent vulnerability and block worms or viruses. This book also includes the latest exploits through various case studies. Identifying Malicious Code through Reverse Engineering is designed for professionals composed of practitioners and researchers writing signatures to prevent virus and software vulnerabilities. This book is also suitable for advanced-level students in computer science and engineering studying information security, as a secondary

textbook or reference.

Reversing No Starch Press

Reverse engineering--the process of taking apart a product to find out how it was designed--is becoming an increasingly popular engineering tool. This first-of-its-kind guide provides an engineering perspective on this step-by-step process. Shows how to gather the necessary data to successfully re-design an existing product. Illustrations and index are included.

Proceedings, Seventh Working Conference on Reverse Engineering

BoD – Books on Demand

The purpose of this book is to develop capacity building in strategic and non-strategic machine tool technology. The book contains chapters on how to functionally reverse engineer strategic and non-strategic computer numerical control machinery. Numerous engineering areas, such as mechanical engineering, electrical engineering, control engineering, and computer hardware and software engineering, are covered. The book offers guidelines and covers design for machine tools, prototyping, augmented reality for machine tools, modern communication strategies, and enterprises of functional reverse engineering, along with case studies. Features Presents capacity building in machine tool development Discusses engineering design for machine tools Covers prototyping of strategic and non-strategic machine tools Illustrates augmented reality for machine tools Includes Internet of Things (IoT) for machine tools

Advanced Symbolic Analysis for Compilers 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.

Identifying Malicious Code Through Reverse Engineering Springer

Describes how to design object-oriented code and accompanying algorithms that can be reverse engineered for greater flexibility in future code maintenance and alteration. Provides essential object-oriented concepts and programming methods for software engineers and researchers.

x86 Software Reverse-Engineering, Cracking, and Counter-Measures CRC Press

Explore Apple Code Through LLDB, Python & DTrace!Learn the powerful secrets of Apple's software debugger, LLDB, that can get more information out of any program than you ever thought possible.In Advanced Apple Debugging & Reverse Engineering, you'll come to realize debugging is an enjoyable process to help you better understand software. Not only will you learn to find bugs faster, but you'll also learn how other developers have solved problems similar to yours. You'll also learn how to create custom, powerful debugging scripts that will help you quickly find the secrets behind any bit of code that piques your interest.Who This Book Is ForThis book is for intermediate to advanced iOS/macOS developers who are already familiar with either Swift or Objective-C and want to take their debugging skills to the next level.Topics Covered in Advanced Apple Debugging & Reverse EngineeringLLDB Max Achievement: Master LLDB and learn about its extensive list of subcommands and options.1's and 0's: Learn the low-level components available to help extract useful information from a program, from assembly calling conventions to exploring the process of dynamically-loaded frameworks.The Power of Python: Use LLDB's Python module to create powerful custom debugging commands to introspect and augment existing programs.Nothing is Secret: Learn how to use DTrace, a dynamic tracing framework, and how to write D scripts to query anything you were ever curious about on your macOS machine.Case Studies: Quickly find and solve the real-world issues that iOS and macOS developers typically face in their day-to-day development workflow.One thing you can count on: After reading this book, you'll have the tools and knowledge to answer even the most obscure question about your code - or someone else's.

Model Driven Architecture for Reverse Engineering Technologies: Strategic Directions and System Evolution Packt Publishing Ltd

Advanced Apple Debugging & Reverse Engineering, Second Edition ISBN: Learn the powerful secrets of Apple's software debugger, LLDB, that can get more information out of any program than you ever thought possible. In Advanced Apple Debugging and Reverse Engineering, you'll come to realize debugging is an enjoyable process to help you better understand software. Not only will you learn to find bugs faster, but you'll also learn how other developers have solved problems similar

to yours. You'll also learn how to create custom, powerful debugging scripts that will help you quickly find the secrets behind any bit of code that piques your interest. This book is for intermediate to advanced iOS/macOS developers who are already familiar with either Swift or Objective-C and want to take their debugging skills to the next level. Topics Covered in Advanced Apple Debugging & Reverse Engineering: LLDB Max Achievement: Master LLDB and learn about its extensive list of subcommands and options. 1's and 0's: Learn the low-level components available to help extract useful information from a program, from assembly calling conventions to exploring the process of dynamically-loaded frameworks. The Power of Python: Use LLDB's Python module to create powerful custom debugging commands to introspect and augment existing programs. Nothing is Secret: Learn how to use DTrace, a dynamic tracing framework, and how to write D scripts to query anything you were ever curious about on your macOS machine. Case Studies: Quickly find and solve the real-world issues that iOS and macOS developers typically face in their day-to-day development workflow. After reading this book, you'll have the tools and knowledge to answer even the most obscure question about your code - or someone else's.

Advanced Apple Debugging & Reverse Engineering (Fourth Edition) Springer

The great challenge of reverse engineering is recovering design information from legacy code: the concept recovery problem. This monograph describes our research effort in attacking this problem. It discusses our theory of how a constraint-based approach to program plan recognition can efficiently extract design concepts from source code, and it details experiments in concept recovery that support our claims of scalability. Importantly, we present our models and experiments in sufficient detail so that they can be easily replicated. This book is intended for researchers or software developers concerned with reverse engineering or reengineering legacy systems. However, it may also interest those researchers who are interested using plan recognition techniques or constraint-based reasoning. We expect the reader to have a reasonable computer science background (i.e., familiarity with the basics of programming and algorithm analysis), but we do not require familiarity with the fields of reverse engineering or artificial intelligence (AI). To this end, we carefully explain all the AI techniques we use. This book is designed as a reference for advanced undergraduate or graduate seminar courses in software engineering, reverse engineering, or reengineering. It can also serve as a supplementary textbook for software engineering-related courses, such as those on program understanding or design recovery, for AI-related courses, such as those on plan recognition or constraint satisfaction, and for courses that cover both topics, such as those on AI applications to software engineering. ORGANIZATION The book comprises eight chapters.

Reverse Engineering Springer Science & Business Media

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.

Mastering Reverse Engineering
Springer Science & Business Media
"This book proposes an integration of classical compiler techniques, metamodeling techniques and algebraic specification techniques to make a significant impact on the automation of MDA-based reverse engineering processes"--Provided by publisher.

Reverse Engineering of Object Oriented Code Packt Publishing Ltd
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.

Implementing Reverse Engineering
Elsevier
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 methodologie

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