ADVANCES IN INFORMATION SECURITY

Computer Viruses and Malware

John Aycock

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Advances in Information Security

Sushil Jajodia
Consulting Editor
Center for Secure Information Systems
George Mason University
Fairfax, VA 22030-4444
email: jajodia@gmu.edu

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by

John Aycock
University of Calgary
Canada

Springer

John Aycock
University of Calgary
Dept. Computer Science
2500 University Drive N.W.
CALGARY AB T2N 1N4
CANADA

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by John Aycock, University of Calgary, AB, Canada

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To all the two-legged critters
in my house

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Preface

It seemed like a good idea at the time. In 2003, I started teaching a course on computer viruses and malicious software to senior undergraduate and graduate students at the University of Calgary. It's been an interesting few years. Computer viruses are a controversial and taboo topic, despite having such a huge impact on our society; needless to say, there was some backlash about this course from outside the University.

One of my initial practical concerns was whether or not I could find enough detailed material to teach a 13-week course at this level. There were some books on the topic, but (with all due respect to the authors of those books) there were none that were suitable for use as a textbook.

I was more surprised to find out that there was a lot of information about viruses and doing "bad" things, but there was very little information about anti-virus software. A few quality minutes with your favorite web search engine will yield virus writing tutorials, virus source code, and virus creation toolkits. In contrast, although it's comprised of some extremely nice people, the anti-virus community tends to be very industry-driven and insular, and isn't in the habit of giving out its secrets. Unless you know where to look.

Several years, a shelf full of books, and a foot-high stack of printouts later, I've ferreted out a lot of detailed material which I've assembled in this book. It's a strange type of research for a computer scientist, and I'm sure that my academic colleagues would cringe at some of the sources that I've had to use. Virus writers don't tend to publish in peer-reviewed academic journals, and anti-virus companies don't want to tip their hand. I would tend to characterize this detective work more like historical research than standard computer science research: your sources are limited, so you try and authenticate them; you piece a sentence in one document together with a sentence in another document, and you're able to make a useful connection. It's painstaking and often frustrating.

Technical information goes out of date very quickly, and in writing this book I've tried to focus on the concepts more than details. My hope is that the