

2ND  
EDITION

# THE IDA PRO BOOK

THE UNOFFICIAL GUIDE TO THE  
WORLD'S MOST POPULAR DISASSEMBLER

CHRIS EAGLE

*I wholeheartedly recommend The  
IDA Pro Book to all IDA Pro users.  
—Ilfak Gullfanov,  
creator of IDA Pro*



# The IDA Pro Book

---

## Table of Contents

[PRAISE FOR THE FIRST EDITION OF THE IDA PRO BOOK](#)

[Acknowledgments](#)

[Introduction](#)

[I. Introduction to IDA](#)

# 1. Introduction to Disassembly

---

Disassembly Theory

The What of Disassembly

The Why of Disassembly

Malware Analysis

Vulnerability Analysis

Software Interoperability

Compiler Validation

Debugging Displays

The How of Disassembly

A Basic Disassembly Algorithm

Linear Sweep Disassembly

Recursive Descent Disassembly

Summary

## 2. Reversing and Disassembly Tools

---

### Classification Tools

file

PE Tools

PEiD

### Summary Tools

nm

ldd

objdump

otool

dumpbin

c++filt

### Deep Inspection Tools

strings

Disassemblers

### Summary

### [3. IDA Pro Background](#)

---

[Hex-Rays' Stance on Piracy](#)

[Obtaining IDA Pro](#)

[IDA Versions](#)

[IDA Licenses](#)

[Purchasing IDA](#)

[Upgrading IDA](#)

[IDA Support Resources](#)

[Your IDA Installation](#)

[Windows Installation](#)

[OS X and Linux Installation](#)

[IDA and SELinux](#)

[32-bit vs. 64-bit IDA](#)

[The IDA Directory Layout](#)

[Thoughts on IDA's User Interface](#)

[Summary](#)

### [II. Basic IDA Usage](#)

## [4. Getting Started with IDA](#)

---

### [Launching IDA](#)

[IDA File Loading](#)

[Using the Binary File Loader](#)

### [IDA Database Files](#)

[IDA Database Creation](#)

[Closing IDA Databases](#)

[Reopening a Database](#)

### [Introduction to the IDA Desktop](#)

[Desktop Behavior During Initial Analysis](#)

[IDA Desktop Tips and Tricks](#)

[Reporting Bugs](#)

[Summary](#)

## 5. IDA Data Displays

---

### The Principal IDA Displays

[The Disassembly Window](#)

[The Functions Window](#)

[The Output Window](#)

### Secondary IDA Displays

[The Hex View Window](#)

[The Exports Window](#)

[The Imports Window](#)

[The Structures Window](#)

[The Enums Window](#)

### Tertiary IDA Displays

[The Strings Window](#)

[The Names Window](#)

[The Segments Window](#)

[The Signatures Window](#)

[The Type Libraries Window](#)

[The Function Calls Window](#)

[The Problems Window](#)

### Summary

## 6. Disassembly Navigation

---

### Basic IDA Navigation

[Double-Click Navigation](#)

[Jump to Address](#)

[Navigation History](#)

### Stack Frames

[Calling Conventions](#)

[Local Variable Layout](#)

[Stack Frame Examples](#)

[IDA Stack Views](#)

### Searching the Database

[Text Searches](#)

[Binary Searches](#)

### Summary



## 7. Disassembly Manipulation

---

### Names and Naming

Parameters and Local Variables

Named Locations

Register Names

### Commenting in IDA

Regular Comments

Repeatable Comments

Anterior and Posterior Lines

Function Comments

### Basic Code Transformations

Code Display Options

Formatting Instruction Operands

Manipulating Functions

Converting Data to Code (and Vice Versa)

### Basic Data Transformations

Specifying Data Sizes

Working with Strings

Specifying Arrays

### Summary

## 8. Datatypes and Data Structures

---

### Recognizing Data Structure Use

[Array Member Access](#)

[Structure Member Access](#)

### Creating IDA Structures

[Creating a New Structure \(or Union\)](#)

[Editing Structure Members](#)

[Stack Frames as Specialized Structures](#)

### Using Structure Templates

#### Importing New Structures

[Parsing C Structure Declarations](#)

[Parsing C Header Files](#)

### Using Standard Structures

#### IDA TIL Files

[Loading New TIL Files](#)

[Sharing TIL Files](#)

### C++ Reversing Primer

[The this Pointer](#)

[Virtual Functions and Vtables](#)

[The Object Life Cycle](#)

[Name Mangling](#)

[Runtime Type Identification](#)

[Inheritance Relationships](#)

[C++ Reverse Engineering References](#)

### Summary

## 9. Cross-References and Graphing

---

### Cross-References

[Code Cross-References](#)

[Data Cross-References](#)

[Cross-Reference Lists](#)

[Function Calls](#)

### IDA Graphing

[IDA External \(Third-Party\) Graphing](#)

[IDA's Integrated Graph View](#)

### Summary

## 10. The Many Faces of IDA

---

### Console Mode IDA

Common Features of Console Mode

Windows Console Specifics

Linux Console Specifics

OS X Console Specifics

Using IDA's Batch Mode

Summary

## III. Advanced IDA Usage

## 11. Customizing IDA

---

### Configuration Files

The Main Configuration File: ida.cfg

The GUI Configuration File: idagui.cfg

The Console Configuration File: idatui.cfg

### Additional IDA Configuration Options

IDA Colors

Customizing IDA Toolbars

### Summary

## 12. Library Recognition Using FLIRT Signatures

---

[Fast Library Identification and Recognition Technology](#)

[Applying FLIRT Signatures](#)

[Creating FLIRT Signature Files](#)

[Signature-Creation Overview](#)

[Identifying and Acquiring Static Libraries](#)

[Creating Pattern Files](#)

[Creating Signature Files](#)

[Startup Signatures](#)

[Summary](#)

## 13. Extending IDA's Knowledge

---

### Augmenting Function Information

IDS Files

Creating IDS Files

### Augmenting Predefined Comments with loadint

Summary

## 14. Patching Binaries and Other IDA Limitations

---

### The Infamous Patch Program Menu

[Changing Individual Database Bytes](#)

[Changing a Word in the Database](#)

[Using the Assemble Dialog](#)

### IDA Output Files and Patch Generation

[IDA-Generated MAP Files](#)

[IDA-Generated ASM Files](#)

[IDA-Generated INC Files](#)

[IDA-Generated LST Files](#)

[IDA-Generated EXE Files](#)

[IDA-Generated DIF Files](#)

[IDA-Generated HTML Files](#)

### Summary

## IV. Extending IDA's Capabilities



## 15. IDA Scripting

---

### Basic Script Execution

#### The IDC Language

[IDC Variables](#)

[IDC Expressions](#)

[IDC Statements](#)

[IDC Functions](#)

[IDC Objects](#)

[IDC Programs](#)

[Error Handling in IDC](#)

[Persistent Data Storage in IDC](#)

### Associating IDC Scripts with Hotkeys

#### Useful IDC Functions

[Functions for Reading and Modifying Data](#)

[User Interaction Functions](#)

[String-Manipulation Functions](#)

[File Input/Output Functions](#)

[Manipulating Database Names](#)

[Functions Dealing with Functions](#)

[Code Cross-Reference Functions](#)

[Data Cross-Reference Functions](#)

[Database Manipulation Functions](#)

[Database Search Functions](#)

[Disassembly Line Components](#)

### IDA Scripting Examples

[Enumerating Functions](#)

[Enumerating Instructions](#)

[Enumerating Cross-References](#)

[Enumerating Exported Functions](#)

[Finding and Labeling Function Arguments](#)

[Emulating Assembly Language Behavior](#)

### IDAPython

[Using IDAPython](#)

### IDAPython Scripting Examples

[Enumerating Functions](#)

[Enumerating Instructions](#)

[Enumerating Cross-References](#)

### Summary

## 16. The IDA Software Development Kit

---

### SDK Introduction

[SDK Installation](#)

[SDK Layout](#)

[Configuring a Build Environment](#)

### The IDA Application Programming Interface

[Header Files Overview](#)

[Netnodes](#)

[Useful SDK Datatypes](#)

[Commonly Used SDK Functions](#)

[Iteration Techniques Using the IDA API](#)

### Summary

### Writing a Plug-in

[The Plug-in Life Cycle](#)

[Plug-in Initialization](#)

[Event Notification](#)

[Plug-in Execution](#)

### Building Your Plug-ins

[Installing Plug-ins](#)

[Configuring Plug-ins](#)

[Extending IDC](#)

[Plug-in User Interface Options](#)

[Using the SDK's Chooser Dialogs](#)

[Creating Customized Forms with the SDK](#)

[Windows-Only User Interface-Generation Techniques](#)

[User Interface Generation with Qt](#)

### Scripted Plug-ins

[Summary](#)

## 18. Binary Files and IDA Loader Modules

---

[Unknown File Analysis](#)

[Manually Loading a Windows PE File](#)

[IDA Loader Modules](#)

[Writing an IDA Loader Using the SDK](#)

[The Singleton Loader](#)

[Building an IDA Loader Module](#)

[A pcap Loader for IDA](#)

[Alternative Loader Strategies](#)

[Writing a Scripted Loader](#)

[Summary](#)

## 19. IDA Processor Modules

---

[Python Byte Code](#)

[The Python Interpreter](#)

[Writing a Processor Module Using the SDK](#)

[The processor\\_t Struct](#)

[Basic Initialization of the LPH Structure](#)

[The Analyzer](#)

[The Emulator](#)

[The Outputter](#)

[Processor Notifications](#)

[Other processor\\_t Members](#)

[Building Processor Modules](#)

[Customizing Existing Processors](#)

[Processor Module Architecture](#)

[Scripting a Processor Module](#)

[Summary](#)

## V. Real-World Applications

## 20. Compiler Personalities

---

[Jump Tables and Switch Statements](#)

[RTTI Implementations](#)

[Locating main](#)

[Debug vs. Release Binaries](#)

[Alternative Calling Conventions](#)

[Summary](#)

## 21. Obfuscated Code Analysis

---

### Anti-Static Analysis Techniques

Disassembly Desynchronization

Dynamically Computed Target Addresses

Imported Function Obfuscation

Targeted Attacks on Analysis Tools

### Anti-Dynamic Analysis Techniques

Detecting Virtualization

Detecting Instrumentation

Detecting Debuggers

Preventing Debugging

### Static De-obfuscation of Binaries Using IDA

Script-Oriented De-obfuscation

Emulation-Oriented De-obfuscation

### Virtual Machine-Based Obfuscation

Summary



- [download online Changing My Mind: Occasional Essays](#)
- [click A Guide to Poetics Journal: Writing in the Expanded Field, 1982â€“1998 pdf, azw \(kindle\), epub, doc, mobi](#)
- [click Succubus Blues \(Georgina Kincaid, Book 1\) pdf, azw \(kindle\)](#)
- [Mathematics, Ideas and the Physical Real online](#)
- [download online Nelson the Commander book](#)
- [Building Military Dioramas, Volume 2 here](#)
  
- <http://metromekanik.com/ebooks/Magicians-of-the-Gods--The-forgotten-wisdom-of-earth-s-lost-civilisation.pdf>
- <http://www.freightunlocked.co.uk/lib/Hot-Springs.pdf>
- <http://www.khoi.dk/?books/The-Yoga-Sutras-of-Patanjali.pdf>
- <http://studystategically.com/freebooks/Mathematics--Ideas-and-the-Physical-Real.pdf>
- <http://deltaphenomics.nl/?library/Nelson-the-Commander.pdf>
- <http://www.gateaerospaceforum.com/?library/The-Politics-of-Inequality--A-Political-History-of-the-Idea-of-Economic-Inequality-in-America.pdf>