Introduction To 64 Bit Intel Assembly Language Programming For Linux: Second Edition
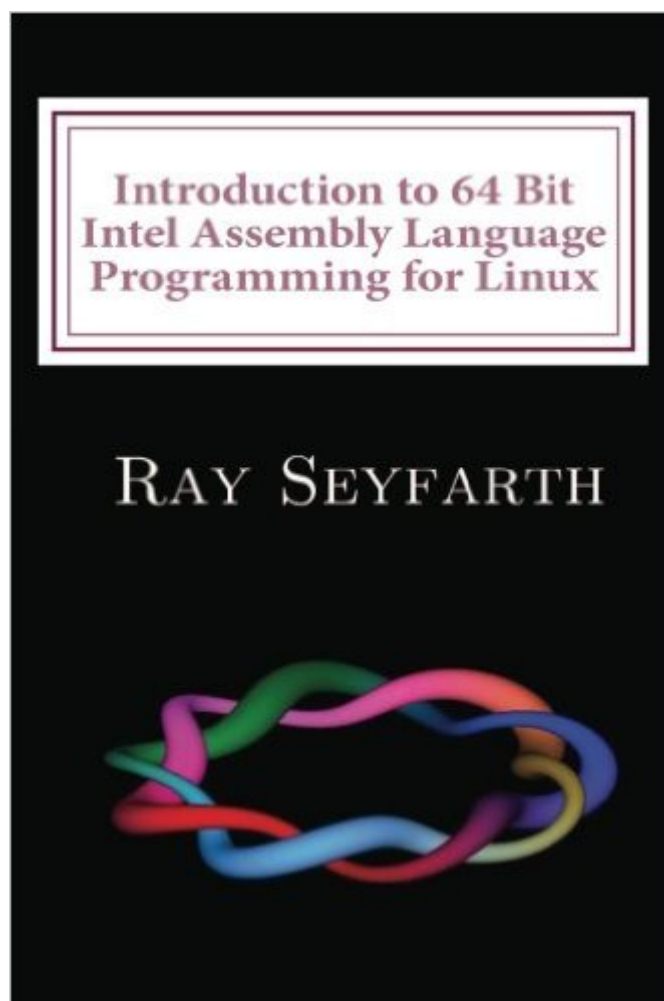
Introduction to 64 Bit Intel Assembly Language Programming for Linux

RAY SEYFARTH

Synopsis

This is the second edition of this assembly language programming textbook introducing programmers to 64 bit Intel assembly language. The primary addition to the second edition is the discussion of the free integrated development environment, ebe, designed by the author specifically to meet the needs of assembly language programmers. Ebe is a Python program which uses the Tkinter and Pwm widget sets to implement a GUI environment consisting of a source window, a data window, a registers window, a console window, a terminal window and a project window. The source window includes a full-featured text editor with convenient controls for assembling, linking and debugging a program. The project facility allows a program to be built from C source code files and assembly source files. Assembly is performed automatically using the yasm assembler and linking is performed with ld or gcc. Debugging operates by transparently sending commands into the gdb debugger while automatically displaying registers and variables after each debugging step. Additional information about ebe can be found at http://www.rayseyfarth.com. The book is intended as a first assembly language book for programmers experienced in high level programming in a language like C or C++. The assembly programming is performed using the yasm assembler automatically from the ebe IDE under the Linux operating system. The book primarily teaches how to write assembly code compatible with C programs. The reader will learn to call C functions from assembly language and to call assembly functions from C in addition to writing complete programs in assembly language. The gcc compiler is used internally to compile C programs. The book starts early emphasizing using ebe to debug programs, along with teaching equivalent commands using gdb. Being able to single-step assembly programs is critical in learning assembly programming. Ebe makes this far easier than using gdb directly. Highlights of the book include doing input/output programming using the Linux system calls and the C library, implementing data structures in assembly language and high performance assembly language programming. Early chapters of the book rely on using the debugger to observe program behavior. After a chapter on functions, the user is prepared to use printf and scanf from the C library to perform I/O. The chapter on data structures covers singly linked lists, doubly linked circular lists, hash tables and binary trees. Test programs are presented for all these data structures. There is a chapter on optimization techniques and 3 chapters on specific optimizations. One chapter covers how to efficiently count the 1 bits in an array with the most efficient version using the recently-introduced popcnt instruction. Another chapter covers using SSE instructions to create an efficient implementation of the Sobel filtering algorithm. The final high performance programming chapter discusses computing correlation between data in 2 arrays. There is an AVX implementation which achieves 20.5 GFLOPs on a

single core of a Core i7 CPU. A companion web site, http://www.rayseyfarth.com, has a collection of PDF slides which instructors can use for in-class presentations and source code for sample programs.

Book Information

Paperback: 308 pages

Publisher: CreateSpace Independent Publishing Platform; 2 edition (June 23, 2012)

Language: English

ISBN-10: 1478119209

ISBN-13: 978-1478119203

Product Dimensions: 6.1 x 0.7 x 9.2 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: 4.4 out of 5 starsÂ Â See all reviewsÂ (24 customer reviews)

Best Sellers Rank: #1,007,067 in Books (See Top 100 in Books)   #67 inÂ Books > Computers & Technology > Programming > Languages & Tools > Assembly Language Programming   #222 inÂ Books > Computers & Technology > Operating Systems > Linux > Programming   #1793 inÂ Books > Computers & Technology > Programming > Introductory & Beginning

Customer Reviews

I do like the layout of this book. It has a couple of problems for the IDE it uses.I would recommend both yasm and gold as the compiler and linker respectively. The author prefers ld even though it is not optimized for 64bit like gold is.Currently, the author will respond to emails if you have problems or suggestions.The book itself is well laid out and covers appropriate subjects in order. It is good for the beginner/intermediate as a learning tool and handy for the expert as a reference book for the 64bit commands/registers.

This book is not such a thick tome as many assembly books and allows a person wanting to learn assembly to do so in approximately ten weeks with 5 hours of study per week. I agree with the author that chapter 4 should just be skipped or read casually. Chapter 4 needs a lot more explanation or outside study to really get a handle on this memory topic. However, the rest of the book is good and gives a good introduction to 64 bit Assembly in Linux. Its emphasis is on science/engineering and optimization and not on device drivers or kernel writing.*** When working through this book, be sure to also have the Intel manual with its alphabetic listing of assembly instructions on the screen also. It will be your main source for moving beyond basic assembly and is

a good supplement from the beginning.[...]Assembly is so much nicer in 64 bit with all the extra registers, instructions, etc.I have both the first and second edition. Some have said the ebe figures are hard to read in the 2nd edition, but they are easy to read in the copy I have.The second addition adds additional exercises and explanation. It is worth getting it instead of the first edition. The hundreds of dollars asking price for the first edition is a ridiculous joke! Don't buy it, just get the second edition.

64-bit assembler is much easier to learn, write, and use than the old Intel 32-bit instruction set. This book is a great introduction that covers the basics as well as vectorized functions.Note, the book is aimed at instructions used in application code rather than the more advanced instructions used by the operating system.The toolset described in the book is easy to run on a Linux system. If you're on a Mac or on Windows, you can either futz around trying to find an equivalent toolset or load a Linux VM.

I am through most of the book and am very happy I added it to my personal library. It is a very useful and effective introduction to assembly language - one which I would want to recommend as a mandatory text in the engineering syllabus. It goes through lot of details which make things quite clear - floating point representation in memory, different segments of the program, implementation of data structures like arrays, linked lists (structures), binary trees, hash tables and has a chapter relating to recent SSE and AVX instructions. Over all very happy on this purchase. So not a reference manual (~ 250 pages) but a book I'd really use and keep coming back.

This book is an excellent introduction to the x86-64 assembly language.What I like about this book is that there is no unnecessary "padding". Topics proceed briskly and the writing is to the point. The assembly language examples are chosen well and gradually increase in complexity. The author has managed to explain the "essentials" of x86-64 very well.I would strongly discourage anybody from starting to learn the 32 bit version of x86 assembly (especially nowadays). So, I would recommend picking this book to start your journey into assembly on the intel platform.

I had done a bit of x86 (32) and MIPs in college so I got this book to fill in gaps. I'm only a few chapters in but I am very happy with my purchase so far. Note: Although the author moves slowly, you should be familiar with basic linux concepts.

Very good to have finally a book which doesn't emphasize the whole now useless history of Intel's and AMD's 64 Bit processors. Also a perfect fit for those who work under Linux. So the book title is a truthful hint for whom the book is, actually.I especially liked the fact that the author uses yasm as the assembly tool and not gas or anything else. Yasm is just a great assembler. Good choice. My favorite chapter is the one about data structures which covers from linked list to hash tables everything. You won't find that in other assembly books.Highly recommended for the target audience.

The author doesn't believe in commas, and there's a new edition out now. 's website didn't find it for me, so I'm kinda mad at for selling me this based on my search without showing me the new version.Still, a great book so far. I have needed to read other articles online about some of the topics covered, since the author is obviously some kind of engineer (a man of few wasted words).I'm reading it for a class at Uni.

Introduction to 64 Bit Intel Assembly Language Programming for Linux: Second Edition Introduction to 64 Bit Assembly Programming for Linux and OS X: Third Edition - for Linux and OS X Linux: Linux Command Line - A Complete Introduction To The Linux Operating System And Command Line (With Pics) (Unix, Linux kemel, Linux command line, ... CSS, C++, Java, PHP, Excel, code) (Volume 1) Assembly Language for Intel-Based Computers (3rd Edition) Assembly Language for Intel-Based Computers (4th Edition) Introduction to 64 Bit Windows Assembly Programming Digitalk PARTS Workbench for Win32 - 32-Bit Parts Assembly and Reuse Tool Set - Script Language Guide - Win32 Series Version 3.0 LINUX: Easy Linux For Beginners, Your Step-By-Step Guide To Learning The Linux Operating System And Command Line (Linux Series) Assembly Language Step-by-step: Programming with DOS and Linux (with CD-ROM) Digitalk PARTS Workbench for Win32 - 32-Bit Parts Assembly and Reuse Tool Set - User's Guide - Win32 Series Version 3.0 PARTS Workbench for Win32 - 32-Bit Parts Assembly and Reuse Tool Set - Reference (Win32 Series Version 3.0) Gun Digest Book of Firearms Assembly/Disassembly, Part 2: Revolvers (Gun Digest Book of Firearms Assembly/Disassembly: Part 1 Automatic Pistols) (Pt. 2) Kaizen Assembly: Designing, Constructing, and Managing a Lean Assembly Line Python: Python Programming For Beginners - The Comprehensive Guide To Python Programming: Computer Programming, Computer Language, Computer Science (Machine Language) Linux For Beginners: The Ultimate Guide To The Linux Operating System & Linux Linux Administration: The Linux Operating System and Command Line Guide for Linux Administrators CompTIA Linux+ Powered by Linux Professional

Institute Study Guide: Exam LX0-103 and Exam LX0-104 (Comptia Linux + Study Guide) ARM Assembly Language Programming & Architecture (ARM books) (Volume 1) Z80 Assembly Language Programming Assembly Language and Systems Programming for the M68000 Family

[Dmca](#)