The Software Optimization Cookbook

High-Performance Recipes for IA-32 Platforms

Second Edition

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Preface

The first edition of *The Software Optimization Cookbook* continues to be one of the most popular books offered by Intel Press. Feedback received from readers indicates that the book fills a gap between introductory textbooks that deal with program optimizations in general and advanced manuals that deal with all aspects of the Intel® architecture in particular. The introduction of the Intel Extended Memory 64 Technology (Intel EM64T) and multi-core processing together with the growing popularity of the Hyper-Threading Technology, OpenMP†, and multimedia extensions have outdated the first edition, however. The continuing demand for an intermediate level introduction to these topics has prompted Intel Press to ask three additional Intel experts to team up with the original author to provide an expanded and updated second edition of the book.

The Software Optimization Cookbook, *Second Edition*, provides updated recipes for high-performance applications on Intel platforms. Through simple explanations and examples, the authors show you how to address performance issues with algorithms, memory access, branch prediction, automatic vectorization, SIMD instructions, multiple threads, and floating-point calculations. Software developers learn how to take advantage of Intel EM64T, multi-core processing, Hyper-Threading Technology, OpenMP, and multimedia extensions. This book guides you through the growing collection of software tools, compiler switches, and coding optimizations, showing you efficient ways to improve the performance of software applications for Intel platforms. Software developers who want to understand the latest techniques for delivering more performance and to fine-tune their coding skills will benefit from this book.

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The people of Intel Press have been very helpful during the writing process. In particular, we would like to acknowledge the help of our editor David Spencer and content architect Stuart Goldstein for their kind and professional guidance during all stages of the publishing process.

Readers Can Help, Too

To prepare this second edition, the authoring team carefully reviewed the material in the first edition and updated most of it. In particular, Richard Gerber updated the putting-it-together material. Aart Bik updated Chapters 2, 9, and 12, and he added Chapter 13 on automatic vectorization. Kevin Smith updated Chapter 3 through 8, 10, 11, and 14. Xinmin Tian updated Chapter 15 and added Chapters 16, 17, and 18 on OpenMP parallelization.

Having done so, we are anxious to keep the book up-to-date. We would like to hear your questions and requests for clarification. We post contact information, errata, and additional materials on this book's Web site.

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