
File Type PDF Writing High Performance NET Code

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AK5C1X - THORNTON SINGH

Get more out of your legacy systems: more performance, functionality, reliability, and manageability Is your code easy to change? Can you get nearly instantaneous feedback when you do change it? Do you understand it? If the answer to any of these questions is no, you have legacy code, and it is draining time and money away from your development efforts. In this book, Michael Feathers offers start-to-finish strategies for working more effectively with large, untested legacy code bases. This book draws on material Michael created for his renowned Object Mentor seminars: techniques Michael has used in mentoring to help hundreds of developers, technical managers, and testers bring their legacy systems under control. The topics covered include Understanding the mechanics of software change: adding features, fixing bugs, improving design, optimizing performance Getting legacy code into a test harness Writing tests that protect you against introducing new problems Techniques that can be used with any lan-

guage or platform—with examples in Java, C++, C, and C# Accurately identifying where code changes need to be made Coping with legacy systems that aren't object-oriented Handling applications that don't seem to have any structure This book also includes a catalog of twenty-four dependency-breaking techniques that help you work with program elements in isolation and make safer changes.

In the Complete Guide .NET Performance and Optimization, Paul Glavich and Chris Farrell offer a comprehensive and essential handbook to anybody looking to set up a .NET testing environment and get the best results out of it, or just learn effective techniques for testing and optimizing their .NET applications.

The free book "Fundamentals of Computer Programming with C#" is a comprehensive computer programming tutorial that teaches programming, logical thinking, data structures and algorithms, problem solving and high quality code with lots of examples in C#. It starts with the first steps in programming and software development like variables, data types, conditional state-

ments, loops and arrays and continues with other basic topics like methods, numeral systems, strings and string processing, exceptions, classes and objects. After the basics this fundamental programming book enters into more advanced programming topics like recursion, data structures (lists, trees, hash-tables and graphs), high-quality code, unit testing and refactoring, object-oriented principles (inheritance, abstraction, encapsulation and polymorphism) and their implementation the C# language. It also covers fundamental topics that each good developer should know like algorithm design, complexity of algorithms and problem solving. The book uses C# language and Visual Studio to illustrate the programming concepts and explains some C# / .NET specific technologies like lambda expressions, extension methods and LINQ. The book is written by a team of developers lead by Svetlin Nakov who has 20+ years practical software development experience. It teaches the major programming concepts and way of thinking needed to become a good software engineer and the C# language in the meantime. It is a great start for anyone who wants to become a skillful software engineer. The books does not teach technologies like databases, mobile and web development, but shows the true way to master the basics of programming regardless of the languages, technologies and tools. It is good for beginners and intermediate developers who want to put a solid base for a successful career in the software engineering industry. The book is accompanied by free video lessons, presentation slides and mind maps, as well as hundreds of exercises and live examples. Download the free C# programming book, videos, presentations and other resources from <http://introprogramming.info>. Title: Fundamentals of Computer

Programming with C# (The Bulgarian C# Programming Book) ISBN: 9789544007737 ISBN-13: 978-954-400-773-7 (9789544007737) ISBN-10: 954-400-773-3 (9544007733) Author: Svetlin Nakov & Co. Pages: 1132 Language: English Published: Sofia, 2013 Publisher: Faber Publishing, Bulgaria Web site: <http://www.introprogramming.info> License: CC-Attribution-Share-Alike Tags: free, programming, book, computer programming, programming fundamentals, ebook, book programming, C#, CSharp, C# book, tutorial, C# tutorial; programming concepts, programming fundamentals, compiler, Visual Studio, .NET, .NET Framework, data types, variables, expressions, statements, console, conditional statements, control-flow logic, loops, arrays, numeral systems, methods, strings, text processing, StringBuilder, exceptions, exception handling, stack trace, streams, files, text files, linear data structures, list, linked list, stack, queue, tree, balanced tree, graph, depth-first search, DFS, breadth-first search, BFS, dictionaries, hash tables, associative arrays, sets, algorithms, sorting algorithm, searching algorithms, recursion, combinatorial algorithms, algorithm complexity, OOP, object-oriented programming, classes, objects, constructors, fields, properties, static members, abstraction, interfaces, encapsulation, inheritance, virtual methods, polymorphism, cohesion, coupling, enumerations, generics, namespaces, UML, design patterns, extension methods, anonymous types, lambda expressions, LINQ, code quality, high-quality code, high-quality classes, high-quality methods, code formatting, self-documenting code, code refactoring, problem solving, problem solving methodology, 9789544007737, 9544007733 Essential C# 3.0 is an extremely well-written and well-organized

“no-fluff” guide to C# 3.0, which will appeal to programmers at all levels of experience with C#. This fully updated edition dives deep into the new features that are revolutionizing programming, with brand new chapters covering query expressions, lambda expressions, extension methods, collection interface extensions, standard query operators, and LINQ as a whole. Author Mark Michaelis covers the C# language in depth, and each important-construct is illustrated with succinct, relevant code examples. (Complete code examples are available online.) Graphical “mind maps” at the beginning of each chapter show what material is covered and how each topic relates to the whole. Topics intended for beginners and advanced readers are clearly marked. Following an introduction to C#, readers learn about C# primitive data types, value types, reference types, type conversions, and arrays Operators and control flow, loops, conditional logic, and sequential programming Methods, parameters, exception handling, and structured programming Classes, inheritance, structures, interfaces, and object-oriented programming Well-formed types, operator overloading, namespaces, and garbage collection Generics, collections, custom collections, and iterators Delegates and lambda expressions Standard query operators and query expressions LINQ: language integrated query Reflection, attributes, and declarative programming Threading, synchronization, and multi-threaded patterns Interoperability and unsafe code The Common Language Infrastructure that underlies C# Whether you are just starting out as a programmer, are an experienced developer looking to learn C#, or are a seasoned C# programmer interested in learning the new features of C# 3.0, Essential C# 3.0 gives you just what you need to quickly get up and running writing C# appli-

cations.

Summary Entity Framework Core in Action teaches you how to access and update relational data from .NET applications. Following the crystal-clear explanations, real-world examples, and around 100 diagrams, you'll discover time-saving patterns and best practices for security, performance tuning, and unit testing. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology There's a mismatch in the way OO programs and relational databases represent data. Entity Framework is an object-relational mapper (ORM) that bridges this gap, making it radically easier to query and write to databases from a .NET application. EF creates a data model that matches the structure of your OO code so you can query and write to your database using standard LINQ commands. It will even automatically generate the model from your database schema. About the Book Using crystal-clear explanations, real-world examples, and around 100 diagrams, Entity Framework Core in Action teaches you how to access and update relational data from .NET applications. You'll start with a clear breakdown of Entity Framework, long with the mental model behind ORM. Then you'll discover time-saving patterns and best practices for security, performance tuning, and even unit testing. As you go, you'll address common data access challenges and learn how to handle them with Entity Framework. What's Inside Querying a relational database with LINQ Using EF Core in business logic Integrating EF with existing C# applications Applying domain-driven design to EF Core Getting the best performance out of EF Core Covers EF Core 2.0 and 2.1 About the Reader For

.NET developers with some awareness of how relational databases work. About the Author Jon P Smith is a full-stack developer with special focus on .NET Core and Azure. Table of Contents Part 1 - Getting started Introduction to Entity FrameworkCore Querying the database Changing the database content Using EF Core in business logic Using EF Core in ASP.NET Core web applications Part 2 - Entity Framework in depth Configuring nonrelational properties Configuring relationships Configuring advanced features and handling concurrency conflicts Going deeper into the DbContext Part 3 - Using Entity Framework Core in real-world applications Useful software patterns for EF Core applications Handling database migrations EF Core performance tuning A worked example of performance tuning Different database types and EF Core services Unit testing EF Core applications Appendix A - A brief introduction to LINQ Appendix B - Early information on EF Core version 2.1

Pro Asynchronous Programming with .NET teaches the essential skill of asynchronous programming in .NET. It answers critical questions in .NET application development, such as: how do I keep my program responding at all times to keep my users happy? how do I make the most of the available hardware? how can I improve performance? In the modern world, users expect more and more from their applications and devices, and multi-core hardware has the potential to provide it. But it takes carefully crafted code to turn that potential into responsive, scalable applications. With Pro Asynchronous Programming with .NET you will: Meet the underlying model for asynchrony on Windows—threads. Learn how to perform long blocking operations away from your UI thread to keep your UI responsive, then weave the results back in

as seamlessly as possible. Master the async/await model of asynchrony in .NET, which makes asynchronous programming simpler and more achievable than ever before. Solve common problems in parallel programming with modern async techniques. Get under the hood of your asynchronous code with debugging techniques and insights from Visual Studio and beyond. In the past asynchronous programming was seen as an advanced skill. It's now a must for all modern developers. Pro Asynchronous Programming with .NET is your practical guide to using this important programming skill anywhere on the .NET platform.

If you're writing one of several applications that call for asynchronous programming, this concise hands-on guide shows you how the async feature in C# 5.0 can make the process much simpler. Along with a clear introduction to asynchronous programming, you get an in-depth look at how the async feature works and why you might want to use it in your application. Written for experienced C# programmers—yet approachable for beginners—this book is packed with code examples that you can extend for your own projects. Write your own asynchronous code, and learn how async saves you from this messy chore Discover new performance possibilities in ASP.NET web server code Explore how async and WinRT work together in Windows 8 applications Learn the importance of the await keyword in async methods Understand which .NET thread is running your code—and at what points in the program Use the Task-based Asynchronous Pattern (TAP) to write asynchronous APIs in .NET Take advantage of parallel computing in modern machines Measure async code performance by comparing it with alternatives

Covers topics such as integrating multiple .NET technologies,

cross-language integration, versioning, database and monitoring tools for application development, accessing data, and COM+.

Maximizing the performance of your algorithms and applications is extremely important and can give you a competitive advantage, a lower cost of ownership, and happier users. Pro .NET Performance explains the internals of Windows, the CLR, and the physical hardware that affect the performance of your applications, and gives you the knowledge and tools to measure how your code performs in isolation from external factors. The book is full of C# code samples and tips to help you squeeze every bit of juice from your application—lower memory utilization, consistent CPU usage, and fewer I/O operations across the network and disk. Pro .NET Performance will change the way you think about .NET application development. Guides you through performance measurement with a variety of profilers and other tools Explains how OS and CLR internals affect your application's performance in unexpected ways Provides you with tips and real-life case studies for improving application performance

Do you want your .NET code to have the absolute best performance it can? This book demystifies the CLR, teaching you how and why to write code with optimum performance. Learn critical lessons from a person who helped design and build one of the largest high-performance .NET systems in the world. This book does not just teach you how the CLR works--it teaches you exactly what you need to do now to obtain the best performance today. It will expertly guide you through the nuts and bolts of extreme performance optimization in .NET, complete with in-depth examinations of CLR functionality, free tool recommendations

and tutorials, useful anecdotes, and step-by-step guides to measure and improve performance. Among the topics you will learn are how to:- Choose what to measure and why- Use many amazing tools, freely available, to solve problems quickly- Understand the .NET garbage collector and its effect on your application- Use effective coding patterns that lead to optimal garbage collection performance- Diagnose common GC-related issues- Reduce costs of JITting- Use multiple threads sanely and effectively, avoiding synchronization problems- Know which .NET features and APIs to use and which to avoid- Use code generation to avoid performance problems- Measure everything and expose hidden performance issues- Instrument your program with performance counters and ETW events- Use the latest and greatest .NET features- Ensure your code can run on mobile devices without problems- Build a performance-minded team...and much more.

Develop your programming skills by exploring essential topics such as code reviews, implementing TDD and BDD, and designing APIs to overcome code inefficiency, redundancy, and other problems arising from bad code Key Features Write code that cleanly integrates with other systems while maintaining well-defined software boundaries Understand how coding principles and standards enhance software quality Learn how to avoid common errors while implementing concurrency or threading Book Description Traditionally associated with developing Windows desktop applications and games, C# is now used in a wide variety of domains, such as web and cloud apps, and has become increasingly popular for mobile development. Despite its extensive coding features, professionals experience problems related to efficiency, scalability, and maintainability because of bad code.

Clean Code in C# will help you identify these problems and solve them using coding best practices. The book starts with a comparison of good and bad code, helping you understand the importance of coding standards, principles, and methodologies. You'll then get to grips with code reviews and their role in improving your code while ensuring that you adhere to industry-recognized coding standards. This C# book covers unit testing, delves into test-driven development, and addresses cross-cutting concerns. You'll explore good programming practices for objects, data structures, exception handling, and other aspects of writing C# computer programs. Once you've studied API design and discovered tools for improving code quality, you'll look at examples of bad code and understand which coding practices you should avoid. By the end of this clean code book, you'll have the developed skills you need in order to apply industry-approved coding practices to write clean, readable, extendable, and maintainable C# code. What you will learn

- Write code that allows software to be modified and adapted over time
- Implement the fail-pass-refactor methodology using a sample C# console application
- Address cross-cutting concerns with the help of software design patterns
- Write custom C# exceptions that provide meaningful information
- Identify poor quality C# code that needs to be refactored
- Secure APIs with API keys and protect data using Azure Key Vault
- Improve your code's performance by using tools for profiling and refactoring

Who this book is for This coding book is for C# developers, team leads, senior software engineers, and software architects who want to improve the efficiency of their legacy systems. A strong understanding of C# programming is required.

Your Python code may run correctly, but you need it to run faster.

Updated for Python 3, this expanded edition shows you how to locate performance bottlenecks and significantly speed up your code in high-data-volume programs. By exploring the fundamental theory behind design choices, High Performance Python helps you gain a deeper understanding of Python's implementation. How do you take advantage of multicore architectures or clusters? Or build a system that scales up and down without losing reliability? Experienced Python programmers will learn concrete solutions to many issues, along with war stories from companies that use high-performance Python for social media analytics, productionized machine learning, and more. Get a better grasp of NumPy, Cython, and profilers

- Learn how Python abstracts the underlying computer architecture
- Use profiling to find bottlenecks in CPU time and memory usage
- Write efficient programs by choosing appropriate data structures
- Speed up matrix and vector computations
- Use tools to compile Python down to machine code
- Manage multiple I/O and computational operations concurrently
- Convert multiprocessing code to run on local or remote clusters
- Deploy code faster using tools like Docker

Why learn F#? With this guide, you'll learn how this multi-paradigm language not only offers you an enormous productivity boost through functional programming, but also lets you develop applications using your existing object-oriented and imperative programming skills. You'll quickly discover the many advantages of the language, including access to all the great tools and libraries of the .NET platform. Reap the benefits of functional programming for your next project, whether you're writing concurrent code, or building data- or math-intensive applications. With

this comprehensive book, former F# team member Chris Smith gives you a head start on the fundamentals and walks you through advanced concepts of the F# language. Learn F#'s unique characteristics for building applications Gain a solid understanding of F#'s core syntax, including object-oriented and imperative styles Make your object-oriented code better by applying functional programming patterns Use advanced functional techniques, such as tail-recursion and computation expressions Take advantage of multi-core processors with asynchronous workflows and parallel programming Use new type providers for interacting with web services and information-rich environments Learn how well F# works as a scripting language

The authors make performance issues the central topic, with very in-depth discussion and examples.

Build powerful and fast applications with F# About This Book Explore the advanced concurrency support in F# and .NET TPL Covers major optimization techniques in F# to improve the performance of applications Use Struct, Class and Record model, Interop with C# and VB without sacrificing performance. Who This Book Is For This book is for F# developers who want to build high-performance applications. Knowledge of functional programming would be helpful. What You Will Learn Understand how the execution of functions in F# works Identify common performance bottlenecks Implement best practices to optimize performance Use the available tooling to help measure performance Combine the best practice of asynchronous and synchronous Optimize further using various F# language constructs In Detail F# is a functional programming language and is used in enterprise applications that demand high performance. It has its own unique trait: it is a function-

nal programming language and has OOP support at the same time. This book will help you make F# applications run faster with examples you can easily break down and take into your own work. You will be able to assess the performance of the program and identify bottlenecks. Beginning with a gentle overview of concurrency features in F#, you will get to know the advanced topics of concurrency optimizations in F#, such as F# message passing agent of MailboxProcessor and further interoperation with .NET TPL. Based on this knowledge, you will be able to enhance the performance optimizations when implementing and using other F# language features. The book also covers optimization techniques by using F# best practices and F# libraries. You will learn how the concepts of concurrency and parallel programming will help in improving the performance. With this, you would be able to take advantage of multi-core processors and track memory leaks, root causes, and CPU issues. Finally, you will be able to test their applications to achieve scalability. Style and approach This easy-to-follow guide is full of hands-on examples of real-world multithreading tasks. Each topic is explained and placed in context, and for the more inquisitive, there are also more in-depth details of the concepts used.

Build fast, scalable, and high performing applications with Delphi Key Features Build efficient and concurrent applications in Delphi with focused examples Identify performance bottlenecks and apply the correct algorithm to increase the performance of applications. Delve into parallel programming and memory management to optimize your code Book Description Delphi is a cross-platform Integrated Development Environment (IDE) that supports rapid application development for Microsoft Windows, Apple Mac OS X,

Google Android, iOS, and now Linux with RAD Studio 10.2. This book will be your guide to build efficient high performance applications with Delphi. The book begins by explaining how to find performance bottlenecks and apply the correct algorithm to fix them. It will teach you how to improve your algorithms before taking you through parallel programming. You'll then explore various tools to build highly concurrent applications. After that, you'll delve into improving the performance of your code and master cross-platform RTL improvements. Finally, we'll go through memory management with Delphi and you'll see how to leverage several external libraries to write better performing programs. By the end of the book, you'll have the knowledge to create high performance applications with Delphi. What you will learn Find performance bottlenecks and easily mitigate them Discover different approaches to fix algorithms Understand parallel programming and work with various tools included with Delphi Master the RTL for code optimization Explore memory managers and their implementation Leverage external libraries to write better performing programs Who this book is for This book is for Delphi developers who would like to build high performance applications with Delphi. Prior knowledge of Delphi is assumed.

Implement JPA repositories and harness the performance of Redis in your applications.

Designed specifically for developing applications on Microsoft's NET platform, the innovative C# programming language is simple, type-safe, object- and component-oriented and Internet-savvy. In *Programming C#, Third Edition*, noted author Jesse Liberty gives experienced professionals the information they

need to become productive quickly. Beginning with a rapid tour of basic C# language syntax, Part I introduces the keywords and concepts that make C# and NET an effective environment for building desktop and web-based applications, including: Classes and objects; Inheritance and polymorphism; Operator overloading; Structs and interfaces; Arrays, indexers, and collections; String handling and regular expressions; Exceptions and bug handling; Delegates and events. Part II teaches you how to use C# with three core application frameworks-ASP.NET, NET Windows Forms, and ADO.NET-to build typical desktop and Internet applications, including browser-oriented web applications and standard-s-based web services. Finally, in Part III, you'll learn how to tap the rich functionality of the NET Framework to manage deployment with assemblies, work with metadata, marshal objects across process and machine boundaries, work with threads, handle data streams, and integrate with legacy Windows APIs and COM objects. All text and examples have been updated for Visual Studio NET 2003 and the NET Framework 1.1 SDK. Also new are extensive tips for java, C++, and VB6 programmers; revised chapters on delegates and events; and web applications and services.

Understand .NET memory management internal workings, pitfalls, and techniques in order to effectively avoid a wide range of performance and scalability problems in your software. Despite automatic memory management in .NET, there are many advantages to be found in understanding how .NET memory works and how you can best write software that interacts with it efficiently and effectively. *Pro .NET Memory Management* is your comprehensive guide to writing better software by understanding and

working with memory management in .NET. Thoroughly vetted by the .NET Team at Microsoft, this book contains 25 valuable troubleshooting scenarios designed to help diagnose challenging memory problems. Readers will also benefit from a multitude of .NET memory management “rules” to live by that introduce methods for writing memory-aware code and the means for avoiding common, destructive pitfalls. What You'll Learn Understand the theoretical underpinnings of automatic memory management Take a deep dive into every aspect of .NET memory management, including detailed coverage of garbage collection (GC) implementation, that would otherwise take years of experience to acquire Get practical advice on how this knowledge can be applied in real-world software development Use practical knowledge of tools related to .NET memory management to diagnose various memory-related issues Explore various aspects of advanced memory management, including use of Span and Memory types Who This Book Is For .NET developers, solution architects, and performance engineers

Publisher's Note: Microsoft will stop supporting .NET 5 in early May 2022. A new edition of this book is available that uses .NET 6 (an LTS release with support up until November 2024), C# 10, and Visual Studio 2022, as well as Visual Studio Code. Key Features • Explore the newest additions to C# 9, the .NET 5 class library, Entity Framework Core and Blazor • Strengthen your command of ASP.NET Core 5.0 and create professional websites and services • Build cross-platform apps for Windows, macOS, Linux, iOS, and Android Book Description In C# 9 and .NET 5 – Modern Cross-Platform Development, Fifth Edition, expert teacher Mark J. Price gives you everything you need to start programming C# ap-

plications. This latest edition uses the popular Visual Studio Code editor to work across all major operating systems. It is fully updated and expanded with a new chapter on the Microsoft Blazor framework. The book's first part teaches the fundamentals of C#, including object-oriented programming and new C# 9 features such as top-level programs, target-typed new object instantiation, and immutable types using the record keyword. Part 2 covers the .NET APIs, for performing tasks like managing and querying data, monitoring and improving performance, and working with the file system, async streams, serialization, and encryption. Part 3 provides examples of cross-platform apps you can build and deploy, such as websites and services using ASP.NET Core or mobile apps using Xamarin.Forms. The best type of application for learning the C# language constructs and many of the .NET libraries is one that does not distract with unnecessary application code. For that reason, the C# and .NET topics covered in Chapters 1 to 13 feature console applications. In Chapters 14 to 20, having mastered the basics of the language and libraries, you will build practical applications using ASP.NET Core, Model-View-Controller (MVC), and Blazor. By the end of the book, you will have acquired the understanding and skills you need to use C# 9 and .NET 5 to create websites, services, and mobile apps. What you will learn • Build your own types with object-oriented programming • Query and manipulate data using LINQ • Build websites and services using ASP.NET Core 5 • Create intelligent apps using machine learning • Use Entity Framework Core and work with relational databases • Discover Windows app development using the Universal Windows Platform and XAML • Build rich web experiences using the Blazor framework • Build mobile applica-

tions for iOS and Android using Xamarin.Forms Who this book is for This book is best for C# and .NET beginners, or programmers who have worked with C# in the past but feel left behind by the changes in the past few years. This book doesn't expect you to have any C# or .NET experience; however, you should have a general understanding of programming. Students and professionals with a science, technology, engineering, or mathematics (STEM) background can certainly benefit from this book. Table of Contents • Hello, C#! Welcome, .NET Core! • Speaking C# • Controlling Flow and Converting Types • Writing, Debugging, and Testing Functions • Building Your Own Types with Object-Oriented Programming • Implementing Interfaces and Inheriting Classes • Understanding and Packaging .NET Types • Working with Common .NET Types • Working with Files, Streams, and Serialization (N.B. Please use the Look Inside option to see further chapters) Review "Mark Price's extraordinary book covers every aspect of C# 9 and .NET 5. It is filled with step-by-step demonstrations and will be of tremendous value both to those who want to learn C# and to more experienced C# programmers making the transition to C# 9. Highly recommended!" -- Jesse Liberty - author of Programming C# and Learning C# (O'Reilly Media)

Learn how to develop web applications that deploy cross-platform and are optimized for high performance using ASP.NET Core 2 About This Book Master high-level web app performance improvement techniques using ASP.NET Core 2.0 Find the right balance between premature optimization and inefficient code Design workflows that run asynchronously and are resilient to transient performance issues Who This Book Is For This book is aimed for

readers who can build a web application and have some experience with ASP.NET or some other web application framework (such as Ruby on Rails or Django). They can be people who are happy learning details independently but who struggle to discover the topics that they should be researching. The reader should be interested in improving the performance of their web app and in learning about ASP.NET Core and modern C#. What You Will Learn Understand ASP.NET Core 2 and how it differs from its predecessor Address performance issues at the early stages of development Set up development environments on Windows, Mac, and Linux Measure, profile and find the most significant problems Identify the differences between development workstations and production infrastructures, and how these can exacerbate problems Boost the performance of your application but with an eye to how it affects complexity and maintenance Explore a few cutting-edge techniques such as advanced hashing and custom transports In Detail The ASP.NET Core 2 framework is used to develop high-performance and cross-platform web applications. It is built on .NET Core 2 and includes significantly more framework APIs than version 1. This book addresses high-level performance improvement techniques. It starts by showing you how to locate and measure problems and then shows you how to solve some of the most common ones. Next, it shows you how to get started with ASP.NET Core 2 on Windows, Mac, Linux, and with Docker containers. The book illustrates what problems can occur as latency increases when deploying to a cloud infrastructure. It also shows you how to optimize C# code and choose the best data structures for the job. It covers new features in C# 6 and 7, along with parallel programming and distributed architectures. By the

end of this book, you will be fixing latency issues and optimizing performance problems, but you will also know how this affects the complexity and maintenance of your application. Finally, we will explore a few highly advanced techniques for further optimization. Style and approach A step-by-step practical guide filled with real-world use cases and examples

Real Solutions for C# 4.0 Programmers Need fast, robust, efficient code solutions for Microsoft C# 4.0? This book delivers exactly what you're looking for. You'll find more than 200 solutions, best-practice techniques, and tested code samples for everything from classes to exceptions, networking to XML, LINQ to Silverlight. Completely up-to-date, this book fully reflects major language enhancements introduced with the new C# 4.0 and .NET 4.0. When time is of the essence, turn here first: Get answers you can trust and code you can use, right now! Beginning with the language essentials and moving on to solving common problems using the .NET Framework, C# 4.0 How-To addresses a wide range of general programming problems and algorithms. Along the way is clear, concise coverage of a broad spectrum of C# techniques that will help developers of all levels become more proficient with C# and the most popular .NET tools. Fast, Reliable, and Easy to Use! Write more elegant, efficient, and reusable code Take advantage of real-world tips and best-practices advice Create more effective classes, interfaces, and types Master powerful data handling techniques using collections, serialization, databases, and XML Implement more effective user interfaces with both WPF and WinForms Construct Web-based and media-rich applications with ASP.NET and Silverlight Make the most of delegates, events, and anonymous methods Leverage advanced C# features ranging

from reflection to asynchronous programming Harness the power of regular expressions Interact effectively with Windows and underlying hardware Master the best reusable patterns for designing complex programs

C# is undeniably one of the most versatile programming languages available to engineers today. With this comprehensive guide, you'll learn just how powerful the combination of C# and .NET can be. Author Ian Griffiths guides you through C# 8.0 fundamentals and techniques for building cloud, web, and desktop applications. Designed for experienced programmers, this book provides many code examples to help you work with the nuts and bolts of C#, such as generics, LINQ, and asynchronous programming features. You'll get up to speed on .NET Core and the latest C# 8.0 additions, including asynchronous streams, nullable references, pattern matching, default interface implementation, ranges and new indexing syntax, and changes in the .NET tool chain. Discover how C# supports fundamental coding features, such as classes, other custom types, collections, and error handling Learn how to write high-performance memory-efficient code with .NET Core's Span and Memory types Query and process diverse data sources, such as in-memory object models, databases, data streams, and XML documents with LINQ Use .NET's multi-threading features to exploit your computer's parallel processing capabilities Learn how asynchronous language features can help improve application responsiveness and scalability

Become an expert at writing fast and high performant code in Clojure 1.7.0 About This Book Enhance code performance by using appropriate Clojure features Improve the efficiency of applications and plan their deployment A hands-on guide to designing

Clojure programs to get the best performance Who This Book Is For This book is intended for intermediate Clojure developers who are looking to get a good grip on achieving optimum performance. Having a basic knowledge of Java would be helpful. What You Will Learn Identify performance issues in Clojure programs using different profiling tools Master techniques to achieve numerical performance in Clojure Use Criterion library to measure latency of Clojure expressions Exploit Java features in Clojure code to enhance performance Avoid reflection and boxing with type hints Understand Clojure's concurrency and state-management primitives in depth Measure and monitor performance, and understand optimization techniques In Detail Clojure treats code as data and has a macro system. It focuses on programming with immutable values and explicit progression-of-time constructs, which are intended to facilitate the development of more robust programs, particularly multithreaded ones. It is built with performance, pragmatism, and simplicity in mind. Like most general purpose languages, various Clojure features have different performance characteristics that one should know in order to write high performance code. This book shows you how to evaluate the performance implications of various Clojure abstractions, discover their underpinnings, and apply the right approach for optimum performance in real-world programs. It starts by helping you classify various use cases and the need for them with respect to performance and analysis of various performance aspects. You will also learn the performance vocabulary that experts use throughout the world and discover various Clojure data structures, abstractions, and their performance characteristics. Further, the book will guide you through enhancing performance by using Java inter-

operability and JVM-specific features from Clojure. It also highlights the importance of using the right concurrent data structure and Java concurrency abstractions. This book also sheds light on performance metrics for measuring, how to measure, and how to visualize and monitor the collected data. At the end of the book, you will learn to run a performance profiler, identify bottlenecks, tune performance, and refactor code to get a better performance. Style and approach An easy-to-follow guide full of real-world examples and self-sufficient code snippets that will help you get your hands dirty with high performance programming with Clojure.

Summary Concurrency in .NET teaches you how to build concurrent and scalable programs in .NET using the functional paradigm. This intermediate-level guide is aimed at developers, architects, and passionate computer programmers who are interested in writing code with improved speed and effectiveness by adopting a declarative and pain-free programming style. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Unlock the incredible performance built into your multi-processor machines. Concurrent applications run faster because they spread work across processor cores, performing several tasks at the same time. Modern tools and techniques on the .NET platform, including parallel LINQ, functional programming, asynchronous programming, and the Task Parallel Library, offer powerful alternatives to traditional thread-based concurrency. About the Book Concurrency in .NET teaches you to write code that delivers the speed you need for performance-sensitive applications. Fea-

turing examples in both C# and F#, this book guides you through concurrent and parallel designs that emphasize functional programming in theory and practice. You'll start with the foundations of concurrency and master essential techniques and design practices to optimize code running on modern multiprocessor systems. What's Inside The most important concurrency abstractions Employing the agent programming model Implementing real-time event-stream processing Executing unbounded asynchronous operations Best concurrent practices and patterns that apply to all platforms About the Reader For readers skilled with C# or F#. About the Book Riccardo Terrell is a seasoned software engineer and Microsoft MVP who is passionate about functional programming. He has over 20 years' experience delivering cost-effective technology solutions in a competitive business environment. Table of Contents PART 1 - Benefits of functional programming applicable to concurrent programs Functional concurrency foundations Functional programming techniques for concurrency Functional data structures and immutability PART 2 - How to approach the different parts of a concurrent program The basics of processing big data: data parallelism, part 1 PLINQ and MapReduce: data parallelism, part 2 Real-time event streams: functional reactive programming Task-based functional parallelism Task asynchronicity for the win Asynchronous functional programming in F# Functional combinators for fluent concurrent programming Applying reactive programming everywhere with agents Parallel workflow and agent programming with TPL Dataflow PART 3 - Modern patterns of concurrent programming applied Recipes and design patterns for successful concurrent programming Building a scalable mobile app with concurrent functional programming

Just as Strunk and White's "The Elements of Style" provides rules of usage for writing in the English language, this text furnishes a set of rules for writing in C#.

Take performance to the next level! This book does not just teach you how the CLR works---it teaches you exactly what you need to do now to obtain the best performance today. It will expertly guide you through the nuts and bolts of extreme performance optimization in .NET, complete with in-depth examinations of CLR functionality, free tool recommendations and tutorials, useful anecdotes, and step-by-step guides to measure and improve performance. This second edition incorporates the advances and improvements in .NET over the last few years, as well as greatly expanded coverage of tools, more topics, more tutorials, more tips, and improvements throughout the entire book. New in the 2nd Edition: 50% increase in content! New examples, code samples, and diagrams throughout entire book More ways to analyze the heap and find memory problems More tool coverage, including expanded usage of Visual Studio More benchmarking New GC configuration options Code warmup techniques New .NET features such as ref-returns, value tuples, SIMD, and more More detailed analysis of LINQ Tips for high-level feature areas such as ASP.NET, ADO.NET, and WPF Also find expanded coverage and discover new tips and tricks for: Profiling with multiple tools to quickly find problem areas Detailed description of the garbage collector, how to optimize your code for it, and how to diagnose difficult memory-related issues How to analyze JIT and diagnose warmup problems Effective use of the Task Parallel Library to maximize throughput Which .NET features and APIs to use and which to avoid Instrument your program with performance coun-

ters and ETW events Use the latest and greatest .NET features Build a performance-minded team ...and so much more Performance tuning is becoming more important than it has been for the last 40 years. Read this book to understand your application's performance that runs on a modern CPU and learn how you can improve it. The 170+ page guide combines the knowledge of many optimization experts from different industries.

If you're one of the many developers uncertain about concurrent and multithreaded development, this practical cookbook will change your mind. With more than 75 code-rich recipes, author Stephen Cleary demonstrates parallel processing and asynchronous programming techniques, using libraries and language features in .NET 4.5 and C# 5.0. Concurrency is becoming more common in responsive and scalable application development, but it's been extremely difficult to code. The detailed solutions in this cookbook show you how modern tools raise the level of abstraction, making concurrency much easier than before. Complete with ready-to-use code and discussions about how and why the solution works, you get recipes for using: `async` and `await` for asynchronous operations Parallel programming with the Task Parallel Library The TPL Dataflow library for creating dataflow pipelines Capabilities that Reactive Extensions build on top of LINQ Unit testing with concurrent code Interop scenarios for combining concurrent approaches Immutable, threadsafe, and producer/consumer collections Cancellation support in your concurrent code Asynchronous-friendly Object-Oriented Programming Thread synchronization for accessing data Use this in-depth guide to correctly design benchmarks, measure

key performance metrics of .NET applications, and analyze results. This book presents dozens of case studies to help you understand complicated benchmarking topics. You will avoid common pitfalls, control the accuracy of your measurements, and improve performance of your software. Author Andrey Akinshin has maintained BenchmarkDotNet (the most popular .NET library for benchmarking) for five years and covers common mistakes that developers usually make in their benchmarks. This book includes not only .NET-specific content but also essential knowledge about performance measurements which can be applied to any language or platform (common benchmarking methodology, statistics, and low-level features of modern hardware). What You'll Learn Be aware of the best practices for writing benchmarks and performance tests Avoid the common benchmarking pitfalls Know the hardware and software factors that affect application performance Analyze performance measurements Who This Book Is For .NET developers concerned with the performance of their applications

Why does the word "legacy" with synonyms like heritage and birthright now describe difficult software? What anchors our code making it rigid and unyielding? How do we identify those anchors? How do we write code that is less painful and more resilient? Leonard is a software architect and .NET specialist who has spent his career asking and answering these questions. He has developed a list of maxims that serve as reminders on how to build systems that are easier to maintain, adapt, and grow. When encountering difficult code, it is easy to want to tear it all down and start fresh. If we choose to do that, how do we ensure our successors will not want to do the same? What if we didn't have

to tear it all down? What if we could identify the pain points in the current system and abstract them? This book is full of examples. For example, the open/closed principle, the second of five well-known SOLID principles, says our code should be open for extension and closed for modification, but what does it look like when our code is closed for extension or open for modification? Each chapter of this book will focus on one of Leonard's code maxims which will highlight either some aspect of code design or the software development lifecycle. Through this book, you will learn how to identify those things anchoring your code to the past. You will learn concepts that make testing and maintainability easy. Your code will be more resilient. When confronted with difficult code or changing business requirements, you will become more resilient. This book starts with an introduction to the core concepts of .NET memory management and garbage collection, and then quickly layers on additional details and intricacies. Once you're up to speed, you can dive into the guided troubleshooting tour, and tips for engineering your application to maximise performance. And to finish off, take a look at some more sophisticated considerations, and even a peek inside the Windows memory model.

Coding and testing are often considered separate areas of expertise. In this comprehensive guide, author and Java expert Scott Oaks takes the approach that anyone who works with Java should be equally adept at understanding how code behaves in the JVM, as well as the tunings likely to help its performance. You'll gain in-depth knowledge of Java application performance, using the Java Virtual Machine (JVM) and the Java platform, including the language and API. Developers and performance engineers alike will

learn a variety of features, tools, and processes for improving the way Java 7 and 8 applications perform. Apply four principles for obtaining the best results from performance testing Use JDK tools to collect data on how a Java application is performing Understand the advantages and disadvantages of using a JIT compiler Tune JVM garbage collectors to affect programs as little as possible Use techniques to manage heap memory and JVM native memory Maximize Java threading and synchronization performance features Tackle performance issues in Java EE and Java SE APIs Improve Java-driven database application performance

If you're like most developers, you rely heavily on JavaScript to build interactive and quick-responding web applications. The problem is that all of those lines of JavaScript code can slow down your apps. This book reveals techniques and strategies to help you eliminate performance bottlenecks during development. You'll learn how to improve execution time, downloading, interaction with the DOM, page life cycle, and more. Yahoo! frontend engineer Nicholas C. Zakas and five other JavaScript experts—Ross Harmes, Julien Lecomte, Steven Levithan, Stoyan Stefanov, and Matt Sweeney—demonstrate optimal ways to load code onto a page, and offer programming tips to help your JavaScript run as efficiently and quickly as possible. You'll learn the best practices to build and deploy your files to a production environment, and tools that can help you find problems once your site goes live. Identify problem code and use faster alternatives to accomplish the same task Improve scripts by learning how JavaScript stores and accesses data Implement JavaScript code so that it doesn't slow down interaction with the DOM Use optimization techniques to improve runtime performance Learn ways to ensure the UI is

responsive at all times Achieve faster client-server communication Use a build system to minify files, and HTTP compression to deliver them to the browser

An example-driven guide covering modern web app development techniques and emerging technologies such as WebAssembly, Service Workers, and Svelte.js to build faster, secure, and scalable apps Key FeaturesDiscover effective techniques for accessing DOM, minimizing painting, and using a V8 engine to optimize JavaScriptUnderstand what makes the web tick and create apps that look and feel like native desktop applicationsExplore modern JavaScript frameworks like Svelte.js for building next-gen web appsBook Description High-performance web development is all about cutting through the complexities in different layers of a web app and building services and APIs that improve the speed and performance of your apps on the browser. With emerging web technologies, building scalable websites and sustainable web apps is smoother than ever. This book starts by taking you through the web frontend, popular web development practices, and the latest version of ES and JavaScript. You'll work with Node.js and learn how to build web apps without a framework. The book consists of three hands-on examples that help you understand JavaScript applications at both the server-side and the client-side using Node.js and Svelte.js. Each chapter covers modern techniques such as DOM manipulation and V8 engine optimization to strengthen your understanding of the web. Finally, you'll delve into advanced topics such as CI/CD and how you can harness their capabilities to speed up your web development dramatically. By the end of this web development book, you'll have understood how the JavaScript landscape has evolved, not just

for the frontend but also for the backend, and be ready to use new tools and techniques to solve common web problems. What you will learnExplore Vanilla JavaScript for optimizing the DOM, classes, and modules, and querying with jQueryUnderstand immutable and mutable code and develop faster web appsDelve into Svelte.js and use it to build a complete real-time Todo appBuild apps to work offline by caching calls using service workersWrite C++ native code and call the WebAssembly module with JavaScript to run it on a browserImplement CircleCI for continuous integration in deploying your web appsWho this book is for This JavaScript book is for web developers, C/C++ programmers, and anyone who wants to build robust web applications using advanced web technologies. This book assumes a good grasp of Vanilla JavaScript and an understanding of web development tools, such as Chrome Developer tools or Mozilla's developer tools.

Take performance to the next level!

This book does not just teach you how the CLR works---it teaches you exactly what you need to do now to obtain the best performance today. It will expertly guide you through the nuts and bolts of extreme performance optimization in .NET, complete with in-depth examinations of CLR functionality, free tool recommendations and tutorials, useful anecdotes, and step-by-step guides to measure and improve performance.

This second edition incorporates the advances and improvements in .NET over the last few years, as well as greatly expanded coverage of tools, more topics, more tutorials, more tips, and improvements throughout the entire book.

New in the 2nd Edition:

- 50% increase in content!
- New examples, code samples, and diagrams throughout entire book
- More ways to analyze the heap and find memory problems
- More tool coverage, including expanded usage of Visual Studio
- More benchmarking
- New GC configuration options
- Code warmup techniques
- New .NET features such as ref-returns, value tuples, SIMD, and more
- More detailed analysis of LINQ
- Tips for high-level feature areas such as ASP.NET, ADO.NET, and WPF

Also find expanded coverage and discover new tips and tricks for:

- Profiling with multiple tools to quickly find problem areas
- Detailed description of the garbage collector, how to optimize your code for it, and how to diagnose difficult memory-related issues
- How to analyze JIT and diagnose warmup problems
- Effective use of the Task Parallel Library to maximize throughput
- Which .NET features and APIs to use and which to avoid
- Instrument your program with performance counters and ETW events
- Use the latest and greatest .NET features

- Build a performance-minded team
- ...and so much more

Summary Metaprogramming in .NET is designed to help readers understand the basic concepts, advantages, and potential pitfalls of metaprogramming. It introduces core concepts in clear, easy-to-follow language and then it takes you on a deep dive into the tools and techniques you'll use to implement them in your .NET code. You'll explore plenty of real-world examples that reinforce key concepts. When you finish, you'll be able to build high-performance, metaprogramming-enabled software with confidence. About the Technology When you write programs that create or modify other programs, you are metaprogramming. In .NET, you can use reflection as well as newer concepts like code generation and scriptable software. The emerging Roslyn project exposes the .NET compiler as an interactive API, allowing compile-time code analysis and just-in-time refactoring. About this Book Metaprogramming in .NET is a practical introduction to the use of metaprogramming to improve the performance and maintainability of your code. This book avoids abstract theory and instead teaches you solid practices you'll find useful immediately. It introduces core concepts like code generation and application composition in clear, easy-to-follow language. Written for readers comfortable with C# and the .NET framework—no prior experience with metaprogramming is required. Purchase of the print book comes with an offer of a free PDF, ePub, and Kindle eBook from Manning. Also available is all code from the book. What's Inside Metaprogramming concepts in plain language Creating scriptable software Code generation techniques The Dynamic Language

Runtime About the Authors Kevin Hazzard is a Microsoft MVP, consultant, teacher, and developer community leader in the mid-Atlantic USA. Jason Bock is an author, Microsoft MVP, and the leader of the Twin Cities Code Camp. "An excellent way to start fully using the power of metaprogramming."—From the Foreword by Rockford Lhotka, Creator of the CSLA .NET Framework Table of Contents PART 1 DEMYSTIFYING METAPROGRAMMING Metaprogramming concepts Exploring code and metadata with reflection PART 2 TECHNIQUES FOR GENERATING CODE The Text Template Transformation Toolkit (T4) Generating code with the CodeDOM Generating code with Reflection.Emit Generating code with expressions Generating code with IL rewriting PART 3 LANGUAGES AND TOOLS The Dynamic Language Runtime Languages and tools Managing the .NET Compiler

Proven methodologies and concurrency techniques that will help you write faster and better code with Go programming Key Features Explore Go's profiling tools to write faster programs by identifying and fixing bottlenecks Address Go-specific performance issues such as memory allocation and garbage collection Delve into the subtleties of concurrency and discover how to successfully implement it in everyday applications Book Description Go is an easy-to-write language that is popular among developers thanks to its features such as concurrency, portability, and ability to reduce complexity. This Golang book will teach you how to construct idiomatic Go code that is reusable and highly performant. Starting with an introduction to performance concepts, you'll understand the ideology behind Go's performance. You'll then learn how to effectively implement Go data structures and algorithms along with exploring data manipulation and organization to write

programs for scalable software. This book covers channels and goroutines for parallelism and concurrency to write high-performance code for distributed systems. As you advance, you'll learn how to manage memory effectively. You'll explore the compute unified device architecture (CUDA) application programming interface (API), use containers to build Go code, and work with the Go build cache for quicker compilation. You'll also get to grips with profiling and tracing Go code for detecting bottlenecks in your system. Finally, you'll evaluate clusters and job queues for performance optimization and monitor the application for performance regression. By the end of this Go programming book, you'll be able to improve existing code and fulfill customer requirements by writing efficient programs. What you will learn Organize and manipulate data effectively with clusters and job queues Explore commonly applied Go data structures and algorithms Write anonymous functions in Go to build reusable apps Profile and trace Go apps to reduce bottlenecks and improve efficiency Deploy, monitor, and iterate Go programs with a focus on performance Dive into memory management and CPU and GPU parallelism in Go Who this book is for This Golang book is a must for developers and professionals who have an intermediate-to-advanced understanding of Go programming, and are interested in improving their speed of code execution.

Do you want your .NET code to have the absolute best performance it can? This book demystifies the CLR, teaching you how and why to write code with optimum performance. Learn critical lessons from a person who helped design and build one of the largest high-performance .NET systems in the world. This book does not just teach you how the CLR works—it teaches you exactly

what you need to do now to obtain the best performance today. It will expertly guide you through the nuts and bolts of extreme performance optimization in .NET, complete with in-depth examinations of CLR functionality, free tool recommendations and tutorials, useful anecdotes, and step-by-step guides to measure and improve performance. Among the topics you will learn are how to: Choose what to measure and why Use many amazing tools, freely available, to solve problems quickly Understand the .NET garbage collector and its effect on your application Use effective coding patterns that lead to optimal garbage collection performance Diagnose common GC-related issues Reduce costs of JITting Use multiple threads sanely and effectively, avoiding synchronization problems Know which .NET features and APIs to use and which to avoid Use code generation to avoid performance problems Measure everything and expose hidden performance issues Instrument your program with performance counters and ETW events Use the latest and greatest .NET features Ensure your code can run on mobile devices without problems Build a performance-minded team ...and much more.

Expert C# 5.0 is a book about getting the best from C#. It's based on the principle that to write good, high-performance, robust applications you need to understand what's going on deep under the hood. If you are already experienced with writing managed applications and want to learn more about how to get the best from the language at an advanced level, then this is the book for you. Expert C# 5.0 discusses the familiar C# language in forensic detail. Examining familiar elements closely to reveal how they really work. Key language features that you are already familiar with, such as Enums, Strings and Collections, are teased apart and examined under the twin microscopes of MSIL (Intermediate Language) and the Windbg debugger to see what's really going on behind the scenes as your code is compiled and passed to the CLR. This unparalleled depth of explanation will help you to become a true master of the C# language and architect better crafted applications that work in the most efficient and reliable way possible. It will also give you the insight you need to rapidly identify and fix the stubborn coding faults that others may be unable to diagnose.