

# Liskov Substitution Principle C

## Implementing Design Patterns in C# and .NET 5

Implement robust applications by applying efficient Design Patterns with .NET 5 and C#

**KEY FEATURES**

- ? Detailed theoretical concepts covered, including the use of encapsulation, interfaces, and inheritance.
- ? Access to solutions applied for software strategy and final product output.
- ? Simplified demonstration of real applications implementing numerous design patterns.

**DESCRIPTION** This book covers detailed aspects of Design Patterns and Object-Oriented Programming concepts using the most modern version of the C# language and .NET platform, including many real-world examples and good practice guidelines that help developers in building robust and extensible applications. The book begins with the essential concepts of C# programming and the .NET platform. You get your foundation strong by understanding SOLID Principles and the actual implementation of reliable applications. You will be working on most common Design Patterns such as Abstract Factory, Adapter, Composite, Proxy, Command, Strategy, Observer, Factory Method, Singleton, Builder, Interpreter, Mediator, and many other patterns that will help you to create solid enterprise applications. You will also witness the performance of these design patterns in a real software development environment with the help of practical examples. After learning the most common Design Patterns practiced in .NET enterprise applications, the reader will be able to understand and apply good practices of software development based on the object-oriented paradigm to develop complex enterprise applications efficiently and simply.

**WHAT YOU WILL LEARN**

- ? Fine-tune your knowledge about interfaces, polymorphism, and encapsulation.
- ? Learn to practice implementing design patterns in enterprise applications.
- ? Implement rich design patterns: Observer, Strategy, Command, Proxy, and more.
- ? Get to learn the latest additional design patterns such as Builder, Bridge, and Decorator.
- ? Includes illustrations, examples, and real use-cases of .NET 5.0 applications.

**WHO THIS BOOK IS FOR** This book is for .NET developers, application developers, and software engineers who want to develop .NET applications with proven techniques and build error-free applications. This book also attracts fresh graduates and entry-level developers as long as basic knowledge about .NET is known to them.

**TABLE OF CONTENTS**

1. C# Fundamentals
2. Introduction to .NET 5
3. Basic Concepts of Object-Oriented Programming
4. Interfaces in C#
5. Encapsulation and Polymorphism in C#
6. SOLID Principles in C#
7. Abstract Factory
8. Abstract Factory
9. Prototype
10. Factory Method
11. Adapter
12. Composite
13. Proxy
14. Command
15. Strategy
16. Observer
17. Good Practices and Additional Design Patterns

## Design Patterns and Best Practices in Java

Create various design patterns to master the art of solving problems using Java

**Key Features** This book demonstrates the shift from OOP to functional programming and covers reactive and functional patterns in a clear and step-by-step manner. All the design patterns come with a practical use case as part of the explanation, which will improve your productivity. Tackle all kinds of performance-related issues and streamline your development.

**Book Description** Having a knowledge of design patterns enables you, as a developer, to improve your code base, promote code reuse, and make the architecture more robust. As languages evolve, new features take time to fully understand before they are adopted en masse. The mission of this book is to ease the adoption of the latest trends and provide good practices for programmers. We focus on showing you the practical aspects of smarter coding in Java. We'll start off by going over object-oriented (OOP) and functional programming (FP) paradigms, moving on to describe the most frequently used design patterns in their classical format and explain how Java's functional programming features are changing them. You will learn to enhance implementations by mixing OOP and FP, and finally get to know about the reactive programming model, where FP and OOP are used in conjunction with a view to writing better code. Gradually, the book will show you the latest trends in architecture, moving from MVC to microservices and serverless architecture. We will finish off by highlighting the new Java features and best practices. By the

end of the book, you will be able to efficiently address common problems faced while developing applications and be comfortable working on scalable and maintainable projects of any size. What you will learn Understand the OOP and FP paradigms Explore the traditional Java design patterns Get to know the new functional features of Java See how design patterns are changed and affected by the new features Discover what reactive programming is and why is it the natural augmentation of FP Work with reactive design patterns and find the best ways to solve common problems using them See the latest trends in architecture and the shift from MVC to serverless applications Use best practices when working with the new features Who this book is for This book is for those who are familiar with Java development and want to be in the driver's seat when it comes to modern development techniques. Basic OOP Java programming experience and elementary familiarity with Java is expected.

## **Agile Principles, Patterns, and Practices in C#**

With the award-winning book *Agile Software Development: Principles, Patterns, and Practices*, Robert C. Martin helped bring Agile principles to tens of thousands of Java and C++ programmers. Now .NET programmers have a definitive guide to agile methods with this completely updated volume from Robert C. Martin and Micah Martin, *Agile Principles, Patterns, and Practices in C#*. This book presents a series of case studies illustrating the fundamentals of Agile development and Agile design, and moves quickly from UML models to real C# code. The introductory chapters lay out the basics of the agile movement, while the later chapters show proven techniques in action. The book includes many source code examples that are also available for download from the authors' Web site. Readers will come away from this book understanding Agile principles, and the fourteen practices of Extreme Programming Spiking, splitting, velocity, and planning iterations and releases Test-driven development, test-first design, and acceptance testing Refactoring with unit testing Pair programming Agile design and design smells The five types of UML diagrams and how to use them effectively Object-oriented package design and design patterns How to put all of it together for a real-world project Whether you are a C# programmer or a Visual Basic or Java programmer learning C#, a software development manager, or a business analyst, *Agile Principles, Patterns, and Practices in C#* is the first book you should read to understand agile software and how it applies to programming in the .NET Framework.

## **Test-Driven Development for Embedded C**

This collection of articles by well-known experts was originally published in 2000 and is intended for researchers in computer science, practitioners of formal methods, and computer programmers working in safety-critical applications or in the technology of component-based systems. The work brings together several elements of this area that were fast becoming the focus of much research and practice in computing. The introduction by Clemens Szyperski gives a snapshot of research in the field. About half the articles deal with theoretical frameworks, models, and systems of notation; the rest of the book concentrates on case studies by researchers who have built prototype systems and present findings on architectures verification. The emphasis is on advances in the technological infrastructure of component-based systems; how to design and specify reusable components; and how to reason about, verify, and validate systems from components. Thus the book shows how theory might move into practice.

## **Foundations of Component-Based Systems**

Write code that can adapt to changes. By applying this book's principles, you can create code that accommodates new requirements and unforeseen scenarios without significant rewrites. Gary McLean Hall describes Agile best practices, principles, and patterns for designing and writing code that can evolve more quickly and easily, with fewer errors, because it doesn't impede change. Now revised, updated, and expanded, *Adaptive Code, Second Edition* adds indispensable practical insights on Kanban, dependency inversion, and creating reusable abstractions. Drawing on over a decade of Agile consulting and development experience, McLean Hall has updated his best-seller with deeper coverage of unit testing, refactoring, pure

dependency injection, and more. Master powerful new ways to:

- Write code that enables and complements Scrum, Kanban, or any other Agile framework
- Develop code that can survive major changes in requirements
- Plan for adaptability by using dependencies, layering, interfaces, and design patterns
- Perform unit testing and refactoring in tandem, gaining more value from both
- Use the “golden master” technique to make legacy code adaptive
- Build SOLID code with single-responsibility, open/closed, and Liskov substitution principles
- Create smaller interfaces to support more-diverse client and architectural needs
- Leverage dependency injection best practices to improve code adaptability
- Apply dependency inversion with the Stairway pattern, and avoid related anti-patterns

About You This book is for programmers of all skill levels seeking more-practical insight into design patterns, SOLID principles, unit testing, refactoring, and related topics. Most readers will have programmed in C#, Java, C++, or similar object-oriented languages, and will be familiar with core procedural programming techniques.

## Adaptive Code

Unleash the true power of JavaScript by mastering Object-Oriented programming principles and patterns

About This Book Covering all the new Object-Oriented features introduced in ES6, this book shows you how to build large-scale web apps

Build apps that promote scalability, maintainability, and reusability

Learn popular Object-Oriented programming (OOP) principles and design patterns to build robust apps

Implement Object-Oriented concepts in a wide range of front-end architectures

Who This Book Is For This book is ideal for you if you are a JavaScript developers who wants to gain expertise in OOP with JavaScript to improve your web development skills and build professional quality web applications. What You Will Learn Master JavaScript's OOP features, including the one's provided by ES6 specification

Identify and apply the most common design patterns such as Singleton, Factory, Observer, Model-View-Controller, and Mediator

Patterns Understand the SOLID principles and their benefits Use the acquired OOP knowledge to build robust and maintainable code

Design applications using a modular architecture based on SOLID principles

In Detail ECMAScript 6 introduces several new Object-Oriented features that drastically change the way developers structure their projects. Web developers now have some advanced OOP functionality at their disposal to build large-scale applications in JavaScript. With this book, we'll provide you with a comprehensive overview of OOP principles in JavaScript and how they can be implemented to build sophisticated web applications. Kicking off with a subtle refresher on objects, we'll show you how easy it is to define objects with the new ES6 classes. From there, we'll fly you through some essential OOP principles, forming a base for you to get hands-on with encapsulation. You'll get to work with the different methods of inheritance and we'll show you how to avoid using inheritance with Duck Typing. From there, we'll move on to some advanced patterns for object creation and you'll get a strong idea of how to use interesting patterns to present data to users and to bind data. We'll use the famous promises to work with asynchronous processes and will give you some tips on how to organize your code effectively. You'll find out how to create robust code using SOLID principles and finally, we'll show you how to clearly define the goals of your application architecture to get better, smarter, and more effective coding. This book is your one-way ticket to becoming a JavaScript Jedi who can be counted on to deliver flexible and maintainable code. Style and approach This comprehensive guide on advanced OOP principles and patterns in JavaScript is packed with real-world use cases, and shows you how to implement advanced OOP features to build sophisticated web applications that promote scalability and reusability.

## Mastering JavaScript Object-Oriented Programming

This book will teach the concepts of test driven development in Java so you can build clean, maintainable and robust code

Key Features Explore the most popular TDD tools and frameworks and become more proficient in building applications

Create applications with better code design, fewer bugs, and higher test coverage, enabling you to get them to market quickly

Implement test-driven programming methods into your development workflows

Book Description Test-driven development (TDD) is a development approach that relies on a test-first procedure that emphasizes writing a test before writing the necessary code, and then refactoring the code to optimize it. The value of performing TDD with Java, one of the longest established

programming languages, is to improve the productivity of programmers and the maintainability and performance of code, and develop a deeper understanding of the language and how to employ it effectively. Starting with the basics of TDD and understanding why its adoption is beneficial, this book will take you from the first steps of TDD with Java until you are confident enough to embrace the practice in your day-to-day routine. You'll be guided through setting up tools, frameworks, and the environment you need, and we will dive right into hands-on exercises with the goal of mastering one practice, tool, or framework at a time. You'll learn about the Red-Green-Refactor procedure, how to write unit tests, and how to use them as executable documentation. With this book, you'll also discover how to design simple and easily maintainable code, work with mocks, utilize behavior-driven development, refactor old legacy code, and release a half-finished feature to production with feature toggles. You will finish this book with a deep understanding of the test-driven development methodology and the confidence to apply it to application programming with Java. What you will learn Explore the tools and frameworks required for effective TDD development Perform the Red-Green-Refactor process efficiently, the pillar around which all other TDD procedures are based Master effective unit testing in isolation from the rest of your code Design simple and easily maintainable code by implementing different techniques Use mocking frameworks and techniques to easily write and quickly execute tests Develop an application to implement behavior-driven development in conjunction with unit testing Enable and disable features using feature toggles Who this book is for If you're an experienced Java developer and want to implement more effective methods of programming systems and applications, then this book is for you.

## **Test-Driven Java Development, Second Edition**

Learn the importance of architectural and design patterns in producing and sustaining next-generation IT and business-critical applications with this guide. About This Book Use patterns to tackle communication, integration, application structure, and more Implement modern design patterns such as microservices to build resilient and highly available applications Choose between the MVP, MVC, and MVVM patterns depending on the application being built Who This Book Is For This book will empower and enrich IT architects (such as enterprise architects, software product architects, and solution and system architects), technical consultants, evangelists, and experts. What You Will Learn Understand how several architectural and design patterns work to systematically develop multitier web, mobile, embedded, and cloud applications Learn object-oriented and component-based software engineering principles and patterns Explore the frameworks corresponding to various architectural patterns Implement domain-driven, test-driven, and behavior-driven methodologies Deploy key platforms and tools effectively to enable EA design and solutioning Implement various patterns designed for the cloud paradigm In Detail Enterprise Architecture (EA) is typically an aggregate of the business, application, data, and infrastructure architectures of any forward-looking enterprise. Due to constant changes and rising complexities in the business and technology landscapes, producing sophisticated architectures is on the rise. Architectural patterns are gaining a lot of attention these days. The book is divided in three modules. You'll learn about the patterns associated with object-oriented, component-based, client-server, and cloud architectures. The second module covers Enterprise Application Integration (EAI) patterns and how they are architected using various tools and patterns. You will come across patterns for Service-Oriented Architecture (SOA), Event-Driven Architecture (EDA), Resource-Oriented Architecture (ROA), big data analytics architecture, and Microservices Architecture (MSA). The final module talks about advanced topics such as Docker containers, high performance, and reliable application architectures. The key takeaways include understanding what architectures are, why they're used, and how and where architecture, design, and integration patterns are being leveraged to build better and bigger systems. Style and Approach This book adopts a hands-on approach with real-world examples and use cases.

## **Architectural Patterns**

What is this Book About? At the beginning of the 21st century, computer systems—and especially software—play an important role in our society. Software is contained in virtually every technical device that we

use in everyday life (e.g., cellular phones and cars). Furthermore, computers and their software are used for leisure purposes at home (the Internet and computer games), at the office (e.g., writing letters and order processing), and for more complicated tasks such as controlling steel plants or insuring flight safety. Therefore, the quality of software (e.g., its correctness, re-ability, and efficiency) has become important not only in the context of critical systems (e.g., nuclear power plants) but also for our entire society, from business to leisure. Software engineering is the practical application of scientific knowledge for the economical production and use of high-quality software [Pomberger96]. The discipline aims at developing methods, techniques, tools, and standards to fulfill these aims. The number of methods and tools available to the software engineer nowadays is overwhelming; nevertheless, many software projects fail—that is, do not meet their schedules, are over budget, do not meet the user needs, or simply have considerable quality defects. The numerous possible explanations for this situation include poor project management, unsuitable methods and tools used in the project, and poorly developed skills of the participating software engineers.

## **Contracts, Scenarios and Prototypes**

Getting the most out of Python to improve your codebase Key Features Save maintenance costs by learning to fix your legacy codebase Learn the principles and techniques of refactoring Apply microservices to your legacy systems by implementing practical techniques Book Description Python is currently used in many different areas such as software construction, systems administration, and data processing. In all of these areas, experienced professionals can find examples of inefficiency, problems, and other perils, as a result of bad code. After reading this book, readers will understand these problems, and more importantly, how to correct them. The book begins by describing the basic elements of writing clean code and how it plays an important role in Python programming. You will learn about writing efficient and readable code using the Python standard library and best practices for software design. You will learn to implement the SOLID principles in Python and use decorators to improve your code. The book delves more deeply into object oriented programming in Python and shows you how to use objects with descriptors and generators. It will also show you the design principles of software testing and how to resolve software problems by implementing design patterns in your code. In the final chapter we break down a monolithic application to a microservice one, starting from the code as the basis for a solid platform. By the end of the book, you will be proficient in applying industry approved coding practices to design clean, sustainable and readable Python code. What you will learn Set up tools to effectively work in a development environment Explore how the magic methods of Python can help us write better code Examine the traits of Python to create advanced object-oriented design Understand removal of duplicated code using decorators and descriptors Effectively refactor code with the help of unit tests Learn to implement the SOLID principles in Python Who this book is for This book will appeal to team leads, software architects and senior software engineers who would like to work on their legacy systems to save cost and improve efficiency. A strong understanding of Programming is assumed.

## **Clean Code in Python**

Utilize the power of modular programming to improve code readability, maintainability, and testability About This Book This book demonstrates code reusability and distributed development to get high speed, maintainable, and fast applications It illustrates the development of a complete modular application developed using PHP7 in detail This book provides a high-level overview of the Symfony framework, a set of tools and a development methodology that are needed to build a modular web shop application Who This Book Is For This step-by-step guide is divided into two sections. The first section explores all the fundamentals of modular design technique with respect to PHP 7. The latter section demonstrates the practical development of individual modules of a web shop application. What You Will Learn Discover the new features of PHP 7 that are relevant to modular application development Write manageable code based on the GoF design patterns and SOLID principles Define the application requirements of a working modular application Explore the ins and outs of the Symfony framework Build a set of modules based on the Symfony framework that comprise a simple web shop app Use core modules to set the structure and dependencies for

other modules to use Set up entities that are relevant to the module functionality and see how to manage these entities In Detail Modular design techniques help you build readable, manageable, reusable, and more efficient codes. PHP 7, which is a popular open source scripting language, is used to build modular functions for your software. With this book, you will gain a deep insight into the modular programming paradigm and how to achieve modularity in your PHP code. We start with a brief introduction to the new features of PHP 7, some of which open a door to new concepts used in modular development. With design patterns being at the heart of all modular PHP code, you will learn about the GoF design patterns and how to apply them. You will see how to write code that is easy to maintain and extend over time with the help of the SOLID design principles. Throughout the rest of the book, you will build different working modules of a modern web shop application using the Symfony framework, which will give you a deep understanding of modular application development using PHP 7. Style and approach This book is for intermediate-level PHP developers with little to no knowledge of modular programming who want to understand design patterns and principles in order to better utilize the existing frameworks for modular application development.

## **Modular Programming with PHP 7**

"Your process may be agile, but are you building agility directly into the code base? This book teaches .NET programmers how to give code the flexibility to adapt to changing requirements and customer demands by applying cutting-edge techniques, including SOLID principles, design patterns, and other industry best practices. Understand why composition is preferable to inheritance and how flexible the interface really can be; gain deep knowledge of key design patterns and anti-patterns, when to apply them, and how to give their code agility; bridge the gap between the theory behind SOLID principles, design patterns, and industry best practices by pragmatically solving real-world problems; get code samples written in upcoming version of Microsoft Visual C#. Topics include: Agile with Scrum process; dependencies and layering; the interface; patterns and anti-patterns; introduction to SOLID principles, including open/closed and dependency interjection; and using application templates"--Publisher's description.

## **Adaptive Code Via C#**

Section 1 Agile development Section 2 Agile design Section 3 The payroll case study Section 4 Packaging the payroll system Section 5 The weather station case study Section 6 The ETS case study

## **Agile Software Development**

Beginning C# Object-Oriented Programming brings you into the modern world of development as you master the fundamentals of programming with C# and learn to develop efficient, reusable, elegant code through the object-oriented programming (OOP) methodology. Take your skills out of the 20th century and into this one with Dan Clark's accessible, quick-paced guide to C# and object-oriented programming, completely updated for .NET 4.0 and C# 4.0. As you develop techniques and best practices for coding in C#, one of the world's most popular contemporary languages, you'll experience modeling a "real world" application through a case study, allowing you to see how both C# and OOP (a methodology you can use with any number of languages) come together to make your code reusable, modern, and efficient. With more than 30 fully hands-on activities, you'll discover how to transform a simple model of an application into a fully-functional C# project, including designing the user interface, implementing the business logic, and integrating with a relational database for data storage. Along the way, you will explore the .NET Framework, the creation of a Windows-based user interface, a web-based user interface, and service-oriented programming, all using Microsoft's industry-leading Visual Studio 2010, C#, Silverlight, the Entity Framework, and more.

## **Beginning C# Object-Oriented Programming**

"Demystifies object-oriented programming, and lays out how to use it to design truly secure and performant

applications.” —Charles Soetan, Plum.io Key Features Dozens of techniques for writing object-oriented code that’s easy to read, reuse, and maintain Write code that other programmers will instantly understand Design rules for constructing objects, changing and exposing state, and more Examples written in an instantly familiar pseudocode that’s easy to apply to Java, Python, C#, and any object-oriented language Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About The Book Well-written object-oriented code is easy to read, modify, and debug. Elevate your coding style by mastering the universal best practices for object design presented in this book. These clearly presented rules, which apply to any OO language, maximize the clarity and durability of your codebase and increase productivity for you and your team. In Object Design Style Guide, veteran developer Matthias Noback lays out design rules for constructing objects, defining methods, and much more. All examples use instantly familiar pseudocode, so you can follow along in the language you prefer. You’ll go case by case through important scenarios and challenges for object design and then walk through a simple web application that demonstrates how different types of objects can work together effectively. What You Will Learn Universal design rules for a wide range of objects Best practices for testing objects A catalog of common object types Changing and exposing state Test your object design skills with exercises This Book Is Written For For readers familiar with an object-oriented language and basic application architecture. About the Author Matthias Noback is a professional web developer with nearly two decades of experience. He runs his own web development, training, and consultancy company called “Noback’s Office.” Table of Contents: 1 | Programming with objects: A primer 2 | Creating services 3 | Creating other objects 4 | Manipulating objects 5 | Using objects 6 | Retrieving information 7 | Performing tasks 8 | Dividing responsibilities 9 | Changing the behavior of services 10 | A field guide to objects 11 | Epilogue

## Object Design Style Guide

Cay Horstmann offers readers an effective means for mastering computing concepts and developing strong design skills. This book introduces object-oriented fundamentals critical to designing software and shows how to implement design techniques. The author's clear, hands-on presentation and outstanding writing style help readers to better understand the material.· A Crash Course in Java· The Object-Oriented Design Process· Guidelines for Class Design· Interface Types and Polymorphism· Patterns and GUI Programming· Inheritance and Abstract Classes· The Java Object Model· Frameworks· Multithreading· More Design Patterns

## Object-Oriented Design And Patterns

This book teaches you all the essential knowledge required to learn and apply time-proven SOLID principles of object-oriented design and important design patterns in ASP.NET Core 1.0 (formerly ASP.NET 5) applications. You will learn to write server-side as well as client-side code that makes use of proven practices and patterns. SOLID is an acronym popularized by Robert Martin used to describe five basic principles of good object-oriented design--Single Responsibility, Open/Closed, Liskov Substitution, Interface Segregation and Dependency Inversion. This book covers all five principles and illustrates how they can be used in ASP.NET Core 1.0 applications. Design Patterns are time proven solutions to commonly occurring software design problems. The most well-known catalog of design patterns comes from Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides, the so-called as GoF patterns (Gang of Four patterns). This book contains detailed descriptions of how to apply Creational, Structural and Behavioral GoF design patterns along with some Patterns of Enterprise Application Architecture. Popular JavaScript patterns are covered, along with working examples of all these patterns in ASP.NET Core 1.0 and C# are included. What You Will Learn: How to apply SOLID principles to ASP.NET applications How to use Gang of Four (GoF) design patterns in ASP.NET applications Techniques for applying Patterns of Enterprise Application Architecture cataloged by Martin Fowler in ASP.NET applications How to organize code and apply design patterns in JavaScript Who This Book Is For: This book is for ASP.NET developers familiar with ASP.NET Core 1.0, C# and Visual Studio.

# Beginning SOLID Principles and Design Patterns for ASP.NET Developers

Publisher's Note: Microsoft stops supporting .NET Core 3.1 in December 2022. The newer 7th edition of this book is available that covers .NET 7 (end-of-life May 2024) or .NET 6 (end-of-life November 2024), with C# 11 and EF Core 7. Key Features Build modern, cross-platform applications with .NET Core 3.0 Get up to speed with C#, and up to date with all the latest features of C# 8.0 Start creating professional web applications with ASP.NET Core 3.0 Book Description In C# 8.0 and .NET Core 3.0 – Modern Cross-Platform Development, Fourth Edition, expert teacher Mark J. Price gives you everything you need to start programming C# applications. This latest edition uses the popular Visual Studio Code editor to work across all major operating systems. It is fully updated and expanded with new chapters on Content Management Systems (CMS) and machine learning with ML.NET. The book covers all the topics you need. Part 1 teaches the fundamentals of C#, including object-oriented programming, and new C# 8.0 features such as nullable reference types, simplified switch pattern matching, and default interface methods. Part 2 covers the .NET Standard APIs, such as managing and querying data, monitoring and improving performance, working with the filesystem, async streams, serialization, and encryption. Part 3 provides examples of cross-platform applications you can build and deploy, such as web apps using ASP.NET Core or mobile apps using Xamarin.Forms. The book introduces three technologies for building Windows desktop applications including Windows Forms, Windows Presentation Foundation (WPF), and Universal Windows Platform (UWP) apps, as well as web applications, web services, and mobile apps. What you will learn Build cross-platform applications for Windows, macOS, Linux, iOS, and Android Explore application development with C# 8.0 and .NET Core 3.0 Explore ASP.NET Core 3.0 and create professional web applications Learn object-oriented programming and C# multitasking Query and manipulate data using LINQ Use Entity Framework Core and work with relational databases Discover Windows app development using the Universal Windows Platform and XAML Build mobile applications for iOS and Android using Xamarin.Forms Who this book is for Readers with some prior programming experience or with a science, technology, engineering, or mathematics (STEM) background, who want to gain a solid foundation with C# 8.0 and .NET Core 3.0.

## C# 8.0 and .NET Core 3.0 – Modern Cross-Platform Development

Software -- Software Engineering.

## Design Patterns

With its support for dynamic programming, C# 4.0 continues to evolve as a versatile language on its own. But when C# is used with .NET Framework 4, the combination is incredibly powerful. This bestselling tutorial shows you how to build web, desktop, and rich Internet applications using C# 4.0 with .NET's database capabilities, UI framework (WPF), extensive communication services (WCF), and more. In this sixth edition, .NET experts Ian Griffiths, Matthew Adams, and Jesse Liberty cover the latest enhancements to C#, as well as the fundamentals of both the language and framework. You'll learn concurrent programming with C# 4.0, and how to use .NET tools such as the Entity Framework for easier data access, and the Silverlight platform for browser-based RIA development. Learn C# fundamentals, such as variables, flow control, loops, and methods Build complex programs with object-oriented and functional programming techniques Process large collections of data with the native query features in LINQ Communicate across networks with Windows Communication Foundation (WCF) Learn the advantages of C# 4.0's dynamic language features Build interactive Windows applications with Windows Presentation Foundation (WPF) Create rich web applications with Silverlight and ASP.NET

## Programming C# 4.0

Practical Software Architecture Solutions from the Legendary Robert C. Martin ("Uncle Bob") By applying universal rules of software architecture, you can dramatically improve developer productivity throughout the life of any software system. Now, building upon the success of his best-selling books Clean Code and The



Clean Coder, legendary software craftsman Robert C. Martin (“Uncle Bob”) reveals those rules and helps you apply them. Martin’s Clean Architecture doesn’t merely present options. Drawing on over a half-century of experience in software environments of every imaginable type, Martin tells you what choices to make and why they are critical to your success. As you’ve come to expect from Uncle Bob, this book is packed with direct, no-nonsense solutions for the real challenges you’ll face—the ones that will make or break your projects. Learn what software architects need to achieve—and core disciplines and practices for achieving it. Master essential software design principles for addressing function, component separation, and data management. See how programming paradigms impose discipline by restricting what developers can do. Understand what’s critically important and what’s merely a “detail.” Implement optimal, high-level structures for web, database, thick-client, console, and embedded applications. Define appropriate boundaries and layers, and organize components and services. See why designs and architectures go wrong, and how to prevent (or fix) these failures. Clean Architecture is essential reading for every current or aspiring software architect, systems analyst, system designer, and software manager—and for every programmer who must execute someone else’s designs. Register your product for convenient access to downloads, updates, and/or corrections as they become available.

## Clean Architecture

& Most software practitioners deal with inherited code; this book teaches them how to optimize it & & Workbook approach facilitates the learning process & & Helps you identify where problems in a software application exist or are likely to exist

## Refactoring Workbook

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.

## Clean Code in C#

Apply modern C++17 to the implementations of classic design patterns. As well as covering traditional design patterns, this book fleshes out new patterns and approaches that will be useful to C++ developers. The author presents concepts as a fun investigation of how problems can be solved in different ways, along the way using varying degrees of technical sophistication and explaining different sorts of trade-offs. Design Patterns in Modern C++ also provides a technology demo for modern C++, showcasing how some of its latest features (e.g., coroutines) make difficult problems a lot easier to solve. The examples in this book are all suitable for putting into production, with only a few simplifications made in order to aid readability. What You Will Learn Apply design patterns to modern C++ programming Use creational patterns of builder, factories, prototype and singleton Implement structural patterns such as adapter, bridge, decorator, facade and more Work with the behavioral patterns such as chain of responsibility, command, iterator, mediator and more Apply functional design patterns such as Monad and more Who This Book Is For Those with at least some prior programming experience, especially in C++.

## **Design Patterns in Modern C++**

Liskov (engineering, Massachusetts Institute of Technology) and Guttag (computer science and engineering, also at MIT) present a component-based methodology for software program development. The book focuses on modular program construction: how to get the modules right and how to organize a program as a collection of modules. It explains the key types of abstractions, demonstrates how to develop specifications that define these abstractions, and illustrates how to implement them using numerous examples. An introduction to key Java concepts is included. Annotation copyrighted by Book News, Inc., Portland, OR.

## **Program Development in Java**

Kotlin is a powerful and pragmatic language, but it's not enough to know about its features. We also need to know when they should be used and in what way. This book is a guide for Kotlin developers on how to become excellent Kotlin developers. It presents and explains in-depth the best practices for Kotlin development. Each item is presented as a clear rule of thumb, supported by detailed explanations and practical examples.

## **Effective Kotlin**

Apply design principles to your classes, preparing them for reuse. You will use package design principles to create packages that are just right in terms of cohesion and coupling, and are user- and maintainer-friendly at the same time. The first part of this book walks you through the five SOLID principles that will help you improve the design of your classes. The second part introduces you to the best practices of package design, and covers both package cohesion principles and package coupling principles. Cohesion principles show you which classes should be put together in a package, when to split packages, and if a combination of classes may be considered a "package" in the first place. Package coupling principles help you choose the right dependencies and prevent wrong directions in the dependency graph of your packages. What You'll Learn Apply the SOLID principles of class design Determine if classes belong in the same package Know whether it is safe for packages to depend on each other Who This Book Is For Software developers with a broad range of experience in the field, who are looking for ways to reuse, share, and distribute their code

## **Principles of Package Design**

Your hands-on guide to Microsoft Visual C# fundamentals with Visual Studio 2015 Expand your expertise--and teach yourself the fundamentals of programming with the latest version of Visual C# with Visual Studio 2015. If you are an experienced software developer, you'll get all the guidance, exercises, and code you need to start building responsive, scalable Windows 10 and Universal Windows Platform applications with Visual C#. Discover how to: Quickly start creating Visual C# code and projects with Visual Studio 2015 Work with variables, operators, expressions, and methods Control program flow with decision and iteration statements

Build more robust apps with error, exception, and resource management Master the essentials of Visual C# object-oriented programming Use enumerations, structures, generics, collections, indexers, and other advanced features Create in-memory data queries with LINQ query expressions Improve application throughput and response time with asynchronous methods Decouple application logic and event handling Streamline development with new app templates Implement the Model-View-ViewModel (MVVM) pattern Build Universal Windows Platform apps that smoothly adapt to PCs, tablets, and Windows phones Integrate Microsoft Azure cloud databases and RESTful web services About You For software developers who are new to Visual C# or who are upgrading from older versions Readers should have experience with at least one programming language No prior Microsoft .NET or Visual Studio development experience required

## Microsoft Visual C# Step by Step

Apply business requirements to IT infrastructure and deliver a high-quality product by understanding architectures such as microservices, DevOps, and cloud-native using modern C++ standards and features Key Features Design scalable large-scale applications with the C++ programming language Architect software solutions in a cloud-based environment with continuous integration and continuous delivery (CI/CD) Achieve architectural goals by leveraging design patterns, language features, and useful tools Book Description Software architecture refers to the high-level design of complex applications. It is evolving just like the languages we use, but there are architectural concepts and patterns that you can learn to write high-performance apps in a high-level language without sacrificing readability and maintainability. If you're working with modern C++, this practical guide will help you put your knowledge to work and design distributed, large-scale apps. You'll start by getting up to speed with architectural concepts, including established patterns and rising trends, then move on to understanding what software architecture actually is and start exploring its components. Next, you'll discover the design concepts involved in application architecture and the patterns in software development, before going on to learn how to build, package, integrate, and deploy your components. In the concluding chapters, you'll explore different architectural qualities, such as maintainability, reusability, testability, performance, scalability, and security. Finally, you will get an overview of distributed systems, such as service-oriented architecture, microservices, and cloud-native, and understand how to apply them in application development. By the end of this book, you'll be able to build distributed services using modern C++ and associated tools to deliver solutions as per your clients' requirements. What you will learn Understand how to apply the principles of software architecture Apply design patterns and best practices to meet your architectural goals Write elegant, safe, and performant code using the latest C++ features Build applications that are easy to maintain and deploy Explore the different architectural approaches and learn to apply them as per your requirement Simplify development and operations using application containers Discover various techniques to solve common problems in software design and development Who this book is for This software architecture C++ programming book is for experienced C++ developers looking to become software architects or develop enterprise-grade applications.

## Software Architecture with C++

Even bad code can function. But if code isn't clean, it can bring a development organization to its knees. Every year, countless hours and significant resources are lost because of poorly written code. But it doesn't have to be that way. Noted software expert Robert C. Martin presents a revolutionary paradigm with Clean Code: A Handbook of Agile Software Craftsmanship. Martin has teamed up with his colleagues from Object Mentor to distill their best agile practice of cleaning code "on the fly" into a book that will instill within you the values of a software craftsman and make you a better programmer—but only if you work at it. What kind of work will you be doing? You'll be reading code—lots of code. And you will be challenged to think about what's right about that code, and what's wrong with it. More importantly, you will be challenged to reassess your professional values and your commitment to your craft. Clean Code is divided into three parts. The first describes the principles, patterns, and practices of writing clean code. The second part consists of several case studies of increasing complexity. Each case study is an exercise in cleaning up code—of transforming a code base that has some problems into one that is sound and efficient. The third part is the payoff: a single

chapter containing a list of heuristics and “smells” gathered while creating the case studies. The result is a knowledge base that describes the way we think when we write, read, and clean code. Readers will come away from this book understanding How to tell the difference between good and bad code How to write good code and how to transform bad code into good code How to create good names, good functions, good objects, and good classes How to format code for maximum readability How to implement complete error handling without obscuring code logic How to unit test and practice test-driven development This book is a must for any developer, software engineer, project manager, team lead, or systems analyst with an interest in producing better code.

## **Clean Code**

Applying Domain-Driven Design And Patterns Is The First Complete, Practical Guide To Leveraging Patterns, Domain-Driven Design, And Test-Driven Development In .Net Environments. Drawing On Seminal Work By Martin Fowler And Eric Evans, Jimmy Nilsson Shows How To Customize Real-World Architectures For Any .Net Application. You Ll Learn How To Prepare Domain Models For Application Infrastructure; Support Business Rules; Provide Persistence Support; Plan For The Presentation Layer And Ui Testing; And Design For Service Orientation Or Aspect Orientation. Nilsson Illuminates Each Principle With Clear, Well-Annotated Code Examples Based On C# 2.0, .Net 2.0, And Sql Server 2005. His Examples Will Be Valuable Both To C# Developers And Those Working With Other .Net Languages And Databases -- Or Even With Other Platforms, Such As J2Ee.

## **Applying Domain-Driven Design and Patterns**

'Downright revolutionary... the title is a major understatement... 'Quantum Programming' may ultimately change the way embedded software is designed.' -- Michael Barr, Editor-in-Chief, Embedded Systems Programming magazine ([Click here](#))

## **Practical Statecharts in C/C++**

Enhance your programming skills by learning the intricacies of object oriented programming in C# 8 Key Features Understand the four pillars of OOP; encapsulation, inheritance, abstraction and polymorphism Leverage the latest features of C# 8 including nullable reference types and Async Streams Explore various design patterns, principles, and best practices in OOP Book Description Object-oriented programming (OOP) is a programming paradigm organized around objects rather than actions, and data rather than logic. With the latest release of C#, you can look forward to new additions that improve object-oriented programming. This book will get you up to speed with OOP in C# in an engaging and interactive way. The book starts off by introducing you to C# language essentials and explaining OOP concepts through simple programs. You will then go on to learn how to use classes, interfaces and properties to write pure OOP code in your applications. You will broaden your understanding of OOP further as you delve into some of the advanced features of the language, such as using events, delegates, and generics. Next, you will learn the secrets of writing good code by following design patterns and design principles. You'll also understand problem statements with their solutions and learn how to work with databases with the help of ADO.NET. Further on, you'll discover a chapter dedicated to the Git version control system. As you approach the conclusion, you'll be able to work through OOP-specific interview questions and understand how to tackle them. By the end of this book, you will have a good understanding of OOP with C# and be able to take your skills to the next level. What you will learn Master OOP paradigm fundamentals Explore various types of exceptions Utilize C# language constructs efficiently Solve complex design problems by understanding OOP Understand how to work with databases using ADO.NET Understand the power of generics in C# Get insights into the popular version control system, Git Learn how to model and design your software Who this book is for This book is designed for people who are new to object-oriented programming. Basic C# skills are assumed, however, prior knowledge of OOP in any other language is not required.

## Accelerated C++: Practical Programming By Example

SOLID are five basic principles which help to create good software architecture. SOLID is an acronym for: Single Responsibility Principle, Open Closed Principle, Liskov Substitution Principle, Interface Segregation Principle, Dependency Inversion Principle. This book aims to explain these principles in a clear way, making it accessible to junior and senior developers as one.

## Hands-On Object-Oriented Programming with C#

Apply design patterns to solve problems in software architecture and programming using C# 7.x and .NET Core 2 Key Features Enhance your programming skills by implementing efficient design patterns for C# and .NET Explore design patterns for functional and reactive programming to build robust and scalable applications Discover how to work effectively with microservice and serverless architectures Book Description Design patterns are essentially reusable solutions to common programming problems. When used correctly, they meet crucial software requirements with ease and reduce costs. This book will uncover effective ways to use design patterns and demonstrate their implementation with executable code specific to both C# and .NET Core. Hands-On Design Patterns with C# and .NET Core begins with an overview of object-oriented programming (OOP) and SOLID principles. It provides an in-depth explanation of the Gang of Four (GoF) design patterns such as creational, structural, and behavioral. The book then takes you through functional, reactive, and concurrent patterns, helping you write better code with streams, threads, and coroutines. Toward the end of the book, you'll learn about the latest trends in architecture, exploring design patterns for microservices, serverless, and cloud native applications. You'll even understand the considerations that need to be taken into account when choosing between different architectures such as microservices and MVC. By the end of the book, you will be able to write efficient and clear code and be comfortable working on scalable and maintainable projects of any size. What you will learn Make your code more flexible by applying SOLID principles Follow the Test-driven development (TDD) approach in your .NET Core projects Get to grips with efficient database migration, data persistence, and testing techniques Convert a console application to a web application using the right MVP Write asynchronous, multithreaded, and parallel code Implement MVVM and work with RxJS and AngularJS to deal with changes in databases Explore the features of microservices, serverless programming, and cloud computing Who this book is for If you have a basic understanding of C# and the .NET Core framework, this book will help you write code that is easy to reuse and maintain with the help of proven design patterns that you can implement in your code.

## SOLID Programming

By developing object calculi in which objects are treated as primitives, the authors are able to explain both the semantics of objects and their typing rules, and also demonstrate how to develop all of the most important concepts of object-oriented programming languages: self, dynamic dispatch, classes, inheritance, protected and private methods, prototyping, subtyping, covariance and contravariance, and method specialization. An innovative and important approach to the subject for researchers and graduates.

## Working Effectively With Legacy Code

Learn the principles of good software design, and how to turn those principles into great code. This book introduces you to software engineering — from the application of engineering principles to the development of software. You'll see how to run a software development project, examine the different phases of a project, and learn how to design and implement programs that solve specific problems. It's also about code construction — how to write great programs and make them work. Whether you're new to programming or have written hundreds of applications, in this book you'll re-examine what you already do, and you'll investigate ways to improve. Using the Java language, you'll look deeply into coding standards, debugging,

unit testing, modularity, and other characteristics of good programs. With Software Development, Design and Coding, author and professor John Dooley distills his years of teaching and development experience to demonstrate practical techniques for great coding. What You'll Learn Review modern agile methodologies including Scrum and Lean programming Leverage the capabilities of modern computer systems with parallel programming Work with design patterns to exploit application development best practices Use modern tools for development, collaboration, and source code controls Who This Book Is For Early career software developers, or upper-level students in software engineering courses

## Hands-On Design Patterns with C# and .NET Core

A Theory of Objects

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