

## Java Application Architecture: Modularity Patterns With Examples Using OSGi (Robert C Martin Series): A Roadmap For Enterprise Development (Agile Software Development)

**Have you heard about the tremendous success Amazon and Netflix have had by switching to a microservice architecture? Are you wondering how this can benefit your company? Or are you skeptical about how it might work? If you've answered yes to any of these questions, this practical book will benefit you. You'll learn how to take advantage of the microservice architectural style for building systems, and learn from the experiences of others to adopt and execute this approach most successfully.**

**Software -- Software Engineering.**

**"A comprehensive overview of the challenges teams face when moving to microservices, with industry-tested solutions to these problems." - Tim Moore, Lightbend** 44 reusable patterns to develop and deploy reliable production-quality microservices-based applications, with worked examples in Java Key Features 44 design patterns for building and deploying microservices applications Drawing on decades of unique experience from author and microservice architecture pioneer Chris Richardson A pragmatic approach to the benefits and the drawbacks of microservices architecture Solve service decomposition, transaction management, and inter-service communication Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About The Book Microservices Patterns teaches you 44 reusable patterns to reliably develop and deploy production-quality microservices-based applications. This invaluable set of design patterns builds on decades of distributed system experience, adding new patterns for composing services into systems that scale and perform under real-world conditions. More than just a patterns catalog, this practical guide with worked examples offers industry-tested advice to help you design, implement, test, and deploy your microservices-based application. What You Will Learn How (and why!) to use microservices architecture Service decomposition strategies Transaction management and querying patterns Effective testing strategies Deployment patterns This Book Is Written For Written for enterprise developers familiar with standard enterprise application architecture. Examples are in Java. About The Author Chris Richardson is a Java Champion, a JavaOne rock star, author of Manning's POJOs in Action, and creator of the original CloudFoundry.com. Table of Contents Escaping monolithic hell Decomposition strategies Interprocess communication in a microservice architecture Managing transactions with sagas Designing business logic in a microservice architecture Developing business logic with event sourcing Implementing queries in a microservice architecture External API patterns Testing microservices: part 1 Testing microservices: part 2 Developing production-ready services Deploying microservices Refactoring to microservices

**The software development ecosystem is constantly changing, providing a constant stream of new tools, frameworks, techniques, and paradigms. Over the past few years, incremental developments in core engineering practices for software development have created the foundations for rethinking how architecture changes over time, along with ways to protect important architectural characteristics as it evolves. This practical guide ties those parts together with a new way to think about architecture and time.**

**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.

**The Software Architect Elevator**

**The Java Module System**

**Agile Java™**

**Design and architect highly scalable and robust applications using Go**

**An Engineering Approach**

**Tackling Complexity in the Heart of Software**

**Uncover essential patterns in the most indispensable realm of enterprise architecture**

In the past few years, going cloud native has been a big advantage for many companies. But it's a tough technique to get right, especially for enterprises with critical legacy systems. This practical hands-on guide examines effective architecture, design, and cultural patterns to help you transform your organization into a cloud native enterprise—whether you're moving from older architectures or creating new systems from scratch. By following Wealth Grid, a fictional company, you'll understand the challenges, dilemmas, and considerations that accompany a move to the cloud. Technical managers and architects will learn best practices for taking on a successful company-wide transformation. Cloud migration consultants Pini Reznik, Jamie Dobson, and Michelle Gienow draw patterns from the growing community of expert practitioners and enterprises that have successfully built cloud native systems. You'll learn what works and what doesn't when adopting cloud native—including how this transition affects not just your technology but also your organizational structure and processes. You'll learn: What cloud native means and why enterprises are so interested in it Common barriers and pitfalls that have affected other companies (and how to avoid them) Context-specific patterns for a successful cloud native transformation How to implement a safe, evolutionary cloud native approach How companies addressed root causes and misunderstandings that hindered their progress Case studies from real-world companies that have succeeded with cloud native transformations

Design patterns, which express relationships between recurring problems and proven solutions, have become immensely popular in the world of software development. More and more software developers are recognizing the supreme usefulness of design patterns and how they ease the design and delivery of software applications. This book builds upon the information presented in the seminal work in this field, *Design Patterns: Elements of Reusable Object-Oriented Software*, and gives software professionals the information they need to recognize and write their own patterns. *Pattern Hatching*, written by one of the co-authors of *Design Patterns*, truly helps the software professional apply one of the most popular concepts in software development.

Kick-start your modular programming journey and gear up for the future of Java development About This Book Master design patterns and best practices to build truly modular applications in Java 9 Upgrade your old Java code to Java 9 with ease Build and run a smooth functioning multi-module application. Who This Book Is For This book is written for Java developers who are interested in learning and understanding the techniques and best practices to build modular applications in Java. The book assumes some previous programming experience in Java 8 or earlier, familiarity with the basic Java types such as classes and interfaces, as well as experience in compiling and executing Java programs. What You Will Learn Get introduced to the concept of modules and modular programming by working on a fully modular Java application Build and configure your own Java 9 modules Work with multiple modules and establish inter-module dependencies Understand and use the principles of encapsulation, readability, and accessibility Use `jlink` to generate fully loaded custom runtime images like a pro Discover the best practices to help you write awesome modules that are a joy to use and maintain Upgrade your old Java code to use the new Java 9 module system In Detail The Java 9 module system is an important addition to the language that affects the way we design, write, and organize code and libraries in Java. It provides a new way to achieve maintainable code by the encapsulation of Java types, as well as a way to write better libraries that have clear interfaces. Effectively using the module system requires an understanding of how modules work and what the best practices of creating modules are. This book will give you step-by-step instructions to create new modules as well as migrate code from earlier versions of Java to the Java 9 module system. You'll be working on a fully modular sample application and add features to it as you learn about Java modules. You'll learn how to create module definitions, setup inter-module dependencies, and use the built-in modules from the modular JDK. You will also learn about module resolution and how to use `jlink` to generate custom runtime images. We will end our journey by taking a look at the road ahead. You will learn some powerful best practices that will help you as you start building modular applications. You will also learn how to upgrade an existing Java 8 codebase to Java 9, handle issues with libraries, and how to test Java 9 applications. Style and Approach The book is a step-by-step guide to understanding Modularity and building a complete application using a modular design.

*"I'm dancing! By god I'm dancing on the walls. I'm dancing on the ceiling. I'm ecstatic. I'm overjoyed. I'm really, really pleased." –From the Foreword by Robert C. Martin (a.k.a. Uncle Bob) This isn't the first book on Java application architecture. No doubt it won't be the last. But rest assured, this title is different. The way we develop Java applications is about to change, and this title explores the new way of Java application architecture. Over the past several years, module frameworks have been gaining traction on the Java platform, and upcoming versions of Java will include a module system that allows you to leverage the power of modularity to build more resilient and flexible software systems. Modularity isn't a new concept. But modularity will change the way we develop Java applications, and you'll only be able to realize the benefits if you understand how to design more modular software systems. Java Application Architecture will help you Design modular software that is extensible, reusable, maintainable, and adaptable Design modular software today, in anticipation of future platform support for modularity Break large software systems into a flexible composite of collaborating modules Understand where to place your architectural focus Migrate large-scale monolithic applications to applications with a modular architecture Articulate the advantages of modular software to your team Java Application Architecture lays the foundation you'll need to incorporate modular design thinking into your development initiatives. Before it walks you through eighteen patterns that will help you architect modular software, it lays a solid foundation that shows you why modularity is a critical weapon in your arsenal of design tools. Throughout, you'll find examples that illustrate the concepts. By designing modular applications today, you are positioning yourself for the platform and architecture of tomorrow. That's why Uncle Bob is dancing.*

*Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense of all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively Make informed decisions by identifying the strengths and weaknesses of different tools Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity Understand the distributed systems research upon which modern databases are built Peek behind the scenes of major online services, and learn from their architectures*

*Java Design*

*Practical Patterns for Innovation*

*UML, Use Cases, Patterns, and Software Architectures*

*Enterprise Application Architecture with .NET Core*

*The Big Ideas Behind Reliable, Scalable, and Maintainable Systems*

*Objects, UML, and Process*

*AGILE PRIN PATTS PRACTS C#\_1*

*Get the best out of Node.js by mastering its most powerful components and patterns to create modular and scalable applications with ease About This Book Create reusable patterns and modules by leveraging the new features of Node.js . Understand the asynchronous single thread design of node and grasp all its features and patterns to take advantage of various functions. This unique guide will help you get the most out of Node.js and its ecosystem. Who This Book Is For The book is meant for developers and software architects with a basic working knowledge of JavaScript who are interested in acquiring a deeper understanding of how to design and develop enterprise-level Node.js applications. Basic knowledge of Node.js is also helpful to get the most out of this book. What You Will Learn Design and implement a series of server-side JavaScript patterns so you understand why and when to apply them in different use case scenarios Become comfortable with writing asynchronous code by leveraging constructs such as callbacks, promises, generators and the async-await syntax Identify the most important concerns and apply unique tricks to achieve higher scalability and modularity in your Node.js application Untangle your modules by organizing and connecting them coherently Reuse well-known techniques to solve common design and coding issues Explore the latest trends in Universal JavaScript, learn how to write code that runs on both Node.js and the browser and leverage React and its ecosystem to implement universal applications In Detail Node.js is a massively popular software platform that lets you use JavaScript to easily create scalable server-side applications. It allows you to create efficient code, enabling a more sustainable way of writing software made of only one language across the full stack, along with extreme levels of reusability, pragmatism, simplicity, and collaboration. Node.js is*

revolutionizing the web and the way people and companies create their software. In this book, we will take you on a journey across various ideas and components, and the challenges you would commonly encounter while designing and developing software using the Node.js platform. You will also discover the "Node.js way" of dealing with design and coding decisions. The book kicks off by exploring the basics of Node.js describing it's asynchronous single-threaded architecture and the main design patterns. It then shows you how to master the asynchronous control flow patterns, and the stream component and it culminates into a detailed list of Node.js implementations of the most common design patterns as well as some specific design patterns that are exclusive to the Node.js world. Lastly, it dives into more advanced concepts such as Universal Javascript, and scalability' and it's meant to conclude the journey by giving the reader all the necessary concepts to be able to build an enterprise grade application using Node.js. Style and approach This book takes its intended readers through a comprehensive explanation to create a scalable and efficient real-time server-side apps.

A Hands-On Guide to Equinox and the OSGi Framework In OSGi and Equinox: Creating Highly Modular Java™ Systems , three leading experts show developers—for the first time—exactly how to make the most of these breakthrough technologies for building highly modular dynamic systems. You'll quickly get started with Eclipse bundle tooling, create your first OSGi-based system, and move rapidly to sophisticated production development. Next, you'll master best practices and techniques for creating systems with exceptional modularity and maintainability. You'll learn all about OSGi's Declarative Services and how to use them to solve a wide variety of real-world problems. Finally, you'll see everything that you've learned implemented in a complete case study project that takes you from early prototype through application delivery. For every Eclipse developer, regardless of previous experience, this book Combines a complete hands-on tutorial, online sample code at every step, and deep technical dives for working developers Covers the OSGi programming model, component development, OSGi services, Eclipse bundle tooling, server-side Equinox, and much more Offers knowledge, guidance, and best practices for overcoming the complexities of building modular systems Addresses practical issues ranging from integrating third-party code libraries to server-side programming Includes a comprehensive case study that goes beyond prototyping to deliver a fully refined and refactored production system Whatever your application, industry, or problem domain, if you want to build state-of-the-art software systems with OSGi and Equinox, you will find this book to be an essential resource.

Larman covers how to investigate requirements, create solutions and then translate designs into code, showing developers how to make practical use of the most significant recent developments. A summary of UML notation is included

Pattern-oriented software architecture is a new approach to software development. This book represents the progression and evolution of the pattern approach into a system of patterns capable of describing and documenting large-scale applications. A pattern system provides, on one level, a pool of proven solutions to many recurring design problems. On another it shows how to combine individual patterns into heterogeneous structures and as such it can be used to facilitate a constructive development of software systems. Uniquely, the patterns that are presented in this book span several levels of abstraction, from high-level architectural patterns and medium-level design patterns to low-level idioms. The intention of, and motivation for, this book is to support both novices and experts in software development. Novices will gain from the experience inherent in pattern descriptions and experts will hopefully make use of, add to, extend and modify patterns to tailor them to their own needs. None of the pattern descriptions are cast in stone and, just as they are borne from experience, it is expected that further use will feed in and refine individual patterns and produce an evolving system of patterns. Visit our Web Page <http://www.wiley.com/compbooks/>

Describes ways to incorporate domain modeling into software development.

Design Patterns Explained

Cloud Native Transformation

Software Modeling and Design

Sustainable Software Architecture

Patterns and Practices for Developing Maintainable Applications

Modular Programming in Java 9

Maven: The Definitive Guide

Understand the principles of software architecture with coverage on SOA, distributed and messaging systems, and database modeling Key FeaturesGain knowledge of architectural approaches on SOA and microservices for architectural decisionsExplore different architectural patterns for building distributed applicationsMigrate applications written in Java or Python to the Go languageBook Description Building software requires careful planning and architectural considerations; Golang was developed with a fresh perspective on building next-generation applications on the cloud with distributed

and concurrent computing concerns. Hands-On Software Architecture with Golang starts with a brief introduction to architectural elements, Go, and a case study to demonstrate architectural principles. You'll then move on to look at code-level aspects such as modularity, class design, and constructs specific to Golang and implementation of design patterns. As you make your way through the chapters, you'll explore the core objectives of architecture such as effectively managing complexity, scalability, and reliability of software systems. You'll also work through creating distributed systems and their communication before moving on to modeling and scaling of data. In the concluding chapters, you'll learn to deploy architectures and plan the migration of applications from other languages. By the end of this book, you will have gained insight into various design and architectural patterns, which will enable you to create robust, scalable architecture using Golang. What you will learn Understand architectural paradigms and deep dive into MicroservicesDesign parallelism/concurrency patterns and learn object-oriented design patterns in GoExplore API-driven systems architecture with introduction to REST and GraphQL standardsBuild event-driven architectures and make your architectures anti-fragileEngineer scalability and learn how to migrate to Go from other languagesGet to grips with deployment considerations with CICD pipeline, cloud deployments, and so onBuild an end-to-end e-commerce (travel) application backend in GoWho this book is for Hands-On Software Architecture with Golang is for software developers, architects, and CTOs looking to use Go in their software architecture to build enterprise-grade applications. Programming knowledge of Golang is assumed.

If you're an experienced Java developer in the enterprise, this practical, hands-on book shows you how to use OSGi to design, develop, and deploy modular cloud applications. You'll quickly learn how to use OSGi, through concise code examples and a set of best practices derived from the authors' experiences with real-world projects. Through the course of this book, you'll learn to develop modern web applications with tools and techniques such as RESTful Web Services, NoSQL, provisioning, elasticity, Auto Scaling, hotfixes, and automatic failover. Code samples are available from GitHub. Work with dynamic OSGi services to create modular applications Explore the basics of OSGi bundles and modular application design Learn advanced topics, including semantic versioning, integration testing, and configuring components Understand OSGi pitfalls, anti-patterns, and features you should avoid Create a modular architecture for cloud-based web applications Discover how maintainability, extensibility, scalability, and testability are affected by modular design Get a look at various options for creating web applications with a modular approach Interact with persistent storage services, including relational databases and NoSQL Examine alternatives for deploying modular applications to the cloud

Explains how to leverage Java's architecture and mechanisms to design enterprise applications and considers code modularity, nonduplication, network efficiency, maintainability, and reusability.

What is OSGi? Simply put, OSGi is a standardized technology that allows developers to create the highly modular Java applications that are required for enterprise development. OSGi lets you install, start, stop, update, or uninstall components without taking down your entire system. The interest in OSGi based applications has exploded since major vendors like Sun, Spring, Oracle, BEA, and IBM have gotten behind the standard. OSGi in Action is a comprehensive guide to OSGi with two primary goals. First, it provides a clear introduction to OSGi concepts with examples that are relevant both for architects and developers. Then, it explores numerous practical scenarios and techniques, answering questions like: How much of OSGi do you actually need? How do you embed OSGi inside other containers? What are the best practices for moving legacy systems to OSGi? 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.

The upcoming Java 9 module system will affect existing applications and offer new ways of creating modular and maintainable applications. With this hands-on book, Java developers will learn not only about the joys of modularity, but also about the patterns needed to create truly modular and reliable applications. Authors Sander Mak and Paul Bakker teach you the concepts behind the Java 9 module system, along with the new tools it offers. You'll also learn how to modularize existing code and how to build new Java applications in a modular way. Understand Java 9 module system concepts Master the patterns and practices for building truly modular applications Migrate existing applications and libraries to Java 9 modules Use JDK 9 tools for modular development and migration

Creating Highly Modular Java Systems

A New Perspective on Object-Oriented Design

10th International Conference, BDAS 2014, Ustron, Poland, May 27-30, 2014. Proceedings

Agile Principles, Patterns, and Practices in C#

Robust Web Architecture with Node, HTML5, and Modern JS Libraries

Architectural Patterns

OSGi and Equinox

*Salary surveys worldwide regularly place software architect in the top 10 best jobs, yet no real guide exists to help developers become architects. Until now. This book provides the first comprehensive overview of software architecture's many aspects. Aspiring and existing architects alike will examine architectural characteristics, architectural patterns, component determination, diagramming and presenting architecture, evolutionary architecture, and many other topics. Mark Richards and Neal Ford—hands-on practitioners who have taught software architecture classes professionally for years—focus on architecture principles that apply across all technology stacks. You'll explore software architecture in a modern light, taking into account all the innovations of the past decade. This book examines: Architecture*

*patterns: The technical basis for many architectural decisions*  
*Components: Identification, coupling, cohesion, partitioning, and granularity*  
*Soft skills: Effective team management, meetings, negotiation, presentations, and more*  
*Modernity: Engineering practices and operational approaches that have changed radically in the past few years*  
*Architecture as an engineering discipline: Repeatable results, metrics, and concrete valuations that add rigor to software architecture*

This book covers all you need to know to model and design software applications from use cases to software architectures in UML and shows how to apply the COMET UML-based modeling and design method to real-world problems. The author describes architectural patterns for various architectures, such as broker, discovery, and transaction patterns for service-oriented architectures, and addresses software quality attributes including maintainability, modifiability, testability, traceability, scalability, reusability, performance, availability, and security. Complete case studies illustrate design issues for different software architectures: a banking system for client/server architecture, an online shopping system for service-oriented architecture, an emergency monitoring system for component-based software architecture, and an automated guided vehicle for real-time software architecture. Organized as an introduction followed by several short, self-contained chapters, the book is perfect for senior undergraduate or graduate courses in software engineering and design, and for experienced software engineers wanting a quick reference at each stage of the analysis, design, and development of large-scale software systems.

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.

This book constitutes the refereed proceedings of the 10th IEEE International Conference Beyond Databases, Architectures, and Structures, BDAS 2014, held in Ustron, Poland, in May 2014. This book consists of 56 carefully revised selected papers that are assigned to 11 thematic groups: query languages, transactions and query optimization; data warehousing and big data; ontologies and semantic web; computational intelligence and data mining; collective intelligence, scheduling, and parallel processing; bioinformatics and biological data analysis; image analysis and multimedia mining; security of database systems; spatial data analysis; applications of database systems; Web and XML in database systems.

With Learning JavaScript Design Patterns, you'll learn how to write beautiful, structured, and maintainable JavaScript by applying classical and modern design patterns to the language. If you want to keep your code efficient, more manageable, and up-to-date with the latest best practices, this book is for you. Explore many popular design patterns, including Modules, Observers, Facades, and Mediators. Learn how modern architectural patterns—such as MVC, MVP, and MVVM—are useful from the perspective of a modern web application developer. This book also walks experienced JavaScript developers through modern module formats, how to namespace code effectively, and other essential topics. Learn the structure of design patterns and how they are written  
Understand different pattern categories, including creational, structural, and

behavioral Walk through more than 20 classical and modern design patterns in JavaScript Use several options for writing modular code—including the Module pattern, Asynchronous Module Definition (AMD), and CommonJS Discover design patterns implemented in the jQuery library Learn popular design patterns for writing maintainable jQuery plug-ins "This book should be in every JavaScript developer's hands. It's the go-to book on JavaScript patterns that will be read and referenced many times in the future."—Andrée Hansson, Lead Front-End Developer, presis!

Essential Software Architecture

Modularity Patterns with Examples Using OSGi

Microservice Architecture

Java 9 Modularity

Elements of Reusable Object-Oriented Software

OSGi in Action

Pattern-Oriented Software Architecture, A System of Patterns

**Designing Software Architectures will teach you how to design any software architecture in a systematic, predictable, repeatable, and cost-effective way. This book introduces a practical methodology for architecture design that any professional software engineer can use, provides structured methods supported by reusable chunks of design knowledge, and includes rich case studies that demonstrate how to use the methods. Using realistic examples, you'll master the powerful new version of the proven Attribute-Driven Design (ADD) 3.0 method and will learn how to use it to address key drivers, including quality attributes, such as modifiability, usability, and availability, along with functional requirements and architectural concerns. Drawing on their extensive experience, Humberto Cervantes and Rick Kazman guide you through crafting practical designs that support the full software life cycle, from requirements to maintenance and evolution. You'll learn how to successfully integrate design in your organizational context, and how to design systems that will be built with agile methods. Comprehensive coverage includes Understanding what architecture design involves, and where it fits in the full software development life cycle Mastering core design concepts, principles, and processes Understanding how to perform the steps of the ADD method Scaling design and analysis up or down, including design for pre-sale processes or lightweight architecture reviews Recognizing and optimizing critical relationships between analysis and design Utilizing proven, reusable design primitives and adapting them to specific problems and contexts Solving design problems in new domains, such as cloud, mobile, or big data**

**Architect and design highly scalable, robust, clean and highly performant applications in .NET Core About This Book Incorporate architectural soft-skills such as DevOps and Agile methodologies to enhance program-level objectives Gain knowledge of architectural approaches on the likes of SOA architecture and microservices to provide traceability and rationale for architectural decisions Explore a variety of practical use cases and code examples to implement the tools and techniques described in the book Who This Book Is For This book is for experienced .NET developers who are aspiring to become architects of enterprise-grade applications, as well as software architects who would like to leverage .NET to create effective blueprints of applications. What You Will Learn Grasp the important aspects and best practices of application lifecycle management Leverage the popular ALM tools, application insights, and their usage to monitor performance, testability, and optimization tools in an enterprise Explore various authentication models such as social media-based authentication, 2FA and OpenID Connect, learn authorization techniques Explore Azure with various solution approaches for Microservices and Serverless architecture along with Docker containers Gain knowledge about the recent market trends and practices and how they can be achieved with .NET Core and Microsoft tools and technologies In Detail If you want to design and develop enterprise applications using .NET Core as the development framework and learn about industry-wide best practices and guidelines, then this book is for you. The book starts with a brief introduction to enterprise architecture, which will help you to understand what enterprise architecture is and what the key components are. It will then teach you about the types of patterns and the principles of software development, and explain the various aspects of distributed computing to keep your applications effective and scalable. These chapters act as a catalyst to start the practical implementation, and design and develop applications using different architectural approaches, such as layered architecture, service oriented architecture, microservices and cloud-specific solutions. Gradually, you will learn about the different approaches and models of the Security framework and explore various authentication models and authorization techniques, such as social media-based authentication and safe storage using app secrets. By the end of the book, you will get to know the concepts and usage of the emerging fields, such as DevOps, BigData, architectural practices, and Artificial Intelligence. Style and approach Filled with examples and use cases, this guide takes a no-nonsense approach to show you the best tools and techniques required to become a successful software architect.**

**With Pro JavaScript Design Patterns, you'll start with the basics of object-oriented programming in JavaScript applicable to design patterns, including making JavaScript more expressive, inheritance, encapsulation, information hiding, and more. The book then details how to implement and take advantage of several design patterns in JavaScript. Each chapter is packed with real-world examples of how the design patterns are best used and expert advice on writing better code, as well as what to watch out for. Along the way you'll discover how to create your own libraries and APIs for even more efficient coding.**

**As the digital economy changes the rules of the game for enterprises, the role of software and IT architects is also transforming. Rather than focus on technical**

*decisions alone, architects and senior technologists need to combine organizational and technical knowledge to effect change in their company's structure and processes. To accomplish that, they need to connect the IT engine room to the penthouse, where the business strategy is defined. In this guide, author Gregor Hohpe shares real-world advice and hard-learned lessons from actual IT transformations. His anecdotes help architects, senior developers, and other IT professionals prepare for a more complex but rewarding role in the enterprise. This book is ideal for: Software architects and senior developers looking to shape the company's technology direction or assist in an organizational transformation Enterprise architects and senior technologists searching for practical advice on how to navigate technical and organizational topics CTOs and senior technical architects who are devising an IT strategy that impacts the way the organization works IT managers who want to learn what's worked and what hasn't in large-scale transformation*

*Explores how to incorporate modular design thinking into Java application development.*

*Learning JavaScript Design Patterns*

*Microservices Patterns*

*Analyze and Reduce Technical Debt*

*Hands-On Software Architecture with Golang*

*Pro JavaScript Design Patterns*

*A JavaScript and jQuery Developer's Guide*

*Designing Data-Intensive Applications*

*Summary Java's much-awaited "Project Jigsaw" is finally here! Java 11 includes a built-in modularity framework, and The Java Module System is your guide to discovering it. In this new book, you'll learn how the module system improves reliability and maintainability, and how it can be used to reduce tight coupling of system components. Foreword by Kevlin Henney. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. You'll find registration instructions inside the print book. About the Technology Packaging code into neat, well-defined units makes it easier to deliver safe and reliable applications. The Java Platform Module System is a language standard for creating these units. With modules, you can closely control how JARs interact and easily identify any missing dependencies at startup. This shift in design is so fundamental that starting with Java 9, all core Java APIs are distributed as modules, and libraries, frameworks, and applications will benefit from doing the same. About the Book The Java Module System is your in-depth guide to creating and using Java modules. With detailed examples and easy-to-understand diagrams, you'll learn the anatomy of a modular Java application. Along the way, you'll master best practices for designing with modules, debugging your modular app, and deploying to production. What's inside The anatomy of a modular Java app Building modules from source to JAR Migrating to modular Java Decoupling dependencies and refining APIs Handling reflection and versioning Customizing runtime images Updated for Java 11 About the Reader Perfect for developers with some Java experience. About the Author Nicolai Parlog is a developer, author, speaker, and trainer. His home is codefx.org. Table of Contents PART 1 - Hello, modules First piece of the puzzle Anatomy of a modular application Defining modules and their properties Building modules from source to JAR Running and debugging modular applications PART 2 - Adapting real-world projects Compatibility challenges when moving to Java 9 or later Recurring challenges when running on Java 9 or later Incremental modularization of existing projects Migration and modularization strategies PART 3 - Advanced module system features Using services to decouple modules Refining dependencies and APIs Reflection in a modular world Module versions: What's possible and what's not Customizing runtime images with jlink Putting the pieces together*

*Java Application Architecture Modularity Patterns with Examples Using OSGi Prentice Hall*

*Master Java 5.0 and TDD Together: Build More Robust, Professional Software Master Java 5.0, object-oriented design, and Test-Driven Development (TDD) by learning them together. Agile Java weaves all three into a single coherent approach to building professional, robust software systems. Jeff Langr shows exactly how Java and TDD integrate throughout the entire development lifecycle, helping you leverage today's fastest, most efficient development techniques from the very outset. Langr writes for every programmer, even those with little or no experience with Java, object-oriented development, or agile methods. He shows how to translate oral requirements into practical tests, and then how to use those tests to create reliable, high-performance Java code that solves real problems. Agile Java doesn't just teach the core features of the Java language: it presents coded test examples for each of them. This TDD-centered approach doesn't just lead to better code: it provides powerful feedback that will help you learn Java far more rapidly. The use of TDD as a learning mechanism is a landmark departure from conventional teaching techniques. Presents an expert overview of TDD and agile programming techniques from the Java developer's perspective Brings together practical best practices for Java, TDD, and OO design Walks through setting up Java 5.0 and writing your first program Covers all the basics, including strings, packages, and more Simplifies object-oriented concepts, including classes, interfaces,*

polymorphism, and inheritance Contains detailed chapters on exceptions and logging, math, I/O, reflection, multithreading, and Swing Offers seamlessly-integrated explanations of Java 5.0's key innovations, from generics to annotations Shows how TDD impacts system design, and vice versa Complements any agile or traditional methodology, including Extreme Programming (XP)

"One of the great things about the book is the way the authors explain concepts very simply using analogies rather than programming examples—this has been very inspiring for a product I'm working on: an audio-only introduction to OOP and software development." —Bruce Eckel  
"...I would expect that readers with a basic understanding of object-oriented programming and design would find this book useful, before approaching design patterns completely. Design Patterns Explained complements the existing design patterns texts and may perform a very useful role, fitting between introductory texts such as UML Distilled and the more advanced patterns books." —James Noble Leverage the quality and productivity benefits of patterns—without the complexity! Design Patterns Explained, Second Edition is the field's simplest, clearest, most practical introduction to patterns. Using dozens of updated Java examples, it shows programmers and architects exactly how to use patterns to design, develop, and deliver software far more effectively. You'll start with a complete overview of the fundamental principles of patterns, and the role of object-oriented analysis and design in contemporary software development. Then, using easy-to-understand sample code, Alan Shalloway and James Trott illuminate dozens of today's most useful patterns: their underlying concepts, advantages, tradeoffs, implementation techniques, and pitfalls to avoid. Many patterns are accompanied by UML diagrams. Building on their best-selling First Edition, Shalloway and Trott have thoroughly updated this book to reflect new software design trends, patterns, and implementation techniques. Reflecting extensive reader feedback, they have deepened and clarified coverage throughout, and reorganized content for even greater ease of understanding. New and revamped coverage in this edition includes Better ways to start "thinking in patterns" How design patterns can facilitate agile development using eXtreme Programming and other methods How to use commonality and variability analysis to design application architectures The key role of testing into a patterns-driven development process How to use factories to instantiate and manage objects more effectively The Object-Pool Pattern—a new pattern not identified by the "Gang of Four" New study/practice questions at the end of every chapter Gentle yet thorough, this book assumes no patterns experience whatsoever. It's the ideal "first book" on patterns, and a perfect complement to Gamma's classic Design Patterns. If you're a programmer or architect who wants the clearest possible understanding of design patterns—or if you've struggled to make them work for you—read this book.

Summary The Tao of Microservices guides you on the path to understanding how to apply microservice architectures to your own real-world projects. This high-level book offers a conceptual view of microservice design, along with core concepts and their application. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology An application, even a complex one, can be designed as a system of independent components, each of which handles a single responsibility. Individual microservices are easy for small teams without extensive knowledge of the entire system design to build and maintain. Microservice applications rely on modern patterns like asynchronous, message-based communication, and they can be optimized to work well in cloud and container-centric environments. About the Book The Tao of Microservices guides you on the path to understanding and building microservices. Based on the invaluable experience of microservices guru Richard Rodger, this book exposes the thinking behind microservice designs. You'll master individual concepts like asynchronous messaging, service APIs, and encapsulation as you learn to apply microservices architecture to real-world projects. Along the way, you'll dig deep into detailed case studies with source code and documentation and explore best practices for team development, planning for change, and tool choice. What's Inside Principles of the microservice architecture Breaking down real-world case studies Implementing large-scale systems When not to use microservices About the Reader This book is for developers and architects. Examples use JavaScript and Node.js. About the Author Richard Rodger, CEO of voxgig, a social network for the events industry, has many years of experience building microservice-based systems for major global companies. Table of Contents PART 1 – BUILDING MICROSERVICES Brave new world Services Messages Data Deployment PART 2 – RUNNING MICROSERVICES Measurement Migration People Case study: Nodezoo.com

Building Modular Cloud Apps with OSGi

Design Patterns

A Practical Approach

Build large scale applications using Java modularity and Project Jigsaw

Best Practices and Design Strategies

Beyond Databases, Architectures, and Structures

Design modern systems using effective architecture concepts, design patterns, and techniques with C++20

Take advantage of JavaScript's power to build robust web-scale or enterprise applications that are easy to extend and maintain. By applying the design patterns outlined in this practical book,

experienced JavaScript developers will learn how to write flexible and resilient code that's easier—yes, easier—to work with as your code base grows. JavaScript may be the most essential web programming language, but in the real world, JavaScript applications often break when you make changes. With this book, author Eric Elliott shows you how to add client- and server-side features to a large JavaScript application without negatively affecting the rest of your code. Examine the anatomy of a large-scale JavaScript application Build modern web apps with the capabilities of desktop applications Learn best practices for code organization, modularity, and reuse Separate your application into different layers of responsibility Build efficient, self-describing hypermedia APIs with Node.js Test, integrate, and deploy software updates in rapid cycles Control resource access with user authentication and authorization Expand your application's reach through internationalization

Discusses how the unified modeling language (UML) can be used during the implementation stage of the Java software development lifecycle. The book focuses on refactoring or cleaning up the design of existing code, and addresses the most common and significant decisions made during enterprise Java development. The author identifies initial analysis classes, introduces the UML sequence diagram, and demonstrates architectural modeling. Annotation copyrighted by Book News Inc., Portland, OR.

Job titles like “Technical Architect” and “Chief Architect” nowadays abound in software industry, yet many people suspect that “architecture” is one of the most overused and least understood terms in professional software development. Gorton's book tries to resolve this dilemma. It concisely describes the essential elements of knowledge and key skills required to be a software architect. The explanations encompass the essentials of architecture thinking, practices, and supporting technologies. They range from a general understanding of structure and quality attributes through technical issues like middleware components and service-oriented architectures to recent technologies like model-driven architecture, software product lines, aspect-oriented design, and the Semantic Web, which will presumably influence future software systems. This second edition contains new material covering enterprise architecture, agile development, enterprise service bus technologies, RESTful Web services, and a case study on how to use the MeDICi integration framework. All approaches are illustrated by an ongoing real-world example. So if you work as an architect or senior designer (or want to someday), or if you are a student in software engineering, here is a valuable and yet approachable knowledge source for you.

For too long, developers have worked on disorganized application projects, where every part seemed to have its own build system, and no common repository existed for information about the state of the project. Now there's help. The long-awaited official documentation to Maven is here. Written by Maven creator Jason Van Zyl and his team at Sonatype, *Maven: The Definitive Guide* clearly explains how this tool can bring order to your software development projects. Maven is largely replacing Ant as the build tool of choice for large open source Java projects because, unlike Ant, Maven is also a project management tool that can run reports, generate a project website, and facilitate communication among members of a working team. To use Maven, everything you need to know is in this guide. The first part demonstrates the tool's capabilities through the development, from ideation to deployment, of several sample applications -- a simple software development project, a simple web application, a multi-module project, and a multi-module enterprise project. The second part offers a complete reference guide that includes: The POM and Project Relationships The Build Lifecycle Plugins Project website generation Advanced site generation Reporting Properties Build Profiles The Maven Repository Team Collaboration Writing Plugins IDEs such as Eclipse, IntelliJ, and NetBeans Using and creating assemblies Developing with Maven Archetypes Several sources for Maven have appeared online for some time, but nothing served as an introduction and comprehensive reference guide to this tool -- until now. *Maven: The Definitive Guide* is the ideal book to help you manage development projects for software, web applications, and enterprise applications. And it comes straight from the source.

Today's programmers don't develop software systems from scratch. Instead, they spend their time fixing, extending, modifying, and enhancing existing software. Legacy systems often turn into an unwieldy mess that becomes increasingly difficult to modify, and with architecture that continually accumulates technical debt. Carola Lilienthal has analyzed more than 300 software systems written in Java, C#, C++, PHP, ABAP, and TypeScript and, together with her teams, has successfully refactored them. This book condenses her experience with monolithic systems, architectural and design patterns, layered architectures, domain-driven design, and microservices. With more than 200 color images from real-world systems, good and sub-optimal sample solutions are presented in a comprehensible and thorough way, while recommendations and suggestions based on practical projects allow the reader to directly apply the author's knowledge to their daily work. "Throughout the book, Dr. Lilienthal has provided sound advice on diagnosing, understanding, disentangling, and ultimately preventing the issues that make software systems brittle and subject to breakage. In addition to the technical examples that you'd expect in a book on software architecture, she takes the time to dive into the behavioral and human aspects that impact sustainability and, in my experience, are inextricably linked to the health of a codebase. She also expertly zooms out, exploring architecture concepts such as domains and layers, and then zooms in to the class level where your typical developer works day-to-day. This holistic approach is crucial for implementing long-lasting change." From the Foreword of Andrea Goulet CEO, Corgibytes, Founder, Legacy Code Rocks

*Redefining the Architect's Role in the Digital Enterprise*

*Node.js Design Patterns*

*Core J2EE Patterns*

*Software Architecture with C++*

*Design Patterns Applied*

*The Definitive Guide*

*Designing Software Architectures*

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,

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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.

Aligning Principles, Practices, and Culture

Domain-driven Design

The Tao of Microservices

Creating Modular Applications in Java

Crafting Code with Test-Driven Development

Support Constant Change

Programming JavaScript Applications