

Software Modeling And Design Uml Use Cases Patterns And Software Architectures

Discover how to use Unified Modeling Language (UML) diagrams to create important artifacts at each stage of the software development life cycle.

With its clear introduction to the Unified Modeling Language (UML) 2.0, this tutorial offers a solid understanding of each topic, covering foundational concepts of object-orientation and an introduction to each of the UML diagram types.

"This book provides you with all you need to know for modeling and design of software applications, from use cases to software architectures in UML. It shows you 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 layered patterns for software product line 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

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client/server architectures, an Online Shopping System for service-oriented architectures, an Emergency Monitoring System for component-based software architectures, and an Automated Guided Vehicle System for real-time software architectures. Organized as an introduction followed by several self-contained chapters the book is perfect for senior undergraduate or graduate courses in software engineering and for experienced software engineers who want a quick reference at each stage of the analysis, design, and development of large-scale software systems"--

This textbook mainly addresses beginners and readers with a basic knowledge of object-oriented programming languages like Java or C#, but with little or no modeling or software engineering experience - thus reflecting the majority of students in introductory courses at universities. Using UML, it introduces basic modeling concepts in a highly precise manner, while refraining from the interpretation of rare special cases. After a brief explanation of why modeling is an indispensable part of software development, the authors introduce the individual diagram types of UML (the class and object diagram, the sequence diagram, the state machine diagram, the activity diagram, and the use case diagram), as well as their interrelationships, in a step-by-step manner. The topics covered include not only the syntax and the semantics of the individual

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language elements, but also pragmatic aspects, i.e., how to use them wisely at various stages in the software development process. To this end, the work is complemented with examples that were carefully selected for their educational and illustrative value. Overall, the book provides a solid foundation and deeper understanding of the most important object-oriented modeling concepts and their application in software development. An additional website offers a complete set of slides to aid in teaching the contents of the book, exercises and further e-learning material.

From Use Cases to Pattern-based Software Architectures

A Working Guide to Reactive System Design, Runtime Monitoring and Execution-based Model Checking

Software Design: Modeling with UML.

Oracle8 Design Using UML Object Modeling Modeling, Analysis, Design

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. This revision offers a crisp, clear explanation of the basics of object-oriented thinking via UML models, then presents a process for applying these principles to software development, including C++, Java, and relational databases. An integrated case study threads throughout the book, illustrating key ideas as well as their application.

Topological UML Modeling: An Improved Approach for

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Domain Modeling and Software Development presents a specification for Topological UML® that combines the formalism of the Topological Functioning Model (TFM) mathematical topology with a specified software analysis and design method. The analysis of problem domain and design of desired solutions within software development processes has a major impact on the achieved result – developed software. While there are many tools and different techniques to create detailed specifications of the solution, the proper analysis of problem domain functioning is ignored or covered insufficiently. The design of object-oriented software has been led for many years by the Unified Modeling Language (UML®), an approved industry standard modeling notation for visualizing, specifying, constructing, and documenting the artifacts of a software-intensive system, and this comprehensive book shines new light on the many advances in the field. Presents an approach to formally define, analyze, and verify functionality of existing processes and desired processes to track incomplete or incorrect functional requirements Describes the path from functional and nonfunctional requirements specification to software design with step-by-step creation and transformation of diagrams and models with very early capturing of security requirements for software systems. Defines all modeling constructs as extensions to UML®, thus creating a new UML® profile which can be implemented in existing UML® modeling tools and toolsets

As systems being developed by industry and government grow larger and more complex, the need for superior specification and verification approaches and tools becomes increasingly vital. The developer and customer must have complete confidence that the design produced is correct, and that it meets forma development and verification standards. In this text, UML expert author Dr. Doron Drusinsky compiles all

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the latest information on the application of UML (Universal Modeling Language) statecharts, temporal logic, automata, and other advanced tools for run-time monitoring and verification. This is the first book that deals specifically with UML verification techniques. This important information is introduced within the context of real-life examples and solutions, particularly focusing on national defense applications. A practical text, as opposed to a high-level theoretical one, it emphasizes getting the system developer up-to-speed on using the tools necessary for daily practice. A practical, tutorial-style text (other books on this topic discuss the tools and formalisms only theoretically) Includes an unclassified case study example from the U.S. Missile Defense project

The purpose of large-scale software architecture is to capture and describe practical representations to make development teams more effective. In this book the authors show how to utilise software architecture as a tool to guide the development instead of capturing the architectural details after all the design decisions have been made. * Offers a concise description of UML usage for large-scale architecture * Discusses software architecture and design principles *

Technology and vendor independent

UML @ Classroom

Understanding UML

UML in Practice

Business Modeling and Software Design

Understanding Object-Oriented Programming and the Unified Modeling Language

Large-Scale Software Architecture

Object-Oriented Analysis and Design for Information Systems clearly explains real object-oriented programming in practice. Expert author Raul Sidnei Wazlawick explains concepts such as object responsibility, visibility and the real

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need for delegation in detail. The object-oriented code generated by using these concepts in a systematic way is concise, organized and reusable. The patterns and solutions presented in this book are based in research and industrial applications. You will come away with clarity regarding processes and use cases and a clear understand of how to expand a use case. Wazlawick clearly explains clearly how to build meaningful sequence diagrams. Object-Oriented Analysis and Design for Information Systems illustrates how and why building a class model is not just placing classes into a diagram. You will learn the necessary organizational patterns so that your software architecture will be maintainable. Learn how to build better class models, which are more maintainable and understandable. Write use cases in a more efficient and standardized way, using more effective and less complex diagrams. Build true object-oriented code with division of responsibility and delegation. Software Modeling and Design UML, Use Cases, Patterns, and Software Architectures Cambridge University Press Object-Oriented Design with UML and Java provides an integrated introduction to object-oriented design with the Unified Modelling Language (UML) and the Java programming language. The book demonstrates how Java applications, no matter how small, can benefit from some design during their construction. Fully road-tested by students on the authors' own courses, the book shows how these complementary technologies can be used effectively to create quality software. It requires no prior knowledge of object orientation, though readers must have some experience of Java or other high level programming language. This book covers object technology; object-oriented analysis and design; and implementation of objects with Java. It includes two case studies dealing with library applications. The UML has been incorporated into a

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graphical design tool called ROME, which can be downloaded from the book's website. This object modelling environment allows readers to prepare and edit various UML diagrams. ROME can be used alongside a Java compiler to generate Java code from a UML class diagram then compile and run the resulting application for hands-on learning. This text would be a valuable resource for undergraduate students taking courses on O-O analysis and design, O-O modelling, Java programming, and modelling with UML. * Integrates design and implementation, using Java and UML * Includes case studies and exercises * Bridges the gap between programming texts and high level analysis books on design 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

Modeling and Verification Using UML Statecharts

A Practical Guide using UML

Language, Concepts, Methods

Designing Software Architectures

Learning UML 2.0

Just Enough 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

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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.

John Hunt's book guides you through the use of the UML and the Unified Process and their application to Java systems. Key topics focus explicitly on applying the notation and the method to Java. The book is clearly structured and written, making it ideal for practitioners. This second edition is considerably revised and extended and includes examples taken from

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the latest version of Rational Rose and Together. Considers how Agile Modelling fits with the Unified Process, and presents Design Patterns Self contained - covers both the Unified Process and UML in one book Includes real-world case studies Written by an experienced author and industry expert Ideal for students on Software Engineering courses

This is an introductory book to information modelling with UML, for entry level university students. It assumes no previous knowledge of UML on the part of the reader, and uses a case-based approach to present the material clearly and accessibly. It harmonises the UML notation with a full software development approach, from project conception through to testing, deployment and enhancement. The author is an experienced tutor, who also practices as a UML professional, and the cases are based upon his own experience. The book is accompanied by a website that provides solutions to end-of-chapter exercises, a password-protected tutor's file of further exercises with solutions, slides to accompany the book, and other support material. This book is suitable for all undergraduate computing and information systems, or Software Engineering courses. First year students

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will find it particularly helpful for modules on systems development or analysis and design.

The Unified Modeling Language has become the industry standard for the expression of software designs. The Java programming language continues to grow in popularity as the language of choice for the serious application developer. Using UML and Java together would appear to be a natural marriage, one that can produce considerable benefit. However, there are nuances that the seasoned developer needs to keep in mind when using UML and Java together. Software expert Robert Martin presents a concise guide, with numerous examples, that will help the programmer leverage the power of both development concepts. The author ignores features of UML that do not apply to java programmers, saving the reader time and effort. He provides direct guidance and points the reader to real-world usage scenarios. The overall practical approach of this book brings key information related to Java to the many presentations. The result is a highly practical guide to using the UML with Java.

APPLYING UML & PATTERNS 3RD EDITION
An Introduction to Object-Oriented
Modeling

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Systems Engineering with SysML/UML

UML and Object-Oriented Design Foundations
Theory and Practice

Software Engineering with UML

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The Model Driven Architecture defines an approach where the specification of the functionality of a system can be separated from its implementation on a particular technology platform. The idea being that the architecture will be able to easily be adapted for different situations, whether they be legacy systems, different languages or yet to be invented platforms. MDA is therefore, a significant evolution of the object-oriented approach to system development. Advanced System Design with Java, UML and MDA describes the factors involved in designing and constructing large systems, illustrating the design process through a series of examples, including a Scrabble player, a jukebox using web streaming, a security system, and others. The book first considers the challenges of software design, before introducing the Unified Modelling

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Language and Object Constraint Language. The book then moves on to discuss systems design as a whole, covering internet systems design, web services, Flash, XML, XSLT, SOAP, Servlets, Javascript and JSP. In the final section of the book, the concepts and terminology of the Model Driven Architecture are discussed. To get the most from this book, readers will need introductory knowledge of software engineering, programming in Java and basic knowledge of HTML. * Examines issues raised by the Model-Driven Architecture approach to development * Uses easy to grasp case studies to illustrate complex concepts * Focused on the internet applications and technologies that are essential for students in the online age

"...(an) exceptionally balanced and informative text." --Rich Dragan

The Unified Modeling Language (UML) is a third generation method for specifying, visualizing, and documenting an object-oriented system under development. It unifies the three leading object-oriented methods and others to serve as the basis for a common, stable, and

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expressive object-oriented development notation. As the complexity of software applications increases, so does the developer's need to design and analyze applications before developing them. This practical introduction to UML provides software developers with an overview of this powerful new design notation, and teaches Java programmers to analyse and design object-oriented applications using the UML notation. + Apply the basics of UML to your applications immediately, without having to wade through voluminous documentation + Use the simple Internet example as a prototype for developing object-oriented applications of your own + Follow a real example of an Intranet sales reporting system written in Java that is used to drive explanations throughout the book + Learn from an example application modeled both by hand and with the use of Popkin Software's SA/Object Architect 0-0 visual modeling tool. This book is intended for Graduate and Post-graduate students in Computer Science and Engineering, Information Technology for the purpose of Object

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Oriented System Analysis and Design.
This book covers details of UML
(Unified Modeling Language) which is
used to model software intensive
systems.

Guide to the Unified Process featuring
UML, Java and Design Patterns
Developing Software with UML
UML for Real

A Risk-Driven Approach
Modeling with UML

Software Modeling and Design

This book constitutes the refereed proceedings
of the 11th International Symposium on
Business Modeling and Software Design, BMSD
2021, which took place in Sofia, Bulgaria, in July
2021. The 14 full and 13 short papers included in
this book were carefully reviewed and selected
from a total of 61 submissions. BMSD is a
leading international forum that brings together
researchers and practitioners interested in
business modeling and its relation to software
design. Particular areas of interest are: Business
Processes and Enterprise Engineering; Business
Models and Requirements; Business Models and
Services; Business Models and Software;
Information Systems Architectures and
Paradigms; Data Aspects in Business Modeling
and Software Development; Blockchain-Based

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Business Models and Information Systems; IoT and Implications for Enterprise Information Systems. The BMSD 2021 theme was: Towards Enterprises and Software that are Resilient against Disruptive Events.

More than 300,000 developers have benefited from past editions of UML Distilled . This third edition is the best resource for quick, no-nonsense insights into understanding and using UML 2.0 and prior versions of the UML. Some readers will want to quickly get up to speed with the UML 2.0 and learn the essentials of the UML. Others will use this book as a handy, quick reference to the most common parts of the UML. The author delivers on both of these promises in a short, concise, and focused presentation. This book describes all the major UML diagram types, what they're used for, and the basic notation involved in creating and deciphering them.

These diagrams include class, sequence, object, package, deployment, use case, state machine, activity, communication, composite structure, component, interaction overview, and timing diagrams. The examples are clear and the explanations cut to the fundamental design logic. Includes a quick reference to the most useful parts of the UML notation and a useful summary of diagram types that were added to the UML 2.0. If you are like most developers, you

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don't have time to keep up with all the new innovations in software engineering. This new edition of Fowler's classic work gets you acquainted with some of the best thinking about efficient object-oriented software design using the UML--in a convenient format that will be essential to anyone who designs software professionally.

CD-ROM contains: Java and XML

implementations of ideas and models described in the appendix.

This comprehensive guide has been fully revised to cover UML 2.0, today's standard method for modelling software systems. Filled with concise information, it's been crafted to help IT professionals read, create, and understand system artefacts expressed using UML. Includes an example-rich tutorial for those who need familiarizing with the system.

UML for Java Programmers

Enterprise Components and Process

The Art of Modeling Software Systems

Demonstrated through Worked Examples and Solutions

Object-Oriented Design with UML and Java

Software Development with UML

Agile Model-Based Development Using UML-RSDS

Explore the fundamental concepts behind

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modern, object-oriented software design best practices. Learn how to work with UML to approach software development more efficiently. In this comprehensive book, instructor Károly Nyisztor helps to familiarize you with the fundamentals of object-oriented design and analysis. He introduces each concept using simple terms, avoiding confusing jargon. He focuses on the practical application, using hands-on examples you can use for reference and practice. Throughout the book, Károly walks you through several examples to familiarize yourself with software design and UML. Plus, he walks you through a case study to review all the steps of designing a real software system from start to finish. Topics include:-

- Understanding software development methodologies- Choosing the right methodology: Waterfall vs. Agile-
- Fundamental object-Oriented concepts: Abstraction, Polymorphism and more-
- Collecting requirements- Mapping requirements to technical descriptions-
- Unified Modeling Language (UML)- Use case, class, sequence, activity, and state diagrams-
- Designing a Note-Taking App from scratch

You will acquire professional and technical skills together with an understanding of object-orientation

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principles and concepts. After completing this book, you'll be able to understand the inner workings of object-oriented software systems. You will communicate easily and effectively with other developers using object-orientation terms and UML diagrams. About the Author Károly Nyisztor is a veteran mobile developer and instructor. He has built several successful iOS apps and games--most of which were featured by Apple--and is the founder at LEAKKA, a software development, and tech consulting company. He's worked with companies such as Apple, Siemens, SAP, and Zen Studios. Currently, he spends most of his days as a professional software engineer and IT architect. In addition, he teaches object-oriented software design, iOS, Swift, Objective-C, and UML. As an instructor, he aims to share his 20+ years of software development expertise and change the lives of students throughout the world. He's passionate about helping people reveal hidden talents, and guide them into the world of startups and programming. You can find his courses and books on all major platforms including Amazon, Lynda, LinkedIn Learning, Pluralsight, Udemy, and iTunes.

UML, the Universal Modeling Language, was

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the first programming language designed to fulfill the requirement for "universality." However, it is a software-specific language, and does not support the needs of engineers designing from the broader systems-based perspective.

Therefore, SysML was created. It has been steadily gaining popularity, and many companies, especially in the heavily-regulated Defense, Automotive, Aerospace, Medical Device and Telecomms industries, are already using SysML, or are planning to switch over to it in the near future. However, little information is currently available on the market regarding SysML. Its use is just on the crest of becoming a widespread phenomenon, and so thousands of software engineers are now beginning to look for training and resources. This book will serve as the one-stop, definitive guide that provide an introduction to SysML, and instruction on how to implement it, for all these new users. *SysML is the latest emerging programming language--250,000 estimated software systems engineers are using it in the US alone! *The first available book on SysML in English *Insider information! The author is a member of the SysML working group and has written sections of the specification *Special focus comparing

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SysML and UML, and explaining how both can work together

Diagramming and process are important topics in today's software development world, as the UML diagramming language has come to be almost universally accepted. Yet process is necessary; by themselves, diagrams are of little use. Use Case Driven Object Modeling with UML - Theory and Practice combines the notation of UML with a lightweight but effective process - the ICONIX process - for designing and developing software systems. ICONIX has developed a growing following over the years. Sitting between the free-for-all of Extreme Programming and overly rigid processes such as RUP, ICONIX offers just enough structure to be successful.

This is a practical guide for software developers, and different than other software architecture books. Here's why: It teaches risk-driven architecting. There is no need for meticulous designs when risks are small, nor any excuse for sloppy designs when risks threaten your success. This book describes a way to do just enough architecture. It avoids the one-size-fits-all process tar pit with advice on how to tune your design effort based on the risks you face. It democratizes architecture. This book seeks to make

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architecture relevant to all software developers. Developers need to understand how to use constraints as guiderails that ensure desired outcomes, and how seemingly small changes can affect a system's properties. It cultivates declarative knowledge. There is a difference between being able to hit a ball and knowing why you are able to hit it, what psychologists refer to as procedural knowledge versus declarative knowledge. This book will make you more aware of what you have been doing and provide names for the concepts. It emphasizes the engineering. This book focuses on the technical parts of software development and what developers do to ensure the system works not job titles or processes. It shows you how to build models and analyze architectures so that you can make principled design tradeoffs. It describes the techniques software designers use to reason about medium to large sized problems and points out where you can learn specialized techniques in more detail. It provides practical advice. Software design decisions influence the architecture and vice versa. The approach in this book embraces drill-down/pop-up behavior by describing models that have various levels of abstraction, from architecture to data structure design.

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Modeling with UML, OCL, and IFML

Object-Oriented Modeling and Design with UML

Model-Driven Development with Executable UML

Designing Software Product Lines with UML

Object-oriented Analysis and Design in Practice

11th International Symposium, BMSD 2021, Sofia, Bulgaria, July 5–7, 2021,

Proceedings

This book shows us how to use UML and apply it in object-oriented software development. Part 1 of the book guides the reader step-by-step through the development process while part 2 explains the basics of UML in detail.

This book provides an introduction to practical formal modelling techniques in the context of object-oriented system design. It is aimed at both practising software engineers with some prior experience of object-oriented design/programming and at intermediate or advanced students studying object-oriented design or modelling in a short course. The following features make this book particularly attractive to potential instructors: § The relationship with UML and object-oriented programming makes it easy to integrate with the mainstream computing curriculum. Although the book is about formal methods, it does not have to be treated as a specialist topic. § The use of tools and an accessible modelling language improves student motivation. § The industry-based examples and case studies add to the credibility of the approach. § The light touch approach means that the material appeals to students with a wider range of abilities than is the case in a conventional formal methods text. § Support materials as listed above.

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The complexity of most real-time and embedded systems often exceeds that of other types of systems since, in addition to the usual spectrum of problems inherent in software, they need to deal with the complexities of the physical world. That world—as the proverbial Mr. Murphy tells us—is an unpredictable and often unfriendly place. Consequently, there is a very strong motivation to investigate and apply advanced design methods and technologies that could simplify and improve the reliability of real-time software design and implementation. As a result, from the first versions of UML issued in the mid 1990's, designers of embedded and real-time systems have taken to UML with vigour and enthusiasm. However, the dream of a complete, model-driven design flow from specification through automated, optimised code generation, has been difficult to realise without some key improvements in UML semantics and syntax, specifically targeted to the real-time systems problem. With the enhancements in UML that have been proposed and are near standardisation with UML 2. 0, many of these improvements have been made. In the Spring of 2003, adoption of a formalised UML 2. 0 specification by the members of the Object Management Group (OMG) seems very close. It is therefore very appropriate to review the status of UML as a set of notations for embedded real-time systems - both the state of the art and best practices achieved up to this time with UML of previous generations - and where the changes embodied in the 2.

*Offers comprehensive coverage of all major modeling viewpoints Provides details of collaboration and class diagrams for filling in the design-level models
Object-Oriented Analysis and Design for Information Systems
Object -Oriented Analysis and Design Using UML
UML, Use Cases, Patterns, and Software Architectures
Enterprise Modeling with UML*

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An Improved Approach for Domain Modeling and Software Development

Design of Embedded Real-Time Systems

This book presents a variant of UML that is especially suitable for agile development of high-quality software. It adjusts the language UML profile, called UML/P, for optimal assistance for the design, implementation, and agile evolution to facilitate its use especially in agile, yet model based development methods for data intensive or control driven systems. After a general introduction to UML and the choices made in the development of UML/P in Chapter 1, Chapter 2 includes a definition of the language elements of class diagrams and their forms of use as views and representations. Next, Chapter 3 introduces the design and semantic facets of the Object Constraint Language (OCL), which is conceptually improved and syntactically adjusted to Java for better comfort. Subsequently, Chapter 4 introduces object diagrams as an independent, exemplary notation in UML/P, and Chapter 5 offers a detailed introduction to UML/P Statecharts. Lastly, Chapter 6 presents a simplified form of sequence diagrams for exemplary descriptions of object interactions. For completeness, appendixes A-C describe the full syntax of UML/P, and appendix D explains a sample application from the E-commerce domain, which is used in all chapters. This book is ideal for introductory courses for students and practitioners alike.

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

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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

Social scientists, whether earnest graduate students or tenured faculty members, clearly know the rules that govern good writing. But for some reason they

choose to ignore those guidelines and churn out turgid, pompous, and obscure prose. Distinguished sociologist Howard S. Becker, true to his calling, looks for an explanation for this bizarre behavior not in the psyches of his colleagues but in the structure of his profession. In this highly personal and inspirational volume he considers academic writing as a social activity. Both the means and the reasons for writing a thesis or article or book are socially structured by the organization of graduate study, the requirements for publication, and the conditions for promotion, and the pressures arising from these situations create the writing style so often lampooned and lamented. Drawing on his thirty-five years' experience as a researcher, writer, and teacher, Becker exposes the foibles of the academic profession to the light of sociological analysis and gentle humor. He also offers eminently useful suggestions for ways to make social scientists better and more productive writers. Among the topics discussed are how to overcome the paralyzing fears of chaos and ridicule that lead to writer's block; how to rewrite and revise, again and again; how to adopt a persona compatible with lucid prose; how to deal with that academic bugaboo, "the literature." There is also a chapter by Pamela Richards on the personal and professional risks involved in scholarly writing. In recounting his own trials and errors Becker offers his readers not a model to be slavishly imitated but an example to inspire. Throughout, his focus is on the elusive work habits that contribute to good writing, not the more easily learned rules of grammar and punctuation. Although his examples are drawn from sociological literature, his

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conclusions apply to all fields of social science, and indeed to all areas of scholarly endeavor. The message is clear: you don't have to write like a social scientist to be one.

"Designing Software Product Lines with UML is well-written, informative, and addresses a very important topic. It is a valuable contribution to the literature in this area, and offers practical guidance for software architects and engineers." --Alan Brown

Distinguished Engineer, Rational Software, IBM Software Group "Gomaa"s process and UML extensions allow development teams to focus on feature-oriented development and provide a basis for improving the level of reuse across multiple software development efforts. This book will be valuable to any software development professional who needs to manage across projects and wants to focus on creating software that is consistent, reusable, and modular in nature." --Jeffrey S Hammond Group

Marketing Manager, Rational Software, IBM Software Group "This book brings together a good range of concepts for understanding software product lines and provides an organized method for developing product lines using object-oriented techniques with the UML. Once again, Hassan has done an excellent job in balancing the needs of both experienced and novice software engineers." --Robert G. Pettit IV, Ph.D. Adjunct Professor of Software Engineering, George Mason University "This breakthrough book provides a comprehensive step-by-step approach on how to develop software product lines, which is of great strategic benefit to industry. The development of software product lines enables significant reuse of software architectures. Practitioners will benefit

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from the well-defined PLUS process and rich case studies." --Hurley V. Blankenship II Program Manager, Justice and Public Safety, Science Applications International Corporation "The Product Line UML based Software engineering (PLUS) is leading edge. With the author's wide experience and deep knowledge, PLUS is well harmonized with architectural and design pattern technologies." --Michael Shin Assistant Professor, Texas Tech University Long a standard practice in traditional manufacturing, the concept of product lines is quickly earning recognition in the software industry. A software product line is a family of systems that shares a common set of core technical assets with preplanned extensions and variations to address the needs of specific customers or market segments. When skillfully implemented, a product line strategy can yield enormous gains in productivity, quality, and time-to-market. Studies indicate that if three or more systems with a degree of common functionality are to be developed, a product-line approach is significantly more cost-effective. To model and design families of systems, the analysis and design concepts for single product systems need to be extended to support product lines. Designing Software Product Lines with UML shows how to employ the latest version of the industry-standard Unified Modeling Language (UML 2.0) to reuse software requirements and architectures rather than starting the development of each new system from scratch. Through real-world case studies, the book illustrates the fundamental concepts and technologies used in the design and implementation of software product lines. This book describes a new

UML-based software design method for product lines called PLUS (Product Line UML-based Software engineering). PLUS provides a set of concepts and techniques to extend UML-based design methods and processes for single systems in a new dimension to address software product lines. Using PLUS, the objective is to explicitly model the commonality and variability in a software product line. Hassan Gomaa explores how each of the UML modeling views--use case, static, state machine, and interaction modeling--can be extended to address software product families. He also discusses how software architectural patterns can be used to develop a reusable component-based architecture for a product line and how to express this architecture as a UML platform-independent model that can then be mapped to a platform-specific model. Key topics include: Software product line engineering process, which extends the Unified Development Software Process to address software product lines Use case modeling, including modeling the common and variable functionality of a product line Incorporating feature modeling into UML for modeling common, optional, and alternative product line features Static modeling, including modeling the boundary of the product line and information-intensive entity classes Dynamic modeling, including using interaction modeling to address use-case variability State machines for modeling state-dependent variability Modeling class variability using inheritance and parameterization Software architectural patterns for product lines Component-based distributed design using the new UML 2.0 capability for modeling components, connectors, ports, and provided and

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required interfaces Detailed case studies giving a step-by-step solution to real-world product line problems Designing Software Product Lines with UML is an invaluable resource for all designers and developers in this growing field. The information, technology, and case studies presented here show how to harness the promise of software product lines and the practicality of the UML to take software design, quality, and efficiency to the next level. An enhanced online index allows readers to quickly and easily search the entire text for specific topics.

UML 2.0 in a Nutshell

A UML Pattern Language

A Practical Approach

Java Modeling in Color with UML

Topological UML Modeling

The Developer's Guide

This book describes the concepts and application of model-based development (MBD), model transformations, and Agile MBD to a wide range of software systems. It covers systems requirements engineering, system specification and design, verification, reuse, and system composition in the context of Agile MBD. Examples of applications in finance, system migration, internet systems and software refactoring are given. An established open-source MBD technology, UML-RSDS, is used throughout to illustrate the concepts. The book is suitable for industrial practitioners who need training in Agile MBD, and those who need to understand the issues to be considered when introducing MBD in an industrial context. It is also suitable for academic researchers, and for use as text for undergraduate or postgraduate courses in MBD. Examples for

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educational use of UML-RSDS are included in the book.

The ultimate guide to designing with Oracle8's Object-Relational Model. The authors show users how to implement the concepts in the real world--teaching how to fully exploit the Object-oriented capabilities of Oracle8. They cover the often neglected areas of database design system requirements, like changes to records, data entry errors, and basic transaction history--all key topics that every database designer must address.

This book presents the analysis, design, documentation, and quality of software solutions based on the OMG UML v2.5. Notably it covers 14 different modelling constructs including use case diagrams, activity diagrams, business-level class diagrams, corresponding interaction diagrams and state machine diagrams. It presents the use of UML in creating a Model of the Problem Space (MOPS), Model of the Solution Space (MOSS) and Model of the Architectural Space (MOAS). The book touches important areas of contemporary software engineering ranging from how a software engineer needs to invariably work in an Agile development environment through to the techniques to model a Cloud-based solution.

Advanced Systems Design with Java, UML and MDA
A Brief Guide to the Standard Object Modeling Language

Use Case Driven Object Modeling with UML Theory and Practice

Designing Successful Software Through Business Analysis

Validated Designs for Object-oriented Systems

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UML Distilled