Software Development With Uml

"Since its original introduction in 1997, the Unified Modeling Language has revolutionized software development. Every integrated software development environment in the world--open-source, standards-based, and proprietary--now supports UML and, more importantly, the model-driven approach to software development. This makes learning the newest UML standard, UML 2.0, critical for all software developers--and there isn't a better choice than this clear, step-by-step guide to learning the language." --Richard Mark Soley, Chairman and CEO, OMG If you're like most software developers, you're building systems that are increasingly complex. Whether you're creating a desktop application or an enterprise system, complexity is the big hairy monster you must manage. The Unified Modeling Language (UML) helps you manage this complexity. Whether you're looking to use UML as a blueprint language, a sketch tool, or as a programming language, this book will give you the need-to-know information on how to apply UML to your project. While there are plenty of books available that describe UML, Learning UML 2.0 will show you how to use it. Topics covered include: Capturing your system's requirements in your model to help you ensure that your designs meet your users' needs Modeling the parts of your system and their relationships Modeling how the parts of your system work together to meet your system's requirements Modeling how your system moves into the real world, capturing how your system will be deployed Engaging and accessible, this book shows you how to use UML to craft and communicate your project's design. Russ Miles and Kim Hamilton have written a pragmatic introduction to UML based on hard-earned practice, not theory. Regardless of the software process or methodology you use, this book is the one source you need to get up and running with UML 2.0. Russ Miles is a software engineer for General Dynamics UK, where he works with Java and Distributed Systems, although his passion at the moment is Aspect Orientation and, in particular, AspectJ. Kim Hamilton is a senior software engineer at Northrop Grumman, where she's designed and implemented a variety of systems including web applications and distributed systems, with frequent detours into algorithms development.

Dieses Lehrbuch vermittelt die Grundlagen der objektorientierten Modellierung anhand von UML und bietet eine kompakte Einführung in die fünf Diagramme Klassendiagramm, Anwendungsfalldiagramm, Zustandsdiagramm, Sequenzdiagramm und Aktivitätsdiagramm. Diese decken die wesentlichen Konzepte ab, die für die durchgängige objektorientierte Modellierung in einem kompletten Softwareentwicklungsprozess benötigt werden. Besonderer Wert wird auf die Verdeutlichung des Zusammenspiels unterschiedlicher Diagramme gelegt. Die präsentierten Konzepte werden anhand von illustrativen Beispielen erklärt.

Topological UML Modeling: An Improved Approach for 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

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.

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 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.

Software Engineering Techniques Applied to Agricultural Systems presents cutting-edge software engineering techniques for designing and implementing better agricultural software systems based on the object-oriented paradigm and the Unified Modeling Language (UML). The book is divided in two parts: the first part presents concepts of the object-oriented paradigm and the UML notation of these concepts, and the second part provides a number of examples of applications that use the material presented in the first part. The examples presented illustrate the techniques discussed, focusing on how to construct better models using objects and UML diagrams. More advanced concepts such as distributed systems and examples of how to build these systems are presented in the last chapter of the book. The book presents a step-by-step approach for modeling agricultural systems, starting with a conceptual diagram representing elements of the system and their relationships. Furthermore, diagrams such as sequential and collaboration diagrams are used to explain the dynamic and static aspects of the software system.

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

This text provides an introduction to the process of software engineering. The revision concentrates on updating the book to reflect the most current trends and innovations in the field. The Universal Modeling Language (UML) has become an industry standard and now permeates this new edition. In this text, it is used for object-oriented analysis and design as well as when diagrams depict objects and their interrelationships. Design patterns, frameworks and software architecture have also become a popular topic in the field of software engineering and are part of a new chapter on reuse, portability, and inoperability. The inoperabilty material includes sections on such hot topics as OLE, COM, and CORBA. Some material from the 3rd edition has been reorganized into a new chapter on planning and estimating, including feature points and COCOMO II. While the text has been updated, the traditonal features which have defined the previous three editions of Schach's book have been retained. These include a balanced coverage of the object-oriented model along with the classical model (as reflected in the title) and an emphasis on metrics. The special considerations of object-oriented life-cycle models, object-oriented analysis, and object-oriented design are also retained in this edition.

If you are interested in learning object-oriented technology using UML (Unified Modeling Language) and C++, then this guide from two leading software developers at Bell Laboratories of Lucent Technologies and AT&T is for you. Designed as a self-teaching guide for busy software analysts and developers who work on large systems, this book will teach you how to actually do object-oriented modeling using UML notation and implementing the model using C++. Features: Uses the new UML notation for documentation. UML will be the new industry standard; teaches the professional to make and trade off decisions to meet business needs; explains the differences among object-oriented analysis, object-oriented design, and object-oriented programming; provides a strategy for employing all the steps of object-oriented technology; fully worked case study that takes the reader through the entire development process; every concept is introduced with an example.

Mit der Entwicklung neuer Technologien werden auch die einzelnen Software-Projekte stetig komplexer. Zu analysieren, warum manche Projekte scheitern und andere erfolgreich sind, wird daher immer wichtiger. Dieses Buch ist ein praktischer Leitfaden für die Entwicklung neuer Software. Systematisch beschreibt der Autor die Chancen und Risiken, die einem bei der Entwicklung einer Software begegnen können. Vom gemeinsamen Kundengespräch, das Anforderungen und Ziele der Software festlegt, über die erste Modellierung bis hin zur systematischen Erfassung der Anforderungen zeigt er, wie die unterschiedlichen Prozesse mit Hilfe der UML (Unified Modeling Language) koordiniert werden können. Diese Modellierungssprache hilft, die Ideen des Entwicklers nachzuvollziehen und die Erfahrungen aus erfolgreichen Projekten auf andere Projekte zu übertragen.Neben Maßnahmen zur Qualitätssicherung beschreibt das Buch weitere Ansätze zur Projektplanung und Projektdurchführung und zeigt, wie die Softwareentwicklung in den Gesamtprozess eines Unternehmens eingebettet ist. Zum Verständnis des Buches werden Grundkenntnisse in einer objektorientierten Programmiersprache wie Java, C# oder C++ vorausgesetzt. Durch zahlreiche Wiederholungsfragen und Übungsaufgaben am Ende der Kapitel wird dieses Buch zum idealen Begleiter für Studenten der Informatik und verschiedener Ingenieurswissenschaften. Aber auch erfahrene Entwickler können von den vielen Kommentaren zur Verwendung in der Praxis zur kontinuierlichen Weiterentwicklung des Software-Engineerings profitieren. Die vorliegende vierte Auflage des bewährten Buches enthält erneut wichtige Erweiterungen und Ergänzungen.

For professionals involved in large software development projects with thousands or even millions of lines of code, this best-selling guide offers complete coverage of both classic Software Lifecycle -- requirements, specifications, design, implementation, testing, and maintenance -- and the latest Object-Oriented design approaches. Important new issues, such as object patterns and software architecture, are also included.

Dieses Lehrbuch des international bekannten Autors und Software-Entwicklers Craig Larman ist ein Standardwerk zur objektorientierten Analyse und Design unter Verwendung von UML 2.0 und Patterns. Das Buch zeichnet sich insbesondere durch die Fahigkeit des Autors aus, komplexe Sachverhalte anschaulich und praxisnah darzustellen. Es vermittelt grundlegende OOA/D-Fertigkeiten und bietet umfassende Erlauterungen zur iterativen Entwicklung und zum Unified Process (UP). Anschliessend werden zwei Fallstudien vorgestellt, anhand derer die einzelnen Analyse- und Designprozesse des UP in Form einer Inception-, Elaboration- und Construction-Phase durchgespielt werden

Software Engineering with UMLCRC Press

At the dawn of the 21st century and the information age, communication and c- puting power are becoming ever increasingly available, virtually pervading almost every aspect of modern socio-economical interactions. Consequently, the potential for realizing a signi?cantly greater number of technology-mediated activities has emerged. Indeed, many of our modern activity ?elds are heavily dependant upon various underlying systems and software-intensive platforms. Such technologies are commonly used in everyday activities such as commuting, traf?c control and m- agement, mobile computing, navigation, mobile communication. Thus, the correct function of the forenamed computing systems becomes a major concern. This is all the more important since, in spite of the numerous updates, patches and ?rmware revisions being constantly issued, newly discovered logical bugs in a wide range of modern software platforms (e. g. , operating systems) and software-intensive systems (e. g. , embedded systems) are just as frequently being reported. In addition, many of today’s products and services are presently being deployed in a highly competitive environment wherein a product or service is succeeding in most of the cases thanks to its quality to price ratio for a given set of features. Accordingly, a number of critical aspects have to be considered, such as the ab- ity to pack as many features as needed in a given product or service while c- currently maintaining high quality, reasonable price, and short time -to- market.

This book constitutes the refereed proceedings of the 9th International Conference on Model Driven Engineering Languages and Systems (formerly UML conferences), MoDELS 2006. The book presents 51 revised full papers and 2 invited papers. Discussion is organized in topical sections on evaluating UML, MDA in software development, concrete syntax, applying UML to interaction and coordination, aspects, model integration, formal semantics of UML, security, model transformation tools and implementation, and more.

Verhaltensregeln für professionelle Programmierer Erfolgreiche Programmierer haben eines gemeinsam: Die Praxis der Software-Entwicklung ist ihnen eine Herzensangelegenheit. Auch wenn sie unter einem nicht nachlassenden Druck arbeiten, setzen sie sich engagiert ein. Software-Entwicklung ist für sie eine Handwerkskunst. In Clean Coder stellt der legendäre Software-Experte Robert C. Martin die Disziplinen, Techniken, Tools und Methoden vor, die Programmierer zu Profis machen. Dieses Buch steckt voller praktischer Ratschläge und behandelt alle wichtigen Themen vom professionellen Verhalten und Zeitmanagement über die Aufwandsschätzung bis zum Refactoring und Testen. Hier geht es um mehr als nur um Technik: Es geht um die innere Haltung. Martin zeigt, wie Sie sich als Software-Entwickler professionell verhalten, gut und sauber arbeiten und verlässlich kommunizieren und planen. Er beschreibt, wie Sie sich schwierigen Entscheidungen stellen und zeigt, dass das eigene Wissen zu verantwortungsvollem Handeln verpflichtet. In diesem Buch lernen Sie: Was es bedeutet, sich als echter Profi zu verhalten Wie Sie mit Konflikten, knappen Zeitplänen und unvernünftigen Managern umgehen Wie Sie beim Programmieren im Fluss bleiben und Schreibblockaden überwinden Wie Sie mit unerbittlichem Druck umgehen und Burnout vermeiden Wie Sie Ihr Zeitmanagement optimieren Wie Sie für Umgebungen sorgen, in denen Programmierer und Teams wachsen und sich wohlfühlen Wann Sie Nein sagen sollten – und wie Sie das anstellen Wann Sie Ja sagen sollten – und was ein Ja wirklich bedeutet Großartige Software ist etwas Bewundernswertes: Sie ist leistungsfähig, elegant, funktional und erfreut bei der Arbeit sowohl den Entwickler als auch den Anwender. Hervorragende Software wird nicht von Maschinen geschrieben, sondern von Profis, die sich dieser Handwerkskunst unerschütterlich verschrieben haben. Clean Coder hilft Ihnen, zu diesem Kreis zu gehören. Über den Autor: Robert C. Uncle Bob Martin ist seit 1970 Programmierer und bei Konferenzen in aller Welt ein begehrter Redner. Zu seinen Büchern gehören Clean Code – Refactoring, Patterns, Testen und Techniken für sauberen Code und Agile Software Development: Principles, Patterns, and Practices. Als überaus produktiver Autor hat Uncle Bob Hunderte von Artikeln, Abhandlungen und Blogbeiträgen verfasst. Er war Chefredakteur bei The C++ Report und der erste Vorsitzende der Agile Alliance. Martin gründete und leitet die Firma Object Mentor, Inc., die sich darauf spezialisiert hat, Unternehmen bei der Vollendung ihrer Projekte behilflich zu sein.

"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 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 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.

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.

This textbook develops an understanding of the software development process and provides design practice using UML. Focusing on design techniques it describes the software process and lifecycle, and covers the main terms and concepts of object orientation and component based engineering. Case studies illustrate the issues involved in real life design, including real time systems, data oriented and component based design.

This book focuses on the methodological treatment of UML/P and addresses three core topics of model-based software development: code generation, the systematic testing of programs using a model-based definition of test cases, and the evolutionary refactoring and transformation of models. For each of these topics, it first details the foundational concepts and techniques, and then presents their application with UML/P. This separation between basic principles and applications makes the content more accessible and allows the reader to transfer this knowledge directly to other model-based approaches and languages. After an introduction to the book and its primary goals in Chapter 1, Chapter 2 outlines an agile UML-based approach using UML/P as the primary development language for creating executable models, generating code from the models, designing test cases, and planning iterative evolution through refactoring. In the interest of completeness, Chapter 3 provides a brief summary of UML/P, which is used throughout the book. Next, Chapters 4 and 5 discuss core techniques for code generation, addressing the architecture of a code generator and methods for controlling it, as well as the suitability of UML/P notations for test or product code. Chapters 6 and 7 then discuss general concepts for testing software as well as the special features which arise due to the use of UML/P. Chapter 8 details test patterns to show how to use UML/P diagrams to define test cases and emphasizes in particular the use of functional tests for distributed and concurrent software systems. In closing, Chapters 9 and 10 examine techniques for transforming models and code and thus provide a solid foundation for refactoring as a type of transformation that preserves semantics. Overall, this book will be of great benefit for practical software development, for academic training in the field of Software Engineering, and for research in the area of model-based software development. Practitioners will learn how to use modern model-based techniques to improve the production of code and thus significantly increase quality. Students will find both important scientific basics as well as direct applications of the techniques presented. And last but not least, the book will offer scientists a comprehensive overview of the current state of development in the three core topics it covers.

Practical guide to exploiting the power of Object Technology & UML in your software development process.

One of the first textbooks to be fully up-to-date with the new and expanded UML 2.0 standard, this is an ideal introduction to the Unified Modelling Language for students learning about object and component-based software design and development. The book encourages a pragmatic and open-minded approach to real-life software engineering. It places UML in the context of the software engineering discipline as a whole, providing students with a practical understanding of best practice in software design and development. The authors present a broad view of the subject area, enabling students to see for themselves how different practices may be appropriate for different situations. The book is divided into four parts covering: Part 1 - Introductory Concepts Part 2 - UML, the language Part 3 - Case studies Part 4 - Applying UML in practice

This book constitutes the thoroughly refereed joint postproceedings of the satellite activities held at the 7th International Conference on the Unified Modeling Language, UML 2004, in Lisbon, Portugal in October 2004 complementing the main conference track. The book presents reports on the 10 workshops held at UML and covers a broad range of topics around systems modelling; these reports are compiled by the respective workshop organizers. Furthermore 12 revised reviewed papers from the industry track are included as well as 11 short papers corresponding to selected poster/demo presentations and a summary on the UML tools exhibition.

In dieser - lang erwarteten - Überarbeitung zur Version 2.0 der umfassenden Einführung in UML bieten die Entwickler der Sprache - Grady Brooch, James Rumbaugh, Ivar Jacobsen - eine Einführung, die sich mit den Kernpunkten befasst. Ausgehend von einer Übersicht über UML wird die Sprache anhand der Vorstellung bestimmter Konzepte und Schreibweisen in jedem Kapitel Schritt für Schritt erläutert. Das Buch sorgt einerseits für einen umfassenden Überblick über alle Diagrammtypen sowie Elemente von UML in der zweiten Version und stellt andererseits den nötigen Praxisbezug her, um UML 2.0 effektiv für eigene Projekte einzusetzen. Die tief greifenden Erläuterungen und die an Beispielen orientierte Herangehensweise der Autoren, sorgen für ein schnelles Verständnis des komplexen Themas.

The object-oriented paradigm supplements traditional software engineering by providing solutions to common problems such as modularity and reusability. Objects can be written for a specific purpose acting as an encapsulated black-box API that can work with other components by forming a complex system. This book provides a comprehensive overview of the many facets of the object-oriented paradigm and how it applies to software engineering. Starting with an in-depth look at objects, the book naturally progresses through the software engineering life cycle and shows how object-oriented concepts enhance each step. Furthermore, it is designed as a roadmap with each chapter, preparing the reader with the skills necessary to advance the project.This book should be used by anyone interested in learning about object-oriented software engineering, including students and seasoned developers. Without overwhelming the reader, this book hopes to provide enough information for the reader to understand the concepts and apply them in their everyday work. After learning about the fundamentals of the object-oriented paradigm and the software engineering life cycle, the reader is introduced to more advanced topics such as web engineering, cloud computing, agile development, and big data. In recent years, these fields have been rapidly growing as many are beginning to realize the benefits of developing on a

highly scalable, automated deployment system. Combined with the speed and effectiveness of agile development, legacy systems are beginning to make the transition to a more adaptive environment.Core Features: 1. Provides a thorough exploration of the object-oriented paradigm. 2. Provides a detailed look at each step of the software engineering life cycle. 3. Provides supporting examples and documents. 4. Provides a detailed look at emerging technology and standards in object-oriented software engineering.

A systematic approach to striving for perfection in Java "TM" enterprise software! -- Principles and best-practice patterns for the key design and implementation problems facing enterprise developers. -- Effective integration of UML, object-oriented development, Java "TM," and your software development processes. -- Identifies behavioral and structural modeling techniques that deliver exceptional value. Drawing upon the experiences of hundreds of developers he has trained or worked with, Kirk Knoernschild offers a systematic guide to solving today's complex problems of Java-based enterprise application design and implementation. Knoernschild focuses on both technology and process, offering a phased approach to integrating UML, object-oriented development, and Java "TM" throughout the entire development lifecycle. Knoernschild begins by reintroducing objects and object-oriented design, presenting key concepts such as polymorphism and inheritance in terms of several powerful principles and patterns that inform the entire book. Next, he introduces the UML: how it evolved, the problems it helps to solve, and how various UML constructs can be mapped to Java. Knoernschild shows how to structure UML diagrams to more easily identify the problem being solved, introduces best practices that any software development process should promote, and shows how the UML fits with these best practices. He reviews the external considerations that impact how companies really use the UML, Java "TM," and object-based techniques, presenting a pragmatic, phased approach to integrating them with the least pain and the greatest effectiveness. The book concludes with in-depth coverage of behavioral andstructural modeling, again emphasizing the principles and patterns associated with long-term success. For every Java "TM" enterprise developer, architect, analyst, and project manager.

Explore the fundamental concepts behind 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-Orientation 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 scratchYou will acquire professional and technical skills together with an understanding of object-orientation 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 AuthorKároly 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.

Abstraction is the most basic principle of software engineering. Abstractions are provided by models. Modeling and model transformation constitute the core of model-driven development. Models can be refined and finally be transformed into a technical implementation, i.e., a software system. The aim of this book is to give an overview of the state of the art in model-driven software development. Achievements are considered from a conceptual point of view in the first part, while the second part describes technical advances and infrastructures. Finally, the third part summarizes experiences gained in actual projects employing model-driven development. Beydeda, Book and Gruhn put together the results from leading researchers in this area, both from industry and academia. The result is a collection of papers which gives both researchers and graduate students a comprehensive overview of current research issues and industrial forefront practice, as promoted by OMG’s MDA initiative.

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

Software Engineering Techniques Applied to Agricultural Systems presents cutting-edge software engineering techniques for designing and implementing better agricultural software systems based on the object-oriented paradigm and the Unified Modeling Language (UML). The focus is on the presentation of rigorous step-by-step approaches for modeling flexible agricultural and environmental systems, starting with a conceptual diagram representing elements of the system and their relationships. Furthermore, diagrams such as sequential and collaboration diagrams are used to explain the dynamic and static aspects of the software system. This second edition includes: a new chapter on Object

Constraint Language (OCL), a new section dedicated to the Model-VIEW-Controller (MVC) design pattern, new chapters presenting details of two MDA-based tools – the Virtual Enterprise and Olivia Nova and a new chapter with exercises on conceptual modeling. It may be highly useful to undergraduate and graduate students as the first edition has proven to be a useful supplementary textbook for courses in mathematical programming in agriculture, ecology, information technology, agricultural operations research methods, agronomy and soil science and applied mathematical modeling. The book has broad appeal for anyone involved in software development projects in agriculture and to researchers in general who are interested in modeling complex systems. From the reviews of the first edition: "The book will be useful for those interested in gaining a quick understanding of current software development techniques and how they are applied in practice... this is a good introductory text on the application of OOAD, UML and design patters to the creation of agricultural systems. It is technically sound and well written." —Computing Reviews, September 2006

A cutting-edge, UML-based approach to software development and maintenance that integrates component-based and product-line engineering methods. - ripe market: development of component-based technologies is a major growth area - CBD viewed as a faster, more flexible way of building systems that can easily be adapted to meet rapidly-changing business needs and integrate legacy and new applications (e.g. Forrester report in June 1998 predicted that by 2001 "half of packaged apps vendors will deliver component-based apps"; e.g. Butler Group Management Briefing (2000): "Butler Group is now advising that all new-build and significant modification activity should be based on component architectures...Butler Group belives that Component-Based Development is one of the most important events in the evolution of information technology" e.g. Gartner Group estimates that "by 2003, 70% of new applications will be deployed as a combination of pre-assembled and newly created components integrated to form complex business-systems. The book defines, describes and shows how to use a method for component-based product-line engineering, supported by UML. This method aims to dramatically increase the level of reuse in software development by integrating the strengths of both of these approaches. UML is used to describe components during the analysis, design & implementation stages and capture their characteristics and relationships.This method includes two new kinds of extensions to the UML: new stereotypes to capture KobrA-specific concepts and new metamodel elements to capture variabilities. The method makes components the focus of the entire software development process, not just the implementation and deployment phases. The method has grown out of work by two companies in industry (Softlab & Psipenta) and two research organizations (GMD FIRST & Fraunhofer IESE) called the KobrA project. It is influenced by a number of successful existing methods e.g. Fusion method, Cleanroom method, Catalysis & Rational Unified Process, integrated with new ideas in an innovative way. Benefits for the reader: - gain a clear understanding of the product-line and component-based approaches to software development - learn how to use UML to describe components in analysis, design and implementation of components - learn how to develop and apply component-based frameworks in product-lines - learn how to build new systems from pre-existing components and ensure that components are of a high quality The book also includes: - case studies: library system example running throughout the chapters; ERP/business software system as appendix or separate chapter - bibliography - glossary - appendices covering: UML profiles, concise process description in the form of UML activity diagrams, refinement/translation patterns AUDIENCE Software engineers, architects & project managers. Software engineers working in the area of distributed/enterprise systems who want a method for applying a component-based or product-line engineering approach in practice.

Studienarbeit aus dem Jahr 2008 im Fachbereich Informatik - Wirtschaftsinformatik, Note: 1,0, Universitat Hamburg (Department fur Wirtschaft und Politik), Veranstaltung: Wirtschaftsinformatik II, 43 Quellen im Literaturverzeichnis, Sprache: Deutsch, Abstract: Innerhalb dieser Arbeit soll die objektorientierte Softwareentwicklung mittels UML und RUP als Beispiel fur ein methodisches Vorgehen im Sinne des Software Engineering detailiert dargestellt werden. Hierbei liegt der Schwerpunkt der Darstellungen auf den technischen Aspekten der Softwareherstellung (technische Prozesse der Softwareentwicklung) und auf den ersten beiden Prozessaktivitaten (Softwarespezifikation und Softwareentwicklung) des Softwareprozesses [Somm07, S. 33f]. Die Arbeit gliedert sich in drei Abschnitte (vgl. Bild 1). Im ersten Abschnitt werden die grundlegenden Begriffe und ausgewahlte Techniken und Vorgehensweisen aus dem Software Engineering vorgestellt und diskutiert. Der zweite Abschnitt vertieft UML als Modellierungsmethode und RUP als Vorgehensmodell zur objektorientierten Softwareentwicklung. Grundlegenden Prinzipien, Arbeitsschritte und Phasen von RUP und die Notation und Semantik der Modellierungsmethode UML werden beschrieben. Eine kurze Beispielanwendung der vorgestellten Methodik und Vorgehensweise im dritten Abschnitt der Arbeit zeigt die praktische Umsetzung fur ein Softwaresystem zur Bibliotheksverwaltung. Die Grosse und Komplexitat von Softwaresystemen verdoppelt sich etwa alle funf Jahre. Heutige Softwaresysteme konnen leicht aus mehreren Millionen Zeilen Quelltext bestehen. Sie werden mehrheitlich nicht mehr fur einen einzelnen Computer geschrieben sondern bestehen aus verteilten Anwendungen, die als Teil komplexer Softwarearchitekturen ihre Aufgabe erfullen mussen [West06, S.6]. Die Entwicklung fehlerfreier Software stellt eine grosse Herausforderung fur die Entwickler dar, die ohne methodisches Vorgehen und Techniken aus dem Software Engineering nur schwer moglich ist [S

This book covers the essential knowledge and skills needed by a student who is specializing in software engineering. Readers will learn principles of object orientation, software development, software modeling, software design, requirements analysis, and testing. The use of the Unified Modelling Language to develop software is taught in depth. Many concepts are illustrated using complete examples, with code written in Java.

For courses in Software Engineering, Software Development, or Object-Oriented Design and Analysis at the Junior/Senior or Graduate level. This text can also be utilized in short technical courses or in short, intensive management courses. Object-Oriented Software Engineering Using UML, Patterns, and Java, 3e, shows readers how to use both the principles of software engineering and the practices of various object-oriented tools, processes, and

products. Using a step-by-step case study to illustrate the concepts and topics in each chapter, Bruegge and Dutoit emphasize learning object-oriented software engineer through practical experience: readers can apply the techniques learned in class by implementing a real-world software project. The third edition addresses new trends, in particular agile project management (Chapter 14 Project Management) and agile methodologies (Chapter 16 Methodologies).
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