Using UML Software Engineering With Objects And Components Object Technology Series

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UML @ Classroom - Martina Seidl 2015-02-21
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.

Object-Oriented Software Engineering with UML - Roger Y. Lee 2019-01-11

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.

Classical and Object-oriented Software Engineering with UML and C++ - Stephen R. Schach 1999

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.

Software Engineering Techniques Applied to Agricultural Systems - Petraq J. Papajorgji 2010-02-12

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.

The UML Profile for Framework Architectures - Marcus Fontoura 2002

The aim of the UML profile for framework architectures is the definition of a UML subset, enriched with a few UML-compliant extensions, which allows the annotation of such artefacts. Thus, the resulting profile that we call UML-F does not correspond to a specific domain, but to framework technology. Though profiles might be standardized in the future, sound proposals from various communities will get the process of defining and standardizing UML profiles started. In that sense, this book sets the stage for the UML profile for framework architectures.

Software Modeling and Design - Hassan Gomaa 2011-02-21

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.

Object-oriented Software Engineering - Bernd Bruegge 2010

This textbook develops a long-term single project and explores both the theoretical foundations of software engineering as well as the principles and practices of various tools, processes, and products. It emphasizes practical experience whereby participants can apply the techniques learned in class to a realistic problem.

UML and C++ - Richard C. Lee 2001

This practical book by two industry leaders continues to be a self-teaching guide for software analysts and developers. This revised edition teaches readers how to actually "do" object-oriented modeling using UML notation as well as how to implement the model using C++. The authors introduce all of the basic object-oriented fundamentals necessary so readers can understand and apply the object-oriented paradigm. FEATURES Teaches readers to build an object-oriented application using C++ and make the right trade-off decisions to meet business needs. Exposes a number of the myths surround object-oriented technology while focusing on its practicality as a software engineering tool. Gives readers a "recipe or step-by-step guide to do all of the steps of object-oriented technology. Provides a practical approach to analysis, design, and programming in the object-oriented technology. NEW TO THE SECOND EDITION Gives a practical approach for the development of use cases as part of object-oriented analysis. Provides greater coverage of UML diagramming. Introduces key C++ libraries that provide important functionality, supporting implementation of an object-oriented model in C++. Improved coverage of dynamic behavior modeling, implementation of the state model, and class projects.

Object-oriented Software Engineering with UML - Roger Y. Lee 2019

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UML @ Classroom - Martina Seidl 2015-03-09

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Designing Software Product Lines with UML - Hassan Gomaa 2005

"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.

Outlines and Highlights for Object Oriented Software Engineering Using Uml, Patterns, and Java by Bernd Bruegge - Cram101 Textbook Reviews 2011-08-01

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780136061250 .

Use Case Driven Object Modeling with UMLTheory and Practice - Don Rosenberg 2008-06-28

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.

Object-Oriented Software Engineering: Practical Software Development using UML and Java - Timothy Lethbridge 2002-05-16

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.

APPLYING UML & PATTERNS 3RD EDITION - Craig Larman 2015

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

Object-oriented Software Engineering - Bernd Bruegge 2004

"This thoroughly updated text teaches students or industry R & D practitioners to successfully negotiate the terrain for building and maintaining large, complex software systems. The authors introduce the basic skills needed for a developer to apply software engineering techniques. Next, they focus on methods and technologies that enable developers to specify, design, and implement complex systems. Finally, the authors show how to support the system changes throughout the software life cycle."--BOOK JACKET.Title Summary field provided by Blackwell North America, Inc. All Rights Reserved

Object-Oriented Design with UML and Java - Kenneth Barclay 2003-12-17

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 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

Software Engineering: A Hands-On Approach - Roger Y. Lee 2013-07-04

This textbook provides a progressive approach to the teaching of software engineering. First, readers are introduced to the core concepts of the object-oriented methodology, which is used throughout the book to act as the foundation for software engineering and programming practices, and partly for the software engineering process itself. Then, the processes involved in software engineering are explained in more detail, especially methods and their applications in design, implementation, testing, and measurement, as they relate to software engineering projects. At last, readers are given the chance to practice these concepts by applying commonly used skills and tasks to a hands-on project. The impact of such a format is the potential for quicker and deeper understanding. Readers will master concepts and skills at the most basic levels before continuing to expand on and apply these lessons in later chapters.

Software Engineering and Object Oriented Modeling - Jitendra Patel 2013-01-10

Software Engineering and Object Oriented Modeling: This book is specially written for those who are interested in understanding software engineering and Object Oriented Modeling concepts using UML in the Computer Engineering and Information technology field and want to gain enhanced knowledge about the power of UML Language in software development. Also everyone with interest in learning UML for Software Engineering for application development can refer to this book to get the knowledge about various features of this subject.

How to Write Good Programs - Perdita Stevens 2020-07-23

Accessible guide to writing good, clear, correct code without stress, aimed at students on early programming courses.

Practical Object-oriented Design with UML - Mark Priestley 2003

This is a revised and updated edition of this title, which provides a practical introduction to the design of object-oriented programs using UML. It includes detailed coverage of modelling techniques and notation, with worked examples throughout. The book contains substantial code examples in Java. It clearly connects design concepts with code, and is useful for people with programming experience who wish to learn about design. It is also useful for computer science and software engineering undergraduates taking courses covering object-oriented techniques. The book provides explanations of UML and OCL notation emphasis on transitions from design to code, as well as including complete case studies with code, and many exercises.

Object Oriented Modeling and Design Using UML - MS Anamika 2022-08-13

This book starts with requirements gathering & ends with implementation. In the process, you'll learn how to analyze and design classes, their relationships to each other in order to build a model of the problem domain. You'll also use common UML diagrams throughout this process, such as use-case, class, activity & other diagrams. This book is also suitable for use in postgraduate and graduate courses as well as in professional seminars and individual study. Because it deals primarily with a method of software development, it is most appropriate for courses in software engineering and as a supplement to courses involving specific object-oriented programming languages. To understand and use UML as intended by its authors, software architects and developers should be familiar with general concepts and methods of Object Oriented Modeling and Design and/or of the object-oriented development (OOD), and how those were applied to UML itself. There is one problem with this requirement: though OOMD/OOD is being used for several decades, there is still no concensus on what is OOMD and even what are the fundamental concepts ("quarks") of the OOMD. Ok, so we are really in trouble: UML specifications use OOMD concepts which have no clear and generally accepted definitions without providing own interpretations or definitions of those concepts. Ajit & Anamika....

Understanding UML - Paul Harmon 1998

"...(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 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 O-O visual modeling tool.

Objects, Components, and Frameworks with UML - Desmond Francis D'Souza 1999 Using the Catalysis approach, Objects, Components, and Frameworks with UMLdetails the recurring patterns within UML. Catalysis is a rapidly emerging UML-based method for component and framework-based development with objects, and it is gaining popularity because it allows developers to more easily build business models, requirement specs, designs, and code. The authors describe a unique UML-based approach to precise specification of component interfaces using a type model. By identifying patterns in this notational language, the authors provide application developers and system architects with well-defined and reusable techniques that help them build open distributed object systems from components and frameworks. Expected Availability: September 1998

Learning UML 2.0 - Russ Miles 2006-04-25

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.

Developing Software with UML - Bernd Oestereich 2002

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.

Applying Use Case Driven Object Modeling with UML - Doug Rosenberg 2001

"This is the fourth report on mothers and babies in NSW to combine the annual reports of the NSW Midwives Data Collection (MDC), the Neonatal Intensive Care Units' Data Collection and the NSW Birth Defects Register."--Page 9.

Topological UML Modeling - Janis Osis 2017-06-16

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

Applying UML - Rob Pooley 2003-10-13

Unified Modeling Language (UML) is a general-purpose notation language for specifying and visualizing complex software, especially large, object-oriented projects. Object-oriented programming is when a programmer defines not only the data type of a data structure, but also the types of operations/functions that can be applied to the data structure. Applying UML addresses the practical issues faced by users in adopting UML. As the title suggests, it helps the reader in actually applying UML to real life situations, rather than just in learning the language. The book covers in depth detail of UML, including notation on profiles and extensions. The scope of the book assumes prior experience in software engineering and/or business modeling, an understanding of object-oriented concepts and a basic knowledge of UML. * Case study driven approach covering a wide range of issues * Contains advanced tutorial material to aid learning * Focuses on practical issues in the application of UML

Using UML - Perdita Stevens 2006

The essentials of UML 2.0 and

how to use it in one concise volume.

Object -Oriented Analysis and Design Using UML - k Venugopal Reddy 2018-08
This book is intended for Graduate and Post-graduate students in Computer Science and Engineering, Information Technology for the purpose of Object Oriented System Analysis and Design. This book covers details of UML (Unified Modeling Language) which is used to model software intensive systems.

eBook: Object-Oriented Systems Analysis 4e - BENNETT 2021-03-26
eBook: Object-Oriented Systems Analysis 4e

Fundamentals of Object-oriented Design in UML - Meilir Page-Jones 2000
Fundamentals of Object-Oriented Design in UML shows aspiring and experienced programmers alike how to apply design concepts, the UML, and the best practices in OO development to improve both their code and their success rates with object-based projects.

EBOOK: Object-Oriented Software Engineering: Practical Software Development Using UML and Java - LETHBRIDGE, TIM 2004-12-16
EBOOK: Object-Oriented Software Engineering: Practical Software Development Using UML and Java

Object-oriented Software Engineering - Timothy Christian Lethbridge 2004
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.

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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.

Rationale Management in Software Engineering - Allen H. Dutoit 2007-02-02

This is a detailed summary of research on design rationale providing researchers in software engineering with an excellent overview of the subject. Professional software engineers will find many examples, resources and incentives to enhance their ability to make decisions during all phases of the software lifecycle. Software engineering is still primarily a human-based activity and rationale management is concerned with making design and development decisions explicit to all stakeholders involved.

Advanced Object-Oriented Analysis and Design Using UML - James J. Odell 1998-02-13

This 1998 book conveys the essence of object-oriented programming and software building through the Unified Modeling Language.

Software Engineering with UML - Bhuvan Unhelkar 2017-12-14

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.

UML Distilled - Martin Fowler 2018-08-30

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 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.