Practical Uml Statecharts In C C Event Driven Pro

What the experts have to say about Model-Based Testing for Embedded Systems: "This book is exactly what is needed at the exact right time in this fast-growing area. From its beginnings over 10 years ago of deriving tests from UML statecharts, model-based testing has matured into a topic with both breadth and depth. Testing embedded systems is a natural application of MBT, and this book hits the nail exactly on the head. Numerous topics are presented clearly, thoroughly, and concisely in this cutting-edge book. The authors are world-class leading experts in this area and teach us well-used and validated techniques, along with new ideas for solving hard problems. "It is rare that a book can take recent research advances and present them in a form ready for practical use, but this book accomplishes that and more. I am anxious to recommend this in my consulting and to teach a new class to my students." —Dr. Jeff Offutt, professor of software engineering, George Mason University, Fairfax, Virginia, USA "This handbook is the best resource I am aware of on the automated testing of embedded systems. It is thorough, comprehensive, and authoritative. It covers all important technical and scientific aspects but also provides highly interesting insights into the state of practice of model-based testing for embedded systems." —Dr. Lionel C. Briand, IEEE Fellow, Simula Research Laboratory, Lysaker, Norway, and professor at the University of Oslo, Norway "As model-based testing is entering the mainstream, such a comprehensive and intelligible book is a must-read for anyone looking for more information about improved testing methods for embedded systems. Illustrated with numerous aspects of these techniques from many contributors, it gives a clear picture of what the state of the art is today." —Dr. Bruno Legeard, CTO of Smartesting, professor of Software Engineering at the University of Franche-Comté, Besançon, France, and co-author of Practical Model-Based Testing

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

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.

Use MFC, ActiveX, ATL, ADO and COM+ to develop COM applications Implement client/server applications with ease with this example-oriented approach to the details and implementation of COM technology in network applications. If there was ever a subject th

Language, Concepts, Methods

Embedded Systems Building Blocks

UML Weekend Crash Course

Multicore Computing

UML Distilled

A Project-based Tutorial

Modeling Software with Finite State Machines: A Practical Approach explains how to apply finite state machines to software development. It provides a critical analysis of using finite state machines as a foundation for executable specifications to reduce software development effort and improve quality. This book discusses the design of a state machine and of a system of state machines. It also presents a detailed analysis of development issues relating to behavior modeling with design examples and design rules for using finite state machines. This volume describes a coherent and well-tested framework for generating reliable software for even the most complex tasks. The authors demonstrate that the established practice of using a specification as a basis for coding is wrong. Divided into three parts, this book opens by delivering the authors' expert opinions on software, covering the evolution of development as well as costs, methods, programmers, and the development cycle. The remaining two parts encourage the use of state machines: promoting the virtual finite state machine (Vfsm) method and the StateWORKS development tools.

This tutorial reference takes the reader from use cases to complete architectures for real-time embedded systems using SysML, UML, and MARTE and shows how to apply the COMET/RTE design method to real-world problems. The author covers key topics such as architectural patterns for distributed and hierarchical real-time control and other real-time software architectures, performance analysis of real-time designs using real-time scheduling, and timing analysis on single and multiple processor systems. Complete case studies illustrating design issues include a light rail control system, a microwave oven control system, and an automated highway toll system. Organized as an introduction followed by several self-contained chapters, the book is perfect for experienced software engineers wanting a quick reference at each stage of the analysis, design, and development of large-scale real-time embedded systems, as well as for advanced undergraduate or graduate courses in software engineering, computer engineering, and software design.

An introduction to embedding systems for C and C++++ programmers encompasses such topics as testing memory devices, writing and erasing Flash memory, verifying nonvolatile memory contents, and much more. Original. (Intermediate).

A detailed and practical book and eBook walk-through showing how to apply UML to real world development projects

.NET Programming with Visual C++

Topological UML Modeling

Event-Driven Programming for Embedded Systems

Executable UML

COM Programming by Example

UML and C++

Extend and modify MFC code to meet your needs! Author John Swanke delivers studied examples to give you a jump-start on creating more sophisticated and powerful applications. Each example is fully annotated and ready to insert into the your application --

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 syst

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 Language and Object Constraint Language. The book then moves on t

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 approa

grasp case studies to illustrate complex concepts * Focused on the internet applications and technologies that are essential for students in the online age

Readers will learn how to design, implement, and test high quality user interface software, rapidly, while using it with any Graphic User Interface (GUI) development tool. This book allows developers to work at the design level and never have to drop down the code.

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

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

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.

Modeling with UML

Real-Time Software Design for Embedded Systems

Tutorial, Reference, and Immediate Solutions

Practical Software Development Using UML and Java

Object-oriented Software Engineering

The Systems Modeling Language

Practical UML Statecharts in C/C++ Second Edition bridges the gap between high-level abstract concepts of the Unified Modeling Language (UML) and the actual programming aspects of modern hierarchical state machines (UML statecharts). The book describes a lightweight, open source, event-driven infrastructure, called QP that enables direct manual coding UML statecharts and concurrent event-driven applications in C or C++ without big tools. This book is presented in two parts. In Part I, you get a practical description of the relevant state machine concepts starting from traditional finite state automata to modern UML state machines followed by state machine coding techniques and state-machine design patterns, all illustrated with executable examples. In Part II, you find a detailed design study of a generic real-time framework indispensable for combining concurrent, event-driven state machines into robust applications. Part II begins with a clear explanation of the key event-driven programming concepts such as inversion of control (Hollywood Principle), blocking versus non-blocking code, run-to-completion (RTC) execution semantics, the importance of event queues, dealing with time, and the role of state machines to maintain the context from one event to the next. This background is designed to help software developers in making the transition from the traditional sequential to the modern event-driven programming, which can be one of the trickiest paradigm shifts. The lightweight QP event-driven infrastructure goes several steps beyond the traditional real-time operating system (RTOS). In the simplest configuration, QP runs on bare-metal microprocessor, microcontroller, or DSP completely replacing the RTOS. QP can also work with almost any OS/RTOS to take advantage of the existing device drivers, communication stacks, and other middleware. The accompanying website to this book contains complete open source code for QP, ports to popular processors and operating systems, including 80x86, ARM Cortex-M3, MSP430, and Linux, as well as all examples described in the book.

Another day without Test-Driven Development means more time wasted chasing bugs and watching your code deteriorate. You thought TDD was for someone else, but it's not! It's for you, the embedded C programmer. TDD helps you prevent defects and build software with a long useful life. This is the first book to teach the hows and whys of TDD for C programmers. TDD is a modern programming practice C developers need to know. It's a different way to program---unit tests are written in a tight feedback loop with the production code, assuring your code does what you think. You get valuable feedback every few minutes. You find mistakes before they become bugs. You get early warning of design problems. You get immediate notification of side effect defects. You get to spend more time adding valuable features to your product. James is one of the few experts in applying TDD to embedded C. With his 1.5 decades of training,coaching, and practicing TDD in C, C++, Java, and C# he will lead you from being a novice in TDD to using the techniques that few have mastered. This book is full of code written for embedded C programmers. You don't just see the end product, you see code and tests evolve. James leads you through the thought process and decisions made each step of the way. You'll learn techniques for test-driving code right nextto the hardware, and you'll learn design principles and how to apply them to C to keep your code clean and flexible. To run the examples in this book, you will need a C/C++ development environment on your machine, and the GNU GCC tool chain or Microsoft Visual Studio for C++ (some project conversion may be needed).

Practical UML Statecharts in C/C++ Second Edition bridges the gap between high-level abstract concepts of the Unified Modeling Language (UML) and the actual programming aspects of modern hierarchical state machines (UML statecharts). The book describes a lightweight, open source, event-driven infrastructure, called QP that enables direct manual coding UML statecharts and concurrent event-driven applications in C or C++ without big tools. This book is presented in two parts. In Part I, you get a practical description of the relevant state machine concepts starting from traditional finite state automata to modern UML state machines followed by state machine coding techniques and state-machine design patterns, all illustrated with executable examples. In Part II, you find a detailed design study of a generic real-time framework indispensable for combining concurrent, event-driven state machines into robust applications. Part II begins with a clear explanation of the key event-driven programming concepts such as inversion of control ('Hollywood Principle'), blocking versus non-blocking code, run-to-completion (RTC) execution semantics, the importance of event queues, dealing with time, and the role of state machines to maintain the context from one event to the next. This background is designed to help software developers in making the transition from the traditional sequential to the modern event-driven programming, which can be one of the trickiest paradigm shifts. The lightweight QP event-driven infrastructure goes several steps beyond the traditional real-time operating system (RTOS). In the simplest configuration, QP runs on bare-metal microprocessor, microcontroller, or DSP completely replacing the RTOS. QP can also work with almost any OS/RTOS to take advantage of the existing device drivers, communication stacks, and other middleware. The accompanying website to this book contains complete open source code for QP, ports to popular processors and operating systems, including 80x86, ARM Cortex-M3, MSP430, and Linux, as well as all examples described in the book.

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.

UML for Database Design

The Object Constraint Language

Using MFC, ActiveX, ATL, ADO, and COM+

AnyLogic 7 in Three Days

APPLYING UML & PATTERNS 3RD EDITION

Fundamentals of Computer Security Technology

This volume contains mainly the revised versions of papers presented at the wo- shop '98, "Beyond the Notation", that took place in Mulhouse, France on June 3-4, 1998. We thank all those that have made this possible, and particularly all the people in Mulhouse that worked hard to make this meeting a success, with such a short delay between the announcement and the realization. We are specially grateful to Nathalie Gaertner, who put in a tremendous amount of effort in the initial preparation of the workshop. We were pleasantly surprised of the quality of the submitted material and of the level of the technical exchanges at the Mulhouse meeting. More than one hundred attendees, from about twenty different countries, representing the main actors in the UML research and development scene, gathered in Mulhouse for two full study days. We would like to express our deepest appreciation to the authors of submitted - pers, the editorial committee for this volume, the program committee for the initial workshop, the external referees, and many others who contributed towards the final contents of this volume. April 1999 Jean Bézivin Pierre-Alain Muller

Every area of science and engineering today has to process voluminous data sets. Using exact, or even approximate, algorithms to solve intractable problems in critical areas, such as computational biology, takes time that is exponential in some of the underlying parameters. Parallel computing addresses this issue and has become affordable with the advent of multicore architectures. However, programming multicore machines is much more difficult due to oddities existing in the architectures. Offering insights into different facets of this area, Multicore Computing: Algorithms, Architectures, and Applications focuses on the architectures, algorithms, and applications of multicore computing. It will help readers understand the intricacies of these architectures and prepare them to design efficient multicore algorithms. Contributors at the forefront of the field cover the memory hierarchy for multicore and manycore processors, the caching strategy Flexible Set Balancing, the main features of the latest SPARC architecture specification, the Cilk and Cilk++ programming languages, the numerical software library Parallel Linear Algebra Software for Multicore Architectures (PLASMA), and the exact multipattern string matching algorithm of Aho-Corasick. They also describe the architecture and programming model of the NVIDIA Tesla GPU, discuss scheduling directed acyclic graphs onto multi/manycore processors, and evaluate design trade-offs among Intel and AMD multicore processors, IBM Cell Broadband Engine, and NVIDIA GPUs. In addition, the book explains how to design algorithms for the Cell Broadband Engine and how to use the backprojection algorithm for generating images from synthetic aperture radar data.

Tutorial in style, this volume provides a comprehensive survey of the state-of-the-art of the entire field of computer security. It first covers the threats to computer systems; then discusses all the models, techniques, and mechanisms designed to thwart those threats as well as known methods of exploiting vulnerabilities.

Essential skills for first-time programmers! This easy-to-use book explains the fundamentals of UML. You'll learn to read, draw, and use this visual modeling language to create clear and effective blueprints for software development projects. The modular approach of this series--including drills, sample projects, and mastery checks--makes it easy to learn to use this powerful programming language at your own pace.

Design Patterns for Embedded Systems in C
Modeling, Analysis, Design
A Practical Approach
UML: A Beginner's Guide
A Practical Guide to Object-oriented Development
The Craft of Model-Based Testing

A recent survey stated that 52% of embedded projects are late by 4-5 months. This book can help get those projects in on-time with design patterns. The author carefully takes into account the special concerns found in designing and developing embedded applications specifically concurrency, communication, speed, and memory usage. Patterns are given in UML (Unified Modeling Language) with examples including ANSI C for direct and practical application to C code. A basic C knowledge is a prerequisite for the book while UML notation and terminology is included. General C programming books do not include discussion of the contraints found within embedded system design. The practical examples give the reader an understanding of the use of UML and OO (Object Oriented) designs in a resource-limited environment. Also included are two chapters on state machines. The beauty of this book is that it can help you today. . Design Patterns within these pages are immediately applicable to your project Addresses embedded system design concerns such as concurrency, communication, and memory usage Examples contain ANSI C for ease of use with C programming code

A Practical Guide to SysML: The Systems Modeling Language is a comprehensive guide to SysML for systems and software engineers. It provides an advanced and practical resource for modeling systems with SysML. The source describes the modeling language and offers information about employing SysML in transitioning an organization or project to model-based systems engineering. The book also presents various examples to help readers understand the OMG Systems Modeling Professional (OCSMP) Certification Program. The text is organized into four parts. The first part provides an overview of systems engineering. It explains the model-based approach by comparing it with the document-based approach and providing the modeling principles. The overview of SYsML is also discussed. The second part of the book covers a comprehensive description of the language. It discusses the main concepts of model organization, parametrics, blocks, use cases, interactions, requirements, allocations, and profiles. The third part presents examples that illustrate how SysML supports different model-based procedures. The last part discusses how to transition and deploy SysML into an organization or project. It explains the integration of SysML into a systems development environment. Furthermore, it describes the category of data that are exchanged between a SysML tool and other types of tools, and the types of exchange mechanisms that can be used. It also covers the criteria that must be considered when selecting a SysML. Software and systems engineers, programmers, IT practitioners, experts, and non-experts will find this book useful. *The authoritative guide for understanding and applying SysML *Authored by the foremost experts on the language *Language description, examples, and quick reference guide included

In his latest work, author Paul C Jorgensen takes his well-honed craftsman's approach to mastering model-based testing (MBT). To be expert at MBT, a software tester has to understand it as a craft rather than an art. This means a tester should have deep knowledge of the underlying subject and be well practiced in carrying out modeling and testing techniques. Judgment is needed, as well as an understanding of MBT the tools. The first part of the book helps testers in developing that judgment. It starts with an overview of MBT and follows with an in-depth treatment of nine different testing models with a chapter dedicated to each model. These chapters are tied together by a pair of examples: a simple insurance premium calculation and an event-driven system that describes a garage door controller. The book shows how simpler models—flowcharts, decision tables, and UML Activity charts—express the important aspects of the insurance premium problem. It also shows how transition-based models—finite state machines, Petri nets, and statecharts—are necessary for the garage door controller but are overkill for the insurance premium problem. Each chapter describes the extent to which a model can support MBT. The second part of the book gives testers a greater understanding of MBT tools. It examines six commercial MBT products, presents the salient features of each product, and demonstrates using the product on the insurance premium and the garage door controller problems. These chapters each conclude with advice on implementing MBT in an organization. The last chapter describes six Open Source tools to round out a tester's knowledge of MBT. In addition, the book supports the International Software Testing Qualifications Board's (ISTQB®) MBT syllabus for certification.

For all software engineering courses on UML, object-oriented analysis and modeling, and analysis/modeling for real-time or embedded software. Executable UML is for students who want to apply object-oriented analysis and modeling techniques to real-world UML projects. Leon Starr presents the skills and techniques needed to build useful class models for creating precise, executable software specifications that generate target code in multiple languages and for multiple platforms. Leon, who wrote the definitive guide to Shlaer-Mellor modeling, emphasizes the practical use of executable UML modeling, presenting extensive examples from real-time embedded and scientific applications. Using the materials in his How to Build Shlaer-Mellor Object Models as a starting point, Leon presents an entirely new introduction to Executable UML, expresses all diagrams in Executable UML notation, and adds advanced new object modeling techniques.

Quantum Programming for Embedded Systems
Secure Systems Development with UML
The Unified Modeling Language. "UML"'98: Beyond the Notation
A Practical Guide to SysML
An Improved Approach for Domain Modeling and Software Development
A Brief Guide to the Standard Object Modeling Language

- This second edition features revisions that support the latest version of the author's popular operating system and book, MicroC/OS-II - Complete and ready-to-use modules in C Get a clear explanation of functional code modules and microcontroller theory

Typically, analysis, development, and database teams work for different business units, and use different design notations. With UML and the Rational Unified Process (RUP), however, they can unify their efforts -- eliminating time-consuming, error-prone translations, and accelerating software to market. In this book, two data modeling specialists from Rational Software Corporation show exactly how to model data with UML and RUP, presenting proven processes and start-to-finish case studies. The book utilizes a running case study to bring together the entire process of data modeling with UML. Each chapter dissects a different stage of the data modeling process, from requirements through implementation. For each stage, the authors cover workflow and participants' roles, key concepts, proven approach, practical design techniques, and more. Along the way, the authors demonstrate how integrating data modeling into a unified software design process not only saves time and money, but gives all team members a far clearer understanding of the impact of potential changes. The book includes a detailed glossary, as well as appendices that present essential Use Case Models and descriptions. For all software team members: managers, team leaders, systems and data analysts, architects, developers, database designers, and others involved in building database applications for the enterprise.

The first practical textbook on AnyLogic 7 from AnyLogic developers. AnyLogic is the unique simulation software that supports three simulation modeling methods: system dynamics, discrete event, and agent based modeling and allows you to create multi-method models. The book is structured around four examples: a model of a consumer market, an epidemic model, a job shop model and an airport model. We also give some theory on different modeling methods. You can consider this book as your first guide in studying AnyLogic 7.

Is the Unified Process the be all and end all standard for developing object-oriented component-based software? Scott Ambler doesn't think so. This book is one in a four-volume series that presents a critical review of the Unified Process -- designed to p

The Unified Process Elaboration Phase
A Quick Course in Simulation Modeling
Precise Modeling with UML
First International Workshop, Mulhouse, France, June 3-4, 1998, Selected Papers
UML Applied
Model-Based Testing for Embedded Systems

The extension UMLsec of the Unified Modeling Language for secure systems development is presented in this text. The book is written in a way which keeps the first part accessible to anyone with a basic background on object-oriented systems. The second part covers the mathematical tools needed to use the UMLsec approach to verify UML specifications against security requirements. It can also be used as part of a general course on applying UML or on computer security. A practically relevant example is used throughout the book to demonstrate the presented methods.

UML, the Universal Modeling Language, was 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 plannning 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 SysML and UML, and explaining how both can work together

A practical guide to the OCL (part of the UML 1.1 standard of the OMG), this title is designed for software architects, designers, and developers. The authors' pragmatic approach and illustrative use of examples help application developers to quickly get up to speed with this important object modeling technique.

Packed with C++ code examples and screen shots, .NET Programming with Visual C++ explains the .NET framework and managed extensions to C++, and provides a complete reference to the basic and advanced types contained in .NET Framework System namesp

Programming Embedded Systems in C and C++
Constructing the User Interface with Statecharts
Modeling Software with Finite State Machines
An Embedded Software Engineering Toolkit
VC++ MFC Extensions by Example
Test Driven Development for Embedded C

"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

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

ABOUT THE TECHNOLOGY What it is: UML (Unified Modeling Language) is a graphical modeling language used to specify, visualize, construct, and document applications and software systems, which are implemented with components and object-oriented programming languages, such as Java, C++, and Visual Basic. UML incorporates the object-oriented community's consensus on core modeling concepts and provides a standard way for developers to communicate the details of system design and development. In addition to object-oriented modeling of applications, UML is also used for business-process modeling, data modeling, and XML modeling. Purpose of modeling: Models for software systems are as important as having a blueprint for a large building, or an outline for a book. Good models enhance communication among project teams and assure architectural soundness. The more complex the software system, the more important it is to have models that accurately describe the system and can be understood by everyone. UML helps provide this via a standard for graphical diagrams. Just like an architect can understand the notations on any blueprint, UML enables software engineers and business managers to understand the design of any software system, even if the original designers have long left the company. Organization behind it: Object Management Group (OMG) (www.omg.org). (UML Resource Page at OMG Web site is www.omg.org/uml.) The OMG produces and maintains the UML standard, an internationally recognized standard. The OMG is an open membership, not-for-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications. Its membership roster (about 800) includes just about every large company in the computer industry and hundreds of smaller ones. Most of the companies that shape enterprise and Internet computing are represented on the OMG's Board of Directors. Companies that contributed to the UML Standard: Realizing that UML would be strategic to their business, the following companies contributed their ideas to the first UML standard: Digital Equipment Corp, HP, i-Logix, IntelliCorp, IBM, ICON Computing, MCI, Microsoft, Oracle, Rational Rose, TI, and Unisys. Companies that use UML: It is safe to say that all Fortune 1000 companies are currently using UML, or are moving toward UML to model and design their applications and systems. This includes companies from all vertical industries, from Coca Cola to Warner Brothers, from CVS Pharmacy to Lockhead Martin Aerospace. You name the company - if they have an IT department, they are using UML.

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

Using UML, Patterns and Java
Learning UML 2.0
UML 2. 0 in Action
Systems Engineering with SysML/UML
Practical UML Statecharts in C/C++
Advanced Systems Design with Java, UML and MDA

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.

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.

Practical UML Statecharts in C/C++, 2nd Edition
Algorithms, Architectures, and Applications
Best Practices in Implementing the UP
How to Build Class Models
Practical Statecharts in C/C++