> Intended Audience

Systems Analysis and Design Methods, seventh edition, is intended to support one or more practical courses in information systems development. These courses are normally taught to both information systems and business majors at the sophomore, junior, senior, or graduate level.

We recommend that students take a computer- and information systems–literacy course before using this text. While not required or assumed, a programming course can significantly enhance the learning experience provided by this textbook.

> Why We Wrote This Book

More than ever, today's students are "consumer-oriented," due in part to the changing world economy, which promotes quality, competition, and professional currency. They expect to walk away from a course with more than a grade and a promise that they'll someday appreciate what they've learned. They want to "practice" the application of concepts, not just study applications of concepts. We wrote this book (1) to balance the coverage of concepts, tools, techniques, and their application, (2) to provide the most examples of system analysis and design deliverables available in any book, and (3) to balance the coverage of classic methods (such as *structured analysis* and *information engineering*) and emerging methods (e.g., *object-oriented analysis, agile development,* and *rapid application development*). Additionally, our goal is to serve the reader by providing a postcourse, professional reference for the best current practices.

We have written the book using a lively, conversational tone. This approach (and the numerous examples) delivers a comprehensive text that still connects with the student throughout the learning process.

> Changes for the Seventh Edition

- **Reorganization for Better Clarity:** The object-oriented analysis chapter has become Chapter 10 to better position it alongside the structured analysis chapters (Chapters 8 and 9). Other chapters have been reorganized internally. For example, Chapter 9, in response to reviewer comments, has undergone extensive reorganization. Also, the discussion of sequential versus iterative development has been moved to Chapter 3 to place it with related methodology concepts.
- **Expanded Object-Oriented Coverage:** As object-oriented analysis and design grows in importance, coverage continues to increase. The seventh edition more fully explains the object-oriented approach and tracks both where it follows the same path as the traditional, structured approach and where the two approaches part ways. The object-oriented analysis chapter (Chapter 10) features expanded coverage of activity diagrams. New to this edition in Chapter 10 is coverage of system sequence diagrams. Chapter 18 features expanded coverage of object-oriented design. Persistence and system design classes are discussed as well as entity, controller, and interface design classes. The discussion of sequence diagrams and CRC cards has been expanded, and their role in the design process explained more fully. Coverage of design patterns has been greatly expanded with a discussion of the Gang of Four patterns and an examination of two of the patterns.
- **UML 2.0:** Both Chapter 10 and Chapter 18 have been revised to cover the UML 2.0 specification. Each UML 2.0 diagram is listed with an explanation of its purpose. In Chapters 7, 10, and 18, five of the thirteen UML 2.0 diagrams are developed in depth and three more are shown and discussed.
- **Expanded Discussion of Feasibility:** The discussion of feasibility now includes legal feasibility and cultural (or political) feasibility as well as our traditional four tests of feasibility (operational, economic, schedule, and technical).
- **Use of Context Diagrams:** Even as the move away from data flow diagrams and to UML diagrams continues, the context diagram continues to be important as a

tool for understanding system scope. It has been added to the tools used in Chapter 5 and can be employed in the classroom as a first modeling assignment.
- **Updated Technology References:** The extensive references to example technologies has been continued in the seventh edition and updated to reflect technological changes, version updates, and mergers and acquisitions of technology companies.
- **Revision of the SoundStage Running Case:** The SoundStage case has been condensed, changed from a dialogue format to a narrative format, and integrated into the opening of each chapter. Featuring the perspective of a just-graduated systems analyst in his first assignment, SoundStage briefly introduces the concepts taught in each chapter and underscores their importance in a real systems project.

> Pedagogical Use of Color

The seventh edition continues the use of color applied to an adaptation of Zachman's *Framework for Information Systems Architecture*. The color mappings are displayed in the inside front cover of the textbook.

The information systems building blocks matrix uses these colors to introduce recurring concepts. System models then reinforce those concepts with a consistent use of the same colors.
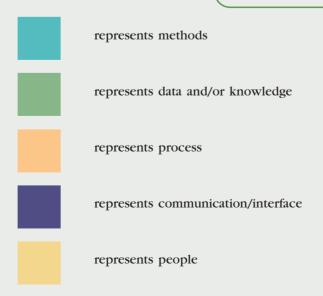
> Organization

Systems Analysis and Design Methods, seventh edition, is divided into four parts. The text's organization is flexible enough to allow instructors to omit and resequence chapters according to what they feel is important to their audience. Every effort has been made to decouple chapters from one another as much as possible to assist in re-sequencing the material—even to the extent of reintroducing selected concepts and terminology.

Part One, "The Context of Systems Development Projects," presents the information systems development scenario and process. Chapters 1 through 4 introduce the student to systems analysts, other project team members (including users and management), information systems building blocks (based on the Zachman framework), a

Information Systems Framework
Color is used consistently throughout the text's framework to introduce recurring concepts.

represents methods

represents data and/or knowledge

represents process

represents communication/interface

represents people

contemporary systems development life cycle, and project management. Part One can be covered relatively quickly. Some readers may prefer to omit project management or delay it until the end of the book.

Part Two, "Systems Analysis Methods," covers the front-end life-cycle activities, tools, and techniques for analyzing business problems, specifying business requirements for an information system, and proposing a business and system solution. Coverage in Chapters 5 through 11 includes requirements gathering, use cases, data modeling with entity-relationship diagrams, process modeling with data flow diagrams, object-oriented analysis, and solution identification and the system proposal.

Part Three, "Systems Design Methods," covers the middle life-cycle activities, tools, and techniques. Chapters 12 through 18 include coverage of both general and detailed design, with a particular emphasis on application architecture, rapid development and prototyping, external design (inputs, outputs, and interfaces), internal design (e.g., database and software engineering), and object-oriented design.

Part Four, "Beyond Systems Analysis and Design," is a capstone unit that places systems analysis and design into perspective by surveying the back-end life-cycle activities. Specifically, Chapters 19 and 20 examine system implementation, support, maintenance, and reengineering.

> Supplements and Instructional Resources

It has always been our intent to provide a complete course, not just a textbook. We are especially excited about this edition's comprehensive support package. It includes Web-hosted support, software bundles, and other resources for both the student and the instructor. The supplements for the seventh edition include the following components.

Web Site/OLC

A completely redesigned Web site provides easy-to-find resources for instructors and students.

For the Instructor

Web Site/OLC

The book's Web site at www.mhhe.com/whitten provides resources for instructors and students using the text. The Online Learning Center (OLC) builds on the book's pedagogy and features with self-assessment quizzes, extra material not found in the text, Web links, and other resources. The instructor side of the site offers a *secure* location for downloading the latest supplemental resources.

Instructor's Manual with PowerPoint Presentations

The instructor's manual is offered on the *Instructor's CD-ROM,* as well as on the book's Web site. This manual includes course planning materials, teaching guidelines and PowerPoint slides, templates, and answers to end-of-chapter problems, exercises, and minicases.

The PowerPoint presentations on the CD-ROM include over 400 slides. All slides are complete with instructor notes that provide teaching guidelines and tips. Instructors can (1) pick and choose the slides they wish to use, (2) customize slides to their own preferences, and (3) add new slides. Slides can be organized into electronic presentations or be printed as transparencies or transparency masters.

Test Bank

The *Instructor's CD-ROM* also includes an electronic test bank covering all the chapters. Computerized/Network Testing with Brownstone Diploma software is fully networkable for LAN test administration. Each chapter offers 75 questions in the following formats: true/false, multiple choice, sentence completion, and matching. The test bank and answers are cross-referenced to the page numbers in the textbook. A level-of-difficulty rating is also assigned to each question.

> Packages

Student Resource CD

Each text includes a student CD with two case projects, templates and forms for the projects, the same PowerPoint® slides provided to the instructor, and a 120-day evaluation copy of **Microsoft Project**® accompanied by a step-by-step tutorial.

System Architect Student Edition Version 8

An optional package combines the textbook, Student Resource CD, and a student version of System Architect. System Architect is a powerful, repository-based enterprise modeling tool which supports a comprehensive set of diagramming techniques and features, including all nine UML diagram types, business enterprise modeling, data modeling, business modeling with IDEFO and IDEF3 notations, plus many more.

Visible Analyst Workbench

Another optional package combines the textbook, Student Resource CD, and Visible Analyst Workbench. This tool integrates business function analysis, data modeling and database design, process modeling, and object modeling in one easy-to-use package. Print versions of each case can be ordered through McGraw-Hill's Custom Publishing group by visiting www.primiscontentcenter.com. A *build your own project* model is retained for instructors and students who want to maximize value by leveraging students' past and current work experience or for use with a live-client project.

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