

CONTENTS AT A GLANCE

CHAPTER 1 Software and Software Engineering 1

PART ONE THE SOFTWARE PROCESS 19

- CHAPTER 2 Process Models 20
- CHAPTER 3 Agility and Process 37
- CHAPTER 4 Recommended Process Model 54
- CHAPTER 5 Human Aspects of Software Engineering 74

PART TWO MODELING 83

- CHAPTER 6 Principles That Guide Practice 84
- CHAPTER 7 Understanding Requirements 102
- CHAPTER 8 Requirements Modeling—A Recommended Approach 126
- CHAPTER 9 Design Concepts 156
- CHAPTER 10 Architectural Design—A Recommended Approach 181
- CHAPTER 11 Component-Level Design 206
- CHAPTER 12 User Experience Design 233
- CHAPTER 13 Design for Mobility 264
- CHAPTER 14 Pattern-Based Design 289

PART THREE QUALITY AND SECURITY 309

- CHAPTER 15 Quality Concepts 310
- CHAPTER 16 Reviews—A Recommended Approach 325
- CHAPTER 17 Software Quality Assurance 339
- CHAPTER 18 Software Security Engineering 356
- CHAPTER 19 Software Testing—Component Level 372
- CHAPTER 20 Software Testing—Integration Level 395
- CHAPTER 21 Software Testing—Specialized Testing for Mobility 412
- CHAPTER 22 Software Configuration Management 437
- CHAPTER 23 Software Metrics and Analytics 460

PART FOUR MANAGING SOFTWARE PROJECTS 489

- CHAPTER 24 Project Management Concepts 490
CHAPTER 25 Creating a Viable Software Plan 504
CHAPTER 26 Risk Management 532
CHAPTER 27 A Strategy for Software Support 549

PART FIVE ADVANCED TOPICS 567

- CHAPTER 28 Software Process Improvement 568
CHAPTER 29 Emerging Trends in Software Engineering 583
CHAPTER 30 Concluding Comments 602
- APPENDIX 1 An Introduction to UML 611
APPENDIX 2 Data Science for Software Engineers 629
REFERENCES 639
INDEX 659