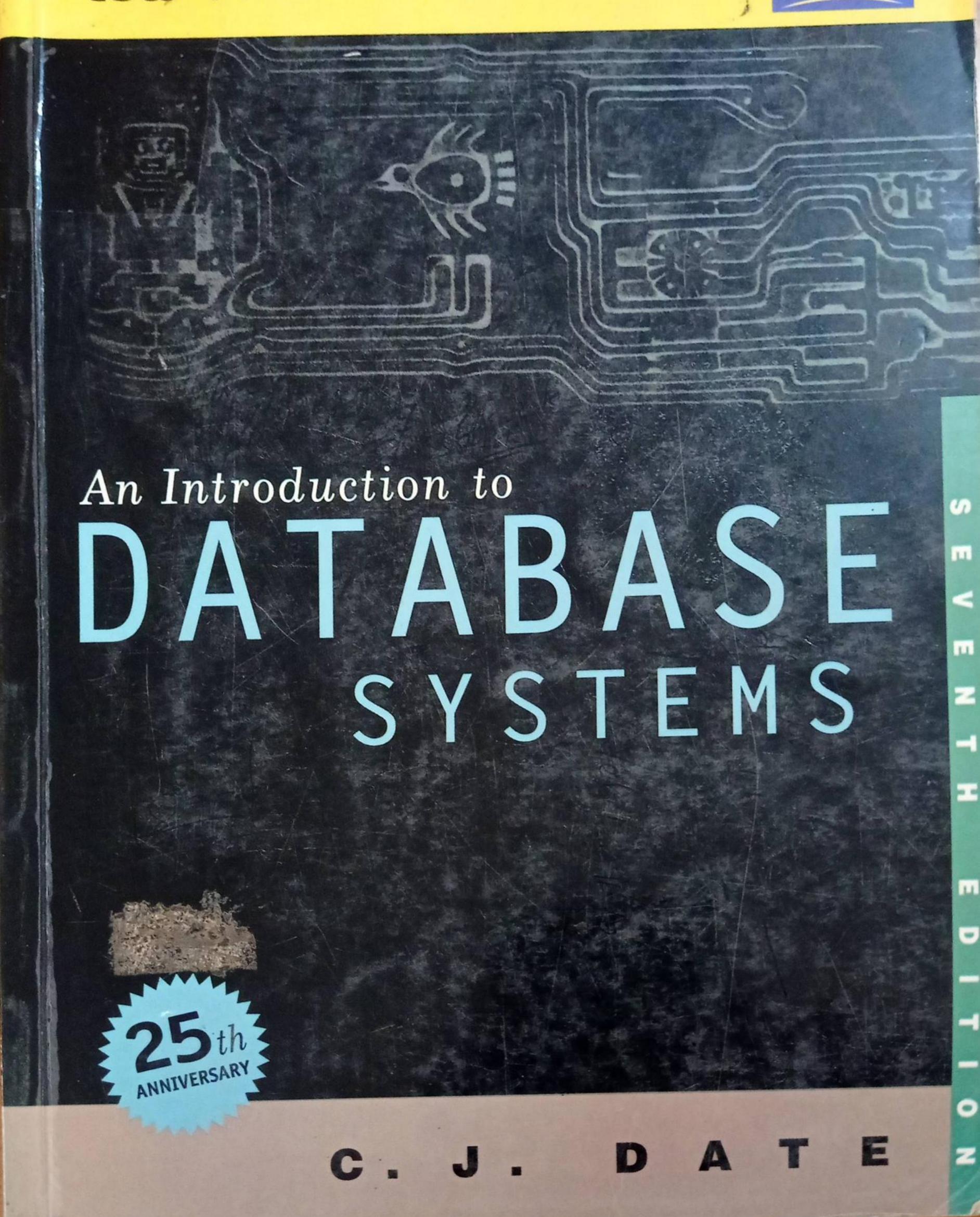
LOW PRICE EDITION

Pearson Education Asia



Scanned by TapScanner

## Contents

	PARTI PRELIMINARIES 1
CHAPTER 1	An Overview of Database Management 2
1.1	Introduction 2
1.2	What is a database system? 5
1.3	What is a database? 9 Why database? 15
1.5	Data independence 19
1.6	Relational systems and others 25
1.7	Summary 27
1.,	Exercises 28
	References and bibliography 30
	Answers to selected exercises 30
CHAPTER 2	Database System Architecture 33
2.1	Introduction 33
2.2 4	The three levels of the architecture 33
2.3	The external level 37
	The conceptual level 39
	Ine internal level 40
2.6	Mappings 40
2.7	The database administrator 41
2.8	
2.9	The data communications manager 47
2.10	Client/server architecture 48
2.11	Utilities 50
2.12	Distributed processing 50

Summary

2.13

54

Preface to the Seventh Edition

xvii

vii

CHAPTER I Demains, 8

S.L. Dometru

CHAPTER & An Introduc

	Exercises 5	5 I bibliography	56		
CHAPTER :	An Introduction	n to Relation	al Database	s 58	
3.3	An informal loc Relations and r	elvars 63	ional model	58	
3.4 3.5 3.6 3.7	Optimization The catalog	67			
3.8 3.9 3.10	Transactions The suppliers are Summary 78 Exercises 80 References and leading	oibliography	81		
CII A POTTO A	Answers to selec		82		
	Views 88	83 7 89 89		adesce 15 and e 15 an	
	References and bil Answers to selecte	0 1	106	tribut A missay	
	PART II	THE RELA	TIONAL N	MODEL	109
5.1 In 5.2 D 5.3 R	omains, Relation troduction 11 omains 112 elation values elation variables			11 Cale Cale Cale Cale Cale Cale Cale Cale	

5.6 Summary 137	
Exercises 139	
References and bibliography	
Answers to selected exercises	14
CHAPTER 6 Relational Algebra 150	
6.1 Introduction 150	
6.2 Closure revisited 152	
6.3 Syntax 154	
6.4 Semantics 156	
6.5 Examples 167	
6.6 What is the algebra for? 16	9
6.7 Additional operators 171 6.8 Grouping and ungrouping	170
6.9 Relational comparisons 182	179
6.10 Summary 184	2
Exercises 184	
References and bibliography	187
Answers to selected exercises	190
To bottoeted excitioes	170
HAPTER 7 Relational Calculus 198	
7.1 Introduction 198	
7.2 Tuple calculus 200	
7.3 Examples 208	
7.4 Calculus vs. algebra 210	
	215
7.6 Domain calculus 216	
7.7 SQL facilities 218	
7.8 Summary 228	
Exercises 229	
References and bibliography	231
Answers to selected exercises	233
APTER 8 Integrity 249	
8.1 Introduction 249	
8.2 Type constraints 251	
8.3 Attribute constraints 252	
8.4 Relvar constraints 253	

CHA

Database constraints

8.6		A VIETNAME
8.7	.7 State vs. transition constraints 256	lotte terrorestus
8.8	.0 Reys 250	
8.9	.9 SQL facilities 26/	
8.10		
	Exercises 272 References and hibliography 274	
	References and bibliography 274 Answers to selected exercises 280	
	TARRY CID TO SCIECTED CACTERDED	
CHAPTER 9	9 Views 289	
9.1	1 T . 1	
9.2		als with at tart N
9.3		
9.4		Loss anioums
9.5		Relational com
9.6		
9.7	7 Summary 316	Exercises 1
	Exercises 317	Ceferences send
	References and bibliography 319	
	Answers to selected exercises 321	
	DATE DESIGN	327
	PART III DATABASE DESIGN	327
	PART III DATABASE DESIGN	327
CHAPTER 10	Functional Dependencies 330	Tuple calculus Scamples
	Functional Dependencies 330	327
10.1	Functional Dependencies 330 Introduction 330	Exple calculus Scamples Calculus us al
10.1 10.2	Functional Dependencies 330 Introduction 330 Basic definitions 331	Examples Calculus us al Computational
10.1 10.2 10.3	Functional Dependencies 330  Introduction 330  Basic definitions 331  Trivial and nontrivial dependencies 334	Exple calculus Calculus us al
10.1 10.2 10.3 10.4	Functional Dependencies 330  Introduction 330  Basic definitions 331  Trivial and nontrivial dependencies 334  Closure of a set of dependencies 334	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5	Functional Dependencies 330  Introduction 330  Basic definitions 331  Trivial and nontrivial dependencies 334  Closure of a set of dependencies 334  Closure of a set of attributes 336	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5 10.6	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337 Summary 340	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5 10.6	Functional Dependencies 330  Introduction 330  Basic definitions 331  Trivial and nontrivial dependencies 334  Closure of a set of dependencies 334  Closure of a set of attributes 336  Irreducible sets of dependencies 337  Summary 340  Exercises 341	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5 10.6	Functional Dependencies 330  Introduction 330  Basic definitions 331  Trivial and nontrivial dependencies 334  Closure of a set of dependencies 334  Closure of a set of attributes 336  Irreducible sets of dependencies 337  Summary 340  Exercises 341  References and bibliography 342	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5 10.6	Functional Dependencies 330  Introduction 330  Basic definitions 331  Trivial and nontrivial dependencies 334  Closure of a set of dependencies 334  Closure of a set of attributes 336  Irreducible sets of dependencies 337  Summary 340  Exercises 341  References and bibliography 342	Examples Calculus us al Computational
10.1 10.2 10.3 10.4 10.5 10.6 10.7	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337 Summary 340 Exercises 341 References and bibliography 342 Answers to selected exercises 344	Calculus as al Calculus Calculus as al Summer of the State of the Stat
10.1 10.2 10.3 10.4 10.5 10.6	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337 Summary 340 Exercises 341 References and bibliography 342 Answers to selected exercises 344	Exple calculus Calculus us al Computational
10.1 10.2 10.3 10.4 10.5 10.6 10.7	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337 Summary 340 Exercises 341 References and bibliography 342 Answers to selected exercises 344	Examples and Samples of Calculus as an extended and samples of the
10.1 10.3 10.4 10.5 10.6 10.7 CHAPTER 11	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337 Summary 340 Exercises 341 References and bibliography 342 Answers to selected exercises 344  Further Normalization I: 1NF, 2NF, 3NF, BCNF 34	Examples and Samples of Calculus as an extended and samples of the
10.1 10.3 10.4 10.5 10.6 10.7 CHAPTER 11	Introduction 330 Basic definitions 331 Trivial and nontrivial dependencies 334 Closure of a set of dependencies 334 Closure of a set of attributes 336 Irreducible sets of dependencies 337 Summary 340 Exercises 341 References and bibliography 342 Answers to selected exercises 344  Further Normalization I: 1NF, 2NF, 3NF, BCNF 34 Introduction 348	Andread Andrea

11.3 11.4 11.5 11.6 11.7	First, second, and third normal forms 356 Dependency preservation 363 Boyce/Codd normal form 366 A note on relation-valued attributes 372 Summary 374 Exercises 375 References and bibliography 377 Answers to selected exercises 379
CHAPTER 12	Further Normalization II: Higher Normal Forms 389
12.1 12.2 12.3 12.4 12.5 12.6 12.7 12.8	Introduction 389 Multi-valued dependencies and fourth normal form 389 Join dependencies and fifth normal form 394 The normalization procedure summarized 399 A note on denormalization 401 Orthogonal design (a digression) 404 Other normal forms 407 Summary 408 Exercises 409 References and bibliography 410 Answers to selected exercises 416
CHAPTER 13	Semantic Modeling 419
13.1 13.2 13.3 13.4 13.5 13.6 13.7	Introduction 419 The overall approach 421 The E/R model 424 E/R diagrams 427 Database design with the E/R model 430 A brief analysis 434 Summary 437 Exercises 439 References and bibliography 440
	PART IV TRANSACTION MANAGEMENT 453
CHAPTER 14	Recovery 454
	Introduction 454 Transactions 455

14.3

14.4

14.5

14.6

14.7	7 SQL facilities 464		
14.8	Summary 465		
	Exercises 466		
	References and bibliography		
	Answers to selected exercises	471	
CHAPTER 15	Concurrency 473		
15.1	Testing describes and		
15.1			
15.2	Three concurrency problems		
15.3			
15.4	The three concurrency problem	ms revisited	478
15.5	Deadlock 481	(ricine)	Orthogenial design (a olgr
15.6	Serializability 482		
15.7	Isolation levels 484		
15.8	Intent locking 486		
15.9	SQL facilities 488		
15.10			
10.10	Summary 490 Exercises 491		Answers to sulceted exerc
	References and bibliography	102	
	Answers to selected exercises	493	
	ritiswers to selected exercises	499	
		154	
			452 Subom Statement
	PART V FIIDT	HED TOT	

Transaction recovery

System recovery

Media recovery

Two-phase commit

## 503 FURTHER TOPICS

457

462

460

462

CHAPTER 16	Security 504	
16.1	Introduction 504	
16.2	Discretionary access control	506
16.3	1.6	512
16.4	Statistical databases 515	
16.5	Data encryption 520	
16.6	SQL facilities 525	
16.7	Summary 528	
	Exercises 529	
	References and bibliography	530
	Answers to selected exercises	532

13.5 Presented de un centratue H/R model 430

PARTIT TRANS

CHAPTER 17	Optimization 537
17.1 17.2 17.3 17.4 17.5 17.6 17.7 17.8	Introduction 537 A motivating example 539 An overview of query processing 540 Expression transformation 544 Database statistics 550 A divide and conquer strategy 551 Implementing the relational operators 554 Summary 560 Exercises 561 References and bibliography 564 Answers to selected exercises 582
CHAPTER 18	Missing Information 584
18.1 18.2 18.3 18.4 18.5 18.6 18.7 18.8	Introduction 584 An overview of the 3VL approach 585 Some consequences of the foregoing scheme 591 Nulls and keys 595 Outer join (a digression) 597 Special values 600 SQL facilities 601 Summary 604 Exercises 606 References and bibliography 608 Answers to selected exercises 611
CHAPTER 19	Type Inheritance 613
19.1 19.2 19.3 19.4 19.5 19.6 19.7 19.8 19.9 19.10	Introduction 613 Type hierarchies 617 Polymorphism and substitutability 620 Variables and assignments 624 Specialization by constraint 628 Comparisons 630 Operators, versions, and signatures 635 Is a circle an ellipse? 639 Specialization by constraint revisited 643 Summary 645 Exercises 646 References and bibliography 648
	References and bibliography 648 Answers to selected exercises 649

CHAPTER 20	Distributed Databases 651
20.1 20.2 20.3 20.4 20.5 20.6 20.7 20.8	Introduction 651 Some preliminaries 651 The twelve objectives 656 Problems of distributed systems 675 Client/server systems 675 DBMS independence 678 SQL facilities 683 Summary 684 Exercises 685 References and bibliography 686
	Decision Support 694
CHAPTER 21	.01
21.1	Introverse and the second seco
21.2	Aspects of decision support 695  Database design for decision support 697
21.3 21.4	Data preparation 706
21.4	Data warehouses and data marts
21.6	Online analytical processing 715
21.7	Data mining 722
21.8	Summary 724
	Exercises 725  Perences and hibliography 726
	References and bibliography Answers to selected exercises 726 729
CHAPTER 22	Temporal Databases 730
22.1	Introduction 730
22.2	Temporal data 731
22.3	What is the problem? 736
22.4	Intervals 742
22.5	Interval types 744
22.6	Scalar operators on intervals 746
22.7	Aggregate operators on intervals 747
22.8	Relational operators involving intervals 748
22.9	Constraints involving intervals 754
22.10	Update operators involving intervals 757
22.11	Database design considerations 759
22.12	Summary 762
	Exercises 763

Exercises

811

23.4 Predicate calculus 777 23.5 A proof-theoretic view of databases 784 23.6 Deductive database systems 787 23.7 Recursive query processing 793 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859		References and bibliography Answers to selected exercises	764 766			
23.1 Introduction 769 23.2 Overview 769 23.3 Propositional calculus 772 23.4 Predicate calculus 777 23.5 A proof-theoretic view of databases 784 23.6 Deductive database systems 787 23.7 Recursive query processing 793 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875		r '- Parad Databases 769				
23.2 Overview 769 23.3 Propositional calculus 772 23.4 Predicate calculus 777 23.5 A proof-theoretic view of databases 784 23.6 Deductive database systems 787 23.7 Recursive query processing 793 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	CHAPTER 23					
23.3 Propositional calculus 772 23.4 Predicate calculus 777 23.5 A proof-theoretic view of databases 784 23.6 Deductive databases ystems 787 23.7 Recursive query processing 793 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	23.1					
23.4 Predicate calculus 777 23.5 A proof-theoretic view of databases 784 23.6 Deductive database systems 787 23.7 Recursive query processing 793 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	23.2	O'CL'TICH.				
23.5 A proof-theoretic view of databases 784 23.6 Deductive database systems 787 23.7 Recursive query processing 793 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	23.3					
23.6 Deductive database systems 23.7 Recursive query processing 23.8 Summary 298 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812 24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	23.4			808		
23.7 Recursive query processing 23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816  24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	23.5			784		
23.8 Summary 798 Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	23.6					
Exercises 801 References and bibliography 802 Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875			793			
References and bibliography Answers to selected exercises 808  PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	20.0					
PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812  24.2 Objects, classes, methods, and messages 816  24.3 A closer look 821  24.4 A cradle-to-grave example 829  24.5 Miscellaneous issues 839  24.6 Summary 847  Exercises 850  References and bibliography 851  Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862  25.2 The First Great Blunder 865  25.3 The Second Great Blunder 872  25.4 Implementation issues 875			802			
PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875		Answers to selected exercises				
PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875		THIS WEIGHT CACTERED				
PART VI OBJECT AND OBJECT/RELATIONAL DATABASES  CHAPTER 24 Object Databases 812  24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875			016	solds		
24.1 Introduction 812 24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	PART	THE RESERVE TO SELECT THE SECOND STREET				
24.2 Objects, classes, methods, and messages 816 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	CHAPTER 24	Object Databases 812	ent cars		tonexing, or	
24.2 Objects, classes, methods, and messages 24.3 A closer look 821 24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862 25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	24.1				pro	
24.4 A cradle-to-grave example 829 24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	24.2	Objects, classes, methods, and r	nessage	es 8	16	
24.5 Miscellaneous issues 839 24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	24.3	A closer look 821				
24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	24.4	A cradle-to-grave example	829			
24.6 Summary 847 Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	24.5					
Exercises 850 References and bibliography 851 Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	24.6	Summary 847				
References and bibliography Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	TERRESTA					
Answers to selected exercises 859  CHAPTER 25 Object/Relational Databases 862  25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875			851			
25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875			859			
25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875		Aliswels to selected excited				
25.1 Introduction 862 25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875						
25.2 The First Great Blunder 865 25.3 The Second Great Blunder 872 25.4 Implementation issues 875	HAPTER 25	Object/Relational Databases	862			
	25.2 25.3 25.4	The First Great Blunder 865 The Second Great Blunder 87 Implementation issues 875				

880

Summary 879 References and bibliography

25.6