

Contents

<i>Introduction</i>		<i>xxi</i>
<i>Assessment Test</i>		<i>xxviii</i>
Chapter 1	Installing Microsoft SQL Server 2005	1
	Meeting the Prerequisites	2
	Preparing to Install	5
	Choosing Default Instances or Named Instances	5
	Choosing Service Accounts	6
	Selecting an Authentication Mode	6
	Choosing a Collation Setting	7
	Upgrading from a Previous Version	8
	Installing SQL Server 2005	10
	Installing a Second Instance	19
	Troubleshooting the Installation	22
	Summary	23
	Exam Essentials	23
	Review Questions	24
	Answers to Review Questions	28
Chapter 2	Creating and Configuring Databases	31
	Planning Your Database	32
	Introducing Database Files	32
	Introducing Filegroups	33
	Deciding on Database File Placement	34
	Introducing RAID-0	35
	Introducing RAID-1	35
	Introducing RAID-5	35
	Introducing RAID-10	35
	Creating Data Storage Structures	36
	Introducing Extents	36
	Introducing Pages	37
	Estimating Storage Requirements	38
	Estimating Table Storage Requirements	38
	Estimating Index Storage Requirements	41
	Creating and Configuring Databases	42
	Creating a Database	42
	Gathering Information about Your Database	44
	Setting Database Options	46
	Summary	50
	Exam Essentials	51
	Review Questions	52
	Answers to Review Questions	59

Chapter 3	Working with Tables and Views	61
	Planning Tables	62
	Introducing Built-in Datatypes	63
	Introducing Computed Columns	66
	Creating Tables	67
	Restricting the Data	72
	Introducing Constraints	73
	Partitioning Tables	80
	Understanding Views	82
	Modifying Data through a View	84
	Working with Indexed Views	88
	Summary	93
	Exam Essentials	94
	Review Questions	96
	Answers to Review Questions	105
Chapter 4	Performing Indexing and Full-Text Searching	107
	Understanding Index Architecture	108
	Understanding Heaps	109
	Understanding Clustered Indexes	111
	Understanding Nonclustered Indexes	116
	Creating Indexes	122
	Using Primary Keys	123
	Using Full-Text Searching	126
	Summary	133
	Exam Essentials	133
	Review Questions	134
	Answers to Review Questions	139
Chapter 5	Introducing More Database Objects	141
	Introducing Stored Procedures	142
	Understanding the Types of Stored Procedures	142
	Creating Stored Procedures	145
	Recompiling Stored Procedures	149
	Introducing Triggers	150
	Understanding the Types of Triggers	150
	Understanding DML Triggers	151
	Understanding DDL Triggers	154
	Understanding Trigger Recursion and Nesting	158
	Understanding Disabling Triggers	159
	Understanding Event Notifications	159
	Introducing Functions	166
	Understanding the Types of Functions	166
	Using Scalar Functions	166

	Introducing Table-Valued Functions	167
	Introducing Built-in Functions	167
	Introducing CLR Functions	169
	Introducing Deterministic and Nondeterministic Functions	171
	Introducing User-Defined Types	172
	Creating T-SQL User-Defined Types	172
	Creating CLR User-Defined Types	173
	Getting More CLR Functionality	174
	Summary	175
	Exam Essentials	175
	Review Questions	176
	Answers to Review Questions	185
Chapter 6	Implementing Security in SQL Server 2005	189
	Understanding Security Modes	190
	Using Windows Authentication Mode	190
	Using Mixed Mode	191
	Setting the Authentication Mode	191
	Understanding SQL Server Logins	193
	Using Standard Logins	193
	Using Windows Logins	196
	Understanding the Items Common to All Logins	199
	Understanding Fixed Server Roles	199
	Creating Database User Accounts	202
	Understanding Permissions	204
	Applying Statement Permissions	205
	Applying Object Permissions	207
	Understanding Database Roles	210
	Using Fixed Database Roles	210
	Using Custom Database Roles	212
	Using Application Roles	215
	Understanding Permission States	217
	Granting a Permission	217
	Revoking a Permission	217
	Denying a Permission	217
	Introducing Ownership Chains	221
	Introducing Linked Server Security	223
	Introducing Encryption	224
	Creating a Security Plan	225
	Summary	227
	Exam Essentials	229
	Review Questions	230
	Answers to Review Questions	238

Chapter 7	Working with Relational Data	241
	Understanding and Using Transactions	242
	Executing Implicit and Explicit Transactions	243
	Committing and Rolling Back	244
	Executing Distributed Transactions	246
	Populating Tables	247
	Importing Data Using Bulk Insert	247
	Importing Data Using the <i>bcp</i> Utility	248
	Copying Data Using SSIS	250
	Bulk Inserting XML Data	252
	Supporting the Bulk-Logged Recovery Model	253
	Supporting Different Collation Types and Orders	
	When Querying Data	255
	Formatting and Converting Datatypes	256
	Casting and Converting	261
	Understanding Datatype Precedence	264
	Understanding Collations	265
	Introducing Error Handling	266
	Using <i>RAISERROR</i>	266
	Using <i>@ERROR</i>	267
	Using Error Messages	267
	Using <i>TRY...CATCH</i> Blocks	268
	Summary	272
	Exam Essentials	272
	Review Questions	274
	Answers to Review Questions	278
Chapter 8	Working with XML Data	281
	Understanding XML Data	282
	Using the <i>xml</i> Datatype	283
	Using Untyped XML	284
	Using Typed XML	285
	Working with XML Schema	285
	Querying XML Data	288
	Using the <i>query</i> Method	288
	Using the <i>value</i> Method	289
	Using the <i>exist</i> Method	290
	Using the <i>modify</i> Method	290
	Using the <i>nodes</i> Method	291
	Creating XML Indexes	295
	Summary	297
	Exam Essentials	297
	Review Questions	298
	Answers to Review Questions	308

Chapter 9	Working with Service Broker and HTTP	311
	Understanding the SQL Server Service Broker Architecture	312
	Working with Service Broker	313
	Creating a Message Type	313
	Creating a Queue	314
	Creating a Contract	315
	Creating a Service	316
	Creating a Route	317
	Using Service Broker	318
	Sending Messages	318
	Receiving Messages	321
	Automating the Queue Processing	323
	Introducing HTTP Endpoints	328
	Configuring HTTP Endpoints	329
	Securing HTTP Endpoints	334
	Summary	334
	Exam Essentials	336
	Review Questions	337
	Answers to Review Questions	345
Chapter 10	Maintaining and Automating SQL Server	347
	Maintaining Indexes	348
	Understanding <i>sys.DM_DB_INDEX_PHYSICAL_STATS</i>	349
	Reorganizing and Rebuilding Indexes	352
	Maintaining Statistics	354
	Maintaining Databases	355
	Understanding <i>DBCC CHECKDB</i>	355
	Shrinking Files	357
	Understanding Automation Basics	359
	Configuring Database Mail	361
	Creating Operators	366
	Creating Jobs	369
	Creating Alerts	376
	Creating Event Alerts Based on Standard Errors	377
	Creating Event Alerts Based on Custom Errors	382
	Creating Performance Alerts	385
	Creating WMI Alerts	387
	Using the Maintenance Plan Wizard	389
	Copying Databases	399
	Summary	405
	Exam Essentials	406
	Review Questions	407
	Answers to Review Questions	413

Chapter 11	Performing Backups and Restores	415
	Backing Up Your Data	416
	Understanding How Backups Work	417
	Creating a Backup Device	418
	Performing Full Backups	419
	Performing Differential Backups	423
	Performing Transaction Log Backups	426
	Performing Filegroup Backups	428
	Backing Up to Multiple Devices	434
	Restoring Databases	438
	Performing Standard Restores	439
	Performing Point-in-Time Restores	443
	Performing Piecemeal Restores	446
	Devising a Backup Strategy	448
	Planning for Full Backups Only	448
	Planning for Full with Differential Backups	449
	Planning for Full with Transaction Log Backups	450
	Planning for Full, Differential, and Transaction Log Backups	451
	Planning for Filegroup Backups	451
	Summary	452
	Exam Essentials	453
	Review Questions	454
	Answers to Review Questions	460
Chapter 12	Achieving High Availability through Replication	463
	Introducing Replication	464
	Introducing the Publisher/Subscriber Metaphor	465
	Introducing Articles	466
	Introducing Publications	467
	Understanding Replication Factors and Distribution Types	467
	Using Distributed Transactions	468
	Using Transactional Replication	469
	Using Transactional Replication with Immediate Updating Subscribers	469
	Using Snapshot Replication	470
	Using Snapshot Replication with Immediate Updating Subscribers	470
	Using Merge Replication	470
	Using Queued Updating	471
	Understanding Replication Internals	472
	Understanding Merge Replication	473

Understanding Snapshot Replication	476
Understanding Transactional Replication	476
Considering Publication Issues	478
Considering Distributor Issues	479
Introducing Replication Models	480
Introducing Central Publisher/Central Distributor	480
Introducing Remote Distribution	481
Introducing Central Subscriber/Multiple Publishers	482
Introducing Multiple Publishers/Multiple Subscribers	483
Replicating over the Internet and to Heterogeneous Database Servers	484
Using Heterogeneous Replication	484
Using Internet Replication	484
Installing and Using Replication	485
Configuring SQL Server for Replication	485
Installing a Distribution Server	486
Adding a Publication	490
Creating a Subscription	496
Testing Replication	502
Managing Replication	503
Considering Administrative Issues	504
Considering Replication Backup Issues	504
Using the Replication Monitor	505
Working with Replication Scripts	508
Enhancing Replication Performance	509
Summary	511
Exam Essentials	512
Review Questions	513
Answers to Review Questions	519

Chapter 13 Introducing More High-Availability Methods 521

Choosing the High-Availability Features You Need	522
Implementing Database Mirroring	523
Understanding Database Mirroring Concepts	524
Preparing for Mirroring	525
Creating Endpoints	526
Specifying Partners and Witnesses	529
Configuring the Operating Mode	530
Switching Roles	531
Implementing Log Shipping	532
Monitoring the Server	533
Configuring Log Shipping	533
Changing Roles	538
Monitoring Log Shipping	538

xx Contents

	Managing Database Snapshots	539
	Creating a Snapshot	540
	Reverting from a Snapshot	543
	Summary	547
	Exam Essentials	548
	Review Questions	549
	Answers to Review Questions	555
Chapter 14	Monitoring and Optimizing SQL Server 2005	557
	Using System Monitor	559
	Monitoring with SQL Profiler	565
	Replaying a Trace File	570
	Using the Database Engine Tuning Advisor	572
	Troubleshooting SQL Server	576
	Reading Error and Event Logs	577
	Troubleshooting Blocks and Deadlocks	579
	Troubleshooting Jobs	582
	Using the Dedicated Administrator Connection	583
	Summary	585
	Exam Essentials	587
	Review Questions	588
	Answers to Review Questions	593
	Glossary	595
	<i>Index</i>	609