

Contents

About the Author	iv
Acknowledgments	v
Foreword	xii
Introduction	xiii
About This Book	xiv
Audience	xvi
Conventions Used	xvii
<i>Example 1</i>	xvii
<i>Example 2</i>	xvii
1: IBM DB2 Certification	1
DB2 10 and 10.1 Certification Roles	2
<i>IBM Certified Database Associate—DB2 10.1 Fundamentals</i>	2
<i>IBM Certified Database Administrator—DB2 10.1 for Linux, UNIX, and Windows</i>	4
<i>IBM Certified Database Administrator—DB2 10 for z/OS</i>	7
<i>IBM Certified System Administrator—DB2 10 for z/OS</i>	10
<i>IBM Certified Advanced Database Administrator—DB2 10.1 for Linux, UNIX, and Windows</i>	12
Additional DB2 9.7 Certification Roles	14
<i>IBM Certified Application Developer—DB2 9.7 for Linux, UNIX, and Windows</i>	14
<i>IBM Certified Solution Developer—DB2 9.7 SQL Procedure</i>	16
The Certification Process	18
<i>Preparing for the Certification Exams</i>	18

<i>Arranging to Take a Certification Exam</i>	20
<i>Taking an IBM Certification Exam</i>	22
2: Planning	35
The DB2 Family	36
<i>DB2 Express-C</i>	38
<i>DB2 Express Edition</i>	40
<i>DB2 Workgroup Server Edition (WSE)</i>	41
<i>DB2 Enterprise Server Edition (ESE)</i>	43
<i>DB2 Advanced Enterprise Server Edition (AESE)</i>	44
<i>DB2 for z/OS</i>	45
Database Workloads	47
<i>Optimized Solutions for Each Workload Type</i>	49
Managing Nonrelational Data	52
<i>Large Objects (LOBs)</i>	53
<i>XML Documents</i>	55
DB2's Comprehensive Tool Set	56
<i>The DB2 Command Line Processor</i>	56
<i>IBM Data Studio</i>	59
3: Security	63
Controlling Database Access	64
Authentication	64
<i>Where Authentication Takes Place</i>	65
Authorities and Privileges	67
<i>Administrative Authorities</i>	68
<i>Privileges</i>	72
Granting Authorities and Privileges	83
<i>The GRANT Statement</i>	84
<i>GRANT Statement Examples</i>	87
Revoking Authorities and Privileges	88
<i>REVOKE Statement Examples</i>	90
Row and Column Access Control (RCAC)	91
<i>Row Permissions</i>	92
<i>Column Masks</i>	94
<i>Activating Row and Column Access Control</i>	96
Label-Based Access Control (LBAC)	96

<i>Security Label Components</i>	97
<i>Security Policies</i>	98
<i>Security Labels</i>	100
<i>Granting Security Labels to Users</i>	101
<i>Implementing Row-Level LBAC Protection</i>	102
<i>Implementing Column-Level LBAC Protection</i>	103
A Word About Trusted Contexts	104
4: Working with Databases and Database Objects	107
Servers, Instances, and Databases	108
Other DB2 Objects	109
<i>Data Objects</i>	109
<i>System Objects</i>	125
Creating a DB2 Database	135
Establishing a Database Connection	139
<i>Type 1 and Type 2 Connections</i>	140
<i>A Word About DB2 Connect</i>	142
Temporal Data Management and Time Travel Tables	144
<i>Basic Temporal Data Concepts</i>	144
5: Working with DB2 Data Using SQL	151
Structured Query Language (SQL)	152
SQL Data Manipulation Language (DML) Statements	153
<i>The INSERT Statement</i>	153
<i>The UPDATE Statement</i>	156
<i>The DELETE Statement</i>	159
<i>The SELECT Statement</i>	162
A Closer Look at the SELECT Statement and Its Clauses	164
<i>Other SELECT Statement Clauses</i>	168
<i>The Where Clause</i>	169
<i>The GROUP BY Clause</i>	180
<i>The GROUP BY ROLLUP Clause</i>	181
<i>The GROUP BY CUBE Clause</i>	183
<i>The HAVING Clause</i>	185
<i>The ORDER BY Clause</i>	186
<i>The FETCH FIRST Clause</i>	187
<i>The Isolation Clause</i>	189

<i>A Word About Common Table Expressions</i>	190
<i>A Word About CASE Expressions</i>	192
<i>Joining Tables</i>	196
<i>Using a Set Operator to Combine the Results of Two or More Queries</i>	207
Using a Cursor to Obtain Results from a Result Data Set	215
<i>The DECLARE CURSOR Statement</i>	216
<i>The OPEN Statement</i>	218
<i>The FETCH Statement</i>	219
<i>The CLOSE Statement</i>	220
<i>Putting It All Together</i>	221
Working with Temporal (Time Travel) Tables	223
<i>Querying System-Period Temporal Tables</i>	225
<i>Querying Application-Period Temporal Tables</i>	226
<i>Querying Bitemporal Temporal Tables</i>	229
Working with XML Data	230
Working with User-Defined Functions (UDFs)	235
<i>Creating SQL Scalar and SQL Table User-Defined Functions</i>	237
<i>Invoking SQL Scalar and SQL Table User-Defined Functions</i>	240
Working with Stored Procedures	241
<i>Developing and Registering SQL Stored Procedures</i>	242
<i>Calling a Stored Procedure</i>	246
Transactions and Transaction Boundaries	248
<i>Transaction Management with Savepoints</i>	252
6: Working with DB2 Tables, Views, and Indexes	257
DB2's Data Types	258
<i>Numeric Data Types</i>	259
<i>Character String Data Types</i>	260
<i>Date and Time Data Types</i>	263
<i>Large Object Data Types</i>	264
<i>The Extensible Markup Language (XML) Data Type</i>	265
<i>A Word About the Oracle Compatibility Data Types</i>	266
<i>User-Defined Data Types</i>	267
Understanding Data Constraints	267
NOT NULL Constraints	268
<i>Default Constraints</i>	268

<i>UNIQUE Constraints</i>	272
<i>Check Constraints</i>	274
<i>Referential Integrity Constraints</i>	275
<i>Informational Constraints</i>	293
Creating Tables	296
<i>Creating Tables with Identity Columns</i>	304
<i>Creating Tables That Are Similar to Existing Tables</i>	306
<i>A Quick Word About Schemas</i>	307
<i>Examples of the CREATE TABLE Statement</i>	308
Altering Tables	317
A Closer Look at Temporary Tables	319
A Closer Look at Views	323
A Closer Look at Indexes	329
A Closer Look at Triggers	332
7: Data Concurrency	341
Understanding Data Consistency	342
Transactions, Isolation Levels, and Locks	342
<i>Isolation Levels</i>	344
<i>Choosing the Proper Isolation Level</i>	352
<i>Specifying the Isolation Level to Use</i>	354
<i>Locks</i>	356
<i>Lock Attributes and Lock States</i>	357
<i>How Locks Are Acquired</i>	361
<i>Which Locks Are Acquired?</i>	363
<i>Lock Avoidance</i>	364
<i>Currently Committed Semantics</i>	365
<i>Enabling Currently Committed Semantics Behavior</i>	369
<i>Locks and Performance</i>	369
Appendix A: DB2 10.1 Fundamentals Exam (Exam 610) Objectives	377
Appendix B: Practice Questions	381
Appendix C: Answers to Practice Questions	439
Index	493