



Contents at a Glance

PART I

Basic Concepts and Technologies

1	Introducing Oracle XML DB	3
2	Native XML Storage: XMLType	15
3	XML Database Repository	31
4	Parsing XML	49
5	Validating XML	73
6	Navigating XML with XPath	95
7	XSL Transformations	109
8	XML Query	131
9	XML and Relational Tables	145
10	Searching XML	167

PART II

Managing Oracle XML Database

11	XML DB Installation	197
12	XML DB Storage	215
13	XML DB Backup and Recovery	235
14	XML DB Security and Performance Tuning	247

PART III
Building XML Applications

15	XML DB Web Services	267
16	Using Oracle JDeveloper 11g	293
17	Pulling It All Together	323
A	Installing Oracle Application Express in Oracle Database 11g	369
	Index	381

Contents

Acknowledgments	xiii
Introduction	xiii

PART I BASIC CONCEPTS AND TECHNOLOGIES

1	Introducing Oracle XML DB	3
	What Is Oracle XML DB?	4
	What Is Provided by Oracle XML DB?	4
	What Is Native XML Storage?	5
	Well-Formedness Rules	6
	XML Encoding	8
	Special Characters	10
	Summary	13
2	Native XML Storage: XMLType	15
	Creating XMLTypes	16
	XML Schema-based XMLType	18
	Querying XMLTypes	21
	Updating XMLTypes	23
	Transforming XMLTypes	24
	Reading Binary XMLTypes in Java	26
	Summary	30
3	XML Database Repository	31
	Creating Resources	32
	Deleting Resources	36
	Querying XML DB Repository	36
	Using RESOURCE_VIEW and PATH_VIEW	37
	Using XDBUriType	40

Linking to Resources	41
Updating Resources	42
Version Control	42
Using XML DB Repository Events	44
Creating Event Handlers	45
Registering Event Handlers	46
Summary	48
4 Parsing XML	49
DOM Parsing in Java	50
Basic DOM Parsing	50
Splitting XML Using DOM	52
Scalable DOM Parsing	55
Cutting and Pasting Across Documents	57
DOM Parsing in SQL	60
Retrieving and Creating a CDATA Section	60
Importing a DOM Node	62
SAX Parsing	63
Basic SAX Parsing	64
SAX Print	68
Parsing Binary XML	69
Writing XML to Binary XML	69
Reading from Binary XML	71
Summary	72
5 Validating XML	73
DTD Validation	74
Using Oracle XDK Command-Line Utility	75
Using Oracle XDK Java APIs	76
Using Oracle XML DB	80
XML Schema Validation	81
XML Schema and Namespaces	81
Using Oracle XDK Command-Line Utility	82
Using Oracle XDK Java APIs	82
Using Oracle XML DB	85
Using JAXB with XML Schemas	89
Summary	94
6 Navigating XML with XPath	95
XPath Basics	96
Processing XPath in Java	101
Extracting XPath from XML Documents	102
Summary	108
7 XSL Transformations	109
Understanding XSLT Processing	110

Basic XSLT Features	115
Multiple XML Inputs	115
Building an XSL Index	116
Creating XSLT Extensions	119
Advanced XSLT Features	120
Modularizing XSLT Processing with Temporary Trees	122
Merging Duplicates with Grouping	123
Creating Outputs with Multiple Outputs	124
Running XSLT	127
Using Oracle XDK Java	127
Using Oracle XML DB	129
Summary	129
8 XML Query	131
XQuery Expressions	132
Using XMLQuery()	133
Querying XMLType Objects	133
Querying XML DB Repository	136
Querying Relational Tables	137
XQuery Beyond the Basics	138
Using Functions	138
Nested XQuery Expressions	139
Numeric Calculations	140
Oracle XQuery Extensions	141
ora:contains()	142
ora:matches()	142
ora:replace()	143
Summary	143
9 XML and Relational Tables	145
Creating XML from Relational Tables	146
Using SQL/XML Functions	146
Using XQuery	151
Using DBMS_XMLGEN or XMLType()	155
Using Oracle XDK Java	155
Creating a Relational View on XML Data	158
Loading XML into Relational Tables	158
Loading Excel Spreadsheet Content into Relational Tables	159
Loading XML Data	163
Summary	166
10 Searching XML	167
Using ora:contains()	168
Using Oracle Text	168
Basic Oracle Text Search on XML	169
Using XML Section Groups	171
Indexing Oracle XML DB Repository	173

X Oracle Database 11g: Building Oracle XML DB Applications

Using Oracle Secure Enterprise Search	173
Preparing the Index Data	174
Creating a Database Data Source	175
Crawling the XML Data	178
Enabling XML Content Navigation	180
Creating a Source Group	182
UI Customization	183
Searching XML	187
Refining the Search Result Cache	192
Summary	194

PART II **MANAGING ORACLE XML DATABASE**

11 XML DB Installation	197
Installing Oracle XML DB	198
Simple Installation Review	198
Detailed Installation Review	199
Installing Oracle XML DB	202
Reinstall Oracle XML DB	202
Set Up XML DB Repository	204
Installing Oracle XDK	212
Validate Oracle XDK Installation	212
Set Up Oracle XDK Command-line Utilities	213
Summary	214
12 XML DB Storage	215
XML Storage Options	216
Object-Relational XMLType	217
Binary XMLType	223
Creating Binary XMLType	223
Partitioning Binary XMLType	226
XMLIndex on Binary XMLType	227
Managing XML DB Storage	228
XMLType Tables and Columns	229
XMLType Views	230
XML Schemas	231
XML DB Repository	232
XML Indexes	232
Summary	233
13 XML DB Backup and Recovery	235
Back Up XML DB with RMAN	236
Back Up in NOARCHIVE Log Mode	236
Back Up in Archive Log Mode	239

Importing and Exporting XML with Data Pump	240
XMLType Stored as a Table Column	241
XMLType Tables	243
XML Schema-based XMLType Tables and Columns	244
Summary	245
14 XML DB Security and Performance Tuning	247
Oracle XML DB Security	248
XML DB Repository ACLs	248
Setting Up ACL for Network Services Access	250
Oracle XML DB Performance Tuning	254
Basic XML Processing Performance	255
Bulk XML Loading Performance	257
XQuery Performance Tuning	257
Summary	264

PART III BUILDING XML APPLICATIONS

15 XML DB Web Services	267
Setting Up XML DB Web Services	268
Querying Oracle Database with Web Services	274
Publishing PL/SQL Functions/Procedures	282
Creating PL/SQL Packages and Functions	283
Reviewing the WSDL of the PL/SQL Function	284
Calling PL/SQL XML DB Web Services in Java	286
Summary	291
16 Using Oracle JDeveloper 11g	293
Creating the First XML Project	294
Creating XML Documents	295
Validating XML with XML Schema	296
Transforming XML with XSLT	297
Running Oracle XML Java Program	300
Creating Java Stored Procedures: Basics	303
Setting Up Oracle Java Virtual Machine	305
Creating the Java Program	306
Creating Database Connections	307
Deploying Java Stored Procedures	308
Creating PL/SQL Specifications	311
Running Java Stored Procedures	312
Remote Debugging of Java Stored Procedures	314
Creating Java Stored Procedures: Advanced Topics	318
Summary	322

17	Pulling It All Together	323
	Creating XML Documents	324
	Storing XML in XML DB Repository	326
	Creating an SQL View	326
	Adding Contact IDs	327
	Reformatting the Data String	329
	Publishing XML in APEX	330
	Creating a Report	330
	Editing XML	333
	Displaying XML	340
	Exporting Contacts	342
	Integrating with Full-Text Search	345
	Sending Emails Using Oracle XML DB	349
	Creating an Email Template	349
	Selecting an Email Template	350
	Previewing Emails	353
	Sending Emails	355
	Summary	367
A	Installing Oracle Application Express in Oracle Database 11g	369
	Configuring Oracle APEX	370
	Step 1: Check APEX Installation in Oracle Database 11g	370
	Step 2: Check DAD Setup	370
	Step 3: Configure Oracle APEX in Oracle Database 11g	372
	Step 4: Unlock the ANONYMOUS User	373
	Step 5: Set Up Oracle Database HTTP Server	374
	Step 6: Set Up ACL Security	374
	Step 7: Validate APEX Access	375
	Uninstalling Oracle APEX	376
	Reinstalling Oracle APEX	377
	Step 1: Install Oracle APEX and Set Up DAD	377
	Steps 2–7: Set Up DAD, Configure APEX in DB, and More	377
	Setting Up APEX Development Environment	377
	Creating a Workspace	378
	 Index	 381