

Index

A

absolute positioning in Swing, 437
acknowledge mode, JMS messages, MDBs, and, 301
action beans, Struts and, 54, 55
Action class, Struts and, 65-68, **66, 67-68**
action listeners, 442-443, **443**, 448-451, **448-451**
ActionForm beans, Struts and, 54, 55-56, 60-65, **61, 62, 63, 64-65**
ActionServlet, Struts and, 54, 55
Admin Console, XA datasources and creation, 114
administrative structure of WebSphere, 373-378, **374**
advertisement filters, 50-53, **51, 52**
alias destination, 307
Annotate view, **475, 475**
annotation-based programming, 267, 378-384
 CVS Annotate view in, **475, 475**
 in J2EE, 378-384
 metadata in, 378
 method added to session bean in, 381-384, **381, 382, 383, 384**
 session beans and, 267
Apache Axis, Web services and runtime, 331
Application Client, Web development in, 21
application heap analysis, 539-542, **539, 540, 541**
application logic, in MVC design pattern, 54
architectural and application analysis using visual
 modeling, 589-596
 browse diagrams in, 589, 593-594, **593, 594**
 edit diagrams in, 589
 Javadoc creation using UML diagrams in, 595-596,
 595
 topic diagrams in, 589, 590-593, **590-592**

attributes, visual modeling of, 562-563, **565, 566, 567, 568**
authentication, 392-396
Authorization Constraint wizard, 395-396, **396**

B

batch update facility, Java Database Connectivity
 (JDBC) and, 106-108, **106-107, 108**
bean-managed persistence, 235
bean-managed transactions (BMT), 301
binding and enabling security, 399-402
bottom-up mapping, 233
 visual modeling of, 584-585, **584, 587**
branches, 472
branching using multiple streams, in team CVS
 development, 503-510, **503**
breakpoint setting, 14, 18, **18, 19**, 136-137, **137**
browse diagrams, in architectural and application
 analysis, 589 593-594, **593, 594**
build paths, 14
bus destination, service integration bus (SIB) and, 307
bus members, service integration bus (SIB) and, 305-306
business delegates, 307
business logic, session beans and, 270, **270-271**

C

CallableStatement class in JDBC, 102
calling stored procedure from Java, 133-136, **134, 135, 136t**
cascade delete and relationships, 251-252, **252**
catching up a file for modification, CVS, 497-498,
 497, 498, 499

- CD companion to book, 2-4
cells, WebSphere, 374
class creation, Java applications and, 16, **16**
class loaders and loading, Java, 413-419, **413, 416, 417**
 class path in, 415
 context type, 415
 equals() returns false in, 418-419
 J2EE-specific, 416
 JAR files in, 415-416, 415
 loading down the loader chain and, 419-420
 manifest files in, 415-416
 problems and conflicts in, 418-420
 WebSphere Application Server and, 416-418, **417, 418**
class modification, Java applications and, 17
class path in class loading, 415
class statistics view, Java Profiling Agent, 529-530, **530**
client proxy, Web services and, 333, 346-352, **347, 348, 349**
client session, in Web development, 26-27, 33-34, **33, 34**
Cloudscape, 2, 4, 89
 connection creation for, **95, 96**
 Java Database Connectivity (JDBC) and, 106
 transaction support in, 114
Code Assist, SQLJ and, **139**
collection limits, in profiling, logging, 520-521, **521**
column definitions, database development and, 99, 100t
committed transactions, XA datasources and, 113-114
comparing files in Package Explorer view, 14
compilation errors, Quick Fix, 576, **576**
composer and converter for EJBs, 233, 257-266
 custom composer creation for, 260-262, **261, 262**
 mapping EJB to RDB in, 263-264, **264**
 meet-in-the-middle mapping and, 262-263
concurrent team-development scenarios, team CVS, 490-491, **491**
Concurrent Versions System (CVS), 3, 19, 469. *See also* team development with CVS
connections, database, 94-98, 94t
Console view, 17, **17**
consumer, in service integration bus (SIB), 304
container-managed persistence (CMP), 235-247, **237, 247-257, 266**
container-managed transactions (CMT), 301
Content Area dialog, 37-38, **37**
Content Assist feature, 13, **13**
context type class loaders, 415
controller, in MVC design pattern, 54
converter. *See* composer and converter for EJBs
copy helpers, Enterprise JavaBeans (EJBs) and, 277
correlation, 7
custom tags, Struts and, 54, 56
CVS Annotate view, 475, **475**
CVS Repositories Exploring perspective, 474-475, **474**
CVS Repositories view, 474-475
CVS. *See* team development with CVS
- D**
- data classes, Enterprise JavaBeans (EJBs) and, 277-280, **279**
Data Definition view, 89, **90**
data graphs, **218, 219**
 SDO relational records and, 143
 session beans and, 267
 XML development and, 165, 216
Data Mediator Service (DMS), 143, 267
 SDO and, 216
data model, 581, **581**
data objects
 SDO relational records and, 143
 session beans and, 267
 XML development and, 165, 216
Data perspective, 12
 database development and, 89
 table creation using, 93-101
data stores, SDO relational records and, 143
data visualization, 580-581, **580**
data-access beans, 102
database development, 2, 3, 89-159
 accessing data using Java programs in, 102-113
 Cloudscape and, 89, 106
 column definitions in, 99, 100t
 connection creation for, 94-98, 94t
 Cloudscape, **95, 96**
 DB2, 94-95
 Oracle Database, 96-97
 SQL Server, 97-98
 Sybase, 98
 Data Definition view in, 89, **90**
 data model in, 581, **581**
 Data perspective in, 89
 data visualization in, 580-581, **580**
 data-access beans in, 102
 database creation for, 98-100
 Database Explorer view in, 89-90, **90**
 datasources in, 92, 113-120
 Admin Console creation of, 114
 committed transactions in, 113-114
 creation of, 115-116
 EAR Deployment descriptor and, 114

- Java Authentication and Authorization Service (JAAS) alias and, 114, 117
- Java Naming and Directory Interface (JNDI) and, 117-120, **119-120**
- local vs. distributed transactions in, 113
 - required database resource properties for, 116, 116t
 - rollback transactions in, 113-114
 - running servlet for, 120
 - servlet for, 113, 117-120, **119-120**
 - transactions in, 113
 - XA. *See* XA datasources in, 120
- DB beans and, 92, 110-113, **111, 112, 113**
- DB Output view in, 89, **90**
- DB2 Universal Database and, 89, 91
- DDL script generation for XSD and table creation for, 208, **209**
- Debug perspective and, 92
- drivers for, 92, 102, 214t
- JDBC, 105t, 114, 115t, 116t, 136, 136t,
 - filters in, 465-467, **466, 467**
- Insert statement creation for, 100-101, **101**
- Java Database Connectivity (JDBC) and, 91-92, 102-106
- batch update facility in, 106-108, **106-107, 108**
 - CallableStatement class in, 102
 - PreparedStatement class in, 102, 108-110, **108-109, 110**
 - Select program creation for, 102-106, **103-104, 105**
 - Statement class in, 102
 - update program using PreparedStatement in, 108-110, **108-109, 110**
- Java Naming and Directory Interface (JNDI) and, 92, 117-120, **119-120**
- mapping in, 239-240, **240**, 253-254, **254**, 262-263, 587-589, **588**
- Microsoft SQL Server and, 89
- Oracle Database and, 89
- project creation for, 93
- schema creation for, 98-100, 98
- SDO relational records in, 143-158
- data graphs in, 143
 - Data Mediator Service (DMS) in, 143
 - data objects in, 143
 - data stores in, 143
- Enterprise Java Beans (EJBs) and, 143
- Java Server Faces (JSF) and, 143, 144
- JDBC Mediator for, 143-144
- modify file (displayAll.jsp) in, 144-149, **145, 146, 147, 148, 149**
- modify file (displayRecord.jsp) in, 149-154, **150, 151, 152, 153, 154**
- modify file (editRecord.jsp) in, 154-156, **155, 156**
- testing, 156-158, **157, 158**
- Web project created for, 144
- XML and, 143
- SQL Query Builder in, 91
- SQL Scrapbook in, 90
- SQL statements for, 89, 91, 92
- SQL and Java in, 91-92, 138-143
- Code Assist in, 139, **139**
 - connecting to database for, 138-139
 - datasource connection for, 139
 - DB2 customizer for, 142, **142**
 - Java application creation for, 141, **141**
 - JDBC connection for, 139
 - modifying files in, 140, **141**
 - result-set file creation in, 139-140
 - running, 143, **143**
 - saving files in, 139
- stored procedures in, 91, 126-138
- calling, in a Java program, 133-136, **134, 135, 136t**
 - creating, 127-133
 - debugging, in DB2, 136-138, **137, 138**
 - JDBC and, 131-133, **131-132**
- Sybase Enterprise Systems and, 89
- table creation in, using Data perspective, 93-101
- table definition creation for, 98-100
- top-down mapping in, 239-240, **240**, 253-254, **254, 587-589, 588**
- UML, relational database elements mapping to, 579, 579t
- user-defined functions in, 91
- views or database tools for, 89
- XA datasources in, 120-126
- Java Transaction API (JTA) in, 121-122, **121**
 - JDBC providers for, 122, 122t
 - running transaction servlet for, 125-126, **126**
 - servlet creation for, 122, **123-125**
 - two datasources in, creating, 122
- XML development and, 208
- Database Explorer view, 89-90, **90**
- datasources
- Admin Console creation of, 114
 - committed transactions in, 113-114
 - database development and, 92, 113-120
 - EAR Deployment descriptor and, 114
 - enhanced EAR file and, 384-390, **386, 387, 388, 389, 390**
- Enterprise JavaBeans (EJBs) and, 243, 243t, 255-256, 265

- Datasources, *continued*
Enterprise JavaBeans (EJBs) and, associating, 244, **244**
Java Authentication and Authorization Service (JAAS) alias and, 114, 117
Java Naming and Directory Interface (JNDI) and, 117-120, **119-120**
local vs. distributed transactions in, 113
required database resource properties for, 116, 116t
rollback transactions in, 113-114
service integration bus (SIB) and, 287-288
servlet for, 113, 117-120, **119-120**
SQLJ and, 139
transactions, 113
WebSphere, 374
XA datasources and, 117-120, **119-120**. *See also* database development
- DB beans, database development and, 92, 110-113, **111, 112, 113**
- DB Output view, 89, **90**
- DB2 Universal Database, 2, 89
complimentary copy download of, 93
connection creation for, 94-95
database development and, 91
debugging stored procedures in, 136-138, **137, 138**
SQLJ and, customizer for, 142, **142**
stored procedures in, 91, 127-129, **128, 129**, 136-138, **137, 138**
transaction support in, 114
user-defined functions in, 91
db2diag.log, 547
- DDL script generation for XSD and table creation, 208, **209**
- Debug perspective, 12, 18, **19**, 92
- debugging, 18, **18, 19**
breakpoint setting in, 14, 18, **18, 19**, 136-137, **137**
database development and, 92
Debug perspective in, 18, **19**
Java applications and, 14, 18, **18, 19**
stored procedures, in DB2, 136-138, **137**
WebSphere, and restarting in, 373
XML development and, 194
- declarative security concepts, 392-398
- delegates, business, 307
- DELETE, 25
- deployment descriptor, 22
Enterprise JavaBeans (EJBs) and, 234-235
- Design view, 30
- discovering a Web service, 366, **366**
- distributed transactions, XA datasources and, 113
- do method, Struts and, 57-58
- Document Object Model. *See* DOM parser, 182
- document type definition (DTD) files, XML development and, 161-163, **163**
- DOM parser, XML development and, 165, 182-183, 188-190, **189-190**
- drivers, database, 92, 102, 214t
JDBC, 105t, 114, 115t, 116t, 136, 136t
durable vs. nondurable subscription, 293
dynamic structure modeling, 570-576, **571-575**
- Dynamic Web Projects Folder, 22
- E**
- EAR Deployment descriptor, XA datasources and, 114
- EAR files, 28, 235, 384-390, **386, 387, 388, 389, 390**
enhanced type, with datasource, 384-385, **386, 387, 388, 389, 390**
Enterprise JavaBeans (EJBs) and, 235
profiling, logging, and, 514-515
security for, 398-399
- Eclipse, ix-x, 11
- Eclipse Modeling Framework (EMF), 219-221, **220, 221**
SDO and, 219-221, **220, 221**
- edit diagrams, architectural and application analysis, 589
- editor for Java, 13
- EJB Query Language (EJB QL), 235
- email, JavaMail in Web application and, 40-46
- enhanced EAR files with datasource, 384-390, **386, 387, 388, 389, 390**
- enterprise application project (EAR). *See* EAR files
- enterprise application security, 398-399
- Enterprise JavaBeans (EJBs), 3, 10, 233-290
Add Access Bean dialog box for, 278, **278**
annotation-based programming and, 378-381, **379, 380-381**
associating datasource to, 244, **244**
bean-managed persistence in, 235
client access to, 276-282
copy helpers and, 277
data classes and, 277-280, **279**
factory classes and, 277-280
Java bean wrappers and, 276-277, 278, 281-282
composer and converter for, 233, 257-266
custom composer creation for, 260-262, **261, 262**
database fields for, 259, 259t
DDL and table for, 258, **258**
EAR and EJB project creation for, 259
entity bean fields for, 258, 258t
entity bean generation for, 259-260, **260**
mapping EJB to RDB in, 263-264, **264**
meet-in-the-middle mapping and, 262-263

- container-managed persistence in, 235-257, **237**
copy helpers and, 277
creating, 248-250, **249, 250**
data classes and, 277-280, **279**
datasource creation for, 243, 243*t*, 255-256, 265
datasource setting for EJB and, 265
DDL run on target database server using, 240-241, 254-255
deployment of, 234-235
EJB Query Language (EJB QL) and, 235
Enterprise Archive (EAR) files and, 235
entity beans as, 233
creating, 237-239, **237, 238**, 248-250, **249, 250, 259-260, 260**
container-managed persistence in, 247-257
cascade delete and relationships in, 251-252, **252**
foreign key attributes and relationships in, 251-252, **252**
navigable roles and relationships in, 251-252, **252**
relationships in, 250-252, **251, 252, 253**
return type attributes and relationships in, 252, **252**
roles and relationships in, 251-252, **252, 253**
top-down mapping, 253-254, **254**
container-managed persistence and, 235-247, **237**
factory classes and, 277-280
finder methods in, 235, 241-242, **242**
J2EE and, 233
JAR files for, 235
Java bean wrappers and, 276-277
Java Naming and Directory Interface (JNDI) and, 234, 276
JavaServer Faces (JSF) and, 78
mapping in, 233, 239-240, **240**, 253-254, **254, 262-263**. *See also* modeling, below
message-driven bean (MDB) as, 233, 234, 291. *See also* JMS messages and message-driven beans
model-view-controller (MVC) design pattern and, 233
modeling
bottom-up mapping in, 584-585, **584, 587**
data model in, 581, **581**
data structure modeling in, 577-582
data visualization in, 580-581, **580**
EJB mapping and modeling in, 582-587, **582-587**
Information Engineering (IE) diagram support in, 577-582
Integration Definition for Information Modeling (IDEFIX) diagram support in, 577-582, **583**
mapping to RDB in, 587-589, **588**
relational database elements mapping to UML elements in, 579, 579*t*
relationships in, 586, **586**
stereotypes in, 579, 579*t*
top-down mapping in, 587-589, **588**
navigable roles and relationships in, 251-252, **252**
project creation in, 236, **236**
relationships in, 247-248, **248**, 250-252, **251, 252, 253**
SDO relational records and, 143
security for, 403-414
session beans as, 233, 234, 266-276
annotation support and, 267
business logic in, code for, 270, **270-271**
container-managed persistence (CMP) in, 266
creation of, using wizard, 267
facades of, 266, 272-275, **273, 274, 275**
interface for, 269, **269**
reference to, 268-269
remote interface for, business methods in, 271-272, **272**
service data objects (SDO) and, 266, 267, 272-275, **273, 274, 275**
stateless type, creating, 268
stateless vs. stateful, 266
testing facade of, 275-276
Swing and, 423
testing, using universal test client in, 244-247, **245, 246, 256-257, 256**, 265-266
top-down mapping, 239-240, **240**, 253-254, **254, 587-589, 588**
transactions using, 282-290
attribute setting for, 288-289, **289**
datasource for, 287-288
logging beans for, 283-285, **284**
reference for logger in, 285-287, **286-287**
testing logger for, 288, **288, 290**
UML Visual Editor for Java and EJB tool for, 556-557
visual modeling and, 555, 576-589
Web development in, 21
entity beans, 233. *See also* Enterprise JavaBeans (EJBs)
creating, 237-239, **237, 238**, 248-250, **249, 250, 259-260, 260**
cascade delete and relationships in, 251-252, **252**
container-managed persistence and, 235-247, **237, 247-257**
foreign key attributes and relationships in, 251-252, **252**
navigable roles and relationships in, 251-252, **252**
relationships in, 247-248, **248**, 250-252, **251, 252, 253**
return type attributes and relationships in, 252, **252**
roles and relationships in, 251-252, **252, 253**
error pages, in Web development, 35-40, 39-40, **39, 40**

- errors, 13
 Problem view and, 13
 Task view and, 13
executing/ running Java application, 17, **17**
execution flow view, Java Profiling Agent, 525-527,
 526, 527
execution time analysis, 518-520. *See also* tracing
 application execution
Extensible Markup Language (XML). *See* XML
 development
extensible stylesheet language transformations (XSLT)
 creating new package for, 195-196, **195, 196**
 editing XSL files for, 198-200, **198, 199, 200, 201**
 HTML, XML document transformed into, 203-205,
 203-205, 206
 inlined XSL style sheet and, 193, **193**
 Java API for XML Processing (JAXP) and, 194,
 202, 202, 203
 namespaces and, 197, **197**
 XML development and, 165, **166, 191-206**
 XSL style sheets and, 192-193, **192, 193**
- F**
facades, for session beans, 266, 272-275, **273, 274, 275**
Faces. *See* Java Server Faces
facets, in XML schema (XSD) files, 180-182, 181-182
factory classes, Enterprise JavaBeans (EJBs) and, 277-280
family of products with RAD, 10
features, RAD, 8
FileServingServlet disablement, security, 397-398, **398**
filters
 advertisement type, 50-53, **51, 52**
 logger type, 47-50, **48, 49, 50**
 profiling, logging, and, 518-520
 servlet. *See* Web development
 table, 465-467, **466, 467**
finder methods, Enterprise JavaBeans (EJBs) and,
 235, 241-242, **242**
fixes, 9
formatting preferences selection, 13, **13**
foreign destination, 307
foreign key attributes and relationships, 251-252, **252**
FrontController pattern, Struts and, 55
- G**
Gallery view, 23, **24**
garbage collection, 542-543, **543**
GET, 25
getters and setters
- Java Visual Applications and, 441-442, **441, 442**
 visual modeling and, 569-570, **570**
GridBagLayout in Swing, 438-440, **438, 439, 440**
groups and security role mapping, 399-400, **400,**
 407-408, **407**
GUI components and Java Visual Applications,
 changes to, 421
- H**
HEAD stream, in team CVS development and, 52,
 474, 499-503
history, 14
 CVS Resource history view in, 476, **476**
 in team CVS development and, 470-471, **470**
HTML, 21
 error pages in, 39-40, **39, 40**
 forms using, in Web development, 26
 page templates for, 35-40
 Web development in, 23
 XML document transformed into, 203-205,
 203-205, 206
- HTTP
 programmatic security concepts in, 396-397
 servlet filters and, 46-47
 in Web development, 25-34
 in Web services, 329, 330, 352, 353
- I**
IBM Agent Controller, profiling, logging, and, 514
images, in Web development, 21
Information Engineering (IE) diagram, 557, 577-582
inlined XSL style sheet, 193, **193**
Insert statement creation, database development and,
 100-101, **101**
installing RAD, 5
integration and RAD, 5
Integration Definition for Information Modeling
 (IDEFIX) diagram, 557, 577-582, **583**
Iyengar, Sridhar, xi
- J**
J2EE, ix-x, 3, 4, 5, 6, 10, 21, 369-420
 annotation-based programming in, 378-384
 metadata in, 378
 method added to bean in, 381-384, **381, 382,**
 383, 384
 session bean using, 378-381, **379, 380-381**
 class loaders and loading, 413-419, **413, 416, 417**
 class path in, 415

- context type, 415
 equals() returns false in, 418-419
 J2EE-specific, 416
 JAR files in, 415-416, 415
 loading down the loader chain and, 419-420
 manifest files in, 415-416
 problems and conflicts in, 418-420
 WebSphere Application Server and, 416-418, **417, 418**
 EJB security and, 403-414
 enhanced EAR files and datasource in, 384-390, **386, 387, 388, 389, 390**
 Enterprise JavaBeans (EJBs) and, 233
 JMS messages, MDBs, and, creating projects for, 309-310, **309, 310, 311**
 JMS messages, MDBs, and, enabling development capability for, 308, **308**
 profiling, logging, and, 513, 516, 517, 522, 524-525, **525**
 SDO and, 217
 security in, 390-403. *See also* security in J2EE
 authentication in, 392-396
 Authorization Constraint wizard for, 395-396, **396**
 binding and enabling, 399-402
 declarative security concepts in, 392-398
 enterprise applications and, 398-399
 Enterprise JavaBeans (EJBs) and, 403-414
 FileServingServlet disablement and, 397-398, **398**
 permissions in, 405-406, **406**
 programmatic security concepts in, 396-397
 role-based development in, 391, 392t
 role definition in, 404-405
 role mapping in, to users and groups, 399-400, **400, 407-408, 407**
 role references in, 412-413, **413**
 Security Constraints wizard for, 395, **395**
 testing, 403, 410-412, **411, 412**
 Web applications and, 392-398, **393, 394, 395, 396**
 WebSphere and, enabling, 400-402, **401, 402, 408-410, 409, 410**
 visual modeling and, 555, **598**
 Web development in, 21
 WebSphere version 6.0 development in, 370-378
 administrative structure of, 373-378, **374**
 cells, nodes, and servers in, 374
 datasources in, 374
 debugging and restarting in, 373
 features of, 370-372
 JMX management for, 372
 Network Deployment (ND) version of, 374
 new server creation in, 371, **372**
 platform support for, 372
 port assignment for profiles in, 375, **376**
 profile support in, 373, 374-378, **376**
 publishing code to, 372-373
 runtimes of, 371, **371**
 server creation in, 376-378, **377**
 test environment in, 370
 J2EE perspective, 12
 J2EE Request Profiler, 513, 516, 517, 522, 524-525, **525**
 JAR files, 14
 class loaders and loading, 415-416, 419
 Enterprise JavaBeans (EJBs) and, 235
 Java, ix, 3, 10, 11-19
 breakpoint setting in, 14, 18, **18, 19**
 build paths in, 14
 class creation in, 16, **16**
 class loaders and loading in, 413-419, **413, 416, 417**
 class modification in, 17
 class structure modeling, using UML, 559-570, **560, 562**. *See also* visual modeling
 dynamic structure modeling in, 570-576, **571-575**
 field creation for, 563-564, **563, 564t**
 getters and setters added to, 569-570, **570**
 operations added to, 568-569, **569**
 Package Explorer view in, 561, **561**
 Perspective Layout for, 560, **560**
 popup menus for, 564, **564**
 Quick Fix for compilation errors in, 576, **576**
 relationships and attributes in, 562-563, **565, 566, 567, 568**
 sequence diagrams in, 570-576, **571-575**
 comparing files in Package Explorer view in, 14
 Console view in, 17, **17**
 creating an application in, 15-19
 database access using, 102-113
 database development and, 91-92
 debugging in, 14, 18, **18, 19**
 editor for, 13
 executing/ running, 14, 17, **17**
 formatting preferences selection for, 13, **13**
 JAR files and, 14
 Java perspective for, 12
 Java scriptlets in, 26
 profiling, logging, and, 513, 516, 517, 525-535
 project creation in, 15-16, **15**
 servlets in, 22, 25-34, **32, 33**
 SQLJ and, 141, **141**
 SQLToXML in, 213-215, **213-214, 214t, 215**

Java, *continued*
 stored procedures and, calling, 133-136, **134, 135**, 136
 UML Visual Editor for Java and EJB tool for, 556-557
 visual modeling and, 555, 558-576
 Web development in, 22
Java 2 Platform Enterprise Edition. *See* J2EE, 3
Java API for XML Processing (JAXP), 165, 182-190
 DOM parser and, 182-183, 188-190, **189-190**
 package creation for, 183
 parsers for, 182-183
 SAX parser and, 182-183, 186-187, **186-187, 188**
 XML and XSD file creation for, 184-185, **184, 185**
 XML development and, 165, 182-190
 XSLT and, 194, 202, **202, 203**
Java APIs for Implementing Enterprise Web Services.
 See JSR-109
Java APIs for XML-based Remote Procedure Calls.
 See JAX-RPC
Java archive. *See* JAR files
Java Authentication and Authorization Service (JAAS) alias, XA datasources and, 114, 117
Java bean wrappers, Enterprise JavaBeans (EJBs) and, 276-277, 278, 281-282
Java Beans, JavaServer Faces (JSF) and, 78
Java Beans view, Java Visual Applications and, 421
Java Connector Architecture (JCA), 267
 JMS messages, MDBs, and, 303
 SDO and, 216
Java Database Connectivity (JDBC), 91-92, 102
 batch update facility in, 106-108, **106-107, 108**
 CallableStatement class in, 102
 Cloudscape and, 106
 DB beans vs., 110-113, **111, 112, 113**
 drivers for, 105_t, 114, 115_t, 116_t, 136, 136_t, 214_t
 PreparedStatement class in, 102, 108-110, **108-109, 110**
 SDO relational records and, Mediator for, 143-144
 Select program creation for, 102-106, **103-104, 105**
 service integration bus (SIB) and, 306
 SQLJ and, 139
 Statement class in, 102
 stored procedures in, 127, 131-133, **131-132**
 XA datasources and, providers for, 122, 122_t, 122
Javadoc creation using UML diagrams, 595-596, **595**
JavaMail in Web application, 40-46. *See also* Web development
Java Messaging Service. *See* JMS messages and message-driven beans
Java Naming and Directory Interface (JNDI), 40, 43, 92
 database development and, 92, 117-120, **119-120**
 Enterprise JavaBeans (EJBs) and, 234, 276
JavaMail and, 40, 43
mapping local names in, 315-317, **316**
service integration bus (SIB) and, 306
Java perspective, 12
Java Profiling Agent, 513, 516, 517, 525-535
 class statistics view in, 529-530, **530**
 execution flow view in, 525-527, **526, 527**
 memory leak analysis using, 537-547
 method invocation table in, 532-535, **533, 534**
 method invocation view in, 530-532, **531, 532**
 package statistics view in, 527-529, **528, 529**
JavaScript files, 22
Java Server Faces (JSF), x, 5, 78-88
 creating, 79-82, **79, 80, 81, 82, 79**
 decoupling of Web components with, 78
 Designer view in, 78
 enterprise Java Beans (EJBs) and, 78
 Java Beans and, 78
 modifying page (*menus.jsp*) in, 82-86, **83, 84, 85, 86, 82**
 modifying page (*result.jsp*) in, 86, **87, 86**
 page templates for, 35-40
Relational Records, Relational Record Lists and, 78
SDO relational records and, 143, 144
testing the application in, 87-88, **87, 88, 87**
user interface (UI) design and, 78
Web project creation for, 79
Web services and, 78-79, 78
Java Server Page (JSP), 3, 21
 creating, 29-31, **29, 30**
 execution of, 31, **31**
 page templates for, 35-40
 scriptlets in, 26
Struts and, 58-60, **59, 60**
Tiles framework and, 73-75, **74, 75, 76**
variables implicit in, 27-28, 28_t
Web development and, 23, 25-34
JavaSource files, in Web development, 22
Java Transaction API (JTA), XA datasources and, 121-122, **121**
Java Virtual Machine Profiler Interface (JVMPi), 513
Java Visual Applications, 421-467, **422**
 getters and setters in, 441-442, **441, 442**
 GUI components and, changes to, 421
 Java Beans view and, 421
 look-and-feel motifs in, 422, **423**
 palette in, 421
 Properties view and, 421
 Swing and, 422, **423**
 absolute positioning in, 437

-
- action listeners in, 442-443, **443**, 448-451, **448-451**
 binding details field and text area to table in,
463-465, 464, 465
 binding name/ID table to Web service in,
458-463, 458-463
 client Notepad application creation in, 424-436
 Enterprise JavaBeans (EJBs) and, 423
 filters for tables in, 465-467, **466, 467**
 GridBagLayout in, 438-440, **438, 439, 440**
 importing files to WSDL Editor in, 453-455,
453, 454, 455
 layout managers in, 437, **437**
 Loan Calculator application in, 443-447,
444-448, 445t, 447t
 logic for menu options in, 430-436, **430-436**
 menu options in, 428-429, **428, 429t, 429, 430**
 Notepad.java classes in, 424, **425**
 reusable panel and multiple layouts in, 436-451
 text area added to, 425-428, **426, 427, 428**
 Visual Editor for, 424, **425**
 Web services and, 423, 451-467, **452**
 Visual Editor for, 424, **425**
 JAX-RPC, 330, 331, 334
 JMS messages and message-driven beans, 3, 267, 291-328
 business delegates in, 307
 durable vs. nondurable subscription in, 293
 Java Connector Architecture (JCA), 303
 message consumer MDB development in, 321-327
 ActivationSpace and destination binding to, 325-326,
 ActivationSpec creation for, 326-327
 creating MDB for, 322-324, **322, 323, 324**
 display-message code for, 324-325, **324, 325**
 testing, 327, **327**
 message headers in, 295
 message objects in, 295
 message payload in, 295-296
 message properties in, 295
 message selector in, 295
 message types in, 295-296, 296t
 message-driven beans (MDBs) in, 296-300
 acknowledge mode in, 301
 activation configuration properties in, 302, **303**
 ActivationSpec and destination in, 303-304, **304**
 bean-managed transactions (BMT) in, 301
 characteristics of, 297
 consumer type, 321-327
 container-managed transactions (CMT) in, 301
 creating, 322-324, **322, 323, 324**
 deployment descriptor configuration for, 300-304
 destination type in, 300
 durability setting in, 300
 interfaces for, 297
 Java Connector Architecture (JCA), 303
 lifecycle of, 297-299, **299**
 listener port setting in, 301-302, **302**
 message selector for, 301
 non-JMS messaging system support in, 297
 point-to-point (p2p) models for, 296
 publish and subscribe (pub/sub) models for, 296
 statelessness of, 297
 transaction type for, 301
 transactions using, 299-300
 messaging models in, 292
 point-to-point (p2p) models for, 292, 293-294, **294**
 publish and subscribe (pub/sub) models for,
292-293, 292
 QueueConnectionFactory in, 294-295
 queues and, 293
 SDO and, 216
 service integration bus (SIB) in, 297, 304-307
 alias destination for, 307
 bus destination of, 307, **308**
 bus members in, 305-306
 consumer, 304
 destination for, 304
 foreign destination for, 307
 JDBC and, 306
 JNDI and, 306
 messaging bus in, 305
 messaging engines in, 306
 point-to-point (p2p) model for, 305
 producer, 304
 publish/subscribe (pub/sub) model for, 305
 queue destination for, 307, **308**
 SIB Service in, 305
 topic space destination for, 307
 universal unique identifier (UUID) and, 306
 structure of message in, 296, **296**
 TopicConnectionFactory in, 294
 WebSphere support for, 291
 writing JMS application with JMS API for,
307-321
 enabling J2EE development capability for, 308, **308**
 J2EE project creation for, 309-310, **309, 310, 311**
 JNDI local name mapping in, 315-317, **316**
 object creation in, 317-319, **319**
 receive message servlet creation in, 313-315, **313**
 send message servlet creation in, 311-313, **311**
 testing application in, 320-321, **320, 321**

JMX management for WebSphere, 372
JSR-109, 330, 331, 335

L

layout managers in Swing, 437, **437**
layouts in Swing, 436-451
learning curve for RAD, 1-2
listener port, JMS messages, MDBs, and, 301-302, **302**
listeners, 442-443, **443**, 448-451, **448-451**
Loan Calculator application, 443-447, **444-448**, 445^t, 447^t
local history, 14
local transactions, in XA datasources, 113
Log and Trace Analyzer Tool, 7
log files, 7-8
logger filter, 47-50, **48**, **49**, **50**
logging beans, 283-285, **284**
Logging Tool, 4
logging. *See* profiling and logging
LoggingUtil.log files, 7-8, 7
logic for menu options, 430-436, **430-436**
look-and-feel motifs, Java Visual Applications and, 422, **423**

M

maintenance stream, team CVS development and, 504-507, **505**
manifest files in class loading, 415-416
many-to-many relationships, 250-252, **251**, **252**, **253**, 247-248, **248**
mapping
 in Enterprise JavaBeans (EJBs) and, 233, 239-240, **240**, 253-254, **254**, 262-263
 of relational database elements, to UML elements in, 579, 579^t
meet-in-the-middle mapping, 233, 262-263
memory leak analysis, 518-520, **519**, 537-547
 application heap analysis in, 539-542, **539**, **540**, **541**
 attaching application for, 538
 fixing the leak in, 544-545, **545**
 garbage collection and, 542-543, **543**
 Java Profiling Agent for, 537-547
 monitoring application for, 538, **539**
 object reference collection in, 543-544, **544**
 package statistics view in, 539-542, **539**, **540**, **541**
 source code viewing for, 544-545, **545**
 verifying fixes to, 547-548, **547**
menu options in Notepad application, 428-429, **428**, 429^t, **429**, **430**
 logic for, 430-436, **430-436**

merging with a branch, in team CVS development, 507-508, **508**
message headers, 295
message objects, 295
message payload, 295-296
message properties, 295
message selector, 295
message types, 295-296, 296^t
message-driven bean (MDB), 3, 233, 234
 ActivationSpace and destination binding to, 325-326, **326**
 ActivationSpec creation for, 326-327
 creating, 322-324, **322**, **323**, **324**
 display-message code for, 324-325, **324**, **325**
 testing, 327, **327**
messaging engines, service integration bus (SIB) and, 306
messaging models, 292
metadata, annotation-based programming and, 378
metadata directory, 7-8
method invocation table, Java Profiling Agent, 532-535, **533**, **534**
method invocation view, Java Profiling Agent, 530-532, **531**, **532**
Microsoft SQL Server. *See* SQL Server
middleware, with RAD, 6
Model Driven Development, x
model-view-controller (MVC) design pattern, 54, **55**
 Enterprise JavaBeans (EJBs) and, 233
 Tiles framework and, 73
modules, in Web development, 21

N

name/ID table, binding Web service to, 458-463, **458-463**
namespaces, 168
 XML schema (XSD) files and, 168
 XSLT and, 197, **197**, 197
navigable roles and relationships, 251-252, **252**
navigation, in Web development in, 35-40
 navigation bar creation, 36-39
Network Deployment (ND) version of WebSphere, 374
nodes, WebSphere, 374
Notepad.java application, 424, **425**

O

object reference collection, 543-544, **544**
one-to-one relationships, 247-248, **248**, 247, 250-252, **251**, **252**, **253**
operations in class diagram, 568-569, **569**
optimistic vs. pessimistic versioning, 472

- Oracle Database, 2, 89
 column definitions in, 99, 100^t
 connection creation for, 96-97
 stored procedures and in, 127, 129-130, **130**
 transaction support in, 114
- P**
- Package Explorer view, comparing files, 14, 561, **561**
 package statistics view, 527-529, **528, 529**
 profiling, logging, and, 539-542, **539, 540, 541**
 Page Designer tool, 23
 page templates, in Web development, 35-40
 Page Template tag, 37, **37**
 palette, Java Visual Applications and, 421
 Palette view, 23, **24, 37, 37**
 parallel development in single stream, team CVS,
 499-503, **499-502**
 pattern matching, XML schema (XSD) files and, 177, **177**
 performance analysis, 516-537
 attaching to an application for, 517-522, **517**
 class statistics view in, 529-530, **530**
 collection limit setting for, 520-521, **521**
 destination project for, 521-522, **521**
 execution flow view in, 525-527, **526, 527**
 execution time analysis in, 518-520
 filter sets for, 518-520
 J2EE Request Profiler for, 524-525, **525**
 Java Profiling Agent for, 525-535
 memory leak analysis in, 518-520, **519**
 method invocation table in, 532-535, **533, 534**
 method invocation view in, 530-532, **531, 532**
 monitoring the application in, 522-523, **523, 524**
 package statistics view in, 527-529, **528, 529**
 Profile mode for, 516
 Profiling tab settings for, 518-520
 source code viewing in, 535-537, **536**
 permissions in security, 405-406, **406**
 persistence, in EJBs, bean- vs. container-managed,
 235, 247-257
 Perspective Layout, in visual modeling, 560, **560**
 perspectives, 12-13
 team CVS development and, 473-479
 pessimistic versioning, 472
 plug-ins for RAD, 8-10, 8
 point-to-point (p2p) models for, 292, 293-294, **294**
 service integration bus (SIB) and, 305
 popup menus, in visual modeling, 564, **564**
 port assignment for profiles in WebSphere, 375, **376**
 POST, 25
- PreparedStatement class in JDBC, 102, 108-110,
 108-109, 110
- Problem view, 13
 team CVS development and, 478, **478**
- Process Advisor in RUP, 601-602, **601**
- Process Browser, visual modeling and, 597-601, **597**
- producer, in service integration bus (SIB), 304
- Product Updater, 8-10
- productivity, 5
- Profile mode, profiling, logging, and, 516
- profile support, WebSphere, 373, 374-378, **376**
- profiling and logging, 511-554
 db2diag.log in, 547
 EAR files for, 514-515
 example use of, 513-514
 IBM Agent Controller and, 514
 importance of, 511-512
 J2EE Request Profiler for, 513, 516, 517, 522,
 524-525, **525**
 Java Profiling Agent for, 513, 516, 525-535
 Java Virtual Machine Profiler Interface (JVMPPI)
 and, 513
 memory leak analysis using, 537-547
 application heap analysis in, 539-542, **539, 540, 541**
 attaching application for, 538
 fixing the leak in, 544-545, **545**
 garbage collection and, 542-543, **543**
 Java Profiling Agent for, 537-547
 monitoring application for, 538, **539**
 object reference collection in, 543-544, **544**
 package statistics view in, 539-542, **539, 540, 541**
 source code viewing for, 544-545, **545**
 verifying fixes to, 547-548, **547**
 package statistics view in, 539-542, **539, 540, 541**
 performance analysis using, 516-537
 attaching to an application for, 517-522, **517**
 class statistics view in, 529-530, **530**
 collection limit setting for, 520-521, **521**
 destination project for, 521-522, **521**
 execution flow view in, 525-527, **526, 527**
 execution time analysis in, 518-520
 filter sets for, 518-520
 J2EE Request Profiler for, 524-525, **525**
 Java Profiling Agent for, 525-535
 memory leak analysis in, 518-520, **519**
 method invocation table in, 532-535, **533, 534**
 method invocation view in, 530-532, **531, 532**
 monitoring the application in, 522-523, **523, 524**
 package statistics view in, 527-529, **528, 529**
 Profile mode for, 516

- profiling and logging, performance analysis, *continued*
 Profiling tab settings for, 518-520, **520**
 source code viewing in, 535-537, **536**
Profile mode for, 516
testing setup for, 515, **515**
tools for, 512-513
trace.log in, 547
tracing application execution using, 547-553
 analyzing logs in, 551-553
 correlating logs for, 549-551, **550, 551**
 db2diag.log in, 547
 importing log files to workspace for, 548-549
 logs for (trace.log, db2diag.log), 547
 symptom database for, 551-552, **552**
 trace.log in, 547
when to profile, 512
- Profiling Tool, 4
- programmatic security concepts, 396-397
- project creation in RAD, 12
 Java applications and, 15-16, **15**
- projects, in Web development, 21-22, **22**
- Properties view, Java Visual Applications and, 421
- publish and subscribe (pub/sub) models for, 292-293, **292**
 service integration bus (SIB) and, 305
- publishing a Web service, 333, 361-367
- publishing code to WebSphere server, 372-373
- PUT, 25
- Q**
- queue destination, 307, **308**
- QueueConnectionFactory, 294-295
- queues, JMS messages, MDBs, and, 293
- Quick Fix for compilation errors, 576, **576**
- R**
- Rational Application Developer (RAD), ix-x, 4-6
 breakpoint setting in, 14, 18, **18, 19**, 136-137, **137**
 build paths in, 14
 comparing files in Package Explorer view in, 14
 Console view in, 17, **17**
 Content Assist feature in, 13, **13**
 debugging in, 18, **18, 19**
 family of products with, 10
 features for, 8
 formatting preferences selection for, 13, **13**
 help system for, 6-8
 installation of, 5
 integration and, 5
 J2EE and. *See* J2EE
- learning curve for, 1-2
- local history in, 14
- Log and Trace Analyzer Tool for, 7
- log files and, 7-8
- perspectives in, 12-13
- productivity and, 5
- project creation in, 12, 15-16, **15**
- Rational Software Development Platform and, 5
- standards and middleware currency with, 6
- starting, 11-12, **11**
- support for, 4-5, 6-8
- tools for, 5-6
- updates and plug-ins for, Product Updater and, 8-10
- views in, 13
- WebSphere Application Server and. *See*
 WebSphere Application Server
- Welcome page for, 12, **12**
- workspace location in, 11-12
- Rational ClearCase LT, 469. *See also* team
 development with CVS
- Rational DeveloperWorks, 10
- Rational Functional Tester, 10
- Rational Software Architect, x, 10
- Rational Software Development Platform, 5, 558, 559^t
- Rational Software Modeler, 10
- Rational Unified Process (RUP), x, 4, 555, 557-558,
 596-604, **597**, 598. *See also* visual modeling
 changing process in, preference setting for,
 602-604, **603**
- Process Advisor in, 601-602, **601**
- Process Browser, 597-601, **597**
- roles and responsibilities diagrammed using,
 599-600, **599**
- tool mentors in RUP and, 600-601, **600**
- Rational Web Developer, 10
- RedHat Linux 7
 team CVS development and, 484-490, **484-490**
- refresh packs, 9
- Relational Records, Relational Record Lists,
 JavaServer Faces (JSF) and, 78
- relational records, SDO. *See* SDO relational records
- relationships
 in Enterprise JavaBeans (EJBs), 247-248, **248**,
 250-252, **251, 252, 253**
 visual modeling of, 562-563, **565, 566, 567, 568**,
 586, **586**
- repositories, CVS, 471-472, 483-484, **483**, 485-486,
 485, 486, 493-494, **494**
- CVS Repositories Exploring perspective in,
 474-475, **474**

-
- result-set file creation, SQLJ and, 139-140
 return type attributes and relationships, 252, **252**
 reusable panel application in Swing, 436-451
 role-based development, 391, 392*t*
 role definition, security, 404-405
 role mapping in security, to users and groups, 399-400, **400**, 407-408, **407**
 role references in security, 412-413, **413**
 roles and relationships, 251-252, **252**, **253**
 roles and responsibilities diagrammed using RUP, 599-600, **599**
 rollback transactions, XA datasources and, 113-114
 runtimes, WebSphere, 371, **371**
- S**
- SAX parser, XML development and, 165, 182-183, 186-187, **186-187**, **188**
 schema, in database development, 98-100
 scriptlets, Java, 26
 SDO relational records, 143-158
 data graphs in, 143
 Data Mediator Service (DMS) in, 143
 data objects in, 143
 data stores in, 143
 Enterprise Java Beans (EJBs) and, 143
 Java Server Faces (JSF) and, 143, 144
 JDBC Mediator for, 143-144
 modify file (displayAll.jsp) in, 144-149, **145**, **146**, **147**, **148**, **149**
 modify file (displayRecord.jsp) in, 149-154, **150**, **151**, **152**, **153**, **154**
 modify file (editRecord.jsp) in, 154-156, **155**, **156**
 testing, 156-158, **157**, **158**
 XML and, 143
 security in J2EE, 390-403
 authentication in, 392-396
 Authorization Constraint wizard for, 395-396, **396**
 binding and enabling, 399-402
 declarative security concepts in, 392-398
 enterprise applications and, 398-399
 Enterprise JavaBeans (EJBs) and, 403-414
 FileServingServlet disablement and, 397-398, **398**
 permissions in, 405-406, **406**
 programmatic security concepts in, 396-397
 role-based development, 391, 392*t*
 role definition in, 404-405
 role mapping in, to users and groups, 399-400, **400**, 407-408, **407**
 role references in, 412-413, **413**
 Security Constraints wizard for, 395, **395**
- testing, 403, 410-412, **411**, **412**
 Web applications and, 392-398, **393**, **394**, **395**, **396**
 WebSphere and, enabling, 400-402, **401**, **402**, 408-410, **409**, **410**
 Security Constraints wizard, 395, **395**
 Select program creation, Java Database Connectivity (JDBC) and, 102-106, **103-104**, **105**
 sequence diagrams, in visual modeling, 570-576, **571**-**575**
 sequential development, in team CVS development, 492-499, **492**
 servers in WebSphere, 374
 Service Data Object (SDO), 143. *See also* SDO relational records
 APIs for, 217-219, **217**, **218**
 class creation in, 231-232, **231**-**232**
 copying XSD and XML files to, 222
 data graphs and, 216, **218**, 219, 267
 Data Mediator Service (DMS) and, 216, 267
 data objects and, 216, 267
 disconnected architecture of, 216-217, **217**
 Eclipse Modeling Framework (EMF) and, 219-221, **220**, **221**
 extending classes in, 228-230, **228**-**230**
 getters and setters in, 217-218
 Java Connector Architecture (JCA) and, 216, 267
 JMS messages and, 216, 267
 loading from XML, 222-223, **222**-**223**
 navigating, 223-224, **223**-**224**
 new package creation for, 221
 SDO Generator for, 222
 session beans and, 266, 267, 272-275, **273**, 274
 updating, 225-228, **225**, **226**-**227**
 XML development and, 165, 190, 216-232
 XPath and, 219
 XPath and, lookups using, 224-225, **225**
 Service Deployment Configuration, for Web services, 333-335, **334**, 341-342, **342**
 service integration bus (SIB), 304-308
 alias destination for, 307
 bus destination of, 307, **308**
 bus members in, 305-306
 consumer, 304
 destination for, 304
 foreign destination for, 307
 JDBC and, 306
 JMS messages, MDBs, and, 291, 304-307
 JNDI and, 306
 messaging bus in, 305
 messaging engines in, 306
 point-to-point (p2p) model for, 305

- service integration bus (SIB), *continued*
producer, 304
publish/subscribe (pub/sub) model for, 305
queue destination for, 307, **308**
SIB Service in, 305
topic space destination for, 307
universal unique identifier (UUID) and, 306
service-oriented architecture (SOA), 329. *See also*
 Web services
servlets, Java, 3, 21, 25
 creation of, 31-33, **32, 33**
 datasources in, in database development, 113-120
 filters for, 46-53, **47, 53**. *See also* Web development
 in Web development, 22, 25-34
 XA datasources and, 122, **123-125**
session, in Web development, 26-27, 33-34, **33, 34**
session beans, 233, 234, 266-276. *See also* Enterprise
 JavaBeans (EJBs)
 annotation support and, 267
 annotation-based programming and, 378-381, **379, 380-381**
 business logic in, code for, 270, **270-271**
 container-managed persistence (CMP) in, 266
 creation of, using wizard, 267
 facades of, 266, 272-275, **273, 274, 275**
 interface for, 269, **269**
 method added to, 381-384, **381, 382, 383, 384**
 reference to, 268-269
 remote interface for, business methods in, 271-272, **272**
 service data objects (SDO) and, 266, 267, 272-275,
 273, 274, 275
 stateless type, creating, 268
 stateless vs. stateful, 266
 testing facade of, 275-276
Simple API for XML. *See* SAX parser
Simple Object Access Protocol (SOAP), 329, 331, 350-355, **353-354, 355**. *See also* Web services
simpleType and complexType definitions, XML
 schema (XSD) files and, 167
site map creation, in Web development, 36-39
SMTP mail server, JavaMail and, 40-41
software configuration management (SCM), 469. *See also* team development with CVS
source code viewing, using profiling, 535-537, **536**
Source view, 33
SQL Query Builder, database development and, 91
SQL Scrapbook, database development and, 90
SQL Server, 2, 89
 column definitions in, 99, 100t
 connection creation for, 97-98
stored procedures and, 127, 131, **131**
transaction support in, 114
XML development and, SQLToXML and
 XMLToSQL translators for, 165, 206-215
SQL statements, in database development, x, 89, 91, 92, 138. *See also* SQLJ
SQLJ, 138-143
 Code Assist in, 139, **139**
 connecting to database, 138-139
 database development and, 91-92, 138-143
 DB2 customizer for, 142, **142**
 Java application creation for, 141, **141**
 JDBC connection for, 139
 modifying files in, 140, **141**
 result-set file creation in, 139-140
 running, 143, **143**
 saving files in, 139
SQLToXML and XMLToSQL translators, 165, 206-215
copying or creating XSD files for, 207, **207**
data from XML, in database, 212-213, **212, 213**
database connection for, 208
DDL script generation for XSD and table creation
 for, 208, **209**
INSERT and SELECT statements in, 209-211, **209, 210**
Java application with SQLToXML in, 213-215,
 213-214, 214t, 215
new package creation for, 207
XST template generation for, 211, **212**
standards, with RAD, 6
starting Rational Application Developer (RAD), 11-12, **11**
stateless vs. stateful session beans, 266
Statement class in JDBC, 102
stereotypes, in visual modeling, 579, 579t
stored procedures, 126-138
 calling, in a Java program, 133-136, **134, 135, 136t**
 creating, 127-133
 database development and, 91, 126-138
 debugging, in DB2, 136-138, **137, 138**
 JDBC and, 131-133, **131-132**
streams, 472
Struts, 5, 54-72
 action beans in, 54, 55
 Action class in, 65-68, 65-68, **66, 67-68**
 ActionForm beans in, 54, 55-56, 60-65, **61, 62, 63, 64-65**
 ActionServlet in, 54, 55
adding support for, to existing Web module, 56-58
custom tags in, 54, 56
do method in, 57-58
FrontController pattern in, 55

- Java Server Page (JSP) in, 58-60, **59, 60**
- Model-View-Controller (MVC) design pattern in, **54, 55**
- running sample application of, 68, **69, 71, 71**
 - SubmitAction class in, 65-68, 65-68, **66, 67-68**
 - SubmitForm in, 58, 60-65, **62, 63, 64-65**
 - validation in, 69-71, **70**
 - Web Diagram tool in, 56, 72, **72**
- stubs, 370
- style sheets, 21
- SubmitAction class, in Struts, 65-68, 65-68, **66, 67-68**
- SubmitForm, in Struts, 58, 60-65, **62, 63, 64-65**
- Swing, 422, **423**
 - absolute positioning in, 437
 - action listeners in, 442-443, **443, 448-451, 448-451**
 - binding details field and text area to table in, 463-465, **464, 465**
 - client application creation in, 424-436
 - Enterprise JavaBeans (EJBs) and, 423
 - filters for tables in, 465-467, **466, 467**
 - getters and setters in, 441-442, **441, 442**
 - GridBagLayout in, 438-440, **438, 439, 440**
 - importing files to WSDL Editor in, 453-455, **453, 454, 455**
 - Java Visual Applications and, 422, **423**
 - layout managers in, 437, **437**
 - Loan Calculator application in, 443-447, **444-448, 445t, 447t**
 - multiple layouts in, 436-451
 - Notepad application example using
 - logic for menu options in, 430-436, **430-436**
 - menu options in, 428-429, **428, 429t, 429, 430**
 - text area added to, 425-428, **426, 427, 428**
 - Notepad.java classes in, 424, **425**
 - reusable panel application in, 436-451
 - Visual Editor for, 424, **425**
 - Web services and, 423, 451-467, **452**
- Sybase Enterprise Systems database, 2, 89
 - column definitions in, 99, 100t
 - connection creation for, 98
 - stored procedures and, 127, 130, **130**
 - transaction support in, 114
- symptom database, tracing execution using, 551-552, **552**
- synchronization, in team CVS development, 472, 476-479
 - conflicts in, 509-510, **509, 510**
 - Synchronize view in, 476-477
 - Team Synchronizing perspective in, 476-479, **477**
 - Synchronize view, CVS, 476-477
- T**
- tables, 98-100
 - Data perspective for, 93-101
 - DDL script generation for XSD and table creation for, 208, **209**
 - filters for, 465-467, **466, 467**
- Task view, 13
 - team CVS development and, 478-479, **479**
 - TCP/IP monitor, Web services and, 351-358, **351, 353**
 - team development with CVS, 469-510
 - branches in, 472
 - branching using multiple streams in, 503-510, **503**
 - catching up a file for modification, 497-498, **497, 498, 499**
 - concurrent team-development scenarios for, 490-491, **491**
 - connection testing in, 483-484
 - CVS Annotate view in, 475, **475**
 - CVS Repositories Exploring perspective in, 474-475, **474**
 - CVS Repositories view in, 474-475
 - CVS Resource history view in, 476, **476**
 - enabling, 473-474, **473**
 - file modification in, 496-497
 - file retrieval in, 496-497, **496**
 - file/project creation in, 493-495, **493**
 - folders in, 485-486, **485**
 - HEAD stream in, 474, 499-503
 - history option in, 470-471, **470, 476**
 - installation of, 479
 - RedHat Linux 7, 484-490, **484-490**
 - testing, 487-490, **488-490**
 - Windows, 479-484, **480-484**
 - maintenance stream creation in, 504-507, **505**
 - merging with a branch in, 507-508, **508**
 - optimistic vs. pessimistic versioning in, 472
 - parallel development in single stream in, 499-503, **499-502**
 - perspectives and views in, 473-479
 - Problems view in, 478, **478**
 - repositories in, 471-472, 483-484, **483, 485-486, 485, 486, 493-494, 494**
 - sequential development in, 492-499, **492**
 - streams in, 472
 - synchronization in, 472, 476-479
 - synchronization conflicts in, 509-510, **509, 510**
 - Synchronize view in, 476-477
 - Tasks view in, 478-479, **479**
 - Team Synchronizing perspective in, 476-479, **477**
 - user accounts and groups in, 484-485

team development with CVS, *continued*
 user environment in, 487, **487**
 versioned object base (VOB) repository
 organization in, 471
 versions in, 473
 workspace in, 470-471, **470**, 491, **491**
 xinetd service in, 486-487, **486**, **487**
Team Synchronizing perspective, 476-479, **477**
template page, Tiles framework and, (*layout.jsp*) for, 76, **77**
templates, in XML development, 193-194, **193**
Tiles framework, 73-78. *See also* Web development
tool mentors in RUP, 600-601, **600**
tools for RAD, 5
top-down mapping, 233, 239-240, **240**, 253-254, **254**
 visual modeling and, 587-589, **588**
topic diagrams, in architectural and application
 analysis, 589, 590-593, **590**-**592**
topic space destination, 307
TopicConnectionFactory, 294
Trace Analyzer Tool. *See* Log and Trace Analyzer Tool
trace.log, 547
tracing application execution, 547-553
 correlating logs for, 549-551, **550**, **551**
 importing log files to workspace for, 548-549
 symptom database for, 551-552, **552**
transactions, 121-122
 attribute setting for, 288-289, **289**
 bean-managed transactions (BMT) in, 301
 container-managed transactions (CMT) in, 301
 datasource for, 287-288
 Enterprise JavaBeans (EJBs) and, 282-290. *See also* Enterprise JavaBeans (EJBs)
 Java Transaction API (JTA) in, 121-122, **121**
 logging beans for, 283-285, **284**
 reference for logger in, 285-287, **286**-**287**
 service integration bus (SIB) and, 299-300
 testing logger for, 288, **288**, 290
 XA datasources and, 113, 120-126
troubleshooting for RAD, 6-7
try/catch blocks, **223**-**224**
tutorials in book, 2

U

UML notation, x. *See also* visual modeling
UML Visual Editor for Java and EJB tool for, 556-557
Unified Modeling Language (UML), 556-557. *See also* visual modeling
Unified Process. *See* Rational Unified Process

Universal Description Discovery and Integration (UDDI), 329-330
Universal Test Client (UTC)
 Enterprise JavaBeans (EJBs) and, 244-247, **245**, **246**, 256-257, **256**, 265-266
 security testing on, 410-412, **411**, **412**
 Web services and, 335, 350, 358-361, **359**, **360**
universal unique identifier (UUID), service integration bus (SIB) and, 306
updates for RAD, 8-10
user accounts and groups, team CVS development and, 484-485
user environment, team CVS development and, 487, **487**
user interface (UI) design, JavaServer Faces (JSF) and, 78
user-defined functions, database development and, 91
users and security role mapping, 399-400, **400**, 407-408, **407**

V

validation, in Struts, 69-71, **70**
variables, implicit in JSPs, 27-28, 28*t*
versioned object base (VOB) repository, 471
versioning, 473
 optimistic vs. pessimistic, 472
views, 13
 database tools, 89
 in MVC design pattern, 54
 team CVS development and, 473-479
Visual Editor, 424, **425**
visual Java, 3
visual modeling, x, 4, 555-604
 architectural and application analysis using, 589-596
 browse diagrams in, 589, 593-594, **593**, **594**
 edit diagrams in, 589
 Javadoc creation using UML diagrams in, 595-596, **595**
 topic diagrams in, 589, 590-593, **590**-**592**
Enterprise JavaBeans (EJB) application modeling using, 555, 576-589
 bottom-up mapping in, 584-585, **584**, **587**
 data model in, 581, **581**
 data structure modeling in, 577-582
 data visualization in, 580-581, **580**
 EJB mapping and modeling in, 582-587, **582**-**587**
 Information Engineering (IE) diagram support in, 577-582
 Integration Definition for Information Modeling (IDEFIX) diagram support in, 577
 mapping to RDB in, 587-589, **588**

- relational database elements mapping to UML
 elements in, 579, 579_t
- relationships in, 586, **586**
- stereotypes in, 579, 579_t
- top-down mapping in, 587-589, **588**
- importance of, 556-557
- Information Engineering (IE) diagram support in, 557, 577-582
- Integration Definition for Information Modeling (IDEFIX) diagram support in, 557, 577-582, **583**
- J2EE and, 555
- Java application modeling using, 555, 558-576
 class structure modeling in, 559-570, **560, 562**
 dynamic structure modeling in, 570-576, **571-575**
 field creation for, 563-564, **563, 564_t**
 getters and setters added to, 569-570, **570**
 operations added to, 568-569, **569**
 Package Explorer view in, 561, **561**
 Perspective Layout for, 560, **560**
 popup menus for, 564, **564**
 Quick Fix for compilation errors in, 576, **576**
 relationships and attributes in, 562-563, **565, 566, 567, 568**
 sequence diagrams in, 570-576, **571-575**
- Javadoc creation using UML diagrams in, 595-596, **595**
- Quick Fix for compilation errors in, 576, **576**
- Rational Software Development Platform and, 558, 559_t
- Rational Unified Process (RUP) in, 555, 557-558, 596-604, **597, 598**
 changing process in, preference setting for, 602-604, **603**
- J2EE and, **598**
- Process Advisor in, 601-602, **601**
- Process Browser for, 597-601, **597**
- roles and responsibilities diagrammed using, 599-600, **599**
- tool mentors in, 600-601, **600**
- tools for, 558, 559_t
- UML Visual Editor for Java and EJB tool for, 556-557
- understanding process of, 596-604
- Unified Modeling Language (UML) in, 556-557
- W**
- WAR files, in Web development, 22
- Web component, in Web development, 21
- Web deployment descriptor (web.xml), 22
- Web development, 21-88. *See also* J2EE.
 Application Client and, 21
- Content Area dialog in, 37-38, **37**
- deployment descriptor (web.xml) and, 22
- Dynamic Web Projects Folder for, 22
- Enterprise JavaBeans (EJBs) and, 21
- error pages in, 39-40, **39, 40**
- Gallery view for, 23, **24**
- HTML and, 21, 23
- images in, 21
- J2EE and, 21
- Java Server Pages (JSP) and, 21, 23, 25-34
 creation of, 29-31, **29, 30**
 Design view in, 30
 enterprise application project (EAR) in, 28
 execution of, 31, **31**
 HTML forms in, 26
 HTTP-based requests in, 25-34
 Java scriptlets in, 26
 servlets, Java, creation of, 25-34, **32, 33**
 session in, 26-27, 33-34, **33, 34**
 Source view in, 33
 variables implicit in JSP and, 27-28, 28_t
- JavaMail feature in, 40-46
- email servlet creation for, 43-46, **44, 45-46**
- Java Naming and Directory Interface (JNDI) and, 40, 43
- SMTP mail server for, 40-41
- testing the servlet for, 46
- WebSphere Server setup for, 41-42, **42**
- JavaScript files in, 22
- JavaServer Faces (JSF) in, 78-88. *See also* JavaServer Faces (JSF)
 creating, 79-82, **79, 80, 81, 82**
 decoupling of Web components with, 78
 Designer view in, 78
 enterprise Java Beans (EJBs) and, 78
 Java Beans and, 78
 modifying page (menus.jsp) in, 82-86, **83, 84, 85, 86**
 modifying page (result.jsp) in, 86, **87**
 Relational Records, Relational Record Lists and, 78
 testing the application in, 87-88, **87, 88**
 user interface (UI) design and, 78
 Web project creation for, 79
 Web services and, 78-79
- JavaSource files for, 22
- modules in, 21
- navigation bar creation in, 36-39
- Page Designer tool for, 23
- Page Template tag in, 37, **37**
- page template, navigation, error pages in, 35-40

- Web development, *continued*.
- Palette view in, 23, **24**, 37, **37**
 - projects in, 21-22, **22**
 - running the Web site in, 38, **39**
 - servlet filters in, 46-53, **47**, **53**
 - advertisement filters in, 50-53, **51**, **52**
 - HTTP requests and, 46-47
 - logger filter in, 47-50, **48**, **49**, **50**
 - servlets, Java and, 21, 22
 - site map creation in, 36-39
 - site structure creation in, 35-36
 - Struts for, 54-72. *See* Struts, 54
 - style sheets in, 21
 - Tiles framework in, 73-78
 - decoupling Web components with, 73-75, **73**, **75**
 - Java Server Pages (JSP) and, 73-75, **74**, **75**, **76**
 - Model-View-Controller (MVC) design pattern in, 73
 - reference to, from JSP page, 77-78, **77**
 - running, 78
 - template page (*layout.jsp*) for, 76, **77**
 - WAR file in, 22
 - Web component in, 21
 - Web Diagram tool and, 22-23, **23**
 - Web page creation in, 36-39
 - Web perspective and, 23
 - Web Site Navigation tool and, 22, **22**, 35-36, **36**
 - WebContent directory for, 22
- Web Diagram tool, 22, **56**, **72**, **72**
- Web page creation, 36-39. *See also* Web development
- Web perspective, 12, 23
- Web Service Description Language (WSDL), 329-330, **334**, 355-358, **356**, 453-455, **453**, **454**, **455**
 - importing files to, 453-455, **453**, **454**, **455**

Web Service Inspection Language (WSIL), 329-330

Web services, x, 3, 329-368
 - binding details field and text area to table in, **463**-**465**, **464**, **465**
 - binding name/ID table to, 458-463, **458**-**463**
 - bottom-up vs. top-down code to, 332
 - client creation in, 367
 - client proxy for, 333, 346-352, **347**, **348**, **349**
 - creation of, from Java bean, 333, **333**, 335-352
 - code for bean in, 337-341, **338**-**339**, **340**-**341**
 - deploying, 341-342, **342**
 - EAR file creation for, 336, **337**
 - proxy and sample for, 346-352, **347**, **348**, **349**
 - testing, 342-346, 350-352
 - Web project creation for, 336, **337**
 - discovering, 366, **366**
 - filters for tables in, 465-467, **466**, **467**

- WebSphere, ix-x, 1-2, 3, 5
 administrative structure of, 373-378, **374**
 cells, nodes, and servers in, 374
 class loaders and, 416-418, **417, 418**
 datasources in, 374
 debugging and restarting in, 373
 development in, 370-378
 EAR file and datasource creation in, 384-390, **386, 387, 388, 389, 390**
 features of, 370-372
 JMS messages, MDBs, and, 291
 JMX management for, 372
 Network Deployment (ND) version of, 374
 new server creation in, 371, **372**
 platform support for, 372
 port assignment for profiles in, 375, **376**
 profile support in, 373, 374-378, **376**
 publishing code to, 372-373
 runtimes of, 371, **371**
 security and, enabling, 400-402, **401, 402**, 408-410, **409, 410**
 server creation in, 376-378, **377**
 test environment in, 370
 Web services and runtime, 331
 WebSphere Studio Application Developer, 1-2
 Welcome page for RAD, 12, **12**
 Windows, team CVS development and, 479-484, **480-484**
 workspace, in team CVS development and, 470-471, **470, 491, 491**
 workspace location in Rational Application Developer (RAD), 11-12, **11**
 wrappers, Enterprise JavaBeans (EJBs) and, 276-277, 278, 281-282
- X**
- XA datasources, 120-126. *See also* database development
 Java Transaction API (JTA) in, 121-122, **121**
 running transaction servlet for, 125-126, **126**
 servlet creation for, 122, **123-125**
 xinetd service, team CVS development and, 486-487, **486, 487**
 XML development, ix, 3, 161-232
 creating files in, 161, **162**, 166-182
 data graphs and, 165, 216
 data objects and, 165, 216
 debugging, 194
 document type definition (DTD) files and, 161-163, **163**
 DOM parser and, 165, 182-183, 188-190, **189-190**
 extensible stylesheet language transformations (XSLT) and, 165, **166**, 191-206
 creating new package for, 195-196, **195, 196**
 editing XSL files for, 198-200, **198, 199, 200, 201**
 HTML, XML document transformed into, 203-205, **203**
 inlined XSL style sheet and, 193, **193**
 Java API for XML Processing (JAXP) and, 194, **202, 202**,
 namespaces and, 197, **197**
 templates and, 193-194, **193**
 testing, 201, **201**
 XPath and, 191-195, **191**
 XPath Expression Builder and, 194, 198-200, **198, 200**
 XSL file creation for, 196-197, **197**
 XSL style sheets and, 192-193, **192, 193**
 facets in, 180-182, 181-182t
 Java API for XML Processing (JAXP) and, 165, 182-190
 DOM parser and, 182-183, 188-190, **189-190**
 package creation for, 183
 parsers for, 182-183
 SAX parser and, 182-183, 186-187, **186-187, 188**
 XML and XSD file creation for, 184-185, **184, 185**
 namespaces in, 168
 parsing or accessing files in, 165, 182
 SAX parser and, 165, 182-183, 186-187, **186-187, 188**
 service data objects (SDO), 143, 165, 190, 216-232
 APIs for, 217-219, **217, 218**
 class creation in, 231-232, **231-232**
 copying XSD and XML files to, 222
 data graphs and, 216, **218, 219**
 Data Mediator Service (DMS) and, 216
 data objects and, 216
 disconnected architecture of, 216-217, **217**
 Eclipse Modeling Framework (EMF) and, 219-221, **220, 221**
 extending classes in, 228-230, **228-230**
 getters and setters in, 217-218
 J2EE and, 217
 Java Connector Architecture (JCA) and, 216
 JMS messages and, 216
 loading from XML, 222-223, **222-223**
 navigating, 223-224, **223-224**
 new package creation for, 221
 SDO Generator for, 222
 updating, 225-228, **225, 226-227**
 XPath and, 219
 XPath and, lookups using, 224-225, **225**

- XML development, *continued*
SQLToXML and XMLToSQL translators for, 165, 206-215
copying or creating XSD files for, 207, 207
data from XML, in database, 212-213, 212, 213
database connection for, 208
DDL script generation for XSD and table creation for, 208, 209
INSERT and SELECT statements in, 209-211, 209, 210
Java application with SQLToXML in, 213-215, 213-214, 214, 215
JDBC drivers and, 214t
new package creation for, 207
XST template generation for, 211, 212
templates and, 193-194, 193
Web services and, 329, 330, 350
wizards for, in RAD, 161, 162
XML schema (XSD) files and, 161-165, 164, 166-182, 166-167
creating, 169-173, 169-173
data types in, 167
expanding, 174-179, 174, 175, 176, 177-178
generating XML file from existing, 173, 174, 180-182, 180
namespaces and, 168
pattern matching in, 177, 177
simpleType and complexType definitions in, 167
simpleType facets in, 180-182, 181-182t
XML Schema conformity and, 167, 167
XPath and, 165, 166, 191-195, 191
inlined XSL style sheet and, 193, 193
templates and, 193-194, 193
- XPath Expression Builder and, 194, 198-200, 198, 200
XSL style sheets and, 192-193, 192, 193
XPath Expression Builder and, 194, 198-200, 198, 200
XSL style sheets and, 192-193, 192, 193
XML schema (XSD) files, 161-165, 164, 166-182, 166-167
creating, 169-173, 169-173
data types in, 167
DDL script generation for, and table creation for, 208, 209
expanding, 174-179, 174, 175, 176, 177-178
generating XML file from existing, 173, 174, 180-182, 180
namespaces and, 168
pattern matching in, 177, 177
simpleType and complexType definitions in, 167
simpleType facets in, 180-182, 181-182t
XML Schema conformity and, 167, 167
XPath and XPath Expression Builder, 194, 198-200, 198, 200
inlined XSL style sheet and, 193, 193
SDO and, 219
SDO and, lookups using, 224-225, 225
XML development and, 165, 166, 191-195, 191
XSL style sheets and, 192-193, 192, 193
- XSL, 3
XSL style sheets, 192-193, 192, 193
XST template generation, 211, 212

Z

- zero-to-many relationships, 247-248, 248, 250-252, 251, 252, 253