

Index

Note: Boldface numbers indicate illustrations

Acceleration, 1015. *See also* BLU Acceleration; BLU technology

Access control, 3, 4, 7, 8, 825, 826, 1005–1006

 application category of, 1006

 for database server, 1005–1006

 development category of, 1006

 fine grained (FGAC), 901

 groups in, 1006–1008

 Import utility and, 605

 label-based. *See* Label-Based Access Control (LBAC)

 power user category of, 1006

 role-based, 872–873

 roles in, 1006–1008

 row and column. *See* Row and Column Access Control (RCAC)

 service category of, 1006

 Single Sign On (SSO), 1005

 taking control of a DB2 server in, 106–110

 user IDs in, 1006–1008

Access Control Administrator. *See* ACCESSCTRL

Access plans, 48, 62, 77, 90, 123, 124, 126–127, 143, 147, 153, 159, 163, 227, 270, 337–338, 347, 371, 382, 383, 489–491, 496–497, 506, 508–509, 511–512, 525, 542, 557, 558, 561, 564, 567, 570, 684, 686–688, 692, 704, 713, 716, 839, 1066, 1102, 1199, 1203

ACCESSCTRL, 760, 833, 837–840, 926. *See also* Authorities; Privileges

 granting and revoking author/privs with, 870

 roles and, 872

Accounts, 45

Actionable compression, 157, 1014–1015, **1016**

Active log files, 727

Active standby databases, in HADR, 779–782, 808, 809, 821, 998

ACTIVE_xxx, 1140

Activities, event monitors for, 404, 411–414, 457–458, 466, 1139

Activities selection, in Data Studio, 1063, **1063**

Activity event monitors, 404, 411–414, 457–458, 466, 1139

Activity metrics, interfaces that report, 1139

Activity monitoring, 404, 411–414, 457–458, 466, 1139

Adaptive compression, 88, 138, 155, 157, 161, 271–272, 292, 305, 987, 1014–1015, **1016**

Adaptive utilities throttling. *See* Throttling

ADMIN_CMD, 8

 stored procedure and, 607–611, 664, 710, 1104

ADMIN_COPY_SCHEMA, 569, 672–674

ADMIN_MOVE_TABLE, 569, 661–672, 708, 717, 718, 1105

Administration notification log, 523

Advanced Copy Services (ACS), 5, 986

Advanced Editions, tools and features, 986–987, 1187

Advanced Enterprise DB2, 1207–1208

Advanced Enterprise Server Edition (AESE), 987, 1187

Advanced Recovery Feature, 1210

- Advanced Workgroup DB2, 1207–1208
- Advanced Workgroup Server Edition (AWSE), 987, 1187, 1210
- ADVISE_xxx, 490–491
- AFTER trigger, 358–363, 387
- Agents, 42, 52
- Aggregate registry variables, 39–41, 134, 140, 151, 156
- AIX, 5, 31, 42, 281, 543, 701, 794, 820, 826, 951–952, 977, 983, 1007, 1022, 1143, 1176, 1203, 1208
 - monitoring tool/db2top in, 543–547
- Alt_collate, 60
- Alt_diagpath, 42, 150
- ALTER_xxx, privilege for, 844, 847, 850–851
- ALTER BUFFERPOOL, 79, 82, 154, 180
- ALTER DATABASE, 778
- ALTER INDEX
 - compression and, 269–270, 269
- ALTER SERVICE CLASS, 838, 1071
- ALTER STOGROUP, 198–199, 206–208, 1035
 - HADR and, 778
- ALTER TABLE, 215, 285, 305, 931, 1196, 1197, 1205
 - compression and, 263–264
 - informational constraints and, 339
 - Label-Based Access Control (LBAC) and, 895–896
 - Load utility and, 627
 - Row and Column Access Control (RCAC) and, 907
- ALTER TABLESPACE, 177, 195–198, 295, 296–297, 298, 299, 428, 745–749, 760, 1181, 1207, 1210
 - HADR and, 778
 - reclaimable storage with, 200–201, 200
- ALTER THRESHOLD, 838, 997
- ALTER WORK ACTION SET, 838
- ALTER WORK CLASS, 1070
- ALTER WORKLOAD, 838
- ALTERIN
 - privilege for, 843
- Alternate_auth_enc, 42
- Analysis and reporting tool/db2dart, 552–554
- Analytics, 4
- Appl_memory, 60
- Applheapsz, 60
- Applicant identification numbers, 12
- Application category of access control, 1006
- Application memory, 60
- Application period temporal tables, 231, 241–247
- Applications, 62, 67
 - binding, 954–956
 - forcing connection to, 109–110
- Architectural integrity, 550, 560, 562, 568
- Archival logging, 726–727, **728**, 815, 1164
- Archiving, 4, 60, 65, 70, 145, 160
 - compression and, 157, 272
- Archretrydelay, 60

Index

- Arranging to take certification exams, 11–12
- Arrays, 8
- Arithmetic, 68
- ASCII
 - delimited ASCII (DEL), 570–572
 - nondelimited ASCII (ASC), 572–573
- Aslheapsz, 42
- ASYNC mode, in HADR, 776, 782, 1145, 1164, 1204
- Asynchronous I/O, 69, 178
- ATTACH, 26, 146
- ATTACH PARTITION, 215, 218, 221
- Attaching to an instance, 26
- Attributes, XML and, 252–253
- AUDIT statements, 914, 916–917, 928, 936
- Audit_buf_sz, 42
- Auditing, 6, 42, 912–917, 928, 935, 936
 - AUDIT statements in, 916–917, 928
 - db2audit for, 912, 913–916
 - SYSADM and, 912
- Authentication, 6, 43, 53, 55, 826–831, 921, 929, 930, 933. *See also* Authorities; Privileges
 - authorities and privileges with. *See* Authorities; Privileges
 - CLIENT, 827, 829
 - DATA_ENCRYPT, 828, 829, 878–879
 - DATA_ENCRYPT_CMP, 828, 829
 - Generic Security Service Application Program Interface (GSS-API) in, 828, 829
 - GSSPLUGIN, 828, 829
 - KBB_SERVER_ENCRYPT, 828, 829
 - KERBEROS, 827–828, 829
 - LDAP, 984
 - Microsoft Active Directory, 1005
 - operating systems and, 826, 830
 - passwords and, 829
 - security plug-ins for, 829–830
 - SERVER, 827, 829
 - SERVER_ENCRYPT, 827, 829
 - single sign on (SSO), 1005
 - Tivoli Identity Manager, 1005
 - trusted and untrusted clients in, 830–831, 830
 - types of, 827
 - user IDs and, 829
 - WebSphere Application Server (WAS), 879
 - where it occurs, 826–827
- Authentication parameter, 43
- Authorities/authorization, 7, 42, 128, 168–169, 294–295, 825, 831–841, 926, 929, 936, 1173, 1197, 1200. *See also* Authentication; Granting authorities and privileges; Privileges
 - ACCESSCTRL, 833, 837–840
 - automatic authority to new databases through, 837
 - common tasks requiring, 870–871
 - DATAACCESS, 833, 837, 838, 840

- DBADM, 832, 837, 838, 840–841
- EXPLAIN, 833, 838, 839, 840
- granting, 851–861. *See also* Granting authorities and privileges
- hierarchy of, 831, **832**
- LOAD, 833, 838, 840–841
- requirements for granting and revoking in, 869–870
- revoking, REVOKE, 861–869, 934
- role-based access control and, 872–873
- SECADM, 832, 837–839
- SQLADM, 832, 838–840
- storage of, in system catalog, 918–919
- SYSADM, 832–834, 837
- SYSCTRL, 832, 834–835, 837
- SYSMAINT, 832, 835–836, 835
- SYSMON, 832, 836
- WLMADM, 832, 838, 839, 840
- Auto_db_backup, 60, 155
- Auto_del_rec_obj, 61
- Auto_maint, 60, 155, 996
- Auto_prof_upd, 61
- Auto_reorg, 61, 996
- Auto_reval, 62
- Auto_runstats, 61
- Auto_sampling, 61
- Auto_stats_prof, 61
- Auto_stats_views, 61
- Auto_stmt_stats, 61
- Auto_tbl_maint, 61
- AUTOCONFIGURE_xxx, 78, 100–102, 132, 149, 150, 171, 608, 996
- Automatic commit, 720
- Automatic Compression Dictionary (ADC), 267–269
- Automatic computing features, 76–84
- Automatic configuration settings, using Data Studio, 1051
- Automatic database maintenance. *See* Automatic Maintenance
- Automatic Dictionary Creation (ADC), 88
- AUTOMATIC keyword, 57, 74, 82, 83, 84, 204
- Automatic maintenance, 3, 23, 60, 61, 89–99, 135, 136, 152–153, 169, 294
 - backups and, 89
 - configuring, 91–99, **91–99**, 90
 - defrag and, 90
 - optimization and, 90
 - statistics collection and, 90
- Automatic reorganization, 136
- Automatic statistics collection, 77, 151–152
- Automatic Statistics Profiling (ASP), 1033, 1190, 1211
- Automatic storage, 23, 77, 84–88, 141, 176–178, 276, 278, 279, 295, 296, 297, 298, 1186, 1187, 1206, 1209, 1210
 - DMS table space conversion to, 202–204
- Automatic Storage Manager (ASM), 993, 1022, 1033–1036, 1074, 1077, 1151, 1163
- Automatic storage table space, 5, 161, 182–184

Index

- Autonomic workloads, 996–997
- Autorestart, 61
- Avg_appls, 62
- Axis, in XML indexing, 259

- Backup, 4, 5, 6, 60, 69, 71, 72, 137, 139, 155, 719, 739–749, 800, 1052, 1171, 1172, 1197, 1199–1200. *See also*
 - Recovery; Restore
 - automatic, 77
 - automatic maintenance and, 89
 - BACKUP DATABASE in, 740–741
 - Backup Utility in, 739–749
 - configuring automatic maintenance for, 91–99, **91–99**
 - Data Studio and, 742–744, **743**, **744**, 1055, **1055**, 1058
 - delta, 734–736, 816
 - differential, 735. *See also* Delta backup
 - HADR and, 778
 - incremental, 734–736, 816
 - memory configurations and roll-forward in, 766
 - mirroring, 772, 818
 - monitoring and, 1141
 - noncumulative, 735. *See also* Delta backup
 - online vs. offline, 734
 - pureScale and, 823, 1122–1131, 1193
 - rebuild feature for, 761–763
 - recovery history file and, 768–769
 - Roll-forward utility in, 763–768, 817
 - SET WRITE SUSPEND/RESUME in, 773–776
 - split mirroring, 772, 818
 - SYSADM and, 744
 - SYSCTRL in, 744
 - table spaces, 744
 - temporary table spaces, 744
 - throttling, 816
- BACKUP, 152, 912
- BACKUP DATABASE, 740–741
 - impact priorities and, 104
- Backup Utility, 739–749. *See* Backup (*above*)
- Bandwidth, 45
- Base tables, 307
- Batch processing, in pureScale, 1150
- BEFORE trigger, 358, 359–360, 377, 384–385, 387
- Benchmark testing, db2batch, 688–692
- Best fit workloads, 998
- Bidirectional index, 386
- BIGINT, 345
- Binary XML, 1172, 1173, 1200
- BIND, 62, 169, 295, 491, 495, 848, 858, 866, 871, 929, 931, 954–957, 971
 - privilege for, 848
- Bind files, 956–957, 978

- description tool for, db2bfd and, 530–532
- problem determination configuration/db2pdcfg and, 526–530
- Rebind, 686–687
- BINDADD, 169, 294, 840–841, 854, 862, 871, 872, 929, 930–931, 955–956, 978
 - roles and, 872
- Binding
 - applications, 954–956
 - db2schema.bnd file and, 956–957
 - Linux, UNIX, and Windows, 956–957
 - schemas, 956–957
 - utilities, 954–956
- Bitemporal period tables, 246–247
- Blk_log_dsk_ful, 62
- BLOB, 311, 346, 661
- Block-based buffer pools, 179
- Blocknonlogged, 62
- BLU, 4, 5, 986, 991–995, 1008–1031, 1161
 - BLU Central, 1031
 - buffer pool manager in, 1016–1017, **1017**, **1018**
 - cloud computing with, 1031
 - columnar-organized data in, 1009–1011, **1009**
 - compression, 1014–1015, **1016**
 - data skipping in, 1020–1021
 - databases and, 1033–1034
 - features of, 985–986. *See also* Crash course
 - idle server in, **1019**
 - memory and, 1011–1013, **1012**, **1014**
 - monitoring in, 1020
 - multi-core parallelism in, 1018–1020
 - OLTP and, 1021–1023
 - one SQL statement running in, **1019**
 - online help with, BLU Central, 1031
 - physical design of, 1031–1046. *See also* Physical design
 - product/package compatibility, 988
 - random key indexes and, 1041–1045, **1044**, **1045**
 - rows, rows and, extended row size in, 1045–1046, 1192, 1211
 - separate row and column instances on database server in, 1023–1031
 - setting up environment for, 1021–1023
 - Shadow tables and, 1075
 - simultaneous SQL statements running in, **1020**
 - Single Instruction Multiple Data (SIMD) processing and, 1014, 1023, 1154, 1188
 - storage groups and, 1034–1035
 - table spaces and, 1035–1036
 - tables in, 1036–1041
 - trial download of, 1031
 - Unicode and, 1073–1074
- Buffer pools/BUFFERPOOL, 5, 45, 49, 52, 154, 161, 162, 167, 175, 178–182, 555, 561, 1016–1017, **1017**, **1018**
 - altering, with ALTER BUFFERPOOL, 180
 - block-based, 179

Index

- Configuration Advisor and, 99–102
- configuration parameters for, 178
- containers and, 182
- creating, with CREATE BUFFERPOOL, 179
- design of, 178–179
- dropping, with DROP BUFFERPOOL, 180
- event monitors for, 446–447, 465
- Explicit Hierarchical Locking (EHL) in, 1117–1118, 1122, 1148, 1161
- extents and, 182
- First in-First out (FIFO), 1017
- flushing, with FLUSH BUFFERPOOLS, 773
- Global/Group Buffer Pool (GBP) in, 793, 823
- hierarchy of storage in DB2 and, 180–182, **181**
- hit ratio of, 431–432
- Last in-Last out (LILO), 1017
- least recently used (LRU) pages in, 1017
- listing, 179–180
- Local Buffer Pool (LBP) in, 793
- logging and, 724
- manager for, 1016–1017, **1017**, **1018**
- memory configurations and roll-forward in, 766
- monitoring, 392, 415–421, 446–447, 465, 563
- Most Recently Used (MRU) pages in, 1017
- pages and, 182
- prefetch and, 178
- pureScale and, 793
- Scan Friendly Page Caching (SFPC) and, 1017
- Self-Tuning Memory Manager (STMM) and, 83–84
- states of pages in, 178
- table spaces and, 182
- victim/victimless pages in, 1017, **1017**, **1018**
- Buffers, 47
- Build phase, Load utility and, 614
- Business rules, 307–388. *See also* Referential integrity
 - CHECK constraint in, 308, 313–316, **314**, 347, 349
 - constraints and, 308
 - creating tables and constraints for, with CREATE TABLE, 344–351
 - Data Studio and, 344
 - DEFAULT constraints and, 308, 310–313, **312**
 - definition of, 308
 - derivations and, 308
 - exception tables and, 343
 - informational constraints and, 308, 337–339, **338**, 349
 - NOT NULL constraints and, 308–310, **309**, 348
 - primary key constraint in, 348
 - referential integrity and, 308, 320–337, **321**, 347, 349, 350. *See also* Referential integrity
 - SET INTEGRITY command in, 339–343
 - triggers in, 358–370
 - UNIQUE constraint in, 308, 316–320, **316**, 345, 346–347, 349–350

- views in, 351–358
- C2090–311 (DB2 10.5 DBA for LUW Upgrade) exam, 5
- C2090–543 (DB2 9.7 Application Development) exam, 7
- C2090–545 (DB2 9.7 SQL Procedure Developer (C2090–545)) exam, 8
- C2090–610 (Fundamentals) exam, 3, 4
- C2090–611 (DB2 10.1 for Linux, UNIX, Windows Database Admin) exam, 4
- C2090–614 (DB2 10.1 for LUW Advanced Database Admin) exam, 6
- C2090–700 (DB2 V8.1 Family Fundamentals) exam, 7, 8
- C2090–730 (DB2 9 Family Fundamentals) exam, 7, 8
- C2090–730 (Fundamentals) exam, 4
- Cache/caching, 4, 47, 62, 71, 79, 154, 204, 570, 1011–1013, **1012**, **1014**
 - Cluster Caching Facility (CF) in, 793, 822
 - event monitors for, 458–459, 466
 - FLUSH PACKAGE CACHE, 687–688
 - monitoring and, 458–459, 466
 - pureScale and, 793, 822
 - Scan Friendly Page Caching (SFPC), 1017
- CALL, triggers and, 358, 387
- Callout script files, first occurrence data capture (FODC) and, 517
- Cancun, 985, 1021, 1074, 1122, 1147, 1156
- Cardinality, 262, 308, 500, 509, 1188, 1210
- Casting data types, 7
- Catalog statistics, 1099
- Catalog_noauth, 44
- CATALOG_xxx, 946–954, 977–978, 982–984
- Catalogcache_sz, 62
- Cataloging, 44, 62, 971, 980, 982–984
 - remote servers and databases, 946–953, 970
- Certification Agreement, 22
- Certification and certification programs, 1
- Certification Navigator tool, 10
- Certified Advanced Database Administrator, 5–6
- Certified Application Developer DB2 9.7 for LUW, 6–7, 7
- Certified Database Administration DB2 10.5, 4–5
- Certified Database Administration for Linux, UNIX, Windows in, 3–4
- Certified Database Associate, 2–3
- Certified Solution Developer DB2 9.7 SQL Procedure, 8
- CF. *See* Cluster caching facility
- Cf_diaglevel, 43
- Cf_diagpath, 43
- Cf_mem_sz, 43
- Cf_num_conns, 44
- Cf_num_workers, 44
- Change history, monitoring and event monitors for, 463–465, 467
- Channels, 48
- CHARACTER VARYING/CHAR VARYING, 311, 345
- CHARACTER/CHAR, 311, 345, 1185, 1209
- CHECK constraints, 307, 308, 313–316, **314**, 347, 349, 844
- CHECK OPTION, views, 351–358, 378, 383, 385–386

Index

- Checkpoints, 738–739
- Child tables, 307
- Chngpgs_thresh, 62
- Cint_krb_plug, 44
- Cint_pw_plug, 44
- Ciphers, 54
- Circular logging, 148, 634, 725–726, **727**, 733, 741, 743
- Classes, in workload management, 1069–1070
- Cleaners, 69
- CLI, 6, 7, 607, 609, 710, 938, 955–956, 971, 978, 1142–1145
 - ADMIN_CMD stored procedure and, 607–611
 - connectivity and, 1144–1145
- CLIENT authentication, 827, 829
- Clients, 937, 1142–1145
 - SSH, 1001
 - trusted and untrusted, 830–831
 - UNIX, 1143–1145
 - z/OS client in, 1143–1145
- CLOB, 311, 346, 661
 - Load utility and, 627
- Cloud, BLU, 1031
- CLP. *See* Command Line Processor (CLP)
- Cluster (DSF) mode, 988
- Cluster Caching Facility (CF), 808, 814, 820, 822–824, 985, 1004–1005, 1020, 1109–1114, 1117–1122, 1131–1132, 1135, 1150, 1161, 1195, 1199
 - pureScale and, 793, 822
- Cluster_mgr, 45
- Clusters/clustering, 5, 45, 806, 814, 985, 988, 1166, 1168, 1186, 1196
 - pureScale, 1159, 1186, 1195, 1209
 - recovery and, 1210
- Code sets, changing, 1073–1074. *See also* Unicode
- Cognos, 986
- COL_OBJECT_xxx, 1032, 1133
- collating, 60
- COLLECT_STATS, 1032–1033
- Collection levels in monitoring, 404, 410–411, 414
- Column mask, 826, 901, 907–912
 - Row and Column Access Control (RCAC) and, 901, 907–911
- Column-organized data, 1009–1011, **1009**
- Column-organized tables, 995–996, 1009, 1011, 1020–1023, 1029, 1033, 1036–1039, 1041, 1078, 1081, 1106–1107, 1148, 1151–1159, 1162, 1189, 1191, 1211
 - reclaiming deleted space in, 1106–1107
- Column Page Map Index (CPMA), 1039
- Column Table Queue (CTQ), 5, 1066, 1100
- Column to row conversion, 1068
- Columns, 344–345
 - CHECK constraint in, 347, 349
 - column sortheap vector memory, 1134
 - column table sizes, 1133

- columnar-organized data in, 1009–1011, **1009**
- converting data to rows, 1068
- converting row tables to columns, 1105
- informational constraints in, 349
- NOT NULL constraint in, 348
- primary key constraint in, 348
- referential integrity in, 347, 349, 350
- separate row and column instances on database server, 1023–1031
- sorts, 1134
- statistics on, in Data Studio, **1065**, 1065
- times, column times, 1133
- UNIQUE constraint in, 346, 349–350
- Comm_bandwidth, 45
- Comm_exit_list, 45
- Command Line Processor (CLP), 90, 93, 96, 98, 118, 144, 159, 255–259, 344, 391, 393, 489, 491, 513, 523, 607–609, 631, 651, 681, 710, 736, 871, 938, 940, 954–955, 1142
 - automatic maintenance and configuration, 91–99, **91–99**
 - instances and, 24–25
- COMMIT/committed semantics, 62, 720–723, **721**, 1170, 1198–1199
 - Import utility and, 604–605
 - logging and, 725
- Common operators, 510
- Communication protocols, 150, 937, 938, 969–970, 979–980, 1142
- Compound SQL, 7, 588, 605
- Comprehensive Explain data, 491
- Compression, 4, 23, 77, 88–89, 138, 141, 155, 157, 262–272, 290, 291, 292, 293, 304, 305, 986, 1014–1015, **1016**, 1156
 - acceleration and, 1015
 - actionable, 157, 1014–1015, **1016**, 1014
 - adaptive. *See* Adaptive compression, 271
 - archiving and, 272
 - Automatic Compression Dictionary (ADC) in, 267–269
 - Automatic Dictionary Creation (ADC) and, 88
 - columnar table limitations to, 1015, **1016**
 - compression dictionary in, 264–265, **265**, 267–269
 - deep, 661, 1014
 - enabling, with ALTER TABLE, 263–264
 - enabling, with CREATE TABLE, 263–264
 - features of, table, **88–89**
 - index, 269–270, 292, 1157
 - INSPECT and Inspect utility in, 266–267, **268**
 - LOB, 270
 - logging and, 272
 - name-value pairs and, 1015, **1016**
 - replication support and, 271
 - row, 1014
 - static (classic) vs. adaptive, 272–273
 - static row, 262–265, **263**
 - storage benefits of, 266–267
 - Storage Optimization, db2pd and, 270–271

Index

- temporary tables and, 270–271, 292
- XML, 270
- Compression dictionary, 264–265, **265**, 267–269, 291, 304
- Concurrency, 56, 639, 660, 710, 779, 793, 814, 824, 847
- Configuration, 3, 5. *See* Configuration Advisor; Connectivity and networking; Database configuration; System configuration
- Configuration Advisor, 3, 23, 78, 99–102, 141, 157, 169, 295, 301, 725–726
 - logging and, 725–726
- Configuration files, 168
- Configure Automatic Maintenance, 1052–1054, **1052–1054**
- Configuring the system environment. *See* System configuration
- Conn_elapse, 45
- CONNECT, 81–82, 131, 169, 281, 294, 550, 632, 674, 676, 678, 774, 840–842, 854, 860–862, 868–872, 881–882, 906–910, 994
 - roles and, 872
- Connect_proc, 62
- Connections, monitoring and event monitors for, 461–462, 466
- Connectivity and networking, 3, 6, 44, 45, 50, 62, 937–984, 1141–1145
 - bind files in, 956–957, 978
 - binding utilities and applications in, 954–956
 - cataloging remote servers and databases in, 946–953, 970
 - cataloging, 971, 980, 982–984
 - CLI and, 6, 7, 607, 609, 710, 938, 955–956, 971, 978, 1142–1145
 - clients for, 1142–1145
 - configuring connections for, 937–938, 1142
 - Converged Ethernet (RoCE), 997
 - DAS, 961
 - Data Studio to manually configure, 939–942
 - Database Connection Services (DCS) directory in, 942, 946
 - DB2 databases in, cataloging, 946–950, **947**
 - db2cli in, 978
 - db2schema.bnd file and, 956–957
 - db2ubind in, 978
 - DCS databases in, cataloging, 953–954, 970, 981
 - directory files in, 942
 - Discovery in, 957–962, **958–962**, 970, 973, 974, 978–980
 - distributed connections in, 937
 - errors in, troubleshooting, 969–970, 973, 974
 - Ethernet, 997
 - Fast Communications Manager (FCM) and, 962–965
 - features of, 1142
 - First in-First out (FIFO) in, 938
 - fix packs in, 971
 - HADR and, 1144
 - InfiniBand (IB), 997
 - instances in, 972
 - IPC and, 1142
 - IPv4 vs. IPv6 communications protocols in, 938, 978
 - Lightweight Directory Access Protocol (LDAP) in, 965–969, 976, 984

- Linux servers, cataloging, 952–953, 975
 - local database directory in, 942, 943–944
 - monitoring and, 406, 408–409
 - named pipes in, 938
 - node directory in, 942, 944–946
 - nodes in, cataloging, 977–978
 - passwords in, 973
 - pinging a server, 969
 - planning for, 1141–1142
 - protocols for, 937, 938, 969–970, 979–980, 1142
 - pureScale and, 997
 - RDMA protocol in, 997–998
 - registry variables and, 979–980
 - remote databases in, 946–953, 969
 - remote servers in, 946–953, 969
 - schemas and, 956–957
 - Secure Sockets Layer (SSL) in, 938
 - setting up, 1142–1145
 - system database directory in, 942–943
 - System i databases and, 946, 957
 - System z databases and, 946, 957
 - TCP/IP in, 938, 957, 969, 976, 978, 981–982, 997, 1142
 - Telnet commands in, 969
 - Transport Layer Security (TLS) in, 938
 - trusted connections in, 825, 879–883
 - UNIX and, 974, 1142, 1143–1145
 - Windows and, 975, 1142
 - z/OS client in, 1143–1145
- Consistency, point of, in recovery, 731
- Constraints, 3, 5, 162, 307, 371, 378, 382, 383, 716, 1157, 1158
- business rules and, 308
 - CHECK, 307, 308, 313–316, **314**, 347, 349, 844
 - creating, with CREATE TABLE, 344–351, 371–373
 - DEFAULT, 308, 310–313, **312**
 - exception tables and, 343, 381
 - foreign key, 381, 388
 - informational, 308, 337–339, **338**, 349, 382, 383
 - Load utility and, 629
 - NOT NULL, 308–310, **309**, 348, 385
 - primary key, 348, 379, 385, 386, 388
 - referential integrity and, 308, 320–337, **321**, 347, 349, 350, 378, 386. *See also* Referential integrity
 - SET INTEGRITY command in, 339–343
 - UNIQUE, 308, 316–320, **316**, 345, 346–347, 349–350, 375, 382–384, 510, 844, 1157, 1158, 1167
- Containers, 182, 569, 1035–1036
- adding, with ALTER STOGROUP, 198–199
 - DROP PENDING TABLESPACES, 736, 815
 - information about, LIST TABLESPACE CONTAINERS, 190–191
 - monitoring and, 415–421
 - pureScale and, container paths mapped to, 1124–1125
 - REORG utility for, 681–684

Index

- REORGCHK utility for, 680–681
- SET TABLESPACE CONTAINERS, 758–760
- Contexts, trusted. *See* Trusted contexts
- Continuous Data Ingest (CDI) utility, 569, 638, 987. *See also* Ingest utility
- CONTROL, 576, 584, 813, 844–849, 850–852, 855–872, 880, 929–930, 956. *See also* Authorities; Privileges
 - granting and revoking author/privs with, 870
 - privilege for, 844, 845, 846, 848, 850–851
 - roles and, 872
- Control Center, instances and, 33
- Control workloads, 998
- Converged Ethernet (RoCE), 997
- Converting row tables to columns, 1105
 - ADMIN_MOVE_TABLE for, 1105
 - db2convert for, 1105–1106, 1105
- Coordinating agents, 51
- Copy, Peer-to-Peer Remote (PPRC), 733
- Core files, first occurrence data capture (FODC) and, 517
- Cost of certification, 12
- Counters, in monitoring, 390
 - resetting, with RESET MONITOR, 402–403, 563
- Courses/education for certification, 10, 11
- CPU, 45, 407
- Cpuspeed, 45
- Crash course, 985–1164
- Crash recovery, 61, 617, 730–731, **731**, 802, 815
- Crashes, 61
- CREATE_xxx, 871, 872
- CREATE AUDIT POLICY, 936
- CREATE BUFFERPOOL, 79, 154, 179
- CREATE DATABASE, 85, 87, 156, 163–174, 274, 275, 279, 1033–1034, 1041, 1208
 - complete code/syntax of, 170–174
 - XML and, 251
- CREATE EVENT MONITOR, 436–440, 444–478, 556, 564
- CREATE INDEX, 77, 211, 218, 260–261, 289, 301, 305, 383–384, 716, 1016, 1037–1040
- CREATE MASK, 907–911, 927, 935
- CREATE OR REPLACE TRIGGER, 359
- CREATE OR REPLACE VIEW, 353–358
- CREATE PERMISSION, 901
- CREATE ROLE, 872, 903–904
- CREATE ROW PERMISSION, 927, 935
- CREATE SCHEMA, 210–212
- CREATE SECURITY LABEL, 892, 893
- CREATE SECURITY LABEL COMPONENT, 884–885
- CREATE SECURITY POLICY, 893
- CREATE SERVICE, 1070
- CREATE SERVICE CLASS, 1072
- CREATE STOGROUP, 176–178, 205–206, 295, 1210
 - temporal tables and, 222–223
- CREATE STORAGE GROUP, 1034–1035

- CREATE TABLE, 281, 283, 284, 285, 300, 344–351, 702, 888–889, 893–894, 1037–1041, 1073, 1191
 - bitemporal period tables, 246–247
 - compression and, 263–264
 - constraints and, 371, 372, 373, 344–351
 - data types used with, 345–346
 - Ingest utility and, 641
 - Load utility and, 627, 628
 - MDC tables, 225–226
 - MQT, 226–227
 - range clustered tables with, 213–214
 - range partitioned tables and, 216–219
 - Row and Column Access Control (RCAC) and, 902
 - rows and, extended row size and, 1045–1046
 - temporal tables and, 223, 232, 241
 - XML and, 253
- CREATE TABLESPACE, 191–195, 206, 277, 278, 745–749, 1035–1036
 - HADR and, 778
- CREATE THRESHOLD, 1072
- CREATE TRIGGER, 387, 848
- CREATE TRUSTED CONTEXT, 880–883
- CREATE VIEW, 374, 848
- CREATE WORK CLASS, 1070
- CREATE WORKLOAD, 1071
- CREATE_EXTERNAL_ROUTINE, 841, 842
- CREATE_NOT_FENCED_ROUTINE, 841, 842
- CREATEIN, privilege for, 843
- CREATETAB, 584, 841
- Cur_commit, 62
- Current Effective Architecture Level (CEAL), 1108–1109, **1109**
- Current Effective Code Level (CECL) and, 1108–1109, **1109**
- CURSOR, 631, 661–662, 718, 1174, 1201
 - Load utility and, 631
- Cursor Stability, Export utility and, 583
- Cursors, 7, 62
- Cygwin and UNIX, 1001

- DAS. *See* DB2 Administration Server
- Data Access Administrator. *See* DATAACCESS
- Data Architect, 987
- Data compression. *See* Compression
- Data concurrency, HADR and active standby databases in, 779, 818
- Data Control Language (DCL), 2, 8
- Data Definition Language (DDL), 2, 7, 8, 66, 111, 114, 161, 167, 463, 491, 661, 673, 680, 692–693, 697–698, 712, 714, 746–748, 766, 779, 781, 788, 821, 848–849, 1006, 1069–1074, 1080, 1210
 - generating scripts in, with Data Studio, 114, **114**
 - workload management and, 1069
- Data encryption, 6, 874–879, 925
 - column level, 874–878
 - encrypting network data, with DATA_ENCRYPT, 878–879
 - levels of, 874–878

Index

- passwords and, 874–878
 - row level, 874–878
 - scalar functions for, built-in, 874
 - Secure Sockets Layer (SSL) in, 878–879
- Data load utility, 569
- Data Manipulation Language (DML), 2, 7, 8, 163, 235, 243, 254, 258, 633, 639, 647–649, 662, 697, 788, 849, 860, 890, 894, 906, 994, 1006, 1022, 1030–1031, 1070, 1210
 - Ingest utility and, 639, 647–651
 - Row and Column Access Control (RCAC) and, 906–907
- Data movement utilities. *See* Utilities
- Data object monitor elements, 404
- Data objects. *See* Objects
- Data organization, using Data Studio, 1064, **1064**
- Data page reads, 1133
- Data page writes, 1133
- Data partition elimination, 215
- Data Partitioning Feature (DPF), 6, 37, 45, 50, 142, 215, 251, 611, 639, 675, 677, 716, 717, 941, 988, 1022, 1208
 - product/package compatibility, 988
- Data Protection Act (DPA), 874
- Data Security Standards (DSS), 874
- Data skipping, 4, 1020–1021
- Data Store, 1081–1086, **1082–1086**
 - subscription creation in, 1086–1095, **1087–1094**
- Data Studio, 3, 4, 23, 34, 110–127, 143, 144, 158, 159, 710, 1049–1067, 1211
 - Activities selection in, 1063, **1063**
 - ADMIN_CMD stored procedure and, 607–611
 - analyzing SQL queries in, 123–127, **124–127**
 - Automatic configuration settings in, 1051
 - automatic maintenance and configuration, 91–99, **91–99**
 - backup and, 742–744, **743, 744**, 1055, **1055**, 1058
 - business rules and, 344
 - client for, 110
 - configuring DB2 database in, 1050–1058, **1051–1058**
 - connecting to instances and databases with, 111–113, **111–112**
 - connectivity and, manual configuration in, 939–942
 - data store creation in, 1081–1086, **1082–1086**
 - database administration tasks with, 114–115, 115
 - database configuration and, 75, **75, 76**
 - database development tasks with, 115, **116**
 - DB2 database cataloging in, 947–950, **947**
 - Deprecated configuration settings in, 1051
 - Discovery in, 957–962, **958–962**
 - Eclipse and, 1049
 - Explain/Graphical Explain in, 1065–1067, **1065, 1067**
 - Export utility and, 583–584, **584**
 - generating DDL scripts with, 114, **114**
 - granting authorities and privileges from, 852–853
 - HADR and setup with, 788–789

- Immediate configuration settings in, 1051
- Import utility and, 599, **601**
- instances and, 58–59, **59**
- Load utility and, 637–638, **638**
- logging in, 1058
- maintenance in, with Configure Automatic Maintenance, 1052–1054, **1052–1054**
- Open Perspective window in, **1050**
- perspectives in, 1049, **1050**
- Query Workload Tuner and, 1044
- recovery and, 737–738, 742–744, **743, 744**
- Reorg policy in, 1056, **1056**
- Restore Wizard in, 753–758
- Return statistics in, 1066, **1067**
- roll-forward recovery in, 764–768, **764–768**
- Runstats policy in, 1057, **1057**
- scheduling database jobs with, 116–123
- Self-Tuning Memory Manager (STMM) and, 82
- Shadow tables and creation, 1078–1081, **1079, 1080**
- SQL file reads in, 1062, **1062**
- SQL project creation in, 1061, **1061**
- SQL tuning with, 1059–1060, **1060, 1063**, 1064
- Statistics Advisor recommendation in, 1066, **1066**
- table and column statistics in, **1065**
- tables and data organization in, 1064, **1064**
- taking control of DB2 server and, 108–109
- Task Launcher in, 1059, **1059**
- Visual Explain graph in, 506–511, **1044, 1045**
- web console for, 110–111
- Workflow Assistant in, 1061, **1061**
- Data transfer rates, storage groups and, 209
- Data transformation, Ingest utility and, 639
- Data types, 7, 311–312, 1173, 1184, 1185, 1209
 - CREATE TABLE and, 345–346
 - XML, 252
- Data warehouses, Ingest utility and, 638–639
- DATA_ENCRYPT, 828, 829, 878–879
- DATA_ENCRYPT_CMP, 828, 829
- DATAACCESS, 576, 760, 813, 833, 837, 838, 840, 926. *See also* Authorities; Privileges
 - granting and revoking author/privs with, 870
 - roles and, 872
- Database Administration certification track, 2–6
- Database Administrator, 3, 30. *See also* DBADM
- Database Application Development track, 6–8
- Database configuration, 23, 130, 131, 133, 993–994, 1148
 - autonomic, 993
 - Configuration Advisor and, 99–102
 - Data Studio for, 75, **75, 76**, 1050–1058, **1051–1058**
 - DATABASE CONFIGURATION commands in, 72 –75
 - database manager and, 23, 57–59
 - db2pdcfg in, 390

Index

- JSON, 1047–1049
 - parameters for, chart of, 60–72
 - Studio Administration Explorer in, 75, **75**, **76**
- Database Connection Services (DCS), 44, 47, 395, 403, 525, 834, 836, 937, 942, 946, 953–954, 957, 966, 970, 979, 980, 981, 984
 - connectivity and, 942, 946
 - databases, cataloging, 953–954, 970, 981
- Database Managed Space (DMS), 3, 5, 161, 167, 172–174, 177, 182–185, 190, 193–198, 202–203, 277, 279, 280, 295–298, 461, 661, 759, 778, 781, 1028, 1035, 1124, 1199
 - convert to automatic storage, 202–204
 - table space, 182–184, 280
- Database manager, 23–24, 57–59
- Database Services Flexible Architecture (DSFA), 1002
- Database Solution Development track, 8, **9**
- Database_memory, 63, 79, 993–994
- Databases, 3, 6, 7, 162, 1033–1034
 - access control in, 1005–1006
 - active standby, 779–782, 808, 809, 821, 998
 - administration tasks in, Data Studio for, 114–115, 115
 - authorities for, 168–169, 294–295
 - automatic features in, 169
 - automatic maintenance of. *See* Automatic maintenance
 - automatic storage in, 176–178
 - backing up, with BACKUP DATABASE, 740–741
 - BLU and, 1033–1034
 - buffer pools in, 167
 - cataloging of, 168
 - Configuration Advisor and, 169
 - configuration file in, 168
 - configuring, 41, 60–76
 - connecting to, with Data Studio, 111–113, **111–112**
 - creating, with CREATE DATABASE, 163–174, 274, 275, 279
 - default features of, 294
 - design aspects of, 175–178
 - development of, with Data Studio, 115, **116**
 - directories and subdirectories for, 164, 294, 295
 - dropping, with DROP DATABASE, 176
 - event monitors for, 444–446, 465
 - files in, 166
 - HADR and, 778
 - hierarchy of objects in, **165**
 - instances and, 24
 - listing, with LIST DB DIRECTORY, 175–176
 - maximum number of, 1209
 - migrating, using pureScale, 1122–1123
 - monitoring and, 444–446, 465
 - moving, using pureScale, 1123–1124
 - objects in. *See* Objects, database
 - physical design and, 1033–1034

- privileges for, 168–169, 294–295, 841–842, **841**, 854, 862, 869, 929, 931
- pureScale and, 1033–1034
- rebuild feature for, 761–763
- recovery and, recoverable and nonrecoverable, 733–734
- recovery of, with RESTART DATABASE, 736
- relocating, with db2relocatedb, 674–679
- remote, 937, 946–953, 969–970
- restoring, with RESTORE DATABASE, 749–753, 760, 761–763
- RUNSTATS, 684–686
- scheduling jobs in, with Data Studio, 116–123
- schemas in, 168
- Shadow tables and, requirements for, 1076–1077. *See also* Shadow tables
- system catalog tables in, 167–168
- table spaces in, 167
- taking control of a DB2 server in, 106–110
- Unicode and, changing code sets in, 1073–1074, 1123–1124, 1149, 1163, 1209
- utilities for, 168
- views in, 167–168, 351–358

DATE, 311, 346

DB_HISTORY view, 769

Db_mem_thresh, 63

DB_WORKLOAD, 1210

DB2 10.1 for LUW Advanced Database Admin (C2090–614) exam, 6

DB2 10.1 certification. *See* IBM DB2 10.1 certification, 1

DB2 10.1 for Linux, UNIX, Windows Database Admin (C2090–611) exam, 4

DB2 10.1 Fundamentals (C2090–610) exam, 3, 4

DB2 10.5 DBA for LUW Upgrade (C2090–311) exam, 5

DB2 9 Family Fundamentals (C2090–730) exam, 7, 8

DB2 9 Fundamentals (C2090–730) exam, 4

DB2 9.7 Application Development (C2090–543) exam, 7

DB2 9.7 SQL Procedure Developer (C2090–545) exam, 8

DB2 Administration Server (DAS), 33–37, 938, 959–961

- instances and, 33–34

DB2 Connect, 987

DB2 Express Edition (EE), XML and, 251

DB2 high availability instance configuration utility (db2haicu), 791, 820, 823

DB2 pureScale. *See* pureScale

DB2 server management. *See* Server management

DB2 V8.1 Family Fundamentals (C2090–700) exam, 7, 8

DB2 Workgroup Server Edition (WSE), XML and, 251

Db2_install, 160

DB2_RESTORE_GRANT_ADMIN_AUTHORITIES, 760

DB2_WORKLOAD, 40–41

DB2_WORKLOAD-ANALYTICS, 993–997, 1022, 1031, 1036, 1076, 1150, 1151, 1161, 1162, 1163

DB2ADMINSERVER, 33

Db2adv, 714

Db2advis, 692–696, 716

Db2audit, 912, 913–916

Db2batch, 570, 612–613, 688–692, 704, 712

Db2bfd, 512, 530–532

Index

Db2ca, 34
 Db2cc, 34
 Db2ckpw, 1006–1007
 Db2ckupgrade, 25
 Db2cli, 978
 Db2comm, 150
 DB2COMM, 39, 147
 Db2convert, 5, 1105–1106 1158
 Db2crt, 25
 Db2dart, 390, 512, 552–554
 Db2diag, 390, 512, 515–516, 622, 566
 Db2drop, 25
 Db2dsdriver.cfg, 986
 Db2eva, 34
 Db2evmon, 443–444
 Db2evmonfmt, unformatted event (UE) table and, 467–475, 568
 Db2exfmt, 499–506, 561, 564, 567
 Db2exp, 496–499
 Db2expln, 564
 Db2fodc, 390, 512, 516–522, 567
 Db2getsnapshot() api, 395
 Db2greg, 35–36, 990–991, 1210
 Db2haicu, 791, 812, 820, 823
 Db2hc, 34
 Db2i, 28
 Db2icrt, 28, 1003
 Db2idrop, 33
 Db2ilist, 33
 Db2indbt, 34
 Db2inidb, split mirroring and, 775–776, 818
 Db2inst1/db2inst2, 1006–1007
 Db2instal, 39
 DB2INSTANCE, 26, 146
 Db2iupdt, 25, 1004, 1005
 Db2iupgrade, 25
 DB2LBACRULES, 885–886, 896–897, 896
 Db2lc, 34
 Db2list, 25
 Db2look, 3, 570, 679–680, 698, 703, 717
 Db2ls, 375, 988–990, 1208
 Db2move, 3, 570, 679–680, 703, 712, 717
 Db2mtrk, 390, 512, 535–538, 558, 565
 DB2NightShow, 11
 Db2pd, 3, 390, 512, 538–543, 559, 560, 565, 568, 1204
 compression and, 270–271
 HADR and, status monitoring, 789
 Db2pdcfg, 390, 512, 526–530
 Db2rc, 1199
 Db2relocatedb, 570, 674–679

- Db2schema.bnd file, 956–957
- Db2set, 36–39, 129, 146–147, 1195–1196
- Db2setup information, 1001–1002
- Db2start, 25
- Db2stop, 25
- Db2support, 390, 512, 554
- Db2tc, 34
- Db2top, 390, 512, 543–547
- Db2trc, 390, 547–549
- Db2ubind, 978
- Db2val, 532–535
- DBADM, 30, 169, 212, 294, 576, 608, 760, 813, 832, 833, 837, 838, 840–841, 846, 851, 852, 856, 857, 860, 862, 864, 868, 869, 870, 871, 872, 890, 894, 913, 916, 917, 922, 929, 930. *See also* Authorities; Privileges auditing and, 913
 - Export utility and, 576
 - granting and revoking author/privs with, 870
 - Import utility and, 584
 - Load utility and, 637
 - pureScale and, 1119
 - quiescing/unquiescing an instance and, 30
 - roles and, 872
- DBCLOB, 312, 346, 661
- Dbheap, 63
- DBI Software, 11
- DBMS_xxx modules, 696–699
- DCL. *See* Data Control Language (DCL)
- DCS. *See* Database Connection Services
- DDL. *See* Data Definition Language
- Deadlocks, 64, 68, 148, 166, 392, 407–408, 420, 421, 437–439, 444, 445, 451–457, 465–466, 471, 475, 513–514, 527, 556, 563, 651, 671, 688, 1198
- Deb2iauto, 1196
- Dec_to_char_fmt, 63
- Decflt_rounding, 63
- Decimal values, 63
- DECIMAL/DEC, 311, 345
- Declaration in XML, 252–253
- DECLARE triggers, 358, 387
- Declared global temporary tables, 8
- Declared temporary tables, storage groups and, 209
- DECRYPT_B, 874
- DECRYPT_CHAR, 874
- Deep compression, 661, 1014
- DEFAULT constraints, 307, 308, 310–313, **312**
- Default database features, 294
- DEFERRED clause, 74
- Defrag, 136, 152
 - automatic maintenance and, 90
- DEGREE, 63
- DELETE, 237, 244, 245, 250, 251, 254, 256, 258, 332–336, 337, 358, 365, 387, 492, 510, 584, 637, 639, 370, 715, 788, 840, 844, 846, 851, 855, 856, 859, 863, 864, 867, 871, 872, 906, 930, 931

Index

- Load utility and, 637
 - privilege for, 844, 845, 846, 850–851
 - roles and, 872
 - triggers and, 358, 365, 387
 - XML and, 254, 256
- Delete phase, in Load utility, 614–615
- Delete Rule, 325, 332–337, **333–336**
- Delimited ASCII (DEL) files, 570–572
 - Import utility and, 598
 - Ingest utility and, 639, 641–642
 - Load utility and, 626–627
- Delta backup, 734–736, 816
- Dependent or child table/row, 324
- Deprecated configuration settings, Data Studio and, 1051
- Deprecated commands in DB2 10, 145, 160
- Derivations, business rules and, 308
- Descendent row, 324
- Descendent table, 324
- DESCRIBE, 839
- DESCRIBE DATA PARTITIONS, 219–220
 - temporal tables and, 224–225
- Design Advisor, 569, 570, 705, 707, 713–716, 1174
 - db2advis utility and, 692–696
- Designing A Database, 175–178
- DETACH, 27, 285
- DETACH PARTITION, 215, 218, 220–221
- Detaching from an instance, 26–27
- Development category of access control, 1006
- Dft_account_str, 45
- Dft_degree, 63
- Dft_extent_sz, 63
- Dft_loadrec_ses, 63
- Dft_mon_bufpool, 45
- Dft_mon_lock, 46
- Dft_mon_sort, 46
- Dft_mon_stmt, 46
- Dft_mon_table, 46
- Dft_mon_timestamp, 46
- Dft_mon_uow, 46
- Dft_mttb_types, 63
- Dft_prefetch_sz, 64
- Dft_queryopt, 64
- Dft_refresh_age, 64
- Dft_schemas_dcc, 64
- Dft_sqlmathwan, 64
- Dftdbpath, 46
- Diaglevel, 46
- Diagnostic and troubleshooting tools, 512–522. *See also* Error management
 - administration notification log and, 523

- AIX/LINUX built-in monitoring tool/db2top in, 543–547
- analysis and reporting tool/db2dart in, 552–554
- bind file description tool/db2bfd and, 530–532
- db2diag and, 515–516
- diagnostic log file/db2diag.log and, 522, 566
- error codes and, 513–514
- first occurrence data capture (FODC)/db2fodc and, 516–522, 567
- inspect in, 550–552, 568
- interpreting notification and diagnostic log entries, 524–526
- limiting amount of data collected in, 523–524
- memory tracker utility/db2mtrk and, 535–538, 565
- problem analysis and environment collection tool/db2support in, 554
- problem determination configuration/db2pdcfg and, 526–530
- problem determination tool/db2pd and, 538–543, 565–566, 568
- reason codes in, 514–515
- trace tool/db2trc in, 547–549
- validation tool/db2val and, 532–535
- Diagnostic log file/db2diag.log , 522, 566
- Diagnostics, 7, 46, 133, 560, 567, 1175, 1202
- Diagpath, 46
- Diagsize, 46
- Differential backup, 735. *See also* Delta backup
- Dir_cache, 47
- Direct reads, 405
- Directories and subdirectories, 164, 1166, 1194
 - connectivity and, 942
 - databases and, 294, 295
- Directory files, connectivity and, 942
- Disaster recovery (DR), 730, 732–733, 1178
- Discover parameter, 47
- Discover_db, 64
- Discover_inst, 47
- Discovery, 957–962, **958–962**, 970, 973, 974, 978–980
- Disk full errors, handling, 62, 729–730
- Distributed Connection Services (DCS), 44, 47, 395, 525, 834, 836, 937, 942, 946, 953–954, 957, 966, 970, 979–981, 984
- Distributed connections, 937
- Distributed units of work, 6, 7
- Dlchktime, 64
- DML. *See* Data Manipulation Language (DML)
- DMS. *See* Database Managed Space
- DOUBLE/DOUBLE PRECISION, 311, 345
- Downgrading instances, 1182
- DPF. *See* Data Partitioning Feature (DPF)
- DROP BUFFERPOOL, 180
- DROP DATABASE, 176
- DROP PENDING, 736, 815, 1035
- Drop Pending state, 185, 298, 736–737, 815, 1035
 - recovery and, 736–737
- DROP STOGROUP, 208–209

Index

- HADR and, 778
- DROP TABLESPACE, 202
 - HADR and, 778
- DROP TRIGGER, 387
- DROPIN, privilege for, 843
- Dropping an instance, 33
- Dual logging, 729
- Dump files, 1175, 1202
 - first occurrence data capture (FODC) and, 517
- Duplexing, 824
- Dynamic SQL, 8

- Eclipse, 1049
- Editions of DB2, 1207–1208
- Education/courses for certification, 10, 11
- EISCAN, 510
- Elements, XML, 252–253
- Enable_xmlchar, 64
- ENCRYPT, 874
- Encryption. *See* Data encryption
- Enterprise Server DB2, 1207–1208
- Enterprise Server Edition (ESE), 987, 1187
- Entry headers, 524
- Environment collection tool/db2support, 554
- Environmental variables, 3, 34
- Error codes, obtaining information about, 513–514
- Error logs, 7, 1203
- Error management, 1170, 1176, 1198, 1203
 - administration notification log and, 523
 - AIX/LINUX built-in monitoring tool/db2top in, 543–547
 - analysis and reporting tool/db2dart in, 552–554
 - bind file description tool/db2bfd and, 530–532
 - connectivity and, 969–970, 973, 974
 - db2diag and, 515–516
 - diagnostic log file/db2diag.log and, 522, 566
 - disk full errors and, 729–730
 - error codes and, 513–514
 - first occurrence data capture (FODC) /db2fodc and, 516–522, 567
 - Ingest utility and, 652–655
 - inspect command, 550–552, 568
 - interpreting notification and diagnostic log entries, 524–526
 - logging and, 729–730
 - memory tracker utility/db2mtrk and, 535–538, 565
 - problem analysis and environment collection tool/db2support in, 554
 - problem determination configuration/db2pdcfg and, 526–530
 - problem determination tool/db2pd and, 538–543, 565–566, 568
 - reason codes in, 514–515
 - trace tool/db2trc in, 547–549
 - triggers and, 364

- validation tool/db2val and, 532–535
- Ethernet, 997
- Event logs, first occurrence data capture (FODC) and, 517
- Event monitors, 3, 389, 436–478, 556, 564, 1134, 1139, 1176, 1202, 1203
 - activating/deactivating, with SET EVENT MONITOR, 440–442, 444–478
 - activities, 457–458, 466
 - buffer pools, 446–447, 465
 - change history, 463–465, 467
 - connections, 461–462, 466
 - creating, with CREATE EVENT MONITOR, 436–440, 444–478, 556, 564
 - databases, 444–446, 465
 - deprecated, 465
 - event types and examples in, 444–478
 - forcing premature output from, with FLUSH EVENT MONITOR, 442–443, 567
 - locking, 451–457, 466, 563
 - numbers of, 564
 - package cache, 458–459, 466
 - quick reference table for, 465–467
 - statements, 462–463, 466
 - statistics, 460, 466
 - table spaces, 446–447, 465
 - tables, 447–451, 465
 - threshold violations, 460–461, 466
 - unformatted event (UE) table and, table functions for, 475–478
 - unformatted event (UE) table and, using db2evmonfmt, 467–475, 568
 - unit of work, 457, 466
 - viewing, with db2evmon, 443–444
- Event tables, 562
- EVMON_FORMAT_xxx, 1134, 1139
- Exam sample, 12–22
 - before you start, 13–14
 - Certification Agreement awarded for, 22
 - Close button in, 18
 - End button in, 20, **20**, **21**
 - Exhibit button for illustrations in, 16–18, **19**
 - Exit button in, 14
 - Help button in, 14, 16
 - IBM Professional Certification title and trademark and, 22
 - incomplete items in, 19–20, **20**
 - Mark check box in, 15
 - Next button in, 16
 - Previous button in, 16
 - question numbering in, 14–15
 - Question panel in, 16–17, **17**
 - results panel in, 21, **21**
 - retaking, 22
 - Review Item button in, 18–19, **20**
 - Review Marked button in, 18–19, **19**, **20**
 - scores in, 21–22, **22**
 - screen in, **15**

Index

- sign in, 12–13
- Start button in, 14
- time limits for, 14
- Time Remaining information in, 15–16, **16**
- title screen of, 13–14, **13**
- Exception handling, Ingest utility and, 639
- Exception tables, 342–343, 370, 381, 385, 388, 613–614, 627–629, 637, 640, 652–657, 707, 711, 716, 840, 1206
 - Load utility and, 627, 628
- Exceptions, 7
- EXECUTE, 169, 294–295, 608, 840, 848, 858, 861, 865–866, 868, 871–872, 880, 913, 929, 930, 932, 955, 978
 - privilege for, 847–848, **847**
 - roles and, 872
- Exhibit button for illustrations, certification exam, 16–18, **19**
- Exit lists, 45
- Explain Administrator (EXPLAIN), 3, 5, 833, 838–840. *See also* Authorities; Privileges, 870
 - granting and revoking author/privs with, 870
- EXPLAIN bind option, 494–496
- Explain facility, 389, 557, 559, 560, 564, 567
 - access plans and. *See* Access plans
 - collecting data from, 491–496
 - common operators in DB2 and, 510
 - comprehensive data in, 491
 - evaluating data from, using db2exfmt, 496–506, 567
 - EXPLAIN bind option in, 494–496
 - EXPLAIN SQL statement in, 491–493
 - Explain tables and, 490–491
 - EXPLSNAP bind option in, 494–496
 - mode values in, 494
 - packages in system catalog and, 489
 - snapshot data in, 491
 - special registers in, 493
 - Visual Explain in, 506–511, 506
- EXPLAIN SQL statement, 491–493
- Explain tables, 490–491
- Explain/Graphical Explain, in Data Studio, 1065–1067, **1065**, **1067**
- EXPLAIN_xxx, 490–491
- Explicit Hierarchical Locking (EHL), 1117–1118, 1122, 1148, 1161
- Explicitly granting authorities and privileges, 851
- EXPLSNAP bind option, 494–496
- Export utility, 3, 569, 576–584, **585**, **586**, 700, 954
 - code set (Unicode) differences and, 1073–1074
 - Cursor Stability and, 583
 - customizing the data selection, 586
 - Data Studio and, 583–584, **584**
 - db2look command and, 679–680
 - db2move command and, 679–680
 - delimiter options in, 585
 - file name and data format in, 585

- file type modifiers recognized by, 579–580
- LOB and, 577, 581–582
- operation of, 582, **582**
- XML and, 577, 582–583, **583**

Express C, 1207–1208

Express DB2, 1207–1208

Expression-based indexing, 986, 1043–1045, **1045**

Extended row size, 5, 1045–1046, 1192, 1211

Extensible Markup Language. *See* XML

Extents, 161, 182, 204

External files, extracting columnar data from, 574–576, **574**

Extract, Transform, and Load (ETL) servers, 639, 840, 992

- Ingest utility and, 639

Failarchpath, 65

Failback operation, 777

Failover, 6, 70, 773, 777, 783, 790–791, 1144, 1160, 1195

Family Fundamentals (C2090–700) exam, 7, 8

Family Fundamentals (C2090–730) exam, 7, 8

Fast Communication Manager (FCM), 47–48, 400, 404, 427–430, 962–965, 970

- monitoring and, 427–428, 427

Fault monitoring, 6

Fcm_num_buffers, 47

Fcm_num_channels, 48

Fcm_parallelism, 48

Features of DB2, 1207–1208

Fed_noauth, 48

Federated databases, 7, 48, 510, 849–851

Federated parameter, 48

Federated servers, 6, 48, 510, 514, 849–851

- HADR and, 778

Federated_async, 48

Fenced mode, 52–53

Fenced Mode Process (FMP), 424

Fenced pools, 49

Fenced processes, 50

Fenced_pool, 49

Fencing, I/O, 1188

FETCH, 510

File dumps, 1175, 1202

File formats, 569, 1174

- delimited ASCII (DEL), 570–572
- nondelimited ASCII (ASC), 572–573
- PC integrated exchange format (PC/IXF), 573, 626
- utilities and, 570–573
- worksheet format (WSF) in, 573

File type modifiers, for temporal tables, 239, 240, 239

Files, database, 67, 166

FILTER, 510

Fine Grained Access Control (FGAC), 901

Index

- First in-First out (FIFO), 938, 1017
- First Occurrence Data Capture (FODC) /db2fodc, 516–522, 527, 530, 554, 567, 1175, 1202
- Fix Central, 1075
- Fix packs, 971, 985
- Fixed length ASCII files, 572–573
- Flash storage, 1013
- FLOAT, 311, 345
- Floating points, 63
- FLUSH BUFFERPOOLS, 773
- FLUSH EVENT MONITOR, 442–443, 567
- FLUSH PACKAGE CACHE, 570, 687–688, 706, 715
- FOR triggers, 358, 387
- FORCE APPLICATION, 109–110, 151
- Forcing application connection, 109–110
- Foreign key, 243, 317, 320–321, 324, 325, 329, 332, 381, 382, 386, 388, 597, 700, 710, 844, 851, 922, 1043
- Foreign key constraints, 320, 381, 388. *See also* Referential integrity
- Functions
 - Row and Column Access Control (RCAC) and, 912
 - SQL, 8
- Fundamentals (C2090–610) exam, 3, 4
- Fundamentals (C2090–730) exam, 4

- Gauge, monitoring and, 390
- General Parallel File System, 820
- GENERATED BY DEFAULT AS IDENTITY, 1169
- Generic Security Service Application Program Interface (GSS-API), 828, 829
- GENROW, 510
- GET DATABASE CONFIGURATION, 72–73, 147
- GET DATABASE MAIN CONFIGURATION, 56
- GET DATABASE MANAGER CONFIGURATION, 57
- GET DB CFG SHOW DETAIL, 82
- GET DBM CFG SHOW DETAIL, 58
- GET DIAGNOSTIC, triggers and, 358, 387
- GET MONITOR SWITCH, 393–394
- GET SNAPSHOT, 391, 395–402
- GET SNAPSHOT FOR BUFFERPOOLS, 84
- GET SNAPSHOT FOR DATABASE, 85–86
- GET SNAPSHOT FOR TABLESPACE, 86–87
- GETHINT, 874
- Global Lock List (GLL), 793
- Global Lock Manager (GLM), 793, 824
- Global registry files, 1187
 - location and content of, with db2greg, 990–991
- Global variables, 8
- Global/Group Buffer Pool (GBP), 793, 796–797, 813, 823, 1122
 - pureScale and, 1122
- Global-level profile registry, 34, 1194
- GPFS drives, 793, 991, 1005, 1034, 1125, 1195, 1209
- Gramm-Leach-Bliley Act (GLBA), 874

- GRANT, 837, 838, 841, 853–861, 870, 921, 930, 931, 932
 - GRANT ROLE , 872–873
 - Label-Based Access Control (LBAC) privileges with, 890–892, 890 roles and, 872
- Granting authorities and privileges, 851–861, 934
 - common tasks requiring, 870–871
 - Data Studio for, 852–853
 - explicitly, 851
 - GRANT command for, 853–861
 - implicitly, 851
 - requirements for granting and revoking in, 869–870
 - revoking, with REVOKE, 861–869
- Granting security labels to users, in LBAC, 889, 894–895
- GRAPHIC, 311, 346
- Group Buffer Pool (GBP). *See* Global/Group Buffer Pool (GBP)
- GROUP BY, 912, 1204
- Group_plug, 49
- Groups, 1006–1008
 - roles vs., 873–874
- GRPBY, 510
- GSS, 50
- GSSPLL, 53
- GSSPLUGIN authentication, 828, 829

- HADR. *See* High Availability Disaster Recovery (HADR)
- Hadr_local_host, 65
- Hadr_local_svc, 65
- Hadr_peer_window, 65
- Hadr_remote_host, 65
- Hadr_remote_inst, 65
- Hadr_replay_delay, 65
- Hadr_spool_limit, 65
- Hadr_syncmode, 65
- Hadr_target_list, 66
- Hadr_timeout, 66
- HADR_xxx parameters tables, 784–786
- Hangs, 562, 567
- HAVING, 912
- Health Insurance Portability and Accountability Act (HIPAA), 874
- Health monitor, 49
- Health_mon, 49
- Heap, 42, 50, 51, 63, 70, 71, 72, 79
- Hierarchical relationships
 - database objects, 165
 - instances and 24, **25**
 - storage, 180–182, **181**
- High availability, 719–824, 1145–1146
 - pureScale, 791–797, **792**
 - recovery and, 730–771. *See also* Recovery
 - transactions and, 720–725

Index

- High Availability and Disaster Recovery (HADR), 4, 5, 6, 65, 66, 142, 158, 719, 776–791, 803, 804, 805, 808, 809, 810, 812, 818, 823, 1145–1146, 1177, 1178
 - ASYNCR mode in, 776, 782, 1145, 1164, 1204
 - active standby databases, in HADR, 779–782, 808, 809, 821, 998
 - auxiliary standby mode in, 822
 - backup and, 778
 - client connection to, 778
 - compatibility matrix for, 1145–1146
 - computers for host and standby in, 777
 - configuring databases for, parameters for, 784–787
 - configuring multiple standby for, parameters for, 785–787
 - connecting to, 787
 - connectivity and, 1144
 - data concurrency and active standby databases in, 779, 818
 - Data Studio setup for, 788–789
 - DB2 high availability instance configuration utility (db2haicu), 791, 820, 823
 - environment requirements for, 777–779
 - failback operation in, 777
 - federation servers and, 778
 - isolation levels and, 779, 821–822
 - LOAD and load operations with, 789–791, 818–819
 - Load operations and, 778
 - monitor status of, with db2pd, 789
 - monitoring and, 1140
 - multiple standby databases in, 776, 782–789, **785**
 - NEARSYNCR mode in, 776, 782, 1145, 1204
 - nonlogged operations and, 778
 - partitioning of databases in, 778
 - primary database (source) in, 776
 - pureScale and, 1112, 1115–1117, 1146, 1160
 - read on standby (ROS) and, 778, 779, 781–782, 819
 - recovery and, 733, 1146
 - replay-only window in active standby databases and, 779–781, 821
 - restrictions to ROS in, 781–782, 781
 - Self-Tuning Memory Management (STMM) and, 83, 778
 - setup of, 783–789
 - software on host and standby for, 777–778
 - starting, with START HADR, 787
 - storage paths in, 778
 - SUPERASYNCR mode in, 776, 782, 819, 821, 822, 1145, 1146, 1164, 1204
 - SYNCR mode in, 776, 782, 1145, 1204
 - synchronization modes in, 776, 782, 1145, 1204
 - table spaces and, 778
 - Tivoli System Automation for Multiplatforms (TSA MP) and, 782, 819–820
 - Uncommitted Read (UR) isolation level, 779, 821
- High availability instance configuration utility (db2haicu), 791, 820, 823
- Histogram, in workload management, 1069
- History file, 70
 - delete entries in, with PRUNE HISTORY, 769

- event monitors for, 463–465, 467
 - history log file, 799
 - LIST HISTORY, 747–748
 - monitoring and, 463–465, 467
 - recovery, 768–769
 - SYSIBMADM.DB_HISTORY view in, 769
 - view, with LIST HISTORY in, 769
- Hit ratio, buffer pool, 415–416, 430–435, 444, 554, 813, 823
- HP-UX, 5, 31, 826, 1203, 1208
- HSJOIN, 510
- I/O, 1012, 1013
- response time, 431–432
- I/O fencing, 1188
- IBM DB2 10.1 certification, 1–22
- applicant identification numbers in, 12
 - arranging to take exams for, 11–12
 - Certification Navigator tool in, 10
 - Certified Advanced Database Administrator in, 5–6
 - Certified Application Developer DB2 9.7 for LUW in, 6–7, 7
 - Certified Database Administration DB2 10.5, 4–5
 - Certified Database Administration for Linux, UNIX, Windows in, 3–4
 - Certified Database Associate in, 2–3
 - Certified Solution Developer DB2 9.7 SQL Procedure in, 8
 - cost of, 12
 - Database Administration track in, 2–6
 - Database Application Development track in, 6–8
 - Database Solution Development track in, 8, 9
 - education/courses for, 10, 11
 - exams in
 - DB2 10.1 for LUW Advanced Database Admin (C2090–614), 6
 - DB2 10.1 for Linux, UNIX, Windows Database Admin (C2090–611), 4
 - DB2 10.1 Fundamentals (C2090–610), 3, 4
 - DB2 10.5 DBA for LUW Upgrade (C2090–311), 5
 - DB2 9 Family Fundamentals (C2090–730), 7, 8
 - DB2 9 Fundamentals (C2090–730), 4
 - DB2 9.7 Application Development (C2090–543), 7
 - DB2 9.7 SQL Procedure Developer (C2090–545), 8
 - DB2 V8.1 Family Fundamentals (C2090–700), 7, 8
 - practice, 10–11
 - practice exams in, 10–11
 - preparing for exams in, 10–11
 - process of, 9, 9
 - publications to prepare for, 10
 - rescheduling exams for, 12
 - roles in, selecting appropriate, 1
 - taking the exam for, 12–22. *See also* Exam sample
 - track selection in, 9
 - tracks in, 2–9, 2–9
 - webinars for, 11

Index

- IBM Knowledge Center, 987
- IBM Professional Certification title and trademark, 22
- Idle server, **1019**
- IF triggers, 358, 387
- IMMEDIATE clause, 28–31, 57–58, 62, 74, 148–149, 357, 526
- Immediate configuration settings, in Data Studio, 1051
- Impact policies, 103–104, 153
- Impact priorities, 104–106, 154, 1660, 661, 684–685, 740, 816, 1201
- Implicitly granting authorities and privileges, 851
- IMPLICIT_SCHEMA, 841
- Import Table wizard, 599
- Import utility, 3, 569, 584–607, 700, 701, 710, 711, 714, 954
 - access control and, 605
 - advanced options for, 604–605, **606**
 - column options for, **602**
 - COMMIT and, 604–605
 - Data Studio and, 599, **601**
 - date, time, timestamp in, 602, **603**
 - db2look command and, 679–680
 - db2move command and, 679–680
 - delimited ASCII (DEL) files and, 598
 - edit and run options in, 606, **607**
 - executing, 597
 - file options for, **601**
 - file type modifiers recognized by, 588–595
 - Import Table wizard for, 599
 - Ingest utility and vs., 660
 - invoking, 586–587
 - Load utility vs., 611–613
 - LOB values, 597–598, **599**, 600
 - location method for, 596
 - locks and, 605
 - name method for, 596
 - options for, 597
 - output from, 588
 - position method for, 596
 - SQL and, 605, 613
 - SQL0964C Transaction Log Full and, 607
 - transaction log full conditions and, 607
 - warnings in, 605
 - XML and, 598, 600, **600**, 603, **604**,
- Incremental backup, 71, 734–736, 741, 769, 800, 816, 823, 1122
- INDEX, 160
 - privilege for, 844, 850–851
- Index compression, 269–270, 1157
- Index copy phase, Load utility and, 615
- Indexes/indexing, 2, 4–6, 49, 66, 67, 160, 163, 175, 182, 286, 289, 301, 303, 305, 803, 804, 1038–1040, 1164, 1168, 1173, 1177, 1196, 1204
 - axis in, 259

- bidirectional, 386
- Column Page Map Index (CPMA) in, 1039
- compression, 292, 1157
- compression, ALTER INDEX and index compression, 269–270
- CREATE INDEX and, 77, 211, 218, 260–261, 289, 301, 305, 383–384, 716, 1016, 1037–1040
- Design Advisor and db2advis in, 692–696
- expression-based, 986, 1043–1045, **1045**
- invalid, 719, 771–772, 817
- Load utility and, 615
- monitoring and, 415–421, 1141
- on expression, 1043–1045, **1045**
- pages in, 405
- partitioning, 300, 301
- privileges for, 846, **846**, 857, 865
- random key indexes and, 1041–1045, **1044**, **1045**
- range partitioned tables and, 215, 218
- recovery of, 817–818
- REORG utility for, 681–684
- XML and, 259–261, **260**, 290, 303, 1201

Indexrec, 49, 66

InfiniBand (IB), 794, 997–998, 1005, 1115

Infinite logging, 728, 778, 1175

- HADR and, 778

Informational constraints, 307, 308, 337–339, **338**, 349, 382, 383

- exception tables and, 343, 381

InfoSphere Optim portfolio, 1165

Ingest utility, 3, 638–661, 709, 714, 715, 718, 1174, 1201

- architecture of, 639–640, **640**
- capabilities of, 638–639
- data transformation and, 639
- data warehouses and, 638–639
- delimited ASCII (DEL) files and, 639, 641–642
- DML operations and, 639, 647–651
- exception handling in, 639
- Extract, Transform, and Load (ETL) servers and, 639
- Import utility vs, 660
- input values for, formatting, 643–646
- invoking, syntax of INGEST, 640–641
- limitations of, 660–661
- Load utility vs., 660
- monitoring, 658–659
- nondelimited ASCII (ASC) files and, 639
- parameters for, 651–652
- performance tuning tips for, 659–660
- pipes and, 646–647
- problems/errors with, handling, 652–655
- recovering failed INGEST command in, 655–657
- table created for, with CREATE TABLE, 641
- tables of various kinds in, 639
- tuning database configuration in, 642–643

Index

- Initial install host (IIH), 1004
- Inoperative views, 356–358, 374, 383
- INSERT, 233–234, 242–242, 254–259, 303, 313–318, 322, 328–329, **338**, 358–362, 365–366, 386, 372–375, 381, 382, 387, 492, 510, 484, 597, 611, 625, 637–639, 646, 661–664, 670, 710, 715, 718, 788, 840, 844–845, 850, 856, 863, 864, 867, 871, 872, 886, 902, 906, 930, 1096, 1120–1122
 - Load utility and, 637
 - privilege for, 844, 845, 850–851
 - roles and, 872
 - triggers and, 358, 359–363, 365, 387
 - XML and, 254, 255, 257
- Insert Rule, 325–329, **326**, **327**
- Insert time clustering (ITC), 5, 225, 230–231, 287, 288
 - Ingest utility and, 639
- INSPECT and Inspect utility, 88, 89, 266–267, 304, 390, 512, 550–552, 568
 - compression and, 266–267, **268**
- Installation process for DB2, 999, 1002–1005, 1183, 1194
 - for UNIX, 1166
- Installed features, display with db2ls, 988–990
- Instance node-level profile registry, 34, 1194
- Instance_memory, 49
- Instance-level profile registry, 34, 1194
- Instances, 3, 23, 24–34, 128, 129, 140, 146, 156, 162, 937, 992
 - attaching to, 26
 - AUTOMATIC keyword and, 57
 - automatic restart of, 1167, 1196
 - Command Line Processor (CLP) for, 24–25
 - configuring, 41–59, 132
 - connecting to, with Data Studio, 111–113, **111–112**
 - connectivity and, 972
 - creating group and user IDs for, 1007–1008
 - creating, 24–25
 - creating, with db2icrt, 1003
 - Data Studio and, 58–59, **59**
 - database manager commands in, 24, 57–59
 - databases and, 24
 - DB2 Administration Server (DAS) and, 33–34
 - DB2 high availability instance configuration utility (db2haicu), 791, 820, 823
 - detaching from, 26–27
 - downgrading, 1182, 1207
 - dropping, 33
 - HADR and, 791, 820, 823
 - hierarchical relationships and, 24, **25**
 - managing, 24–25
 - multiple, 24
 - pureScale and, 1004
 - quiescing, 28–31, **30**
 - separate row and column instances on database server in, 1023–1031
 - starting, 27–28
 - stopping, 27–28

- system configuration and, 36
 - taking control of a DB2 server in, 106–110
 - upgrading, 31–32
 - workstations or servers and, 24
- INSTEAD OF trigger, 358, 359, 365, 387, 1121
- INTEGER/INT, 311, 345
- Interfaces that report activity metrics, 1139
- Interfaces that report object metrics, 1139
- Interfaces that report ratio metrics, 1139
- Interfaces that report request metrics, 1134
- Interpreting notification and diagnostic log entries, 524–526
- Intra_parallel, 50
- Intrapartition, 50–51
- Invalid indexes, rebuilding, 771–772, 817
- IPv4 vs. IPv6 communications protocols, 938, 978
- Isolating transactions, 2
- Isolation levels, 62, 583, 690, 722, 779, 781, 808, 810, 821–822, 1009
 - HADR and, 779, 821
- ITC, 303
- ITERATE triggers, 358, 387
- IX, 510
- IXSCAN, 510
- Java, 50
 - ADMIN_CMD stored procedure and, 607–611
- Java Database Connectivity (JDBC), 6, 7, 609, 1049, 1083, 1108, 1142–1143
- Java_heap_sz, 50
- JDK, 50
- Jdk_path, 50
- Job chains, Data Studio, 121–123, **121–123**, 144, 159
- Job Manager, 116–123, 159
- Job notifications, in Data Studio, 123, **123**
- JSON, 986, 1046–1049, 1192
 - database configuration for, 1047–1049
 - managing, 1049
 - NoSQL properties for, 1049
- KBB_SERVER_ENCRYPT, 828, 829
- Keepfenced, 50
- Kerberos, 53
- KERBEROS authentication, 827–828, 829
- Keys, in referential integrity, 324
- Knowledge Center, IBM, 987
- Label-Based Access Control (LBAC), 4, 6, 240, 346, 825–826, 833, 837, 838, 883–901, 924, 926, 932, 935
 - column-level, implement, 892, 895–896, 898–899
 - combining column- and row-level, 899–901
 - creating protected tables in, 888–889, 893–894
 - DB2LBACRULES in, 885–886, 896–897
 - exemptions to rules in, 897–898

Index

- granting security labels to users in, 889, 894–895
- Row and Column Access Control (RCAC) vs., 901–912
- row-level, implement, 883–884
- row-level, with GRANT ALL, 890–892
- rule set for, DB2LBACRULES, 896–897
- SECADM and, 932
- security label component, 935
- security labels in, defining, 886–888, 893
- security policies in, defining, 885–886, 893, 896–897, 933
- security-label component in, defining, 884–885, 892
- Last in-Last out (LILO), 1017
- Latency, 173, 205, 998, 1074–1075, 1077, 1086, 1095, 1098–1099, 1163, 1206
 - storage groups and, 209
- Least recently used (LRU) pages, 1017
- LEAVE triggers, 358, 387
- Lempel-Ziv (LZ) compression, 88, 1014
- Licensing, 987
- Lightweight Directory Access Protocol (LDAP), 35, 37, 874, 937, 942, 965–969, 976, 984
- Limiting amount of data collected in logs, 523–524
- Linux, 2–7, 14, 26, 28, 31, 35, 42, 44, 124, 146, 167, 384, 543, 660, 725, 741, 760, 794, 820, 826, 859, 897, 946, 952–953, 954, 956, 962, 970, 971, 975, 976, 977–978, 992, 1001, 1008, 1022, 1075, 1076, 1144, 1194, 1197, 1202
 - authorization in, 1197
 - binding, and db2schema.bnd file and, 956–957
 - cataloging, 971
 - connectivity and, cataloging servers, 952–953, 975
 - Ingest utility and, 660
 - logging and, 725
 - monitoring tool/db2top in, 543–547
 - server selection, BLU and, 992
 - shadow tables and, 1075–1076
 - trusted and untrusted clients in, 830–831
- LIST APPLICATIONS, 107–108, 134
- LIST DB DIRECTORY, 175–176
- LIST HISTORY, 747–748, 769
- LIST TABLESPACE CONTAINERS, 190–191
- LIST TABLESPACES, 184–189, 296, 759
- LIST UTILITIES, 105–106
- Listing a database, 175–176
- Lo_ddl_stmts, 66
- LOAD authority, 5, 833–841, 912. *See also* Authorities; Privileges
 - granting and revoking author/privs with, 870
 - privilege for, 841, 842
 - roles and, 872
- LOAD FROM, 379
- Load phase, in Load utility and, 614
- Load utility, 3, 287, 569, 611–638, 700, 701, 702, 703, 705, 706, 710–712, 714, 715, 994–995
 - ALTER TABLE and, 627
 - build phase in, 614

- CLOB and, 627
- constraints and, 629
- CURSOR and, 631
- Data Studio in, 637–638, **638**
- db2look command and, 679–680
- db2move command and, 679–680
- delete phase in, 614–615
- delimited ASCII (DEL) files and, 626–627
- exception tables and, using CREATE TABLE, 627, 628
- file modifiers recognized by, 617–624
- HADR and, 778, 789–791, 818–819
- Import utility vs., 611–613
- index copy phase and, 615
- Ingest utility vs., 660
- Load Pending state and, 637
- load phase in, 614–615
- location method and, 624
- logging and, 637
- monitoring, 634–636
- name method and, 624
- nonrecoverable load operation and, 633–634, 715
- options for, 624
- PC integrated exchange format (PC/IXF) and, 626
- performing LOAD operation in, 615–616, 628–629
- phases of, 614–615
- pipes and, 632–633
- position method and, 624
- SET INTEGRITY and, 614, 636–638
- SQL and, 613
- SYSADM, DBADM and, 637
- TIMESTAMP and, 627
- TRUNCATE and, 637
- XML and, 630–631
- LOAD_INSERT, 995
- LOAD_xxx, 995
- LOB, 581–582
 - compression, 270
 - Export utility and, 577, 581–582
 - Import utility and, 597–598, **599**, 600
 - Ingest utility and, 661
- Local Buffer Pool (LBP), 482, 793, 1133
- Local database directory, connectivity and, 942, 943–944
- Local Lock Manager (LLM), 793
- Local_gssplug, 50
- Location method for extraction, 575, **575**
 - Import utility and, 596
 - Load utility and, 624
- LOCK, 392
- Lock-wait, 68, 404–407, 421, 433, 436, 451, 455, 475, 479, 554, 562, 568, 838
- Lock-wait chains, 433–434

Index

- Locking, 2, 5, 66, 68, 157–158, 405, 814, 1169, 1198
 - deadlocks. *See* Deadlocks
 - event monitors for, 451–457, 466, 563
 - Explicit Hierarchical Locking (EHL) in, 1117–1118, 1122, 1148, 1161
 - Global Lock List (GLL) in, 793
 - Global Lock Manager (GLM) in, 793, 824
 - Import utility and, 605
 - Local Lock Manager (LLM) in, 793
 - lock-wait chains in, 433–434
 - monitoring and, 392, 407–408, 421–423, 451–457, 466, 563
 - pureScale and, 793, 824
- Locklist, 66, 78–79, 83, 142, 148, 157–158, 604, 659
- Locktimeout/LOCKTIMEOUR, 66, 148, 1169, 1198
- Log files, 1171, 1210
- Log retention logging, 726
- Log shipping, 6
- Log_appl_info, 66
- Logarchcompr1/logarchcompr2, 66, 160
- Logarchmeth1/logarchmeth2, 66, 67, 148, 727, 729, 733, 1202
- Logarchopt1/logarchopt2, 67
- Logbufsz, 67
- Logfilasz, 67
- Logging, 4, 6, 62, 66, 67, 68, 69, 70, 160, 559, 561, 719, 798, 803, 1171, 1175, 1202, 1203, 1210, 1212
 - active log files in, 727
 - administration notification log and, 523
 - archival, 726–727, **728**, 815, 1164
 - buffer pools and, 724
 - checkpoints in, 738–739, 738
 - circular, 148, 634, 725–726, **727**, 733, 741, 743
 - COMMIT and, 725
 - compression and, 157, 272
 - Configuration Advisor and, 725–726
 - Data Studio and, 1058
 - delta backup and, 734–736, 816
 - diagnostic log file/db2diag.log and, 522, 566
 - disk full errors and, handling, 729–730
 - dual, 729
 - entry headers in, 524
 - error management, 729–730, 729
 - first occurrence data capture (FODC) /db2fodc and, 516–522, 567
 - HADR and, 778
 - Import utility and, 607
 - incremental backup and, 734–736, 816
 - infinite, 728, 778, 1175
 - interpreting notification and diagnostic log entries in, 524–526
 - Linux, UNIX, Windows, and, 725
 - Load utility and, 637
 - log records in, 724–725, 724
 - log retention/LOGRETAIN mode, 726

- logarchmeth1/logarchmeth2 in, 727, 729
- mirror, 719, 729
- mirrorlogpath in, 729
- newlogpath in, 729
- offline archive log files in, 727
- online log files in, 727
- online vs. offline backup and recovery in, 734
- recoverable and nonrecoverable databases in, 733–734
- recovery history file and, 768–769
- ROLL FORWARD DATABASE in, 762–768, 769, 817
- roll-forward in, and Roll-forward utility in, 763–768, 817
- ROLLBACK and, 725
- secondary log files in, 725–726, 725
- Self-Tuning Memory Manager (STMM) and, 83
- SET WRITE SUSPEND/RESUME in, 773–776
- soft checkpoints in, 738–739
- strategies for, 725–728
- transactions and, 723–725. *See also* Transaction logging
- wait times, 567
- Logical deletion, 995–996
- Logical Partition of Physical Machine (LPAR), 999, **999**
 - pureScale and, 792, 1107
- Logindexrebuild, 67
- Logprimary, 67
- LOGRETAIN mode, 726
- Logsecondary, 67
- LONG VARCHAR, 311, 345
- LONG VARGRAPHIC, 311, 346
- LPAR. *See* Logical Partition of Physical Machine (LPAR)
- Maintenance, 23, 63. *See also* Automatic maintenance
 - Data Studio and, with Configure Automatic Maintenance, 1052–1054, **1052–1054**
 - FLUSH PACKAGE CACHE, 687–688
 - pureScale and, 795
 - Rebind, 686–687
 - REORG utility for, 681–684
 - REORGCHK utility for, 680–681
 - RUNSTATS, 684–686
 - throttling and, 103–106
 - utilities for, 680–688
- MAKE table, referential integrity and, 320–322
- Managed space, 3
- Mask, column, 826, 907–908, 911, 912
 - Row and Column Access Control (RCAC) and, 901
- Materialized Query Tables (MQTs), 4, 7, 63, 175, 182, 225–230, 240, 246, 273, 288, 303, 490, 569, 613, 639, 692, 693, 694, 713, 714, 716, 840, 874, 934, 1074–1075, 1077–1081, 1093, 1095, 1096, 1098–1104, 1105, 1163, 1208
 - creating, with CREATE TABLE, 226–227
 - Design Advisor and db2advis in, 692–696
 - Ingest utility and, 639

Index

- Shadow tables and, 1078–1081, **1079**, **1080**, 1093
- Max_connections, 50
- Max_connretries, 50
- Max_coordagents, 51
- Max_log, 67
- Max_querydegree, 51
- Max_time_diff, 51
- Maxappls, 67
- Maxfilop, 67
- Maxlocks, 68, 79, 83, 157–158
- Maxpapps, 147
- MDC. *See* Multidimensional Clustered (MDC) tables
- Member Crash Recovery (MCR), 1131
- Member sets, in pureScale, 1118–1119
- Memory, 43, 49, 52, 60, 63, 78–84, 129, 131, 139, 1011–1013, **1012**, **1014**
 - column sortheap vector memory, 1134
 - memory tracker utility/db2mtrk and, 535–538, 565
 - monitoring and, 423–425
 - page residency in, **1012**
 - RDMA. *See* Remote Direct Memory Access (RDMA)
 - roll-forward and, 766
 - self-tuning. *See* Self-tuning memory
 - sort, 79
- Memory caching, 4
- Memory tracker utility/db2mtrk, 535–538, 565
- MERGE triggers, 358, 387
- Microsoft Active Directory, 1005
- Migrate a database, 1122–1123
- Min_dev_div_3, 68
- Mirroring, 68, 74, 148, 166, 675, 681, 685, 717, 719, 720, 729, 733, 772–776, 783, 784, 803, 815, 818, 1076, 1094–1095
 - backup and restore with, 772–776, 818
 - db2inidb and, 775–776, 818
 - logging and, 729
 - recovery and, 733, 815
- Mirrorlogpath, 68, 729
- MODEL table for referential integrity, 320–322, 324
- Modules, 8
 - utilities and, 696
- Mon_act_metrics, 68
- MON_BP_UTILIZATION, 430
- MON_CONNECTION_SUMMARY, 430
- MON_CURRENT_SQL, 430
- MON_CURRENT_UOW, 430
- MON_DB_SUMMARY, 430
- mon_deadlock, 68
- MON_FORMAT_xxx, 1134
- MON_GET_xxx, 1069, 1134, 1139, 1140
- MON_GET_ACTIVITY_DETAILS, 405, 411–414, 429

MON_GET_APPL_LOCKWAIT, 421–423, 429
MON_GET_BUFFERPOOL, 405, 415–421, 429, 563
MON_GET_CONNECTION, 406, 429
MON_GET_CONNECTION_DETAILS, 405, 406, 429
MON_GET_CONTAINERS, 415–421, 429
MON_GET_EXTENT_MOVEMENT_STATUS, 430
MON_GET_FCM, 430
MON_GET_FCM_CONNECTION_LIST, 430
MON_GET_INDEX, 415–421, 429
MON_GET_LOCKS, 421–423, 429
MON_GET_MEMORY_POOL, 423, 429
MON_GET_MEMORY_SET, 423, 429
MON_GET_PKG_CACHE_STMT, 405, 411–414, 429
MON_GET_PKG_CACHE_STMT_DETAILS, 411–414, 429
MON_GET_ROUTINE, 426, 430
MON_GET_ROUTINE_DETAILS, 426, 430
MON_GET_ROUTINE_EXEC_LIST, 426, 430
MON_GET_SECTION_ROUTINE, 426, 430
MON_GET_SERVICE_SUBCLASS, 406, 429
MON_GET_SERVICE_SUBCLASS_DETAILS, 406, 429
MON_GET_TABLE, 415–421, 429
MON_GET_TABLESPACE, 405, 415–421, 429
MON_GET_UNIT_OF_WORK, 405, 406, 429
MON_GET_UNIT_OF_WORK_DETAILS, 406, 429
MON_GET_WORKLOAD, 406, 429
MON_GET_WORKLOAD_DETAILS, 406, 429
Mon_heap_sz, 51
Mon_lck_msg_lvl, 68
Mon_locktimeout, 68
Mon_lockwait, 68, 430
Mon_lw_lthresh, 68
Mon_obj_metrics, 68
MON_PKG_CACHE_SUMMARY, 430
Mon_pkglist_siz, 68
Mon_req_metrics, 69
MON_SERVICE_SUBCLASS_SUMMARY, 431
MON_TBSP_UTILIZATION, 431
Mon_uow_data, 69
Mon_uow_execlist, 69
Mon_uow_pkglist, 69
MON_WORKLOAD_SUMMARY, 431
Mongo CLI, 978
Monitoring, 5, 68, 69, 994, 1132–1141, 1159, 1176, 1202
 access plans and. *See* Access plans
 activities, 411–414, 457–458, 466
 activity monitor elements in, 404
 administration notification log and, 523
 administrative views for, 390, 430–431
 AIX/LINUX built-in monitoring tool/db2top in, 543–547
 analysis and reporting tool/db2dart in, 552–554

Index

- backups, 1141
- bind file description tool/db2bfd and, 530–532
- BLU and, 1020
- buffer pool hit ratio and I/O response time, 431–432
- buffer pools and, 392, 415–421, 446–447, 465, 563
- change history, 463–465, 467
- collection limits in, 404, 410–411, 414
- column sortheap vector memory, 1134
- column sorts, 1134
- column table sizes, 1133
- column times, 1133
- common operators in DB2 and, 510
- connections, 461–462, 466
- connectivity, 389–568, 406, 408–409
- containers, 415–421
- counter in, 390
- CPU, 407
- data object monitor elements in, 404
- data objects, 414–421
- data page reads, 1133
- data page writes, 1133
- database system monitor in, 390
- databases, 444–446, 465
- DB2 monitoring elements in, 403–405
- db2diag and, 515–516
- deadlock detectors and, 436
- diagnostic log file/db2diag.log and, 522, 566
- element types in, 390
- error codes and, obtaining information about, 513–514
- event. *See* Event monitors
- Explain facility and, 489–511. *See also* Explain facility
- Fast Communications Manager (FCM) and, 404, 427–428
- First Occurrence Data Capture (FODC) /db2fodc and, 516–522, 567
- gauge in, 390
- HADR, 1140
- indexes and, 415–421, 1141
- information in, 391
- Ingest utility and, 658–659
- Inspect in, 550–552, 568
- interfaces that report activity metrics, 1139
- interfaces that report object metrics, 1139
- interfaces that report ratio metrics, 1139
- interfaces that report request metrics in, 1134
- interpreting notification and diagnostic log entries, 524–526
- limiting amount of data collected in, 523–524
- Load utility and, 634–636
- lock-wait chains in, 433–434
- locking, 392, 407–408, 421–423, 451–457, 466, 563
- memory tracker utility/db2mtrk and, 535–538, 565

- monitor elements and usage, table of, 405
- monitoring table functions in, 390
- MONREPORT module and, 478–486
- optimization class and, 511–512
- package cache, 458–459, 466
- packages in system catalog and, 489
- problem analysis and environment collection tool/db2support in, 554
- problem determination configuration/db2pdcfg and, 526–530
- problem determination tool/db2pd and, 538–543, 565–566, 568
- procedures, 425–429
- pureScale and, 796–797, 1020
- quick reference for functions used in, table of, 429–430
- reason codes in, 514–515
- report database metrics example, 1135–1138
- request metrics in, 403–404
- resetting counters in, with RESET MONITOR, 402–403, 563
- routines, 425–429
- server, 435–436
- services, 406
- shadow tables and, 1095
- snapshot monitor in, 391–403
- sort, 392, 1140, 1204
- SQL, 392, 413–414, 432–433
- statements, 462–463
- statistics, 460, 466
- SYSMON and, 836
- system information, 406–411
- system memory, 423–425
- table functions for, 405–430
- table spaces, 392, 415–421, 434–435, 446–447, 465
- tables, 415–421, 447–451, 465
- threshold violations, 460–461, 466
- time in, 391
- time-spent monitor elements in, 405
- timestamps in, 391, 392
- trace tool/db2trc in, 547–549
- transactions and, 392
- troubleshooting tools and, 512–522. *See also* Diagnostic and troubleshooting tools
- unformatted event (UE) table and, table functions for, 475–478, 568
- unformatted event (UE) table and, using db2evmonfmt, 467–475
- unit of work, 406, 408, 457, 466
- validation tool/db2val and, 532–535
- wait times, 421–423
- watermark in, 390
- workload management (WLM) and, 406, 410–411, 486–489
- XML connections, 409–410

MONREPORT, 389, 478–486, 697

Most recently used (MRU) pages, 1017

MQ/CDC Replication, 986

MQT. *See* Materialized Query Tables

Index

- MSJO, 510
- Multi-core parallelism, 1008, 1018–1020
- Multi-temperature data/storage, 5, 88, 161, 175, 222–231, 273, 280, 298, 1180, 1207
- Multibyte Character Set (MBCS), 1072–1074, 1171, 1199
- Multidimensional Clustered (MDC) tables, 4, 5, 88, 175, 225–230, 269, 273, 302, 303, 569, 639, 661, 664, 692, 693, 694, 713, 714, 716, 718, 1106
 - creating, with CREATE TABLE, 225–226
 - Design Advisor and db2advis in, 692–696
 - Ingest utility and, 639
- Multipage_alloc, 69
- Multiple-event triggers, 365–368
- Multiple standby databases, HADR, 719, 776, 782–789, **785**
- Multiuser environments, 2, 6
 - taking control of a DB2 server in, 106–110, 106

- N-Port ID Virtualization (NPIV), 999
- Name method for extraction, 575–576, **576**
 - Import utility and, 596
 - Load utility and, 624
- Name-value pairs, 1015, **1016**
- Named pipes, 938
- NEARSYNC mode, HADR and, 776, 782, 1145, 1204
- Nested procedures, 8
- NET, 7
- Networking. *See* Connectivity and networking
- Newlogpath, 69, 729
- Nickname privileges, 849–851, **850**, 859–860, 867–868
- NLJOIN, 510
- Node directory and connectivity, 942, 944–946
- Nodeftype, 51
- Nodes, 51
 - connectivity and, 977–978
- Non-cluster (ESE) mode, 988
- Non-Administrator Database. *See* LOAD
- Noncumulative backup, 735. *See also* Delta backup
- Nondelimited ASCII (ASC), 572–573
 - Ingest utility and, 639
- Nonrecoverable load operation, 633–634, 715
- NoSQL properties, JSON, 1049
- NOT LOGGED, 62, 204, 215, 241, 246, 613
- NOT NULL constraints, 212, 214, 246, 307, 308–312, **309**, 314, 317, 319, 324, 332, 348, 385, 628, 629, 637, 641, 670
- Notification log, 4, 523
- Notifications, 51
- Notifylevel, 51
- Num_db_backup, 69
- Num_freqvalues, 69
- Num_initagents, 51
- Num_initfenced, 52

- Num_iocleaners, 69
- Num_ioservers, 69
- Num_log_span, 69
- Num_poolagents, 52
- Num_quantiles, 70
- Numarchretry, 70
- Numdb, 52
- Numeric data types, 1173
- NUMERIC/NUM, 311, 345

- Object metrics, interfaces that report object metrics, 1139
- OBJECT_XXX, 1133
- Objects, 2, 3, 5, 6, 8
 - database, 162–163
 - monitoring and, 414–421
 - ownership of, 1168, 1197
 - privileges for, 842
 - schemas and, 209–212, **210**
 - workload management and, 1069
- Octets, 1073
- ODBC, 6, 7, 44, 554, 955, 971, 978, 1142
- Offline archive log files, 727
- Offline backup and recovery, 734
- OLTP, 100–101, 182, 431, 510, 557, 564, 806, 807, 992, 993, 1021, 1023–1031, 1074, 1174–1177, 1204
 - separate row and column instances on database server in, 1023–1031
 - setting up environment for, 1021–1023
 - Shadow tables and, 1074
- On expression, indexing, 1043–1045, **1045**
- Online backup and recovery, 734
- Online log files, 727
- Operating systems, 1176, 1183, 1197, 1203, 1208
 - authentication and, 826
 - trusted and untrusted clients in, 830–831
- Operational autonomics, 994–995
- Operators, common, 510
- Optim Configuration Manager, 986
- Optim Performance Manager, 986, 1194, 1208
- Optim Query Workload Tuner, 4, 124, 985, 987, 1044, 1059–1060, **1060**, 1064, 1153, 1194
- Optimizer/optimization, 153, 558, 565, 570, 713, 714
 - access plans and. *See* Access plans
 - automatic maintenance and, 90
 - catalog statistics and, 1099
 - Design Advisor and db2advis in, 692–696
 - optimization class and, 511–512
 - QUERYOPT in, 511–512, 565
 - Rebind, 686–687
 - RUNSTATS, 684–686
 - SET CURRENT QUERY OPTIMIZATION in, 511–512, 565
 - timers and, 432, 566, 566, 996, 1153, 1185, 1188, 1209, 1210
 - Visual Explain in, 506–511

Index

- Oracle, 5
- ORDER BY, 912, 1204
- Overflowlogpath, 70
- Ownership, 1168, 1197

- Package cache, 570
 - event monitors for, 458–459, 466, 1139
 - FLUSH PACKAGE CACHE, 687–688
 - monitoring, 458–459, 466
- Packages, 163
 - privileges for, 848–849, **848**, 858–859, 861, 866–867, 923, 930
 - system catalog, 489
- Page residency, **1012**, 1012
- Pages, 161, 182, 204, 1189, 1210
 - data page reads, 1133
 - data page writes, 1133
 - data skipping in, 1020–1021
 - Explicit Hierarchical Locking (EHL) in, 1117–1118, 1122, 1148, 1161
 - First in-First out (FIFO), 1017
 - Last in-Last out (LILO), 1017
 - least recently used (LRU), 1017
 - Most Recently Used (MRU), 1017
 - number of, 995
 - page residency, **1012**, 1012
 - Scan Friendly Page Caching (SFPC) and, 1017
 - victim/victimless pages in, 1017, **1017**, **1018**
- Parallel I/O, 204
- Parallelism, 4, 6, 48. *See also* Multicore parallelism
- Parameter markers, 7
- Parent and child tables, 307
- Parent key, 324
- Parent row, 324
- Parent table, 324
- Partition groups, 162, 175
- Partitioned (DPF) mode, 6, 37, 45, 50, 142, 215, 251, 611, 639, 675, 677, 716, 717, 941, 988, 1022, 1208
- Partitioning, 215–221, 282, 284, 285, 300, 301, 769. *See also* Range partitioned tables
 - Design Advisor and db2advis in, 692–696
 - HADR and, 778
 - indexes and, 300, 301
 - logical. *See* Logical Partition of Physical Machine (LPAR)
- Passport Advantage, 1075
- PASSTHRU privilege, 849
- Passwords, 53, 874–878
 - authentication and, 829
 - connectivity and, 973
- Paths, 42, 46, 259
 - //path indicator, 259
- Payment Card Industry Data Security Standards (DSS), 874
- PC integrated exchange format (PC/IXF), 573

- Load utility and, 626
- Pckcachesz, 70, 79
- Pearson VUE, arranging to take exams, 11–12
- Peer-to-peer remote copy (PPRC), 733
- PENDING, 736, 815, 1032–1035, 1189, 1211
- Performance, 6, 61, 704, 994. *See also* Monitoring
 - column to row conversion in, 1068
 - compression and, 88–89
 - idle server in, **1019**
 - Ingest utility and, improving, 659–660
 - one SQL statement running in, **1019**
 - RUNSTATS, 684–686
 - simultaneous SQL statements running in, **1020**
 - utilities and, 688–699
- Perl, 7
- Personal Information Protection and Electronic Docs Act (PIPEDA), 874
- Perspectives, 1049, **1050**
- PHP, 7
- Physical design, 161–306, 1031–1046
 - BLU and, 1031–1046
 - databases, 1033–1034
 - random key indexes and, 1041–1045, **1044**, **1045**
 - rows and, extended row size in, 1045–1046, 1192, 1211
 - statistical collection and, 1031–1033
 - storage groups and, 1034–1035
 - table spaces and, 1035–1036
 - tables in, 1036–1041
- Ping, 969
- PIPE, 510
- Pipes
 - Ingest utility and, 646–647
 - Load utility and, 632–633
 - named, 938
- Platforms supported by DB2. *See* Operating systems
- Plugins, 44
- Point of consistency, 731
- POOL_xxx, 1133
- Pools. *See* Buffer pools
- Position method for extraction, 574, **574**
 - Import utility and, 596
 - Load utility and, 624
- POST_xxx, 1140
- Power user category of access control, 1006
- Practice exams, 10–11
- Prefetch, 64, 178, 204
- Preinstallation information for DB2, 999–1001
- Preparing for certification exams, 10–11
- Primary database (source), in HADR, 776
- Primary key/primary key constraint, 242–243, 317, 319, 320, 324, 332, 344, 345–349, 385, 386, 388, 557, 597, 616, 700, 710, 712, 844, 931, 1039, 1042, 1089, 1090, 1095

Index

- Primary key constraint, 348, 385, 386, 388
- Privileges, 7, 168–169, 294–295, 825, 831, 841–851, 931, 936
 - common tasks requiring, 870–871
 - database, 841–842, **841**, 854, 862, 869, 929, 931
 - granting, 851–861. *See also* Granting authorities and privileges
 - hierarchy of, 831, **832**
 - index, 846, **846**, 857, 865
 - nickname, 849–851, **850**, 859–860, 867–868
 - object, 842
 - package, 848–849, **848**, 858–859, 861, 866–867, 923, 930
 - referential constraints and, 861
 - requirements for granting and revoking in, 869–870
 - revoking, with REVOKE, 861–869
 - role-based access control and, 872–873
 - roles associated with, with GRANT, 872
 - routine, 847–848, **847**, 858, 865–866
 - schema, 209, 843, **843**, 855, 863
 - sequence, 846–847, **847**, 857, 865, 869
 - server, 849, **849**, 859, 867, 868
 - storage of, in system catalog, 918–919
 - stored procedures, 861, 922, 923, 930
 - table space, 842–843, **842**, 854–855, 862
 - table, 843–845, **844**, 855–856, 860, 861, 863–864, 868–869, 921, 922, 931
 - User-Defined Functions (UDF), 868
 - view, 845, 856–857, 860, 864, 929–930
- Problem analysis and environment collection tool/db2support, 554
- Problem determination configuration/db2pdcfg, 526–530
- Problem determination tool/db2pd, 538–543, 565–568, 568
- Problem determination tools, 390
- Procedures
 - monitoring and, and routines, 425–429
 - SQL, 8
- Process of IBM certification, 9, **9**
- Product packaging, 986
- Professional Certification Program, 1. *See also* IBM DB2 10.1 certification
- Protecting data, 3, 4
- Protocols, communication. *See* Communication protocols
- PRUNE HISTORY, 769
- Pseudodeletion, 995–996
- PUBLIC, 920, 922
- Publications to prepare for certification, 10
- pureData, 998
- pureFlex, 998
- pureQuery, 986
- pureScale, 4, 5, 6, 791–797, 807, 811, 812, 813, 814, 819–820, 985, 986, 987, 997–1001, 1107–1122, 1159, 1162, 1164, 1185
 - Advanced Enterprise Server Edition (AESE), 987, 1187, 1210
 - Advanced Workgroup Server Edition (AWSE), 987, 1187, 1210
 - architecture of, 823

- backup and restore in, 823, 1122–1131, 1193
- batch processing and, 1150
- best fit vs. control workloads in, 998
- Cluster Caching Facility (CF) in. *See* Cluster Caching Facility (CF)
- clustering in, 794–797, 1159, 1186, 1195, 1209
- connectivity and, 997
- container paths mapped to, 1124–1125
- Current Effective Architecture Level (CEAL) and, 1108–1109, **1109**
- Current Effective Code Level (CECL) and, 1108–1109, **1109**
- Cygwin and, 1001
- DAS and, 961
- Database Services Flexible Architecture (DSFA) and, 1002
- databases and, 1033–1034
- DB2 installation, 999
- db2setup information in, 1001–1002
- duplexing in, 824
- enhancements to, 1108
- Enterprise Server Edition (ESE), 987, 1187
- Explicit Hierarchical Locking (EHL) in, 1117–1118, 1122, 1148, 1161
- features of, 1107
- file systems for, 820
- General Parallel File System for, 820
- Global Buffer Pool (GBP) in, 793
- Global Lock List (GLL) in, 793
- Global Lock Manager (GLM) in, 793, 824
- Global/Group Buffer Pool (GBP) in, 823
- group buffer pool (GBP) and, 1122
- HADR and, 1112, 1115–1117, 1146, 1160
- installation process for DB2 in, 1002–1005
- instance creation in, 1004
- instance creation in, with db2icrt, 1003
- licensing in, 987
- Local Buffer Pool (LBP) in, 793
- Local Lock Manager (LLM) in, 793
- locking in, 824
- Logical Partition of Physical Machine (LPAR) in, 792, 999, **999**, 1107
- maintenance capabilities and commands in, 795
- member crash recovery (MCR) in, 1131
- member sets in, 1118–1119
- members added to, 1112–1117
- migrate a database using, 1122–1123
- monitoring capabilities and commands in, 796–797, 1020
- moving a database to, prerequisites for, 1123–1124
- multiple database support in, 1131
- number of DB2 members in, 822
- number of servers in, 822
- operations commands in, 794–795
- physical design and, 1031–1046. *See also* Physical design
- platform selection for, criteria in, 998
- preinstallation information for, 999–1001

Index

- product/package compatibility in, 988
 - pureData and, 998
 - pureFlex, 998
 - Putty and, 1001
 - random key indexes and, 1041–1045, **1044**, **1045**
 - recovery and, 1108
 - Reliable Scalable Cluster Technology (RSCT) and, 819–820
 - Remote Direct Memory Access (RDMA) and, 794
 - restart light mode, 792
 - roll forward, 1193
 - rows, rows and, extended row size in, 1045–1046, 1192, 1211
 - self-tuning memory in, 1131–1132
 - servers number in, 824
 - states in, 792–793, 820
 - storage groups and, 1034–1035, 1190
 - table spaces and, 1035–1036, 1164, 1211
 - tables in, 1036–1041
 - Tivoli System Automation for Multiplatforms (TSA MP) and, 819–820
 - Unicode and, 1073–1074, 1123–1124, 1149, 1163, 1209
 - UNIX and, 997, 1000–1001, 1108
 - upgrades for, 1108–1109, **1109**
 - upgrades for, checking progress/status of, 1110–1112
 - upgrades for, HADR configuring, 1112
 - upgrades for, online, 1109–1110
 - upgrades for, rolling upgrades, 1108–1109, **1109**
 - User Direct Access Programming Library (uDAPL) in, 794
 - virtualization vs., 792, 999, 1107, 1108
 - Windows and, 1108
 - Workgroup Server Edition (WSE), 987, 1187
 - workload management with, 1108, 1119–1122
- pureXML, 251
- Putty, 1001
- Python, 7
- Q Replication, recovery and, 733
- Queries, 51, 64, 159, 376, 570, 1173, 1180
- analyzing, with Data Studio 123–127, **124–127**
 - data partition elimination and, 215
 - Optim Query Workload Tuner, 4, 124, 985, 987, 1044, 1059–1060, **1060**, 1064, 1153, 1194
 - optimizing, 5, 64
 - Query Advisor and, 507–511, **507**
 - range partitioned tables and, 215
 - Shadow tables and, 1077
 - Time Travel Query feature and. *See* Time Travel Query
 - Visual Explain in, 506–511
 - XQuery in, 256–259
- Query Advisor, 507–511, **507**
- Query Workload Tuner, 4, 124, 985, 987, 1044, 1059–1060, **1060**, 1064, 1153, 1194
- QUERYOPT, 511, 565

Question bank, 1165–1212

QUIESCE, 28–31, 239, 608, 795, 840, 841, 854, 862, 872, 930

roles and, 872

QUIESCE_CONNECT, 841

Quiescing an instance, 28–31, **30**

RAID, storage groups and, 209

Random Access Memory (RAM), 1012, 1013

Random key indexes, 1041–1045, **1044**, **1045**

Range Clustered Tables (RCT), 5, 161, 213–214, 254, 273, 282, 302, 343, 388, 639, 714

creating, with CREATE TABLE, 213–214

Ingest utility and, 639

restrictions on, 214–215

Range partitioned tables, 161, 175, 213, 215–221, 223, 282, 284, 285, 303, 639, 714, 1016, 1179

ALTER TABLE and, 215

ATTACH PARTITION and, 215, 218

creating, with CREATE TABLE, 216–219

data partition elimination and, 215

Data Partitioning Feature (DPF) and, 215

DETACH PARTITION and, 215, 218, 220–221

indexing and, 215, 218

Ingest utility and, 639

listing, with DESCRIBE DATA PARTITIONS, 219–220

query processing and, 215

Range partitioning, 4, 5

Ratio metrics, interfaces that report, 1139

RCAC. *See* Row and Column Access Control (RCAC)

RCT. *See* Range Clustered Tables (RCT)

Read on standby (ROS), 719, 778, 779, 819

restrictions to, 781–782

Read-only, 52

Reads, 405

data page reads, 1133

REAL, 311, 345

Real Time Statistical (RTS) collection, 1032–1033, 1189, 1211

Reason codes, 514–515

REBAL, 510

Rebalancing/REBALANCE, 103, 183, 185, 199–200, 203–207, 295, 297, 298, 417, 510, 998, 1035, 1125, 1181, 1206, 1207, 1209

REBIND, 3, 570, 686–687

Rebuild feature, 761–763

Rec_his_retent, 70

Reclaimable storage, 200–201

Reclaiming deleted space in column-organized tables, 1106–1107

Records, deleting, 1168

RECOVER DATABASE, 769–771, 816

Recoverable and nonrecoverable databases, 733–734

Recovery, 4, 6, 61, 719, 730–771, 798, 799, 801, 802, 806, 1172, 1178, 1199–1200. *See also* Backup; Restore

archival logging in, 726–727, **728**, 815

ASYNCR mode and, 1164

Index

backup and Backup Utility in, 739–749
 BACKUP DATABASE in, 740–741
 checkpoints in, 738–739
 clustering and, 1210
 crash, 730–731, **731**, 815
 Data Studio and, 737–738, 742–744, **743**, **744**, 753–758, 764–768, **764–768**
 delta backup and, 734–736, 816
 disaster (DR), 730, 732–733, 1178
 Drop Pending state and, 736–737
 dropped tables and, with ALTER or CREATE TABLESPACE, 745–749
 extracting dropped table information in, with LIST HISTORY, 747–748
 HADR, 733, 1146, 776–791. *See also* High Availability Disaster Recovery (HADR)
 history file in, 768–769
 incremental backup and, 734–736, 816
 indexes and, 817–818
 invalid indexes and, rebuilding, 771–772, 817
 member crash recovery (MCR) in, 1131
 memory configurations and roll-forward in, 766
 migrate a database using, 1122–1123
 mirroring in, 733, 772–776, 815
 online vs. offline, 734
 operations for, with RESTART DATABASE, 736
 Peer-to-Peer Remote Copy (PPRC) in, 733
 point of consistency in, 731
 pureScale and, 1108, 1122–1131
 Q Replication in, 733
 rebuild feature for, 761–763
 reclaiming deleted space in column-organized tables for, 1106–1107
 RECOVER DATABASE for, 769–771, 816
 recoverable and nonrecoverable databases in, 733–734
 Recovery Utility and, 769–771, 816
 redirected restore in, 778, 816
 redirected restore in, with SET TABLESPACE CONTAINERS, 758–760
 registry values and, 760, 823
 RESTART in, 737
 Restore Pending state in, 759
 Restore Utility in, 749–758
 restoring, with RESTORE DATABASE, 749–753, 760,
 ROLL FORWARD DATABASE in, 762–768, 769, 817
 roll-forward, 730, 731, **732**
 Roll-forward utility in, 763–768, 817
 SET WRITE SUSPEND/RESUME in, 773–776
 SMS table spaces, 760
 soft checkpoints in, 738–739
 split mirroring to backup for, 772–776, 818
 SQL in, 733
 SUPERASYNC mode and, 1146
 SYSADM and, 744
 SYSCTRL in, 744

- table space containers in, with DROP PENDING TABLESPACES, 736, 815
- table spaces, 817, 820
- table spaces, with LIST TABLESPACES, 759
- time values in, 765–766
- types of, 730
- version, 730, 731, **732**
- Recovery history file, 768–769
- Recovery Utility, 769–771, 816
- Redirected restore, 1182
 - HADR and, 778, 816
 - with SET TABLESPACE CONTAINERS, 758–760
- REFERENCES, privilege for, 844–845, 850–851
- Referential cycle, 324
- Referential constraints/referential integrity, 225, 246, 307, 308, 318–337, **321**, 343–345, 347, 349–50, 378, 385, 386, 388, 612, 636, 712, 766, 845, 861, 1198
 - Delete Rule and, 325, 332–337, **333–336**
 - dependent or child table/row in, 324
 - descendent row in, 324
 - descendent table in, 324
 - foreign key in, 324
 - important uses for, 325
 - information about, with system catalog table views, 323–324
 - Insert Rule and, 325–329, **326, 327**
 - keys in, 324
 - Load utility and, 614, 636–638
 - MAKE table for, 320–322, 325
 - MODEL table for, 320–322, 325
 - parent key in, 324
 - parent row in, 324
 - parent table in, 324
 - primary key in, 324
 - referential cycle in, 324
 - rows in, 324
 - self-referencing row in, 324
 - self-referencing table in, 324
 - SET INTEGRITY for, 288, 307, 339–343, 370, 377, 381, 385, 386, 388, 612, 614, 636–638, 712, 1081, 1180, 1206
 - tables in, 324
 - unique key in, 324
 - Update Rule and, 325, 329–332, **330, 331**
- Refresh, 64
- REFRESH TABLE, 303
- Registry location and precedence, 35
- Registry profiles, 34–35
- Registry variables, 3, 23, 34, 134, 140, 151, 156, 1166, 1167, 1171, 1194, 1199, 1202
 - BLU environment configuration, 993
 - connectivity and, 979–980
 - db2set and, 1195–1196
 - global registry, location and content of, with db2greg, 990–991
 - recovery and, settings for, 823

Index

- restoring databases and, 760
- temporal tables and, 247–251
- Release parameter, 52
- Reliable Scalable Cluster Technology (RSCT), 819–820
- Relocating a database using, with db2relocatedb, 674–679
- Remote applications, 52
- Remote copy, Peer-to-Peer (PPRC), 733
- Remote databases, 937, 969
- Remote Direct Memory Access (RDMA), 794, 997–998, 1005, 1116
 - pureScale and, 794
- Remote servers, 65, 938, 944–945, 946–947, 957, 965, 967, 970, 982, 1001
- RENAME STOGROUP, 208
 - HADR and, 778
- REORG, 3, 5, 88, 145, 291, 304, 566, 569, 681–684, 718, 839, 912, 1052, 1162
 - compression dictionary and, 264–265, **265**
 - Data Studio and, 1056, **1056**
 - reclaiming deleted space in column-organized tables, 1106–1107
- Reorganization, 152, 566
 - automatic, 77
- REORGCHK, 3, 569, 680–681, 699, 709, 713, 718
- Repartitioning, 569
 - Design Advisor and db2advis in, 692–696
- Replay-only window in active standby databases, 779–781, 809, 821
 - HADR and, 779–781, 821
- Replication, 6, 1171, 1199
 - compression and, 271
- Reporting tool/db2dart, 552–554
- Reports on monitoring of activity. *See* MONREPORT
- Request metrics, 403–404, 1134
- Rescheduling exams, 12
- RESET DATABASE CONFIGURATION, 74–75
- RESET DATABASE MANAGER CONFIGURATION, 58
- RESET MONITOR, 402–403, 555, 563
- Residency, page, **1012**
- Resource Manager, 52
- Response file (silent) mode, 1002, 1003
- Response time, I/O, 431–432
- RESTART, 61, 737
- RESTART DATABASE, 736
- Restart light mode, in pureScale, 792
- Restore, 4, 6, 808, 1212. *See also* Backup; Recovery
 - Data Studio in, 753–758
 - memory configurations and roll-forward in, 766
 - rebuild feature for, 761–763
 - redirected, 778, 816, 1182
 - redirected, with SET TABLESPACE CONTAINERS, 758–760
- RESTORE DATABASE, 749–753, 760, 761–763
 - Restore Pending state in, 759
 - Restore Utility in, 749–758

- ROLL FORWARD DATABASE in, 762–768, 769, 817
- Roll-forward utility in, 763–768, 817
- SYSADM, SYSCTRL, and SYSMaint for, 758
- table spaces, 817
- time values in, 765–766, 765
- RESTORE DATABASE, 747, 749–753, 759, 760–764, 769, 783, 795
- Restore Pending state, 759
- Restore Utility, 739, 749–758, 820
- Restore Wizard, in Data Studio, 753–758
- Resync_interval, 52
- Retaking certification exams, 22
- RETURN, 510
- Return statistics, in Data Studio, 1066, **1067**
- Revalidation, 62, 357
- REVOKE, 861–869, 873, 922, 934
- REVOKE ROLE, 873
- Revoking authorities and privileges, with REVOKE, 825, 861–869, 934
- RIDSCN, 510
- Role-Based Access Control (RBAC), 872, 919
 - creating roles in, with CREATE ROLE, 872
 - granting privileges in, with GRANT, 872
 - granting roles in, with GRANT ROLE, 872–873
 - groups vs., 873–874
 - revoking roles in, with REVOKE/REVOKE ROLE, 873
 - system catalog storage of authorities and privileges for, 918–919
- Roles, 825, 925, 934, 1006–1008
 - Row and Column Access Control (RCAC) and, 903–904
- Roles in Professional Certification program, selecting, 1
- Roll forward, 4, 6, 130, 730, 731, **732**, 763–768, 801, 802, 817, 1212
 - Data Studio wizard for, 764–768, **764–768**
 - pureScale, 1193
 - SYSADM, SYSCTRL, and SYSMaint in, 768
- Roll-forward utility, 763–768, 817
- ROLL FORWARD DATABASE, 762–768, 769, 817
- ROLLBACK, 720–723, **722**, **723**
 - logging and, 725
- Rolling fix pack upgrades, 5
- Rounding, 63
- Routines
 - monitoring and, 425–429
 - privileges for, 847–848, **847**, 858, 865–866
- Row and Column Access Control (RCAC), 3, 4, 6, 825, 901–912, 919, 927, 935
 - advantages of, 911–912
 - column masks in, 901, 907–911
 - deactivating, with ALTER TABLE, 907
 - DML behavior in, 906–907
 - fine grained access control (FGAC) and, 901
 - functions and, 912
 - loading data for, with INSERT, 902–903
 - putting into action, shown with CONNECT, 904–906

Index

- roles in, creating with CREATE ROLE, 903–904
- row permission in, 901
- row permissions in, creating, 903–904
- row permissions in, implement, 901
- scalar functions for, VERIFY_xxx, 911
- table creation in, with CREATE TABLE, 902
- triggers and, 912
- Row compression, 262, 1014. *See also* Static row compression
- Row partitioned table, 300
- Row permission, RCAC, 901–904
- Row- to column-organized tables, 986
- Rows
 - columnar-organized data and, 1009–1011, **1009**
 - converting columns to, 1068
 - converting row tables to columns, 1105
 - extended row size in, 5, 1045–1046, 1192, 1211
 - logical deletion or pseduodeletion of, 995–996
 - referential integrity and, 324
 - separate row and column instances on database server, 1023–1031
- RPD, 510
- Rqrioblk, 52
- RTS. *See* Real time statistics
- RUNSTATS, 3, 4, 61, 69, 70, 71, 77, 90, 91, 98–99, 104, 151–153, 271, 566, 570, 608, 612, 626, 664, 680, 684–686, 703, 706, 707, 711–713, 716, 718, 769, 821, 834, 835, 837, 838–839, 840–841, 912, 1016, 1022, 1031, 1032–1033, 1052, 1058, 1104
 - Data Studio and, 1057, **1057**
 - impact priorities and, 104
- Sampling, 61
- Sarbanes-Oxley Act (SOX), 874
- Scalar functions, 1171
- Scan friendly page caching (SFPC), 1017
- Scanning, 1170
- Scheduling database jobs, 116–123, 144, 159
 - creating and scheduling jobs in, 118–120, **119–120**
 - Data Studio for, 116–123
 - job chains and, 121–123, **121–123**
 - Job Manager and, 116–123
 - job notifications and, 123, **123**
 - Task Launcher and, 116–123
 - viewing job history and, 123
- Schemas, 64, 162, 168, 209–212, **210**, 281, 299, 569
 - ADMIN_COPY_SCHEMA () procedure in, 672–674
 - binding, 956–957
 - creating, with CREATE SCHEMA, 210–212
 - dropping, 1197
 - privileges for, 843, **843**, 855, 863
- Search, 47

- SECADM, 760, 813, 823, 832, 833, 837–838, 839, 854, 862, 869–874, 880, 890–897, 901, 903, 907, 911, 913, 916, 926, 932–936, 1200. *See also* Authorities; Privileges
 - granting and revoking author/privs with, 870
 - groups and, 874
 - LBAC and, 932
 - roles and, 872
 - Row and Column Access Control (RCAC) and, 901
 - trusted contexts/connections and, 880
- Secondary log files, 725–726
- Section_actuals, 70
- Secure Sockets Layer (SSL), 39, 53, 54, 878–879, 938
- Security, 825–936
 - auditing in, 912–917
 - authentication in, 826–831
 - authorities in, 831–841
 - common tasks and, authorities/privs needed for, 870–871
 - data encryption in, 874–879
 - granting authorities and privileges for, 851–861
 - groups in, 873–874
 - Label-Based Access Control (LBAC) in, 883–901
 - passwords and, 874–878
 - privileges in, 831, 841–851
 - requirements for granting and revoking authorities/privs in, 869–870
 - revoking authorities and privileges for, 861–869
 - role-based access control and, 872–873
 - Row and Column Access Control (RCAC) in, 901–912
 - Secure Sockets Layer (SSL) in, 878–879, 938
 - system catalog for, 918–919
 - Transport Layer Security (TLS) in, 938
 - trusted connections in, 879–883
 - trusted context in, 879–883
 - WebSphere Application Server (WAS), 879
- Security Administrator. *See* SECADM
- Security plug-ins, 829–830
- Security policies, 933, 885–886, 893, 896–897
- Security tables, 928
- SELECT, 83, 84, 87, 124, 157, 169, 179, 199, 238–239, 245–251, 254, 258, 259, 272, 294, 296, 338, 348, 352, 353, 358, 362, 377, 383, 384, 387, 414, 432, 471, 476, 477, 492, 497, 501, 522, 576, 578, 584, 620, 661, 795–797, 839, 840, 844, 845, 846, 848, 850, 855, 856, 859, 863, 864, 867, 870–871, 872, 882, 904, 906, 908–910, 912, 930, 953, 1044, 1074, 1079, 1098–1099, 1122
 - privilege for, 844, 845, 850–851
 - roles and, 872
 - triggers and, 358, 387
 - XML and, 254, 259
- SELECT DISTINCT, 912
- Self-Tuning Memory Manager (STMM), 3, 70, 76, 78–84, **79**, 135, 138, 142, 152, 154–156, 158, 169, 294, 1131–1132
 - activating, 81–84
 - buffer pools and, 83–84
 - HADR and, 83, 778

Index

- logging in, 83
- modes of operation in, 80–81
- parameter setting/modification for, 81–84
- shared memory parameters for, 79
- STMM Multi-tenancy in, 5
- structure of, 79, **79**
- work flow in, 79–80, **80**
- Self_tuning_mem, 70, 81–82
- Self-referencing row, 324
- Self-referencing table, 324
- Separate row and column instances on database server in, 1023–1031
- Seqdetect, 70
- Sequences, 163, 1196, 1197
 - privileges for, 846–847, **847**, 857, 865, 869
- Sequential page read, 70
- Serial attached SCSI (SAS), 205
- SERVER authentication, 827, 829
- Server management, 23–160, 986–997. *See also* Servers (*below*)
 - access control to database server in, 1005–1006
 - Advanced Editions, tools and features in, 986–987
 - Advanced Enterprise Server Edition (AESE), 987, 1187, 1210
 - Advanced Workgroup Server Edition (AWSE), 987, 1187, 1210
 - automatic computing features and, 76–84
 - AUTOMATIC keyword and, 57
 - automatic maintenance and, 89–99
 - automatic storage and, 84–88
 - Automatic Storage Manager (ASM) in, 993
 - autonomic workloads in, 996–997
 - best fit workloads and, 998
 - BLU Acceleration in, 991–995
 - BLU autonomics, 993
 - BLU product/package compatibility in, 988
 - BLU technology and, 1008–1031. *See also* BLU technology
 - cluster (DSF) mode in, 988
 - compression and, 88–89
 - Configuration Advisor and, 99–102
 - configuration autonomics for, in BLU, 993
 - configuring the system environment in, 34–41
 - control workloads and, 998
 - creating group and user IDs for, 1007–1008
 - Cygwin and, 1001
 - Data Studio and, 23, 58–59, **59**, 75, **75**, **76**, 110–127. *See also* Data Studio
 - database configuration and, 41, 60–76, 993–994
 - DATABASE MANAGER commands in, 57–59
 - Database Services Flexible Architecture (DSFA) and, 1002
 - DATABASE_MEMORY, 993–994
 - DB2 installation and, 999, 1002–1005
 - db2iupdt in, 1004, 1005
 - db2setup information in, 1001–1002

- DPF product/package compatibility in, 988
- Enterprise Server Edition (ESE), 987, 1187
- exam objectives for, 23
- extract transform and load (ETL) processing in, 992
- global registry, location and content of, with db2greg, 990–991
- GPFS drives in, 1005, 1209
- groups in, 1006–1008
- idle server and, **1019**
- initial install host (IIH) in, 1004
- installation process for DB2 in, 999, 1002–1005
- installed features, display with db2ls, 988–990
- instances in, 24–34, 41–59, 992, 1003
- licensing in, 987
- Linux systems in, 992
- LOAD INSERT, 995
- making sense of it all, pureScale and, 987
- non cluster (ESE) mode in, 988
- OLTP and, 992, 993
- operational autonomics in, 994–995
- page number in, 995
- partitioned (DPF) mode in, 988
- pinging, 969
- preinstallation information for, 999–1001
- product packaging for, 986
- pureScale in, 987, 988, 997–1001. *See also* pureScale
- Putty and, 1001
- remote administration of, 33
- response file (silent) mode in, 1002, 1003
- roles in, 1006–1008
- Self-Tuning Memory Manager (STMM) in, 78–84, **79**
- separate row and column instances on database server in, 1023–1031
- SHEAPTHRESH_SHR, 993–994
- Single Instruction Multiple Data (SIMD) processing and, 992, 1014, 1023, 1154
- SORTHEAP, 993–994
- space management in, 995–996
- SSH clients and, 1001
- statistics collection in, 994, 995
- Studio Administration Explorer in, 75, **75**, **76**
- taking control of a DB2 server in, 106–110
- throttling and, 103–106
- UNIX and, 1000–1001
- user IDs in, 1006–1008
- Visual Explain in, 23
- Workgroup Server Edition (WSE), 987, 1187

SERVER_ENCRYPT, 827, 829

Servers, 162, 937, 1183, 1204. *See also* Server management (*above*)

- access control to, 1005–1006
- BLU Acceleration in, 991–995
- federated, 849
- installing DB2 on, 1194

Index

- monitoring and, 435–436
- one SQL statement running in, **1019**
- privileges for, 849, **849**, 859, 867, 868
- remote, cataloging of, 946–953, 969, 970
- selection of, criteria in, 991
- separate row and column instances on database server in, 1023–1031
- simultaneous SQL statements running in, **1020**
- Service category of access control, 1006
- Service class, in workload management, 1069
- Service level agreements (SLAs), 1068
- Services
 - monitoring and, 406
 - system configuration and, 36
- SESSION special register, in temporal tables, 247–251
- SET triggers, 358, 387
- SET CURRENT QUERY OPTIMIZATION, 511–512, 565
- SET EVENT MONITOR, 440–442, 444–478
- SET INTEGRITY for, 288, 307, 339–343, 370, 377, 381, 385, 386, 388, 612, 614, 636–638, 712, 1081, 1180, 1206
 - Load utility and, 614, 636–638
- SET TABLESPACE CONTAINERS, 758–760
- SET WRITE SUSPEND/RESUME, 773–776
- SET_UTIL_IMPACT_PRIORITY, 154, 816
- Sets, work class, 1070
- Shadow tables, 985, 986, 1074–1104, 1155, 1158, 1193
 - accounts and groups for, 1076
 - BLU and, 1075
 - catalog statistics and, 1099
 - creating, using Data Studio, 1078–1081, **1079**, **1080**
 - data store for, using Data Studio, 1081–1086, **1082–1086**
 - database created for, 1077–1078
 - database requirements for, 1076–1077
 - deploying, 1075–1104
 - Fix Central and, 1075
 - installing software for, 1075–1076
 - Linux, UNIX, Windows and, 1075–1076
 - monitoring, 1095
 - MQT and, 1078–1081, **1079**, **1080**, 1093
 - OLTP and, 1074
 - Passport Advantage and, 1075
 - queries and, 1077
 - software requirements for, 1075
 - subscription for, using Data Store, 1086–1095, **1087–1094**
 - table spaces for, 1081
 - using, 1095–1099
 - verification process in, 1099–1104
 - workflow diagram for, **1095**
 - workload identification for, 1077
 - workload management and, 1074–1075

- Sheapthres, 52, 102, 148
- Sheapthres_shr, 70, 79, 83, 993–994
- Shell scripts, 799
- SHIP, 510
- Sign in for the exam, 12–13
- SIGNAL triggers, 358, 387
- Silent (response file) mode, 1002, 1003
- Simple Management Protocol (STMP), 71
- Simultaneous SQL statements running, **1020**
- Single Byte Character Set (SBCS), 171, 1072–1074, 1171, 1199
- Single Instruction Multiple Data (SIMD) processing, 4, 992, 1008, 1014–1015, 1023, 1154, 1188
- Single sign on (SSO), 1005
- SKIPPED_xxx, 1133
- Skipping, data. *See* Data skipping
- SMALLINT, 311, 345
- SMS. *See* System Managed Space
- Smtplib_server, 71
- Snapshot Explain data, 491
- Snapshot monitor, 3, 46, 391–403
 - buffer pools and, 392
 - capturing data from, with GET SNAPSHOT, 395–402
 - change state of switches in, with UPDATE MONITOR SWITCH, 394–395, 563
 - db2GetSnapshot() API and, 395
 - executing snapshots in, with GET SNAPSHOT, 391
 - locks and, 392
 - resetting counters in, with RESET MONITOR, 402–403
 - sorts and, 392
 - SQL statements and, 392
 - switches in, 391–392
 - tables and, 392
 - timestamps and, 392
 - transactions and, 392
 - viewing current switch settings in, with GET MONITOR SWITCH, 393–394
- Soft checkpoints, 738–739
- Softmax, 71
- Solid State Drives (SSD), 205, 1013
- solidDB/solidDBUC, 987
- SORT, 392, 394, 510, 1140
- Sort memory, 79
- Sortheap, 71, 79, 993–994
- Sorts/sorting, 130, 405, 1176
 - column sortheap vector memory, 1134
 - column sorts, 1134
 - monitoring, 392, 1140, 1204
- Space management, 995–996
- Split mirroring, 720, 737, 772–776, 783, 803, 818
 - backup and restore with, 772–776, 818
 - db2inidb and, 775–776, 818
- SPM log, 52, 53
- Spm_log_file_sz, 52

Index

Spm_log_path, 52
 Spm_name, 53
 Sprm_max_resync, 53
 SQL, 2, 6, 7, 8, 51, 64, 71, 79, 565, 798, 833, 837, 844, 925, 986, 1006, 1148, 1159, 1206
 access plans and. *See* Access plans
 ADMIN_CMD stored procedure and, 607–611
 analyzing queries in, with Data Studio, 123–127, **124–127**
 automatic commit in, 720
 Certified Solution Developer DB2 9.7 SQL Procedure in, 8
 COMMIT transactions in, 720–723, **721**
 compound, 7, 588, 605
 Data Studio and, tuning with, 1059–1060, **1060, 1063**, 1064
 Design Advisor and db2advis in, 692–696
 EXPLAIN and, 839
 Explain facility and, 489–511. *See also* Explain facility
 Import utility and, 605, 613
 Load utility and, 613
 monitoring and, 392, 413–414
 monitoring and, expensive/inefficient, 432–433
 one SQL statement running in, **1019**
 optimization class and, 511–512
 packages in system catalog and, 489
 project creation in, in Data Studio, 1061, **1061**
 Query Workload Tuner and, 1059–1060, **1060**, 1064
 read from file, in Data Studio, 1062, **1062**
 real time statistical collection (RTS) and, 1032–1033
 Rebind, 686–687
 recovery and, 733
 ROLLBACK transactions in, 720–723, **722, 723**
 simultaneous SQL statements running in, **1020**
 SQLADM and, 838–839
 transactions and, 720
 tuning, with Data Studio, 1059–1060, **1060, 1063**, 1064
 Visual Explain in, 506–511
 SQL Administrator. *See* SQLADM
 SQL Communications Area (SQLCA), 7, 462, 466
 SQL replication, 987
 SQL Warehousing Tool (SQW), 1148
 Sql_ccflags, 71
 SQL0964C Transaction Log Full, Import utility and, 607
 SQLADM, 608, 832, 838–840, 916, 926, 933, 934, 936. *See also* Authorities; Privileges
 granting and revoking author/privs with, 870
 roles and, 872
 SQLDBCONF, 87
 SQLJ, 6, 7
 Srv_plugin_mode, 53
 Srvcon_auth, 53
 Srvcon_gssplugin_list, 53
 Srvcon_pw_plug, 53

- SSH clients, 1001
- SSL. *See* Secure Sockets Layer (SSL)
- Ssl_cint_keydb, 54
- Ssl_cint_stash, 54
- Ssl_cipherspecs, 54
- Ssl_svcsnmae, 54
- Ssl_svr_keydb, 53
- Ssl_svr_label, 53
- Ssl_svr_stash, 53
- Ssl_versions, 54
- SSN, 927
- Standby, 6, 804, 809–810. *See also* Active standby databases; Multiple standby databases; Read on standby (ROS)
- START DATABASE MANAGER, 27–28, 146
- START HADR, 787
- Start_stop_time, 54
- Starting an instance, 27–28
- Stat_heap_sz, 71
- STATEMENT, 392
- Statements, event monitors for, 462–463, 466
- States, 807
 - pureScale and, 792–793, 820
- Static row compression, 262–265, **263**
- Static SQL, 8
- Statistical views, 4
- Statistics Advisor, 1066, **1066**
- Statistics/statistics collection, 61, 71, 153, 708, 711, 715, 994, 995, 1031–1033, 1190, 1211. *See also* RUNSTATS
 - automatic maintenance and, 90
 - automatic, 77, 151–152
 - Automatic Statistics Profiling (ASP) and, 1190, 1211
 - catalog statistics and, 1099
 - COLLECT_STATS, 1032–1033
 - Data Studio and, **1065**
 - Design Advisor and db2advis in, 692–696
 - monitoring, event monitors for, 460, 466, 1134
 - real time (RTS), 1032–1033
 - Return statistics, in Data Studio, 1066, **1067**
 - RUNSTATS in. *See* RUNSTATS
 - Statistics Advisor in, 1066, **1066**, 1211
- Statistics event monitor, 460, 466, 1134
- STMM. *See* Self-Tuning Memory Manager (STMM)
- STMM Multi-tenancy, 5
- Stmt_conc, 71
- Stmtheap, 71
- STOP DATABASE MANAGER, 27–28
- Stopping an instance, 27–28
- Storage, 4, 23, 69, 140, 141, 156, 157, 276, 278, 279, 295, 1013, 1181, 1184, 1206, 1209, 1210. *See also* Storage groups
 - automatic, 84–88, 176–178, 1186, 1187

Index

- Automatic Storage Management (ASM) in, 993, 1022, 1033–1036, 1074, 1077, 1151, 1163
 - compression and, 88–89, 266–267
 - data store in, using Data Studio, 1081–1086, **1082–1086**
 - HADR and, paths in, 778
 - hierarchy of, 180–182, **181**
 - JSON and, 1046–1049. *See also* JSON
 - logical deletion or pseduodeletion of rows in, 995–996
 - multi-temperature. *See* Multi-temperature storage, 222
 - reclaimable, 200–201
 - space management in, 995–996
 - storage groups and, 1034–1035
- Storage groups, 3, 5, 161, 162, 205–209, 278, 279, 280, 295, 298, 1181, 1184, 1206, 1207, 1209, 1210
 - adding storage path to, with ALTER STOGROUP, 1035
 - altering, with ALTER STOGROUP, 206–208
 - BLU and, 1034–1035
 - creating, with ALTER TABLESPACE, 297
 - creating, with CREATE STOGROUP, 205–206
 - data transfer rates and, 209
 - declared temporary tables and, 209
 - designing, 209
 - dropping paths from, with DROP PENDING, 1035
 - dropping, with DROP STOGROUP, 208–209
 - latency in, 209
 - physical design and, 1034–1035
 - pureScale and, 1034–1035, 1190
 - RAID levels and, 209
 - renaming, with RENAME STOGROUP, 208
 - serial attached SCSI (SAS) and, 205
 - solid state drives (SSD) and, 205
 - table spaces and, with CREATE TABLESPACE and, 206
 - user temporary, 209
- Storage Optimization, compression and, 270–271
- Storage table spaces, 3
- Stored procedures, 7, 163, 569, 1179
 - ADMIN_CMD, 607–611
 - privileges for, 861, 922, 923, 930
- Structured Query Language. *See* SQL
- Studio Administration Explorer, database configuration and, 75, **75**, **76**
- Subscription, shadow tables and, using Data Store, 1086–1095, **1087–1094**
- Subviews, 357
- Sun Solaris, 5, 31, 826, 1203, 1208
- SUPERASYNC mode, in HADR, 776, 782, 819, 821, 822, 1145, 1146, 1164, 1204
- Superclass (service class), in workload management, 1069
- Svcename, 54
- Switches, snapshot, 391–392
- SYNC mode, in HADR, 776, 782, 1145, 1204
- Sync Point Manager, 52
- Synchronization, 814
 - HADR modes for, 776, 782, 819, 1145, 1204

Synopsis table, 1011, 1020–1021, 1039, 1095, 1185, 1189, 1208, 1210

SYNOPSIS, 4

SYSADM, 30, 33, 35, 44, 54, 146, 212, 576, 584, 637, 744, 758, 768, 832, 833–838, 846, 851, 852, 856, 857, 860, 864, 868, 869, 871, 874, 890, 894, 912, 913, 916, 917, 929, 932, 934, 1007, 1076. *See also* Authorities;

Privileges

auditing and, 912, 913

backup and recovery with, 744

Export utility and, 576

forcing application connections with, 109–110

granting and revoking author/privs with, 869

groups and, 874

Import utility and, 584

Load utility and, 637

quiescing/unquiescing an instance and, 30

remote server administration and, 33

restore and, 758

roll-forward authority in, 768

taking control of DB2 server with, 107–110

UPDATE DATABASE MANAGER CONFIGURATION and, 833

Sysadm_group, 54

SYSCAT, 209

SYSCAT.REFERENCES, 323–324

SYSCAT.TABCONST, 323–324

SYSCAT.TABLES, 384

SYSCAT.TABLES, 368–370

SYSCTRL, 30, 55, 107, 109, 146, 151, 744, 758, 768, 832, 833–837, 869, 871, 874, 913, 916, 929, 934, 936.

See also Authorities; Privileges,

auditing and, 913

backup and recovery with, 744

forcing application connections with, 109–110

granting and revoking author/privs with, 869

quiescing/unquiescing an instance and, 30

restore and, 758

roll-forward authority in, 768

taking control of DB2 server with, 107–110

UPDATE DATABASE MANAGER CONFIGURATION and, 835

Sysctrl_group, 55

SYSFUN, 209

SYSIBM, 209

SYSIBMADM.DB_HISTORY view, 769

SYSMANT, 30, 55, 107, 109, 146, 744, 758, 768, 832, 833–837, 869, 871, 874, 913, 916, 920, 929, 934, 936.

See also Authorities; Privileges

auditing and, 913

forcing application connections with, 109–110

granting and revoking author/privs with, 869

groups and, 874

quiescing/unquiescing an instance and, 30

restore and, 758

roll-forward authority in, 768

taking control of DB2 server with, 107–110

Index

- UPDATE DATABASE MANAGER CONFIGURATION and, 836
- Sysmaint_group, 55
- SYSMON, 55, 107, 832, 833, 836–837, 869, 871, 874, 916, 929, 934, 936. *See also* Authorities; Privileges, granting and revoking author/privs with, 869
 - groups and, 874
 - taking control of DB2 server with, 107–110
- UPDATE DATABASE MANAGER CONFIGURATION and, 836
- Sysmon_group, 55
- SYSPROC.ADMIN_COPY_SCHEMA () procedure, 672–674
- SYSPROC.ADMIN_MOVE_TABLE() procedure, 661–672
- SYSSTAT, 209
- System Administrator. *See* SYSADM
- System catalog, 62, 84, 90, 153, 167–169, 171, 174, 184, 209, 221, 233, 264, 272, 294, 298, 299, 307, 310, 315, 318, 319, 323, 358, 368–370, 384, 386, 489, 491, 497, 587, 603, 616, 679, 684, 692, 712, 715, 717, 718, 734, 745, 761, 766, 773, 833, 839, 840, 870–871, 901, 908, 911, 918, 919, 929, 956, 978, 1178
 - authorities stored in, 918–919
 - packages in, 489
 - privileges stored in, 918–919
 - referential integrity and, 323–324
 - security and, 918–919
 - triggers and, 368–370
- System configuration, 34–41
 - aggregate registry variables and, 39–41
 - determining setting of variables in, 36–39
 - environment variables in, 34
 - global-level profile registry in, 34, 1194
 - instance node-level profile registry in, 34, 1194
 - instance-level profile registry in, 34, 1194
 - instances in, 36
 - record types in, 36
 - registry location and precedence in, 35
 - registry profiles in, 34–35
 - registry variables in, 34
 - service records in, 36
 - setting variables in, using db2set, 36–39
 - user-level profile registry in, 34–35, 1194
 - variables in, 36
- System Control. *See* SYSCTRL
- System database directory, connectivity and, 942–943
- System i, 937, 946, 957
- System Maintenance. *See* SYSMANT
- System Managed Space (SMS), 3, 5, 161, 171–173, 182–186, 190, 194–195, 276, 295, 296, 297, 661, 759, 760, 7778, 781, 1028, 1035, 1124
 - SMS table space and, 5, 182–184, 277, 295, 297
- System memory, monitoring, 423–425
- System Monitor. *See* SYSMON
- System monitoring, 406–411
- System period temporal tables, 232–241, 245–246, 291, 1178, 1179, 1180, 1205, 1206
- System registry variables, 23

System z, 946, 957, 937

System_period_adj, 71

TABLE, 392

Table functions

- for monitoring, 405–430

- unformatted event (UE) table and, 475–478

Table load, 63

Table spaces, 161, 162, 167, 175, 182–200, 277, 278, 279, 280, 295, 298–299, 300, 569, 807, 1186, 1187, 1191, 1206, 1207, 1211

- adding containers to, with ALTER STOGROUP, 198–199

- adding new, 760

- altering, with ALTER TABLESPACE, 195–198

- attributes of, 1191

- AUTOMATIC and, 204

- automatic storage, 182–184

- backup, 744

- BLU and, 1035–1036

- caching and, 204

- containers in, 1035–1036

- containers in, LIST TABLESPACE CONTAINERS, 190–191

- converting DMS to automatic storage, 202–204

- creating, with CREATE TABLESPACE, 191–195, 277, 278, 1035–1036

- designing, 204

- DMS, 182–184, 296–297, 298. *See also* Database Managed Space

- dropping, with DROP PENDING TABLESPACES, 736, 815

- dropping, with DROP TABLESPACE, 202

- event monitors for, 465, 446–451, 465

- extents and, 204

- HADR and, 778

- information on, with LIST TABLESPACES, 296, 759

- monitoring and, 415–421, 434–435, 446–447, 465

- moving, 298–299

- NOT LOGGED and, 204

- obtaining information about, with LIST TABLESPACES, 184–189

- pages and, 204

- parallel I/O and, 204

- physical design and, 1035–1036

- prefetch and, 204

- privileges for, 842–843, **842**, 854–855, 862

- pureScale and, 1035–1036, 1124–1125, 1164, 1211

- rebalancing, 199–200, 1181, 1206, 1207

- reclaimable storage and, 200–201

- recovery of, 820

- redirected restore in, with SET TABLESPACE CONTAINERS, 758–760

- REORG utility for, 681–684

- REORGCHK utility for, 680–681

- restoring/recovering, 817

- Shadow tables and, 1081

- SMS, 182–184, 295, 297

Index

- states of, 185–186
- storage groups and, 206
- temporary, 744
- TRUNCATE and, 204
- writing data to, 183, **183**
- Tables, 2, 3, 4, 5, 7, 162, 175, 182, 569, 1036–1041, 1196
 - ADMIN_MOVE_TABLE() procedure for, 661–672
 - BLU and, 1036–1041
 - code sets, Unicode and, 1073–1074
 - column-organized. *See* Column-organized tables
 - column sorts, 1134
 - column table sizes, 1133
 - columns in, 344–345
 - compression limits on, 1015, **1016**
 - converting row tables to columns, 1105
 - creating, with CREATE TABLE, 281, 344–351, 1037–1041
 - data skipping in, 1020–1021
 - Data Studio and, 1064, **1064**
 - databases and, with CREATE DATABASE, 1041
 - DB2_WORKLOAD-ANALYTICS and, 1036
 - delete records for, 1168
 - Design Advisor and db2advis in, 692–696
 - dropped, recovery of, with ALTER or CREATE TABLESPACE, 745–749
 - dropping, 1168
 - event monitors for, 465, 446–451, 465
 - extracting dropped information in, with LIST HISTORY, 747–748
 - indexes and, 1038–1040
 - Ingest utility and, 639
 - monitoring and, 392, 415–421, 447–451, 465
 - physical design and, 1036–1041
 - privileges, 921, 922
 - privileges for, 843–845, **844**, 855–856, 860, 861, 863–864, 868–869, 931
 - pureScale and, 1036–1041
 - random key indexes and, 1041–1045, **1044**, **1045**
 - range clustered (RCT), 161, 213–214, 254, 273, 282, 302, 343, 388, 639, 714
 - range partitioned, 161, 175, 213, 215–221, 223, 282, 284, 285, 303, 639, 714, 1016, 1179
 - reclaiming deleted space in, 1106–1107
 - recovery and, with ALTER or CREATE TABLESPACE, 745–749
 - referential integrity and, 324
 - REORG utility for, 681–684
 - row- to column-organized, 986
 - rows and, extended row size in, 1045–1046, 1192, 1211
 - RUNSTATS in, 684–686
 - shadow. *See* Shadow tables
 - statistics on, in Data Studio, **1065**
 - system period temporal, 232–241, 245–246, 291, 1178, 1179, 1180, 1205, 1206
 - temporal, 2, 71, 231–249, 291, 304, 714, 1178, 1179, 1180, 1205, 1206
 - Tuple Sequence Number (TSN) in, 1021
- Taking control of DB2 server, 106–110

- Data Studio and, 108–109
 - determining who is using instance or database for, 107
 - forcing application connections in, 109–110
 - LIST APPLICATIONS command in, 107–108
- Task Launcher, 116–123, 143, 158, 1059, **1059**
- TBFUNC, 510
- TBSCAN, 510
- TCP/IP, 150, 938, 957, 969, 976, 978, 981–982, 997, 1142
- Telnet commands, 969
- TEMP, 510
- Temporal tables, 2, 71, 231–249, 291, 304, 714, 1178, 1179, 1180, 1205, 1206
 - adjusting temperature in, 224
 - application period, 231, 241–247
 - bitemporal period, 246–247
 - creating, with CREATE STOGROUP, 222–223
 - creating, with CREATE TABLE, 232, 241
 - information about, with DESCRIBE DATA PARTITIONS, 224–225
 - Ingest utility and, 639
 - restrictions on, 240–241
 - SESSION special register and, 247–251
 - system period, 291
 - system period, 232–241, 245–246, 291, 1178, 1179, 1180, 1205, 1206
 - tables in, with CREATE TABLE, 223
 - Time Travel Query and, 231
 - utilities, tools, and file type modifiers for, 239, 240
- Temporary tables/table spaces, 270–271, 281, 292, 299, 302, 304, 744
- Thresholds, 1176, 1203
 - in workload management, 1069
- Threshold violations, event monitors for, 460–461, 466
- Throttling, 23, 56, 78, 103–106, 153, 154, 169, 294, 660, 686, 741, 816
 - backup and, 816
 - changing impact priority in, 104–105
 - impact policies and, 103
 - information on utilities with LIST UTILITIES, 105–106
 - invoking with AUTOCONFIGURE, 100–102
 - utility execution with, 103–104
- Time, monitoring, 391
- TIME, 311, 346
- Time limits on certification exams, 14
- Time period, 304
- Time Remaining screen, certification exam, 15–16, **16**
- time setting, 51
- Time Travel Query, 161, 231–239. *See also* Temporal tables
- Time values, in restore and recovery, 765–766, 765
- Time-spent monitor elements, 405
- Timerons, 432, 566, 566, 996, 1153, 1185, 1188, 1209, 1210
- TIMESTAMP, 311, 346, 392
 - Load utility and, 627
- Timestamps, monitoring and, 391, 392
- Title screen, certification exam, 13–14, **13**

Index

- Tivoli Identity Manager, 1005
- Tivoli Storage Manager (TSM), 72, 1169, 1197
- Tivoli System Automation, 987
- Tivoli System Automation for Multiplatforms (TSA MP), 782, 819–820, 819
- TM database, 55
- Tm_database, 55
- Tools, 2, 239
- TOTAL_BACKUP_xxx, 1141
- TOTAL_COL_xxx, 1133
- TOTAL_INDEX_xxx, 1141
- Tp_mon_name, 55
- TQ, 510
- Trace tool/db2trc, 547–549
- Traces, 7
- Trackmod, 71
- Tracks in certification, 2–9, **2–9**
 - Certified Advanced Database Administrator in, 5–6
 - Certified Application Developer DB2 9.7 for LUW in, 6–7, **7**
 - Certified Database Administration DB2 10.5, 4–5
 - Certified Database Administration for Linux, UNIX, Windows in, 3–4
 - Certified Database Associate in, 2–3
 - Certified Solution Developer DB2 9.7 SQL Procedure in, 8
 - Database Administration, 2–6
 - Database Application Development track, 6–8
 - Database Solution Development track, 8, **9**
- Transaction logging, 723–728, **724**
 - Import utility and, 607
- Transaction Manager, 52
- Transactions, 2, 4, 720–725
 - automatic commit in, 720
 - benchmark testing and db2batch, 688–692
 - COMMIT in, 720–723, **721**
 - db2batch, 688–692
 - Design Advisor and db2advis, 692–696
 - logging in, 723–725. *See also* Transaction logging monitoring and, 392
 - ROLLBACK in, 720–723, **722, 723**
 - SQL and, 720
 - unit of work and, 720
- TRANSFER OWNERSHIP, 838
- Transition tables, triggers and, 364–365
- Transmission Control Protocol/Internet Protocol. *See* TCP/IP
- Transport Layer Security (TLS), 938
- Trap files, first occurrence data capture (FODC) and, 517
- Triggers, 7, 8, 163, 307, 358–370, 379, 380, 386–387, 1171, 1199
 - action associated with, 358
 - activating, 363, 387
 - AFTER, 358–359, 360–363, 387
 - BEFORE, 358, 359–360, 377, 384–385, 387

- creating, with CREATE OR REPLACE TRIGGER, 359, 387
- DROP TRIGGER, 387
- error management using, 364
- exception tables and, 388
- INSERT, UPDATE, and DELETE using, 358, 359–363, 365, 387
- INSTEAD OF, 358, 359, 365, 387, 1121
- major components associated with, 358
- multiple-event, 365–368
- replacing, with CREATE OR REPLACE TRIGGER, 359
- Row and Column Access Control (RCAC) and, 912
- system catalog and, 368–370
- transition tables and, 364–365
- Troubleshooting. *See* Diagnostic and troubleshooting tools
- TRUNCATE, 204
 - Load utility and, 637
- Trust, 55
- Trust_allcints, 55
- Trust_cintauth, 55
- Trusted and untrusted clients, 830–831
- Trusted connections, 825, 879–883, 879
- Trusted contexts, 3, 7, 825, 879–883, 1173, 1200
 - creating, with CREATE TRUSTED CONTEXT, 880–883
- TSM. *See* Tivoli Storage Manager (TSM)
- Tsm_mgmtclass, 72
- Tsm_nondename, 72
- Tsm_owner, 72
- Tsm_password, 72
- Tuning
 - Optim Query Workload Tuner, 987, 1153, 1164
 - SQL, 1059–1060, **1060**, **1063**, 1064, 1059
- Tuple Sequence Number (TSN), 1021, 1184, 1208

- Uncommitted Read (UR), 810
 - HADR and, 779, 821–822
- Unformatted event (UE) table, db2evmonfmt, 467–475, 568
- Unicode, 60, 1073–1074, 1123–1124, 1149, 1163, 1209
- UNION, 510
- UNIQUE constraint, 242, 247, 307, 308, 316–321, **316**, 324, 345, 346–347, 349–350, 375, 382–384, 388, 510, 629, 637, 660, 844, 931, 1011, 1038, 1066, 1157, 1158, 1167, 1196
- Unit of work (UOW), 46, 52, 68–69, 392, 393–394, 399, 404, 405, 406, 408, 412, 429, 439, 475, 465, 466, 467, 475, 478, 513–514, 720, 838, 1134, 1196, 1202. *See also* Transactions
 - event monitors and monitoring of, 406, 408, 457, 466, 1134
- UNIX, 2–7, 14, 26, 28, 31, 35, 44, 46, 95, 124, 144, 146, 160, 167, 174, 199, 343, 370, 384, 469, 502, 517, 518, 525, 527, 533, 571, 572, 620, 637, 646, 711, 725, 759, 830, 859, 874, 939, 941, 942, 946, 954, 956, 962, 969, 970, 972, 974, 975, 976, 982, 997, 1000–1003, 1005, 1006, 1007, 1022, 1047, 1068, 1075, 1081, 1083, 1108, 1141, 1142–1145, 1166, 1194, 1197, 1202
 - authorization in, 1197
 - binding, and db2schema.bnd file and, 956–957
 - connectivity and, 974, 1142, 1143–1145
 - Cygwin and, 1001

Index

- Ingest utility and, 660
- installation process for DB2 in, 1002–1005
- installing DB2, 1166
- JSON database configuration for, 1047–1049
- logging and, 725
- pureScale and, 997, 1108
- Putty and, 1001
- Shadow tables and, 1075–1076
- trusted and untrusted clients in, 830–831
- user IDs in, 1006–1008
- workload management and, 1068
- X11 prerequisite for, 1001
- UNQUIESCE, 29–31
- UOW. *See* Unit of work
- UPDATE, 57, 58, 73, 74, 82, 102, 103, 148, 149, 150, 153, 157, 185, 187, 236, 143, 250, 254, 256, 258, 329, 330, 331, 332, 358, 365, 387, 394, 395, 410, 414, 451, 492, 510, 563, 584, 588, 597, 608, 609, 611, 639, 710, 715, 718, 788, 833, 835, 836, 840, 844, 846, 850, 855, 856, 859, 860, 863, 864, 867, 871, 872, 886, 906, 930, 931, 941, 979, 982, 1073, 1096
 - privilege for, 844, 845, 846, 850–851
 - roles and, 872
 - triggers and, 358, 365, 387
 - XML and, 254, 256
- UPDATE DATABASE CONFIGURATION, 73–74, 82, 148–149
- UPDATE DATABASE MANAGER CONFIGURATION, 57, 58, 102, 103, 153, 833, 835, 836
- UPDATE DATABASE MONITOR, 563
- UPDATE MONITOR SWITCH, 394–395, 563
- Update Rule, 325, 329–332, **330**, **331**
- Upgrades, 1108–1110, 1157, 1167, 1182, 1183, 1195, 1207
- Upgrading an instance, 31–32
- USAGE, privilege for, 847
- Usage lists, 163
- USE, 584, 842–843, 851
 - roles and, 872
- User-defined data types, 312
- User-Defined Functions (UDF), 7, 163
 - privileges for, 868
- User Direct Access Programming Library (uDAPL), 794
- User IDs, 1006–1008, 1169
 - authentication and, 829
 - db2ckpw and, 1006–1007
 - db2inst1/db2inst2, 1006–1007
- User temporary table spaces, 209
- User-level profile registry, 34–35, 1194
- Util_heap_sz, 72, 994–995
- Util_impact_lim, 56, 153
- UTIL_IMPACT_PRIORITY, 154, 816
- Utilities, 56, 72, 137, 153, 168, 239, 569–718
 - ADMIN_CMD stored procedure and, 607–611
 - Backup Utility in, 739–749

- benchmark testing and db2batch, 688–692
- binding, 954–956
- Continuous Data Ingest (CDI) and. *See* Ingest utility
- converting row tables to columns, 1105
- data management, 704
- data movement, 570–680
- database maintenance, 680–688
- db2look command and, 679–680
- db2move command and, 679–680
- delimited ASCII (DEL), 570–572
- Design Advisor and db2advis, 692–696
- executing in throttled mode, 103–104
- Export, 576–584
- extracting columnar data from external files from, 574–576, **574**
- file formats and, 570–573
- FLUSH PACKAGE CACHE, 687–688
- impact priorities and, 104–105, 154, 816
- Import utility, 584–607
- information on, using LIST UTILITIES, 105–106
- Ingest utility and, 638–661
- Load utility and, 611–638
- location method for extraction in, 575, **575**, 596, 624
- modules in, DBMS_UTILITY module in, 696–699
- name method for extraction in, 575–576, **576**, 596, 624
- nondelimited ASCII (ASC), 572–573
- PC integrated exchange format (PC/IXF), 573, 626
- performance related, 688–699
- position method for extraction in, 574, **574**, 596, 624
- Rebind, 686–687
- Recovery, 769–771, 816
- relocating a database using, with db2relocatedb, 674–679
- REORG, 681–684
- REORGCHK, 680–681
- Restore, 749–758
- Roll-forward, 763–768, 817
- RUNSTATS, 684–686
- SYSPROC.ADMIN_COPY_SCHEMA () procedure in, 672–674
- SYSPROC.ADMIN_MOVE_TABLE() procedure in, 661–672
- throttling. *See* Throttling
- worksheet format (WSF), 573
- UTL_xxx modules, 697

- Validation tool/db2val, 532–535
- VARCHAR, 311, 345, 1185, 1209
- VARGRAPHIC, 311, 346
- Variables, 8
 - system configuration and, 36
- Vector memory, column sortheap, 1134
- Vendoropt, 72
- Verification process, shadow tables and, 1099–1104

Index

- VERIFY_xxx, 911
- Version recovery, 730, 731, **732**, 733–734, 739, 749–751, 758, 763, 768, 769, 770, 817
- Versions, 54
- Victim/victimless pages, 1017, **1017**, **1018**
- Viewing job history, 123
- Views, 2, 3, 7, 163, 167–168, 351–348, **354**, **356**, 374, 377
 - CREATE VIEW, 374
 - creating, with CHECK OPTION, 351–358, 373, 383, 385–386
 - creating, with CREATE OR REPLACE VIEW, 353–358
 - Ingest utility and, 639
 - inoperative, 356–358, 374, 383
 - INSERT INTO, 387
 - monitoring and, administrative, 430–431
 - perspectives and, 1049, **1050**
 - privileges for, 845, 856–857, 860, 864, 929–930
 - revalidation in, 357
 - subviews and, 357
- VIO, 999
- Virtual machines/virtualization vs. pureScale, 792, 999, 1107–1108
- Visual Explain, 23, 143, 506–511, 557, 559, 564, **1044**, **1045**
 - common operators in DB2 and, 510
- Wait list, lock-wait chains in, 433–434
- Wait times, 405
 - monitoring and, 421–423
- Warehouse model packs, 987
- Watermark monitoring, 390
- Webinars for certification, 11
- WebSphere Application Server (WAS), 879
- WHERE, 912
- WHILE triggers, 358, 387
- WHS Cubing Services, 986
- WHS Design Studio, 986
- WHS Mining and Text Analytics, 986
- WHS SQL Warehouse Tool, 986
- Windows, 2–7, 14, 28, 35, 37, 42, 44, 46, 51, 124, 167, 174, 295, 469, 502, 517, 518, 525, 571, 572, 637, 660, 676, 711, 725, 741, 751, 759, 799, 823, 826, 828, 830, 859, 897, 938, 939, 941, 946, 956, 963, 969, 970, 974, 975, 976, 982, 1001–1003, 1006, 1007, 1047, 1048, 1075, 1076, 1081, 1108, 1142, 1144–1145, 1194, 1197, 1208
 - authorization in, 1197
 - binding, and db2schema.bnd file and, 956–957
 - connectivity and, 975, 1142
 - Ingest utility and, 660
 - installation process for DB2 in, 1002–1005
 - JSON database configuration for, 1047–1049
 - logging and, 725
 - pureScale and, 1108
 - shadow tables and, 1075–1076
 - trusted and untrusted clients in, 830–831

- user IDs in, 1006–1008
- Wlim_disp_cpu_shares, 56
- Wlim_disp_min_util, 56
- Wlm_collect_int, 72
- Wlm_disp_concur, 56
- Wlm_dispatcher, 56
- WLM_GET_xxx, 1069
- WLMADM, 832, 838, 839, 840, 870, 8972, 916, 934, 936, 1068, 1119. *See also* Authorities; Privileges
 - granting and revoking author/privs with, 870
 - pureScale and, 1119
 - roles and, 872
- Work action, in workload management, 1069
- Work class, in workload management, 1069, 1070, 1210
- Work class set (WCS), 996, 1070
- Workflow Assistant, 1061, **1061**
- Workgroup DB2, 1207–1208
- Workgroup Server Edition (WSE), 251, 987, 1187
- Workload, in workload management, 1069, 1070–1072
- Workload management/Workload Manager, 6, 56, 72, 389, 925, 985, 987, 1068–1072, 1149, 1150, 1153, 1184, 1188, 1202, 1208, 1210
 - autonomic workloads in, 996–997
 - batch processing in, 1150
 - best fit workloads and, 998
 - catalog statistics and, 1099
 - classes in, 1069–1070
 - control workloads and, 998
 - converting row tables to columns, 1105
 - creating work classes in, with CREATE/ALTER WORK CLASS, 1070
 - Design Advisor and db2advis in, 692–696
 - DDL, 1069
 - histogram in, 1069
 - monitoring and, 406, 410–411, 486–489
 - objects in, 1069
 - Optim Query Workload Tuner, 4, 124, 985, 987, 1044, 1059–1060, **1060**, 1064, 1153, 1194
 - planning in, 1068
 - policies for, 1068
 - pureScale and, 1108, 1119–1122
 - service class in, 1069
 - Service level agreements (SLAs) and, 1068
 - sets, work class, 1070
 - shadow tables in. *See* Shadow tables, 1074
 - superclass (service class) in, 1069
 - Task Launcher in, 1059, **1059**, 1059
 - thresholds in, with CREATE THRESHOLD, 1069, 1072
 - timerons in, 432, 566, 566, 996, 1153, 1185, 1188, 1209, 1210
 - UNIX and, 1068
 - verification process in, 1099–1104
 - WLMADM and, 839
 - work action in, 1069
 - work class in, 1069, 1070

Index

- work class set (WCS) in, 996
- Workflow Assistant in, 1061, **1061**
- workflow diagram for shadow table in, **1095**
- workload in, 1069, 1070–1072
- workload matrix in, 1068
- Workload Management Administrator. *See* WLMADM authority
- Worksheet format (WSF), 573
- Workstations, 24
- World Wide Web Consortium (W3C), 256
- Writes
 - data page writes, 1133
 - SET WRITE SUSPEND/RESUME in, 773–776

- X11 and UNIX, 1001
- XANDOR, 510
- XISCAN, 510
- XML, 3, 7, 64, 88, 161, 163, 251–261, 289, 1172, 1173, 1200
 - attributes in, 252–253
 - compression and, 157, 270
 - converting, 1201
 - CREATE TABLE in, 253
 - DB2 Express Edition (EE) and, 251
 - DB2 Workgroup Server Edition (WSE) and, 251
 - declaration in, 252–253
 - DELETE in, 254, 256
 - elements in, 252–253
 - Export utility and, 577, 582–583, **583**
 - Import utility and, 598, **600**, 600, 603, **604**
 - indexing in, 259–261, **260**, 290, 303, 1201
 - Ingest utility and, 661
 - INSERT in, 254, 255
 - Load utility and, 630–631
 - manipulating XML data in, 254–259
 - monitoring and, 409–410, 434
 - paths in, 259
 - pureXML and, 251
 - retrieving XML data, 256
 - SELECT in, 254, 259
 - UPDATE in, 254, 256
 - XML column for, 252, 253–254
 - XML data type, 252, 312, 346
 - XQuery in, 256–259
- XML column, 252, 253–254
- XML Data Area (XDA), 434
- XML data type, 252, 312, 346
- XML Schema Repository (XSR), 839
- XPATH, 3
- XQuery, 7, 64, 70, 79, 256–258, 259, 260, 490, 491, 510, 511, 566, 578, 579, 689, 690, 692, 712, 833, 837, 839
 - Design Advisor and db2advis in, 692–696

optimization class and, 511–512
XSCAN, 510

z/OS client, 1143–1145
ZZJO, 510