

INDEX

[] (square brackets) in regular expressions, 50

A

abstract keyword, 3

abstract methods, 353

access permissions, views, 223–224

aCFB encryption, 504

ACID, 238

atomicity

non-transactional tables, 238–239

transactional tables, 239–240

consistency, 240–241

durability, 247–250

foreign keys, 38

isolation, 242

levels, 247

READ_COMMITTED, 244–245

READ_UNCOMMITTED, 245–246

REPEATABLE_READ, 242–244

replication, 247

SERIALIZABLE, 246–247

relational integrity, 35

ACLs (Access Control Lists), 473–474

Aksyonoff, Andrew, 369

algorithms, UDFs, 277

aliases, MySQL, 22

ALTER ROUTINE privilege, 230

alternation in regular expressions, 51

AND operator (MySQL), 33

anonymous functions, 78

ANSII control codes, 523

APC (Alternative PHP Cache), 132

configuration, 132–133

installation, 132–133

serialization, 135

when to use, 138

appending, memcached, 166–167

application sample view, 67–69

Archive storage engine, 109–110

args key, 544

arguments

checking for string, 285

functions, in extensions, 331–334

type, checking, 274

UDFs, 192

ArrayAccess interface, 77–78

arrays

accessing, 347–349

associative, 70, 348

building, 347–349

tracking unlinks, 77

associative arrays, 70, 348

atomicity (ACID)

non-transactional tables, 238–239

transactional tables, 239–240

auditing, 500–501

authorization, memcached, 140

autoconf, 292

macros, 292

automation attacks, 514–515

B

b-tree indexes, 365

back-references in regular expressions, 53

basic authentication, 461–463

Beanstalk, 442

bi-directional encoding

mcrypt extension, 503–505

XOR Cipher, 501–503

binary, definition, 327

binary logging, 500

file analysis, 256–257

replication and, 251

bindings (SOAP), 537–538

bison, 308

Blackhole storage engine, 108–109

blocking sockets, 346
BlogEntry class, polymorphism, 2
Boolean query syntax, 385
boundary characters in regular expressions, 49
breaking replication, 261–262
breakpoints in debugging, 302–303
built-in functions, 335–336
built-in rewrite maps, 451
bytecode caching, 132

C

C
C++ and, 308
UDFs, 273
Zend engine, 308
C++
C and, 308
UDFs, 273
C-libraries, UDFs and, 272
cache replication, 145
caching, 180–188
 bytecode, 132
 cache locality, 171–173
 cache replication, 145
 cache status, checking, 135–138
 catalogue table, 142
 deterministic, 144
 file system, 145
 introduction, 131
 LRU (Least Recently Used), 140
 memcached, 138–140
 authorization, 140
 consistent hashing, 140
 replication, 140
 non-deterministic, 144
 opcode, 132
 page, 145
 partial page, 145
 proactive, 145
 read-through, 141, 216–219
 session, 145
 state, 145
 strategies, 144–145
 user, enabling, 133
 write-back, 142
 write-through caching, 141
_call() magic method, 11
callback functions, lambda functions, 78

Callback parameter, 81
callbacks, read-through caching callback, 165
calling methods, 356
_callStatic() magic method, 11
CAPTCHA (Complete Automated Public Turing test to tell Computers and Humans Apart), 514
cardinality, 550–551
CAS (check and set), 174–176, 201–202
case sensitivity, joins (MySQL), 26–27
catalogue table, 142
CBC (Cipher Block Chaining) encryption, 504
CentOS, memcached installation, 145–146
CFB (Cipher-Feedback Mode) encryption, 504
character classes (MySQL), 60
character sets, 486–487
 collations, 487–488
ciphers, 502
C10K problem, 132
class entry, 350
class key, 544
CLASS magic constant, 8
classes
 CodeGen_PECL, example, 320–321
 command-line scripts, 521–522
 constants, 354
 definition, 350–351
 EmailValidator, 56–57
 FileLog, 9–10
 ForumTopic, 4
 inheritance, 350–351
 interfaces
 implementing, 7
 inheritance, 7
 LoggingProxy, 13–14
 methods, magic, 9–11
 MultitonExample, 12–13
 namespaces, 350–351
 Node, defining, 3–4
 Pagination, 75–76
 SingletonExample, 11–12
 variables, 3
CLI (Command Line Interface), 312
 command-line scripts, 517
clients
 memcached, 153
 PECL/memcached, 162–163
_clone() magic method, 11
clone keyword, 12
closures, 81–83
code, critical section, 360

CodeGen_PECL, 314
 classes, example, 320–321
 constants, defining, 318
 dependencies, 338
 extensions, as XML documents, 314
 functions, defining, 316–317
 globals, 318–319
 INI directives, 318–319
 interfaces, 321
 methods, defining, 320
 objects, defining, 319
 properties, defining, 320
 XML files, creating, 314–316

Cole, Jeremy, 483
 collations of character sets, 487–488
 colored text, 523–524
 column privileges, 490–491
 command-line scripts
 classes, 521–522
 CLI, 517
 color, 523–524
 creating, 517–524
 cron jobs, 522–523
 input
 prompting for, 520–521
 reading, 518–520
 shebang, 518
 commands
 CREATE USER, 496
 DROP USER, 497–498
 GRANT, 268, 497
 mysql_secure_installation, 494
 replication, 261
 REVOKE, 268, 497
 SHOW, 491–492
 SHOW TABLE STATUS, 92
 SHOW ENGINES, 89–90

comments
 functions, 330
 regular expressions, 49, 54
 COMMIT command, implied, 250
 complex joins (MySQL), 27
 complex subqueries (MySQL), 47–49
 compressed tables, MyISAM storage engine, 96
 concrete decorators, 16
 CONDITION clause, 229–230
 conditional rewrite rules, 447–450
 exclamation point, 448
 testing for patterns, 449
 testing to check file or path, 449

conditions, 229–230
 config.m4 file, 310
 config.w32 file, 310
 consistency (ACID), 240–241
 consistent hashing, 140
 constants, 354
 CodeGen_PECL, defining, 318
 magic, 8–9
 MINIT function, 357
 constraints, 35
 NOT NULL, 35–36
 UNIQUE KEY, 37
 UNSIGNED, 36
 constructors, copy constructors, 329
 contexts, 343–344
 cookies, 471–473
 copy constructor, 329
 correlated subqueries (MySQL), 46
 count() method, 73
 countable interface, 73–74
 CREATE ROUTINE privilege, 230
 CREATE USER command, 496
 CREATE VIEW privilege, 223
 CREDITS file, 310
 critical section, 360
 cron jobs, 522–523
 crontab, 522
 CSRF attack, 511–514
 CSV (Comma Separated Value), 112
 CSV storage engine, 112
 CTR (Counter Mode) encryption, 504
 cURL, 528–529
 current() method, 72
 cursors, 229
 .cvignore file, 310

D

\d shorthand character, 50
 Danga Interactive, 139
 data capture
 MySQL, 61
 regular expressions, 53–54
 data persistence, Memory storage engine, 103
 data sources, Sphinx, 376–379
 data storage, disk, 275
 data types
 ENUM, 36–37
 function definitions file, 312–313
 SET, 36–37

data warehousing
 InfiniDB, 124
 Infobright, 125
 views, 225
databases, user authentication, 458
Day, Eric, 412
 db_bytes() function, 283, 287
 db_bytes_deinit() function, 284
 db_bytes_init() function, 284
DealNews, 402
debug back-trace, 544
debuggers
 gdb, 273
 attaching to running process, 301–302
 Microsoft debugger, 273
 MySQL and, 564–565
 UDFs, 273
debugging, 543
 breakpoints, 302–303
 debug back-trace, 544
 literal values and, 304
 MySQL
 commands, 564
 error log, 560–561
 PROCESSLIST, 562–564
 slow query log, 561–562
 stack traces, creating, 544–545
stepping through code, 302–303
 UDFs, 300–301
DECLARE clause, 229
decorating objects, 14
decorator pattern, 14–16
decrementing, memcached, 168–169
default users, new installation, 494
defining, interfaces, 7
delete() method, 168
DELETE command, triggers, 235–236
DELETE statement, 556–558
delta indexes, 389–394
dependencies, CodeGen_PECL, 338
dependent queries, 45
derived tables (MySQL), 46–47
deriving interfaces, 7
design patterns
 decorator, 14–16
 façade, 13–14
 multiton, 11–13
 observer, 18–19

proxy, 13–14
publisher/subscriber, 18–19
singleton, 11–13
destructors, 5
deterministic cache, 144
Digest Authentication, 507
digest authentication, 463–466
Digg, 402
 __DIR__ magic constant, 9
directives, rewrite rules, 444
 RewriteCond, 447
directories
 ext, 308
 main, 308
 project directory organization, 281–283
 Zend, 308
disk space, InnoDB storage engine, 99–100
disk storage, 275
distributed indexes, 373
DML statements, Blackhole storage engine, 108
drivers, MySQL, 88
Drizzle, 124, 126
DROP USER command, 497–498
dumb server, 140
durability (ACID), 247–250

E

eAccelerator, 132
 configuration, 133–134
 installation, 133–134
 opcode, optimizer, 134
 serialization, 135
 when to use, 138
eBay Memory storage engine, 127
ECB (Electronic Code Book) encryption, 503
elements, unsetting, 77
EmailValidator class, 56–57
encoding
 bi-directional
 mycrypt extension, 503–505
 XOR Cipher, 501–503
 single-directional, 505–506
encryption
 aCFB, 504
 CBC, 504
 CFB, 504
 CTR, 504

- ECB, 503
mycrypt extension, 503–505
nOFB, 504
OFB, 504
STREAM, 503
ENFORCE_SAFE_MODE flag, 342
engines, Zend, 308
ENUM data type, 36–37
envelopes, SOAP requests, 532
error handling, memcached, 178–179
error log, debugging MySQL, 560–561
errors, stack overflow, 544
errors/warnings, 346–347
values, 346–347
escaping quotes, 80
events
altering, 267–268
creating, 265–266
cron and, 264
disabling, 267–268
dropping, 267–268
event scheduler, enabling, 267
meta data, 269–270
privileges, 268
re-enabling, 268
eventual consistency, 402
excerpts, 395
expert regular expressions, 52–54
EXPERIMENTAL file, 310
EXPLAIN statement, 547–549
EXPLAIN syntax, 102
expressions. *See* regular expressions
ext directory, 308
extensibility, Federated storage engine, 113
extensions, 307
CodeGen_PECL, 314
as XML documents, 314
XML files, 314–316
ext_skel, 309
functions in
arguments, 331–334
built-in functions, 335–336
comments, 330
definitions, 329–331
helper functions, 339–340
returning values, 334–335
standard output, 340
printing, 361
source code, 308
UNIX/Linux, 308
variables in, 321–329
zval, 321–328
ext_skel, 309
function definitions file, 309

F

- façade design pattern, 13–14
-
- factory methods, 17
-
- Falcon storage engine
-
- overview, 118
-
- parameters, 119
-
- tables, 119–120
-
- Federated storage engine
-
- characteristics, 113–114
-
- Federated Server, 116–117
-
- files, 117
-
- read operations, 112
-
- standards, 113
-
- table creation, 114–115
-
- write statements, 112
-
- feet_to_meters() function, 274
-
- feet_to_meters_deinit() function, 274
-
- feet_to_meters_init() function, 274
-
- fetch method, 134
-
- fetch worker (Gearman), 430–433
-
- fetchall_hash_result() method, 299
-
- file key, 544
-
- (FILE_ magic constant, 8
-
- file system caching, 145
-
- FileLog class, 9–10
-
- files
-
- config.m4, 310
-
- config.w32, 310
-
- CREDITS, 310
-
- .cvsignore, 310
-
- EXPERIMENTAL, 310
-
- help, generating, 313
-
- LICENSE, 316
-
- final keyword, 3
-
- Fitzpatrick, Brad, 139, 401
-
- flags in streams, 341–342
-
- flex, 308
-
- flow control (MySQL), 34–35, 230
-
- CASE function, 34
-
- IF() function, 34
-
- IFNULL() function, 35
-
- NULLIF() function, 35
-
- foreign keys, 37–40

ForumTopic class, 4
polymorphism, 2
`fstat()` function, 275
`FULLTEXT` indexes, 365
Boolean mode, 367–368
creating, 366
issues, 368–369
Natural Language mode, 367
searches, 366
 modifier values, 366
function definitions file
 `ext_skel`, 309
 using, 312–313
function key, 544
`_Function_` magic constant, 9
functions
 anonymous functions, 78
 closures, 81–83
CodeGen_PECL, defining, 316–317
creating dynamically, 79
`db_bytes()`, 283, 287
`db_bytes_deinit()`, 284
`db_bytes_init()`, 284
extensions
 arguments, 331–334
 built-in functions, 335–336
 comments, 330
 definitions, 329–331
 helper functions, 339–340
 returning values, 334–335
`feet_to_meters()`, 274
`feet_to_meters_deinit()`, 274
`feet_to_meters_init()`, 274
`fstat()`, 275
hashing functions, 506
helper functions, 339–340
`init()`, 285
lambda functions, 65, 78
lambda-style, 78–81
`lstat()`, 290
`MATCH()`, 366
memcached, 191–192
`MINIT`, 350, 357
PHP API functions, consuming, 336–338
`php_printf`, 340, 361
`serialize()`, 9
`setToCache()`, 184
`sprintf()`, 290
standard output, 340
`stat()`, 275
stored, 226
stream functions, 341–343
thread-safe, 273
user defined (*See* UDFs (user defined functions))
`zend_parse_parameters`, 334

G

`gcc`, 308
`gdb` debugger, 273
 running process, attaching to, 301–302
GDB (GNU Debugger), 564
Gearman, 142, 144
 DealNews, 402
 Digg, 402
 eventual consistency, 402
 Gearman MySQL UDFs, 407–409
 `gman_do()`, 408
 `gman_servers_set()`, 407–408
 `gman_sum()`, 408–409
 gearmand
 installation, 404
 running, 406–407
installation
 Gearman MySQL UDFs, 405–406
 gearmand, 404
 job server, 404
 PECL/Gearman, 404–405
job server, running, 406–407
language independence, 412
Livejournal and, 401, 402
map/reduce operations, 403
Narada and, 412
overview, 402–404
PHP and, 409–412
SixApart, 402
workers
 fetch, 430–433
 index, 434–435
 insert, 429–430
 running, 440
 search, 433–434
`Xing.com`, 402
`Yahoo!`, 402
Gearman MySQL UDFs, 272
 `gman_do()`, 408
 `gman_servers_set()`, 407–408
 `gman_sum()`, 408–409
 installation, 405–406
GearmanClient object, 410

`GearmanWorker` object, 410
`_get()` magic method, 10
`get` method, 134
`get_class()` method, 6
`getDelayedByKey()` method, 173–174
`get_fields()` method, 299
`getFromCache()` method, 183
`getMulti()` method, 169–170
`getServers()` method, 178
`globals`, 357
 accessing, 359
`CodeGen_PECL`, defining, 318–319
`critical section`, 360
 defining, 358–359
`thread safety`, 359–361
`True Global Resources`, 360
`gman_do()` UDF, 408
`gman_servers_set()` UDF, 407–408
`gman_sum()` UDF, 408–409
`GNU General Public License`, 133
`GPL (General Public License)`, 316
`GRANT` command, 268, 497
`GROUP BY (MySQL)`, 30–31
`GUID (Globally Unique Identifier)`, 363

H

`Hadoop`, 442
`HANDLER` clause, 229–230
`handlers`, 229–230
`hash tables`
 accessing, 348, 349
 looping through, 349
 modifying, 349
`hashing`, 505–506
`hashing functions`, 506
`HashTable` data type, 348
`HAVING` clause (MySQL), 32
`help files`, generating, 313
`helper functions`, 339–340
`host permissions`, 499
`HTTP-based user authentication`, 460
 basic, 460, 461–463
 digest, 460, 463–466
`human readability`, 222

I

`IGNORE_PATH` flag, 341
`IGNORE_URL` flag, 342

implementation, interfaces, 7
`implied COMMIT`, 250
`incrementing`, memcached, 168–169
`index workers (Gearman)`, 434–435
`indexes`
 common mistakes, 552–554
 identifying, 549–550
 optimizing, 552
 types, 551
`indexing`
 attributes, 376
 b-tree indexes, 365
 columns, 376
 delta indexes, 389–394
 distributed indexes, 373
 fields, 376
 `FULLTEXT` indexes, 365
 Boolean mode, 367–368
 creating, 366
 issues, 368–369
 Natural Language mode, 367
 inherited, Sphinx, 381
 merging indexes, 394–395
 searches, 365–366
 Sphinx, 372–373
 `Narada`, 416–417
 TokuDB, 124–125
`InfiniDB`, 124
`Infobright`, 125
`INFORMATION_SCHEMA`. *See I_S*
`INFORMATION_SCHEMA` schema, 289–292
`inheritance`, 350–351
 classes inheriting interfaces, 7
`inherited indexes`, 381
`INI directives`, 357
 `CodeGen_PECL`, defining, 318–319
 defining, 358–359
`init()` function, 285
`initialization`, lazy initialization, 12
`inner joins (MySQL)`, 21–23
 `ON`, 22
 syntax, 22–23
 `USING`, 22
`InnoDB` storage engine, 97–98
 disk space, 99–100
`MyISAM` comparison, 99–102
`parameters`, 98
`primary key order`, 100
`SQL optimization`, 102–103
`tables`, 98–99

INSERT command, triggers, 233–234
INSERT statement, 558
 triggers, 233
insert worker (Gearman), 429–430
INSERT...ON DUPLICATE KEY UPDATE statement, 558–560
installation
 APC, 132–133
 eAccelerator, 133–134
 Gearman, 404–407
 libmemcached, 155
 memcached
 CentOS, 145–146
 OpenSolaris, 147
 from source, 147–148
 testing, 151–152
 Ubuntu, 146–147
Memcached Functions for MySQL, 193–196
Sphinx, 370–371
UDFs, 294–295
 checking, 289–292
instanceof keyword, 6
instances, memcached, 160
instantiation, 2–6
 interfaces, 7
integer values, incrementing/decrementing, 204–206
integration points for triggers, 232
interface keyword, 7
interfaces, 7–8
 ArrayAccess, 77–78
 CodeGen_PECL, 321
 countable, 73–74
 creating, 354–355
 defining, 7
 deriving, 7
 implementing, 7
 inheritance, 7
 instantiation, 7
 Iterator interface, 69–73
 methods, 70
 ReadableNode, 7
 SeekableIterator, 75–76
 testing variables against, 7
internal maps, 451
_invoke() magic method, 11
I_S
 character sets, 486–487
 collations, 487–488
column privileges, 490–491
extensions, 491
metadata, 486
MySQL
 status variables, 484–485
 system variables, 485–486
privilege tables, 488
profiling table columns, 483–484
schema privileges, 489
SHOW command, 478
SHOW_PROCESSLIST, 482
status tables, 482
table objects, 479, 481–482
table privileges, 489–490
tables, 478, 479–480
user privileges, 488
isolation (ACID), 242
 levels, 247
READ_COMMITTED, 244–245
READ_UNCOMMITTED, 245–246
REPEATABLE_READ, 242–244
replication, 247
SERIALIZABLE, 246–247
_isset() magic method, 10
isValidCipher() method, 519
Iterator interface, 69–73
IteratorIterator, 75
iterators, 67
 actions, 70
 IteratorIterator, 75
 methods, 71
 rewinding, 71

J

job servers, Gearman, 142
joins (MySQL), 19–21
 aliases, 22
 case sensitivity, 26–27
 complex, 27
 inner joins, 21–23
 ON, 22
 syntax, 22–23
 USING, 22
 left joins, 25
 multiple tables, 20
 outer joins, 23–24
 right joins, 24–25
 syntax, 25–27

K

Kasindorf, Alan, 140
key() method, 72, 77
 keywords
 `abstract`, 3
 `clone`, 12
 `final`, 3
 `instanceof`, 6
 `interface`, 7
 `parent`, 2
 `private`, 3
 `protected`, 3
 `public`, 3
 `WITH ROLLUP`, 31–32
 `static`, 3, 12
 Kickfire storage engine, 128

L

lambda functions, 65, 78
 lambda-style functions, 78–81
 lazy initialization, 12
 lazy processing, 143
 left joins (MySQL), 25
 libgearman, UDFs, 272
 libmemcached, 153–154
 features, 154
 installation, 155
 Memcached Functions for MySQL, 193
 UDFs, 272
 utility programs, 154
 `memcat`, 155–156
 `memcpy`, 156
 `memerror`, 158
 `memflush`, 156
 `memrm`, 157
 `memslap`, 157–158
 `memstat`, 157
 libmysql, 88
 LIB_MYSQLUDF_PREG library, 61
 libraries
 interfacing PHP with MySQL, 88
 LIB_MYSQLUDF_PREG, 61
 MySQL Stored Routines Library, 231
 library dependencies, modules, compiling, 311
 LICENSE file, 316
 line key, 544
`_LINE_` magic constant, 8

literal values, 304
 Livejournal, 402
 Gearman and, 401
`load()` method, 182
 login, rewrite rules, 450
 LoggingProxy class, 13–14
 logic operators (MySQL), 33–34
 logos, 362–363
 lookaheads, 52–53
 lookbehinds, 52–53
 lookups
 random, 451–452
 text, 451–452
 loops, 65–67
 hash tables, 349
 iterators, 67
 LRU (Least Recently Used) cache, 140
`lstat()` function, 290

M

Maesaka, Turo, 140
 magic constants, 8–9
 `_CLASS_`, 8
 `_DIR_`, 9
 `_FILE_`, 8
 `_Function_`, 9
 `_LINE_`, 8
 `_METHOD_`, 9
 `_NAMESPACE_`, 9
 magic methods, 8
 `_call()`, 11
 `_callStatic()`, 11
 classes, 9–11
 `_clone()`, 11
 `_get()`, 10
 `_invoke()`, 11
 `_isset()`, 10
 `_set()`, 10
 `_set_state()`, 11
 `_sleep()`, 9
 `_unset()`, 10
 `_wakeup()`, 9
 main directory, 308
 map/reduce operations, 403
 maps
 internal, 451
 rewrite maps, 450–455
 built-in, 451

Maria storage engine, 120–121
MariaDB, 126
MATCH() function, 366
materialized view, 225
mcrypt extension, 503–505
mcrypt library, white space, 505
md5 hash, decrypting, 459
member variables
 private, serialization, 10
 visibilities, 3
memcached, 138–140. *See also* PECL/memcached
 add method, 163
 appending, 166–167
 authorization, 140
 cache locality, 171–173
 CAS (check and swap), 174–176
 class methods, 163–166
 clients, 153
 consistent hashing, 140
 decrementing, 168–169
 delete() method, 168
 dumb server, 140
 error handling, 178–179
 functions, 191–192
 get method, 164–165
 getDelayedByKey() method, 173–174
 getMulti() method, 169–170
 getServers() method, 178
 -h switch, 148
 incrementing, 168–169
 installation
 CentOS, 145–146
 OpenSolaris, 147
 from source, 147–148
 testing, 151–152
 Ubuntu, 146–147
 instances, 140, 160
 mailing list, 140
 memcapable key-value stores, 186
 moxi proxy, 185–186
 multi-get, 169–170
 multi-set, 170–171
 Narada and, 412
 prepend, 166–167
 read-through caching, 141
 replace method, 164
 replication, 140

servers
 connecting to, 197–198
 connection, 160–161
set method, 164
starting, 148–149
startup scripts, 149
 Debian-based, 150
 OpenSolaris, 151
 Redhat-based, 150–151
statistics, 176–178
Tokyo Tyrant, 187–188
user contract, 140
using, 141–144
values, storing, 198–199
write-back caching, 142
write-through caching, 141
Memcached Functions for MySQL, 191–192
behavioral functions
 memc_behavior_get, 207
 memc_behavior_set, 207–208
 memc_list_behaviors, 206–207
 memc_list_distribution_types, 209
 memc_list_hash_types, 209
data fetching functions, 204
data setting functions
 memc_add, 200
 memc_append, 202–203
 memc_cas, 201
 memc_delete, 203
 memc_prepend, 202
 memc_replace, 200–201
 memc_set, 198–199
 memc_set_by_key, 199–200
incrementing/decrementing
 memc_decrement, 205–206
 memc_increment, 204–205
installation
 building source, 194
 configuring source, 194
 func table, 196
 installing UDF, 195
libmemcached, 196–197
Perl install utility, 195
source distribution directory, 212–214
statistical functions, 209–210
 memc_stat_get_keys, 211
 memc_stat_get_value, 211
 memc_stats, 210–211

triggers, 212
 execution, 214–216

values, 272

version functions, 211
 memc_libmemcached_version, 212
 memc_udf_version, 212

memc_add function, 200

memc_append function, 202–203

memcat, 155–156

memc_behavior_get function, 207

memc_behavior_set function, 207–208

memc_cas function, 201

memc_decrement function, 205–206

memc_delete function, 203

memc_get function, 204

memc_increment function, 204–205

memc_libmemcached_version function, 212

memc_list_behaviors function, 206–207

memc_list_distribution_types function, 209

memc_list_hash_types function, 209

memcmp, 156

memc_prepend function, 202

memc_replace function, 200–201

memc_server_count, 198

memc_servers_set, 197–198

memc_set function, 198–199

memc_set_by_key function, 199–200

memc_stat_get_keys function, 211

memc_stat_get_value function, 211

memc_stats function, 210–211

memc_udf_version function, 212

memerror, 158

memflush, 156

memory management, 328–329

Memory storage engine
 data persistence, 103
 parameters, 103
 table-level locking, 104
 table size maximum, 104
 table usage, 103–107

memrm, 157

memslap, 157–158

memstat, 157

Merge storage engine, 110–111

merging indexes, 394–395

metadata, 477
 events, 269–270

I_S, 486

stored routines, 230–231

METHOD magic constant, 9

methods, 351–353
 abstract, defining, 353
 calling, 356
 CodeGen_PECL, defining, 320
 count(), 73
 current(), 72
 factory methods, 17
 fetch, 134
 fetchall_hash_result(), 299
 get, 134
 get_class(), 6
 get_fields(), 299
 getFromCache(), 183
 interface, 70
 isValidCipher(), 519
 iterator methods, 71
 key(), 72, 77
 load(), 182
 magic, 8
 classes, 9–11
 next(), 73
 print_r(), 543
 rewind(), 71, 76
 save(), 182
 seek(), 75–76
 set, 134
 setMulti(), 170–171
 touchPage(), 77
 type hinting, 6
 unlink(), 78
 unset(), 78
 valid(), 72
 var_dump(), 543
 visibilities, 3

Microsoft debugger, 273

MINIT function, 350, 357

moxi (memcached proxy), 185–186

MTA (Mail Transfer Agent), 55

multiton design patterns, 11–13

MultitonExample class, 12–13

MVCC (multiversion concurrency control), 242

MX (Mail Exchange), 55

MyISAM storage engine, 90–91, 93–94
 compressed tables, 96
 high read environment, 97
 high write environment, 97
 InnoDB comparison, 99–102

Merge storage engine and, 110–111

- MySQL instance crashes, 97
- parameters, 94
- row formats, 94–95
- version, 96
- when to use, 97
- MySQL
 - binaries, custom, 89
 - character classes, 60
 - character sets, 486–487
 - collations, 487–488
 - connecting/disconnecting, 296–297
 - constraints, 35
 - debuggers, 564–565
 - debugging
 - commands, 564
 - error log, 560–561
 - `PROCESSLIST`, 562–564
 - slow query log, 561–562
 - drivers, 88
 - flow control, 32, 34–35
 - `CASE` function, 34
 - `IF()` function, 34
 - `IFNULL()` function, 35
 - `NULLIF()` function, 35
 - `FULLTEXT` indexes, 365
 - `HAVING` clause, 32
 - joins, 19–21
 - aliases, 22
 - case sensitivity, 26–27
 - complex, 27
 - inner joins, 21–23
 - left joins, 25
 - multiple tables, 20
 - outer joins, 23–24
 - right joins, 24–25
 - syntax, 25–27
 - libraries, interfacing with PHP, 88
 - logic operators, 33–34
 - logical operations, 32
 - logical operators
 - `AND`, 33
 - `NOT`, 33
 - `OR`, 33
 - `XOR`, 33
- Memcached Functions for MySQL (*See* Memcached Functions for MySQL)
- privilege tables, 488
- queries
 - dependent queries, 45
 - `GROUP BY`, 30–31
 - subqueries, 45–46
- regular expressions, 59–62
 - data capture, 61
 - query filters, 62
 - replacing strings, 62
- relational integrity, 35
- replication
 - benefits, 264
 - binary log file analysis, 256–257
 - breaking, 261–262
 - commands, 261
 - configuration options, 260
 - issues with, 263–264
 - master analysis, 255–256
 - selective, 262–263
 - slave analysis, 257–258
 - testing, 254–255, 259
- security model, 496–497
- `SELECT` statements, 28–29
- server, hardening, 493–501
- silent column changes, 45
- status tables, `I_S`, 482
- status variables, 484–485
- storage engines, 87, 89
 - `Archive`, 109–110
 - available engines, 89–90
 - `Blackhole`, 108–109
 - `CSV`, 112
 - default, 93
 - defining, 90–91
 - `Falcon`, 118–120
 - features, 89
 - `Federated`, 112–118
 - information, 89–92
 - `InnoDB`, 97–103
 - `Maria`, 120–121
 - `Memory`, 103–107
 - `Merge`, 110–111
 - `MyISAM`, 93–97
 - non-transactional, 89–90
 - table, confirming, 91–92
 - transactional, 89–90
 - system variables, 485–486
 - tables, derived tables, 46–47

unauthenticated users, 494
`UNION`, 28–29
 user privileges, 488
 MySQL Native Driver (for PHP), 88
 MySQL Stored Routines Library, 231
 MySQLi Result objects, 307
`mysqld`, 88
 as native PHP extension, 88
`mysql_secure_installation` command, 494

N

names, views, 225
`_NAMESPACE_` magic constant, 9
 namespaces, 350–351
 Narada
 components, 413–415
 configuration file, 420–422
 database tables, 415–416
 downloading, 413
 flow chart depiction, 439
 Gearman and, 412
 workers, running, 440
 index page, 435–438
 memcached and, 412
 Narada class, 422–429
 `get()` method, 425
 `getContent()` method, 426
 `NaradaWorkerCallback()` method, 428
 `runWorker()` method, 428
 `searchIndex()` method, 427
 `storeContent()` method, 425
 `verify()` method, 428
 `NaradaIndexTimer.php`, 438–439
 open source, 441–442
 overview, 412
 running, 439–441
 Sphinx and, 412
 setup, 416–429
 Sun and, 412
 Natural Language mode, 367
 NDB storage engine, 127
 networking
 clients, building, 344–345
 servers, building, 345–346
`next()` method, 73
 NitroEDB storage engine, 127

Node class
 defining, 3–4
 polymorphism, 2
 nOFB encryption, 504
 non-blocking sockets, 346
 non-deterministic cache, 144
 non-transactional tables, 238–239
 Norbye, Trond, 140
`NOT NULL` constraint, 35–36
`NOT` operator (MySQL), 33

O

object-oriented PHP, 2–19
 interfaces, 7–8
 magic constants, 8–9
 objects
 CodeGen_PECL, defining, 319
 decorating, 14
 identifying, 355–356
 methods, 351–353
 permissions, 496
 properties, 353–354
 table objects, creating, 223–224
 observer pattern, 18–19
 OFB (Output-Feedback Mode) encryption, 504
 opcode caching, 132
 open source projects
 creating, 281–283
 Narada, 441–442
 subdirectories, 282
 top-level directories, 282–283
 open source UDFs, 272
 OpenSolaris, memcached installation, 147
 operating system, security, 495
 optimization, SQL, InnoDB storage engine and, 102–103
`OR` operator (MySQL), 33
 Our Delta patches, 126
 outer joins (MySQL), 23–24

P

page caching, 145
 Pagination class, 75–76
 parameters
 Callback, 81

Memory storage engine, 103
MyISAM storage engine, 94
stored functions, 226–227
stored procedures, 226–227
parent keyword, 2
parsing, quoted strings, 80
partial page caching, 145
passwords
 salts, 460
 SHA-1 hash, 459
PBXT (Primebase Transaction) storage engine, 122–123
PEAR packages, 314
PECL extensions, 132
PECL/Gearman, installation, 404–405
PECL/memcached, 158–159
 client behavior, 162–163
 operations, 159–160
 putting and retrieving data, 163–166
PECL (PHP Extension Community Library), 309
Percona builds for storage engine patches, 125
Perl, install utility, 195
permissions, 495–497
 host permissions, 499
 objects, 496
 restarting, 498
 triggers, 237
 valid, 496
 views, 223–224
PHP
 Gearman and, 409–412
 libraries, interfacing with MySQL, 88
 pure authentication, 466–473
 cookies, 471–473
 sessions, user authentication and, 467–471
 Sphinx and, 395–399
PHP API functions, consuming, 336–338
PHP license, 316
PHP_FE, 351
phpize program, 312
PHP_ME, 351
PHP_METHOD, 351
php_network.h, 344–345
php_printf function, 340, 361
php_socket_t, 345
php_stream, 341
polymorphism, 2–6
 BlogEntry class, 2
 ForumTopic class, 2
 Node class, 2
ports, 537
prepend, memcached, 166–167
primary keys, InnoDB storage engine, 100
printing, extensions, 361
print_r() method, 543
private keyword, 3
private member variables, serialization, 10
privilege tables (I_S), 488
privileges
 appropriate use, 499
 column privileges, 490–491
 event privileges, 268
 removing, 497
 schema privileges, 489
 stored routines, 230–231
 table privileges, 489–490
 user privileges, 488
proactive caching, 145
PROCESSLIST, 562–564
project directory organization, 281–283
properties, 353–354
 CodeGen_PECL, defining, 320
protected keyword, 3
protocol wrappers, 522
 disabled, 529
prototyping, query builder and, 83–85
Proven Scaling, 483
proxy design pattern, 13–14
PSEA (pluggable storage engine architecture), 89
 InnoDB Plugin, 121–122
 PBXT, 122–123
 XtraDB, 123
public keyword, 3
publisher/subscriber pattern, 18–19

Q

QEP (Query Execution Plan), 102
quantifiers in regular expressions, 50
queries (MySQL)
 dependent queries, 45
 derived tables, 46–47
 filtering, 62
 GROUP BY, 30–31
 subqueries
 complex, 47–49
 correlated subqueries, 46
query builder, prototyping, 83–85
quote syntax in regular expressions, 51

quoted strings, parsing, 80
 quotes, escaping, 80

R

rainbow tables, 459
 random lookups, 451–452
 read operations, Federated storage engine, 112
 read-through caching, 141, 216–219
 read-through caching callback, 165
 ReadableNode interface, 7
 READ_COMMITTED, 244–245
 READ_UNCOMMITTED, 245–246
 records
 returning, 72–73
 seeking specific, 75–76
 validating, 72–73
 regular expressions
 [] (square brackets), 50
 alternation, 51
 back-references, 53
 boundary character, 49
 comments, 49, 54
 data capture, 53–54
 exclamation point, 448
 expert, 52–54
 general patterns, 49–51
 MySQL, 59–62
 Perl-style, 54
 POSIX-style, 54
 quantifiers, 50
 quote syntax, 51
 replacing strings, 58–59
 relational integrity (MySQL), 35
 REPEATABLE_READ, 242–244
 REPLACE command, triggers, 232, 236–237
 REPLACE statement, 558
 replacing strings
 MySQL, 62
 regular expressions, 58–59
 replay attacks, 507–509
 replication
 benefits, 264
 binary log file analysis, 256–257
 binary logging, 251
 Blackhole storage engine, 108
 breaking, 261–262
 commands, 261
 configuration, options, 260

isolation (ACID), 247
 issues with, 263–264
 master analysis, 255–256
 memcached, 140
 purposes, 250–251
 selective, 262–263
 setup
 master configuration, 251–252
 slave configuration, 252
 slave operation, 253
 slave analysis, 257–258
 testing, 254–255, 259
 REPORT_ERRORS flag, 342
 REST (Representational State Transfer), 524–531
 controller, 525–526
 cURL, 528–529
 error codes, 533
 requests, 529–531
 resources, 525
 status codes, 527–528
 verbs, 524
 result set array, returning, 297–300
 returning records, 72–73
 REVOKE command, 268, 497
 rewind() method, 71, 76
 rewinding an iterator, 71
 rewrite maps, 450–455
 built-in, 451
 rewrite rules
 conditional, 447–450
 exclamation point, 448
 testing for patterns, 449
 testing to check file or path, 449
 directives, 444
 RewriteCond, 447
 flags
 chain, 446
 env, 447
 forbidden, 445
 gone, 446
 last, 446
 multiple, 447
 next, 446
 nocase, 446
 noescape, 446
 nosubreq, 446
 passthrough, 446
 proxy, 446
 qsappend, 446

```
    redirect, 445
    skip, 446
    type, 446
flow, 445–447
logging, 450
optimization, 450
purposes, 443, 444–445
random lookups, 451–452
structure, 444–445
RewriteCond directive, 447
right joins (MySQL), 24–25
root user, 494
    changing, 498–499
routines, 226
RPCs (Remote Procedure Calls), 532
```

S

```
\s shorthand character, 50
Sallings, Dustin, 140
save( ) method, 182
scaling out, 138
schema privileges, 489
search engines, Narada, 412–442
search worker (Gearman), 433–434
searchd (Sphinx), 374–376
searches
    FULLTEXT indexes, 366
    indexes, 365–366
    modifier values, 366
    Sphinx, 369, 383
        Boolean query syntax, 385
        extended query syntax, 385–386
        search modes, 384
        search utility, 386–388
        sort modes, 384
security
    additional, 500
    auditing, 500–501
    automation attacks, 514–515
    backdoor, 498
    bypassing, 498
    CSRF, 511–514
    ideal, 499–500
    introduction, 493
    operating system, 495
    permissions, 495–497
    replay attacks, protecting against, 507–509
```

```
SQL injection, protecting against, 506–507
XSS (cross-site scripting) attacks, 509–511
seek( ) method, 75–76
SeekableIterator interface, 75–76
seeking specific records, 75–76
SELECT statement, 217, 546–555
SELECT statements (MySQL), 28–29
selective replication, 262–263
SERIALIZABLE, 246–247
serialization, 9
    APC, 135
    eAccelerator, 135
    private member variables, 10
    serialize( ) function, 9
Server SQL, modes, 40–44
servers, memcached, connecting to, 197–198
session caching, 145
_set( ) magic method, 10
SET data type, 36–37
set method, 134
setMulti( ) method, 170–171
_set_state( ) magic method, 11
setToCache( ) function, 184
SHA-1 hash, 459
shebang, 518
shortened URL applications, 452–455
shorthand characters, 50
SHOW command, 478, 491–492
SHOW MASTER STATUS command, 256
SHOW TABLE STATUS command, 92
SHOW.ENGINES command, 89–90
SHOW_PROCESSLIST, 482
shutdown, restricting, 498
silent column changes in MySQL, 45
single-directional encoding, 505–506
singleton design patterns, 11–13
SingletonExample class, 11–12
SixApart, 402
skeleton code
    compiling, 309–312
    creating, 309–312
--skip-grants option, 498
_sleep( ) magic method, 9
slow query log, 561–562
SOAP (Simple Object Access Protocol)
    bindings, 537–538
    client, setup, 540–541
    library, WSDL, 533–534
```

- requests, envelopes, 532
- server, setup, 538–540
- web services, 532–533
- socket pointers, valid, 55–56
- sockets, blocking, 346
- source distribution directory (Memcached Functions for MySql), 212–214
- Sphinx (SQL Phrase Index)
 - Aksyonoff, Andrew, 369
 - applications using, 395–399
 - data sources, 372, 376–379
 - delta indexes, 391–394
 - distributed indexes, 373
 - indexer, 374
 - indexer options, 382
 - indexes, 372–373
 - attributes, 376
 - columns, 376
 - defining, 379–381
 - fields, 376
 - inherited, 381
 - installation, 370–371
 - Narada and, 412, 416–417
 - PHP and, 395–399
 - programs, 369–370
 - sakila_main data source, 379
 - searchd, 374–376
 - searchd options, 382
 - searches, 383
 - Boolean query syntax, 385
 - extended query syntax, 385–386
 - modes, 384
 - search utility, 386–388
 - sort modes, 384
 - Sphinx.conf, 371–382
 - SphinxQL, 388–389
 - starting
 - running indexer, 382–383
 - searchd, 383
 - utilities, 369–370
 - sphinx_counter, 390
 - sprintf() function, 290
 - SQL injection, protecting against, 506–507
 - sql-mode-traditional-myisam-sql, 42–43
 - sql-mode-traditional.sql, 42
 - SQL (Structured Query Language)
 - DELETE statement, 556–558
 - EXPLAIN statement, 547–549
 - indexes
 - common mistakes, 552–554
 - identifying, 549–550
 - optimizing, 552
 - types, 551
 - INSERT statement, 558
 - INSERT...ON DUPLICATE KEY UPDATE statement, 558–560
 - optimization, InnoDB storage engine and, 102–103
 - queries, optimizing, 545–558
 - REPLACE statement, 558
 - SELECT statement, 546–555
 - statements
 - identifying, 545–546
 - reducing, 545
 - UDFs, 300
 - UPDATE statement, 556
 - sql_mode=NO_ENGINESUBSTITUTION, 43–44
 - sql_mode=TRADITIONAL, 43
 - square brackets ([]) in regular expressions, 50
 - stack overflow errors, 544
 - stack traces
 - creating, 544–545
 - keys, 544
 - standalone storage engines, 124–125
 - standard output from functions, 340
 - stat() function, 275
 - state caching, 145
 - statement blocks, 228
 - statements
 - DELETE, 556–558
 - EXPLAIN, 547–549
 - INSERT, 558
 - INSERT...ON DUPLICATE KEY UPDATE, 558–560
 - REPLACE, 558
 - SELECT, 546–555
 - UPDATE, 556
 - static keyword, 3, 12
 - statistics, memcached, 176–178
 - stepping through code, 302–303
 - storage engine
 - eBay Memory, 127
 - integrity, 44–45
 - Kickfire, 128
 - MySQL, 87, 89
 - Archive, 109–110
 - available engines, 89–90
 - Blackhole, 108–109

CSV, 112
default, 93
defining, 90–91
Falcon, 118–120
features, 89
Federated, 112–118
information, 89–92
InnoDB, 97–103
Maria, 120–121
Memory, 103–107
Merge, 110–111
MyISAM, 93–97
non-transactional, 89–90
table, confirming, 91–92
transactional, 89–90
NDB, 127
NitroEDB, 127
patch products
 Our Delta, 126
 Percona builds, 125
PSEA
 InnoDB Plugin, 121–122
 PBXT, 122–123
 XtraDB, 123
standalone products, 124
Virident, 128
stored functions, 226
 characteristics, 228
 parameters, 226–227
stored procedures, 226
 characteristics, 228
 parameters, 226–227
stored routines
 conditions, 229–230
 disadvantages, 231
 extending, 231
 flow control, 230
 handlers, 229–230
 logic
 cursors, 229
 variables, 228–229
meta data, 230–231
MySQL Stored Routines Library, 231
privileges, 230–231
STREAM encryption, 503
stream functions, 341–343
 `php_register_url_stream_wrapper`, 343
 `php_register_url_stream_wrapper_volatile`, 343
 `php_stream_close`, 343
 `php_stream_context_alloc`, 343
 `php_stream_context_del_link`, 343
 `php_stream_context_free`, 343
 `php_stream_context_get_link`, 343
 `php_stream_context_get_option`, 343
 `php_stream_context_set`, 343
 `php_stream_context_set_link`, 343
 `php_stream_context_set_option`, 343
 `php_stream_copy_to_mem`, 343
 `php_stream_copy_to_stream`, 343
 `php_stream_copy_tostream_ex`, 343
 `php_stream_eof`, 343
 `php_stream_flush`, 343
 `php_stream_free`, 343
 `php_stream_from_persistent_id`, 343
 `php_stream_getc`, 343
 `php_stream_get_line`, 343
 `php_stream_get_record`, 343
 `php_stream_locate_url_wrapper`, 343
 `php_stream_mkdir`, 343
 `php_stream_opendir`, 343
 `php_stream_open_wrapper`, 343
 `php_stream_open_wrapper_ex`, 343
 `php_stream_putc`, 343
 `php_stream_puts`, 343
 `php_stream_read`, 343
 `php_stream_readdir`, 343
 `php_stream_rewind`, 343
 `php_stream_rmdir`, 343
 `php_stream_scandir`, 343
 `php_stream_seek`, 343
 `php_stream_set_options`, 343
 `php_stream_stat`, 343
 `php_stream_tell`, 343
 `php_stream_wrapper_log_error`, 343
 `php_stream_write`, 343
 `php_unregister_url_stream_wrapper`, 343
 `php_unregister_url_stream_wrapper_volatile`, 343
 `STREAM_ASSUME_REALPATH` flag, 342
 `STREAM_DISABLE_OPEN_BASEDIR` flag, 342
 `STREAM_DISABLE_URL_PROTECTION` flag, 342
 `STREAM_MUST_SEEK` flag, 342
 `STREAM_ONLY_GET_HEADERS` flag, 342
 `STREAM_OPEN_FOR_INCLUDE` flag, 342
 `STREAM_OPEN_PERSISTENT` flag, 342
streams
 flags, 341–342
 validation, 341
 `STREAM_USE_URL` flag, 342

STREAM_WILL_CAST flag, 342
 strings
 converting to, 327–328
 quoted, parsing, 80
 replacing
 MySQL, 62
 regular expressions, 58–59
 as `zvals`, 326–328
 subqueries (MySQL), 45–46
 complex, 47–49
 correlated subqueries, 46
 derived tables, 46–47
 Sun, Narada and, 412
 syntax
 joins, 25–27
 triggers, 233

T

table-level locking, 104
 table objects, creating, 223–224
 table privileges, 489–490
 table storage engines (MySQL), confirming, 91–92
 tables
 building, 362
 non-transactional, 238–239
 transactional, 239–240
 tables InnoDB storage engine, 98–99
 tables (MySQL)
 aliases, 22
 derived tables, 46–47
 terminal types, 6
 testing
 memcached installation, 151–152
 replication, 254–255, 259
 unit testing, factory methods, 17
 variables against interfaces, 7
 `zval`, 323–324
 tests file, 310
 text lookups, 451–452
 thread-safe functions, 273
 thread safety, globals, 359–361
 TokuDB, 124–125
 Tokyo Tyrant, 187–188
 touchPage() method, 77
 tracking, unlinks, 77
 transactional tables, 239–240

transactions, 237–238
 isolation level, 242
 transparency, Federated storage engine, 113
 triggers
 defining, 232
 DELETE command, 235–236
 INSERT command, 233–234
 integration points, 232
 Memcached Functions for MySQL, 212
 execution, 214–216
 permissions, 237
 REPLACE command, 236–237
 syntax, 233
 UPDATE statement, 234–235
 True Global Resources, 360
 TSRMLS (Thread Safe Resource Management), 359
`tsrm_mutex`, 360
 Turck MMCache, 133
 Turing Test, automation attacks, 514
 type hinting, 6
 type key, 544

U

Ubuntu, memcached installation, 146–147
 UDFs (user defined functions), 191, 231, 271
 algorithms, 277
 arguments, 192
 building, 292–294
 C-libraries, 272
 coding, 281
 debuggers, 273
 debugging, 300–301
 breakpoints, 302–303
 gdb, 301–302
 literal values and, 304
 stepping through code, 302–303
 design, high-level, 275–277
 developing, requirements, 273–274
 example, 274–275
 installation, 294–295
 checking, 289–292
 open source, 272
 project creation, 281–283
 overview, 272–273
 PHP and, 296–300
 required functions, 274

result set array, returning, 297–300
running, 295–296
source code implementation, 283–289
SQL statements, 300
thread-safe functions, 273
unauthenticated users, 494
UNION (MySQL), 28–29
UNIQUE KEY constraint, 37
unit testing, factory methods, 17
`unlink()` method, 78
unlinks, tracking, 77
`_unset()` magic method, 10
`unset()` method, 78
unsetting elements, 77
UNSIGNED constraint, 36
UPDATE statement, 219–220, 556
triggers, 234–235
updating, views, 225
URLs
 rewrite rules, 444
 shortened, applications, 452–455
USE_PATH flag, 342
user authentication
 database, 458
 HTTP-based, 460
 basic, 460, 461–463
 digest, 460, 463–466
 need for, 457
 password, as salted md5 hash, 459
 pure PHP authentication, 466–473
 cookies, 471–473
 sessions, 467–471
 unauthenticated users, 494
 username, 458–459
user caching
 enabling, 133
 storage, 134
user privileges (I_S), 488
users
 default, new installation, 494
 root, 494
 changing, 498–499
utilities, libmemcached, 154
 memcat, 155–156
 memcp, 156
 memerror, 158
 memflush, 156
 memrm, 157

memslap, 157–158
memstat, 157

V

`valid()` method, 72
valid permissions, 496
validation
 records, 72–73
 streams, 341
values, returning, 334–335
`var_dump()` method, 543
variables, 228–229
 classes, 3
 configuration, default values, 266
 extensions, 321–329
 `zval`, 321–328
member, serialization, 10
testing against interfaces, 7
views, 221–222
 access permissions, 223–224
 data warehousing, 225
 materialized, 225
 names, 225
 updating, 225
Viridient storage engine, 128
visibilities, 3

W

`\w` shorthand character, 50
Wafflegrid, 129
`_wakeup()` magic method, 9
warnings, 346–347
web services, 517
 REST (Representational State Transfer), 524–531
 SOAP, 532–533
WITH ROLLUP keyword, 31–32
write-back caching, 142
write statements, Federated storage engine, 112
write-through caching, 141
WSDL (Web Service Descriptor Language), 533–534
 defining service, 538
 messages, defining, 536
 ports, 537
 types, 535–536
 complex, 535

X

Xing.com, 402
XML documents
 creating, 314–316
 extensions as, 314
XOR Cipher, 501–503
XOR operator (MySQL), 33
XSS (cross-site scripting) attacks, 509–511
XtraDB storage engine, 123

Y

Yahoo!, 402

Z

Zend directory, 308
Zend engine, 308
 memory management, 328–329
zend_parse_parameters function, 334
ZTS (Zend Thread Safety), 359
zval, 321–322
 comparing, 324–326
 reading, 324–326
 setting, 323–324
 testing, 323–324
zvals, strings as, 326–328

