

Symbols

- ! operator, 30, 102, 107, 306
- != operator, 55, 79, 106
 - object equality and, 77
- !~ operator, 102, 106
- " (quotation marks), 47
 - expressions, interpolating into strings, 308
- # (hash)
 - comments and, 2, 26, 36
 - string interpolation and, 48
- # { } interpolation in regexps, 311
- \$ (dollar sign), 87
 - global
 - variables and, 30
 - keywords prefixes and, 31
 - regexp anchor, 315
 - ! global variable, 158, 398
 - \$\$ global variable, 397
 - \$\$ global variable, 400
 - \$' global variable, 400
 - \$* global variable, 397
 - \$+ global variable, 400
 - \$, global operator, 399
 - \$_d global variable, 397
 - \$_I global variable, 398
 - \$_K global variables, 398
 - \$. global variable, 399
 - \$/ global variable, 399
 - \$. global variable, 253, 398
 - \$. global variable, 399
 - \$< global operator, 358, 399
 - \$> global operator, 399
 - \$? global variable, 397
 - \$@ global variable, 398
 - \$\ global variable, 399
 - \$_ global variable, 360, 399
 - \$` global variable, 400
 - \$~ global regexp variable, 318
 - \$~ global variable, 316, 400
 - % (percent sign)
 - modulo operator, using as, 44, 96, 102
 - %Q sequence, using as, 51
 - %r delimiter, 310
 - %x syntax, 53
 - %= operator, 102
 - %q sequences, 65
 - %Q sequences, 65
 - & (ampersand)
 - method invocation and, 191
 - & operator, 66, 102, 104
 - && operator, 102, 107
 - &&= operator, 96, 102
 - &= operator, 96, 102
 - ' (single quotes), using for string literals, 46
 - () (parentheses)
 - functions/methods, using, 3
 - if statements and, 119
 - method declarations, 33, 90, 183
 - optional, 183
 - parallel assignment and, 99
 - required, 184
 - * (asterisk), 115
 - matching characters, 352
 - multiplication operator, 5, 44, 102
 - repetition (strings), 304
 - variable-length method argument lists, setting, 186
 - ** (exponentiation) operator, 45, 102, 103
 - **= operator, 96, 102

- *= operator, 96, 102
- + (plus sign), 5, 44, 102
 - concatenation and, 304
 - strings and, 55
 - unary, 103, 209
- += operator, 95, 102
- +@ unary operator, 103
- , (comma), 115
- (minus sign) operator, 44, 102
 - unary, 103
- debug command-line option, 392
- operator, 96
- == operator, 102
- > (arrow) characters, 194
- @ unary operator, 103
- . (dot), 87, 115
 - directories, 353
 - matching characters and newlines (regular expressions), 314
 - method declarations, 89
 - method invocations and, 90
- .. operator, 68, 102, 109–111
- ... operator, 102, 109–111
- / (forward slash)
 - directory separator character, 351
 - division operator, 44
 - Windows directory separator character, 351
- /* ... */ (C-style) comments, 26
- /= operator, 96, 102
- : (colon), 115
- :: (double colon), 87, 89, 115
- ;(semicolons), as statement terminators, 32, 115
- < (less than) operator, 55, 79, 102, 105
- << operator, 5, 10, 102
 - appending text, 304
 - set elements and, 348
 - string operators and, 55
- <<= operator, 96, 102
- <= (less than or equal) operator, 55, 79, 102, 105
- <=> operator, 69, 102, 105, 225
 - object order and, 78
 - SortedSet class and, 347
 - testing membership in ranges, 70
- = (equals sign), 6, 30, 102
 - embedded documents, writing comments and, 27
 - method names and, 180
 - nonoverridable operator, 6
 - suffixes/prefixes punctuation, 7
- == operator, 7, 79, 102, 106
 - object equality, testing, 76
 - point equality and, 222
 - proc equality and, 197
 - String class and, 55
- === (see case equality operator)
- => (arrow), 67, 115
 - comments, using for, 2
- =begin (multiline comments), 26
- =end (multiline comments), 26
- =~ operator, 78, 102, 106
 - pattern matching and, 315–321
- > (greater than) operator, 55, 79, 102
- >= (greater than or equal) operator, 55, 79, 102, 105
- >> operator, 102
- >>= operator, 96, 102
- ? (question mark), 30
 - matching characters with, 352
 - method names and, 180
- ?: operator, 102, 111, 127
- @ (at sign), 87
 - class variables and, 230
 - instance variables and, 8, 30
 - keywords prefixes and, 31
- @@ (class variables), 230
- [] (square-bracket array-index), 5, 56, 60, 64, 115
 - access to arrays/hashtables, 221
 - strings, indexing, 304
- []= operator, 5, 10, 95
 - storing key/values in hashtables, 342
- \ (backslash)
 - apostrophes, using inside string literals, 47
 - escapes, 49
 - line breaks, escaping, 32
- \ (slash)
 - regular expressions and, 310
- \ " (nonterminating quotation mark), 47
- ^ operator, 102, 104
 - regexp anchor, 315
- ^= operator, 96, 102
- _ (underscore)
 - constants, 88
 - integer literals, using, 43
- ` (backtick) method (Kernel), 53

- { } (curly braces), 115
 - block structure and, 35
 - iterators in blocks, using, 3
 - string interpolation and, 48
 - syntax of blocks, 141
 - Unicode escapes and, 50
- | (Boolean) operator, 66, 102
- | operator, 104
- |= operator, 96, 102
- || operator, 102, 107
- ||= operator, 96, 102
- ~ (tilde), 102, 104

A

- "a" (append) file mode, 357
- a command-line option, 393
- \a escape (BEL character), 49
- \A regexp anchor, 315
- "a+" (append and reading) file mode, 357
- abbreviated assignments, 92, 95
- aborting thread state, 378
- accessors, 217–219
 - define_method and, 288
 - methods, 3
- add method (Set), 349
- add? method (Set), 349
- alias chaining, 290–296
- alias keyword, 181
- aliases (method), 181
- alias_method method (Module), 275
- all? method (Enumerable), 333
- allocate keyword, 242
- ampersand (&)
 - method invocation and, 191
 - (see also &)
- ancestry, 235, 267
- AND (&) operator, 102
- and keyword, 103, 107
- any? method (Enumerable), 333
- apostrophes ('), using inside string literals, 47
- append operator (see >>)
- arbitrary delimiters for string literals, 51
- ARGF stream, 358, 360, 396
- ArgumentError, 159
- arguments
 - arbitrary number, setting, 186
 - block, 189–192
 - method, 185–192
 - parameters, mapping to, 188

- passing to blocks, 143
- procs/lambda, passing to, 200
- ARGV stream, 396
- arithmetic, 44
 - coerce method and, 81
 - operations, 103
- arity (proc/lambda), 196
- Array class
 - suffixes/prefixes punctuation, 7
 - [] operator, 5
- Array functions
 - conversion functions and, 81
- Array.new method, 334
- Array.[] method, 334
- arrays, 3, 64–67, 334–341
 - access with [], 221
 - associative, 340
 - comparison, 338
 - creating, 334
 - elements, 335
 - altering, 336
 - assigning to, 94
 - hashes, extracting from, 343
 - iterating, 337
 - methods, passing to, 187
 - searching, 337
 - sorting, 337
 - stacks and queues, 338
 - variable-length method arguments, 186
- arrows (=>), 115
 - comments, using for, 2
- ASCII
 - \a escape, 49
 - default source encoding, 36
- assignments, 6, 92–100
 - abbreviated, 95
 - operators, 112
 - parallel, 97
- assoc method (Array), 340
- associative arrays, 67, 340
- asterisk (*), 115
 - matching characters (Dir class), 352
 - multiplication operator, 5, 44
 - repetition (strings), 304
 - variable-length method argument lists, setting, 186
- at sign (@), 87
 - class variables and, 230
 - instance variables and, 8, 30

- keywords prefixes and, 31
- attr method (Module), 219
- attributes, 94, 214, 217
 - (see also accessors)
 - define_method and, 288
 - methods
 - accessor, defining, 275
- attr_accessor method (Module), 218
 - define_method and, 275
- attr_reader method (Module), 218
 - define_method and, 275
- at_exit method (Kernel), 166
- autoload? function, 257

B

- \b (backspace character) escape, 49
- \B (nonword boundary) regexp anchor, 315
- \b (word boundary) regexp anchor, 315
- backslash (\)
 - apostrophes, using inside string literals, 47
 - escapes, 49
 - line breaks, escaping, 32
- backspace character (\b) escape, 49
- backtick (`) method (Kernel), 53
- backtraces, 279
- BasicObject class, 235
- BEGIN keyword, 165
 - program execution and, 39
- BigDecimal class, 43, 323
- Bignum class, 5, 42
 - arithmetic and, 44
 - bit-manipulation operators and, 45
- BINARY encodings, 60
- binary floating-point, 45
- binary strings, 309
- binding method (Proc), 202
- Binding object, 269
- binding UnboundMethod objects, 205
- binmode method (IO), 359
- bit-manipulation operators, 45
- blocks, 3–4, 140, 176
 - arguments, 189–192
 - passing to, 143–146
 - evaluating, 268–271
 - structure, 35
 - syntax, 141
 - thread safety and, 283
 - values of, 141
 - variable scope, 142

- Boolean flip-flops, 109
- Boolean operators, 66, 82
- break statement, 32, 142, 146, 148
 - next keyword and, 150
 - procs/lambdas/blocks and, 199
 - throw and catch methods, 153
- bytesize method (String), 59

C

- c command-line option, 394
- C command-line option, 394
- C-style (*/* ... */*) comments, 26
- call method (Continuation), 172
- call method (Method), 274
- call method (Proc), 190
- caller method (Kernel), 279
- Cardinal, 12
- carriage return (\r) escape, 49
- case equality (===) operator, 7, 75, 102, 106
 - case keyword and, 125
- case sensitivity, 29
 - string comparison and, 56
- case statement, 123
- casecmp method (String), 56
- catch statement, 146, 153
- chaining methods, 238
- characters
 - accessing, 56–58
 - literals, 54
 - multibyte, 59–64
- Class class (Module), 218
- class hierarchy, 235
- class keyword
 - creating classes, 215
- class method (Object), 266
- class methods, 228
 - inheritance of, 239
 - lookup, 259
- Class#new method, 242
- Class::new method, 242
- classes, 2, 8–10, 395
 - block structure and, 35
 - defining, 214–232, 268
 - exceptions, defining, 156
 - identifiers and, 28
 - instance variables, 231
 - variables, 87, 230
- classify method (Set), 350
- class_eval method (Module), 270, 279, 288

- class_exec method (Module), 270
- clone method (Object), 243–245
- close method (IO), 365
- closures, 200–203
 - bindings and, 202
- coding comments, 36
- coerce method (Numeric), 81
- collect method (Enumerable), 132, 329
- collections, 129, 328–350
 - iterating/converting and, 328
 - searching, 331
 - sorting, 330
- colon (:), 115
- comma (,), 115
- command-line options, 390
- command-line tools, 13
- comments, 2, 36, 59
 - lexical structure and, 26
- Comparable module, 105, 250
- compare_by_identity method, 345
- comparison operators, 56, 105
- compiled languages, 39
- Complex class, 43, 323
- compute-bound programs, 373
- concurrency, 372–386
 - iterators, 381
 - modification, 140
 - platform dependencies and, 373
 - thread lifecycle and, 374
 - threads for, 166
- conditional (?:) operator, 111
- conditionals, 118–127
 - case statements, 123
 - if statements, 118–121
- constants, 88, 229, 271–272
 - assigning, 94
 - inheritance of, 241
 - missing, 284
- constructors, 215
- const_missing method, 284
- continue keyword, 149
- continuous ranges, 69
- control flow, 146–154
- control structures, 4, 118–172
 - custom, 281–284
- conversions (object), 79–83
- coroutines, 167
- cover? method (Range), 70
- curly braces ({}), 115

- block structure and, 35
- iterators in blocks, using, 3
- string interpolation and, 48
- syntax of blocks, 141
- Unicode escapes and, 50

D

- \d (digits) regexp character class, 314
- \D (nondigits) regexp character class, 314
- d command-line option, 392
- DATA stream, 36, 360, 396
- datatypes, 42–84
 - arrays, 64–67
 - character literals, 54
 - hashes, 67–68
 - numbers, 42–46
 - string operators, 55
 - text and, 46–64
- dates and times, 325
- DateTime class, 325
- deadlocks, 384
- \$DEBUG variable, 397
- decimal point (.), using floating-point literals
 - and, 43
- def keyword, 5
 - methods, defining, 177
- default external encoding, 38, 359
- default parameters of methods, 185
- defined? keyword, 103, 113
- define_finalizer method (ObjectSpace), 281
- define_method method (Module), 274, 288
- delete method (Hash), 343
- delete method (Set), 349
- delete? method (Set), 349
- delete_if method (Hash), 343
- delete_if method (Set), 349
- delimiters (arbitrary), 51
- deprecated extraction functions, 404
- descendants of classes, 235
- Dir class, 350
 - chdir method, 353
 - entries method, 352
 - foreach method, 352
 - glob method, 353
 - mkdir method, 356
 - rmdir method, 356
 - unlink method, 356
- Dir.glob method, 353
- directories, 350–356

- creating, deleting, and renaming, 355
- listing, 352
- separator character (/), 351
- discrete
 - membership, 70
 - ranges, 69
- divide method (Set), 350
- .dll files, loading extensions, 253
- do keyword, 35, 141
 - while loops and, 127
- documentation comments, 27
- dollar sign (\$), 87
 - global
 - variables and, 30
 - keywords prefixes and, 31
- domain-specific languages (DSLs), 266, 296–299
- dot (.), 87, 115
 - directories and, 353
 - matching characters and newlines (regular expressions), 314
 - method declarations, 89
 - method invocations and, 90
- double colon (::), 87, 89, 115
- double-quoted string literals, 47
- downto method (Integer), 132
- drop method (Enumerable), 332
- drop_while method (Enumerable), 332
- DSLs (domain-specific languages), 266, 296–299
- duck typing, 76, 220, 223
- dup method (Object), 243–245

E

- \e (ESC) escape, 49
- e (regular expression) modifier, 310
- e command-line option, 11, 391
- E command-line option, 392
- E option, 38
- each method (Enumerable), 130
- each method (String), 58
- each_byte iterator, 362
- each_byte method (String), 306
- each_char method (String), 307
- each_cons method (Enumerable), 329
- each_line method (String), 306
- each_pair method (Hash), 344
- each_slice method (Enumerable), 329
- each_with_index method (Enumerable), 328

- eigenclass, 212, 246, 257–258
 - class method lookup, 260
 - method lookup and, 258
- else keyword, 119, 124, 162, 178
- elsif keyword, 120
- embedded documents, 26
- empty? method (Array/Hash), 7
- encapsulation, 216
- encode! method (String), 61
- Encoding class, 60, 62
- __ENCODING__ keyword, 38
- encoding method (Regexp), 320
- encoding method (String), 60
- encoding options, 38, 392
- Encoding.compatible? method, 61
- Encoding.default_external method, 39, 63
- Encoding.find method, 63
- Encoding.list method, 63
- Encoding.locale_charmap method, 39, 63
- END keyword, 29, 165
- end keyword, 35
 - if statement and, 119
- __END__ token, 36, 358
- end-of-file (EOF), 360, 362
- ensure keyword, 162–164, 178
- Enumerable module, 3, 58, 130–140, 132, 250, 328–334
 - functions, applying functions to, 205
 - max method and, 187
 - String class and, 307
- Enumerable::Enumerator class, 330
- enumerators, 135
- ENV stream, 396
- environment, 390–412
- EOF (end-of-file), 360, 362
- eof? method (IO), 360
- EOFError, 235
- eq! method (Object), 68, 77, 224
- equal? method (Object), 76
- equality, 68
- equals sign (=), 6, 30, 102
 - embedded documents, writing comments
 - and, 27
 - method names and, 180
 - suffixes/prefixes punctuation, 7
- \$ERROR_INFO global variable, 159
- ESC (\e) escape, 49
- escapes, 49
 - double-quoted string literals and, 47

- Unicode, 50
- EUC characters, 29
- EUC-JP, 37
- eval method (Binding), 202, 269
- eval method (Kernel), 268, 269, 279
- Exception objects, 80
- exceptions, 154–165
 - classes and objects, 155
 - exceptions during handling, 161
 - methods, handling, 178
 - rescue clause and, 158–162
- exclamation point (!), 30
 - (see also !)
 - method names and, 180
- exclusion (thread), 382
- exclusive (ranges), 69
- execution of programs, 26–40
- explicit conversions, 80
- exponentiation (**) operator, 45, 102, 103
- expressions, 4, 86–115
- external iterators, 137–140, 329
- external_encoding method (IO), 358

F

- \f (form feed character) escape, 49
- F command-line option, 393
- \$F global variable, 400
- factory methods, 242
 - regular expression, 311
- false keyword, 72, 86
 - conditionals and, 118
 - else keyword and, 119
- fetch method (Hash), 342, 345
- Fiber.new method, 167
- Fiber.yield method, 168
- fibers, 167–172
 - advanced features, 171
 - argument/return values and, 168
- File class
 - expand_path method, 351
 - fnmatch method, 352
 - identical? method, 352
 - link method, 355
 - open method, 356
 - read method, 361
 - readlines method, 361
 - rename method, 355
 - symlink method, 355
 - __FILE__ keyword, 87
 - tracing and, 279
 - file structure, 35
 - File.chmod method, 355
 - File.expand_path method, 351
 - File.fnmatch method, 352
 - File.identical? method, 352
 - File.truncate method, 355
 - File.unlink method, 355
 - File.utime method, 355
 - File::ALT_SEPARATOR method, 351
 - File::FNM_PATHNAME method, 352
 - File::Stat method, 353
 - \$FILENAME global variable, 399
- files, 350–356
 - bytes and characters, reading, 362
 - creating, deleting, and renaming, 355
 - opening, 356
 - reading entire, 361
 - specifying encodings, 359
 - testing, 353
 - Windows, 351
- find method (Enumerable), 331
- find_index method (Enumerable), 331
- first method (Enumerable), 332
- fixed_encoding? method (Regexp), 321
- Fixnum objects, 5, 42
 - arithmetic and, 44
 - bit-manipulation operators and, 45
 - integer literals and, 43
 - object identity and, 74
 - references and, 73
- flatten method (Set), 350
- flatten! method (Set), 350
- flip-flops, 109–111
- Float class, 45, 322
- Float function (Kernel), 81
- floating-point division, 44
- floating-point literals, 43
- flow-of-control, 118
 - statements, 146
- for keyword
 - in keyword and, 129
- force_encoding method (String), 61
- forking, 406
- form feed character (\f) escape, 49
- forward slash (/)
 - directory separator character, 351
 - division operator, 44
 - Window directory separator character, 351

- freeze method (Object), 68
- frozen objects, 84
- functional styles, 232
- functions
 - composition, 207
 - conversion, 81
 - deprecated extraction, 404
 - enumerable, applying to, 205
 - functional programming, 205–212
 - memoization, 208
 - parentheses (()) and, 3
 - partial application, 207
 - predefined global, 401
 - reporting, 404
 - user-defined global, 402

G

- garbage collection, 74, 281
- GC module (garbage collection), 281
- Gem, 234
- gem tool, 11, 14
- getter methods, 95
- global
 - functions, 90
 - methods, 232
 - variables, 30, 88, 397–401
 - \$! operator, 158
 - load path and, 253–255
- greater than (>) operator, 55, 79, 102
- greater than or equal (>=) operator, 55, 79, 102, 105
- group_by method (Enumerable), 332
- gsub method (String), 319
- gsub! method (String), 319

H

- hash (#)
 - comments and, 2, 26, 36
 - string interpolation and, 48
- Hash.each_pair method, 144
- Hash.new method, 341, 345
- hashcodes, 68
- hashes, 3, 67–68, 341–346
 - access with [], 221
 - arrays, extracting from, 343
 - codes/tables, 68
 - creating, 341
 - default values, 344

- entries, removing, 343
- eq!? method, using, 77
- integer hashcodes, 345
- literals, 67
- named method arguments, 188
- suffixes/prefixes punctuation, 7
- [] operator, 5, 341
- help command-line option, 392
- <<here documents, 51–53
- hooks, 277–279

I

- i (regular expression) modifier, 310
- I command-line option, 255, 391
- i command-line option, 393
- id method (deprecated), 74
- id2ref method (ObjectSpace), 281
- idempotent expressions, 93
- identifiers, 28–30
 - unicode characters and, 29
- if keyword, 4, 103, 118–121
 - ?: (conditional) operator, 111
 - modifier, as a, 121–122
- immutable objects, 43, 226
- implicit conversions, 80
- in keyword, 129
- includable namespace module, 251
- include? method (Module), 268
- include? method (Range), 69
- inclusive (ranges), 69
- indexes
 - arrays, 56
 - hashes, 341
- indexing arrays, 64
- inheritance, 234–241
 - class methods and, 239
 - constants, 241
 - instance variables, 239
 - methods, 235
- inherited method
 - hooks and, 277
- initialize method, 215, 230, 231, 240
 - factory methods, 242
 - object creation and initialization, 242
 - private/protected methods and, 232
 - singleton classes and, 247
- initialize method (Class), 73
- initialize_copy method, 83, 243–245
- inject iterator, 205

- inject method (Enumerable), 132, 334
- input/output, 356–366
 - input functions, 403
 - random access methods, 365
 - streams, writing to, 363
- inspect method, 12, 346
- installing gems, 14
- instance variables, 8, 30, 88
 - assigning, 93
 - classes, 231
 - inheritance and, 239
- instance_eval method (Object), 234, 270, 279
- instance_exec method (Object), 270
- instance_of? method (Object), 75, 267
- Integer function, 321
- Integer function (Kernel), 81
- integers
 - literals, 43
- intern method (String), 71
- internal iterator, 137
- internal_encoding method (IO), 358
- internationalization, 308
- interpreter (Ruby), 11–15, 390–394
 - lexical structure and, 26
 - syntactic structure and, 34
- introspection (see reflection)
- invert method (Hash), 346
- invocations, 89–92, 176
- IO object, 356–366
- IO-bound programs, 373
- IO.new method, 356
- IO.open method, 356
- IO.pipe method, 356
- IO.popen method, 356
- IOError, 235
- irb (interactive Ruby) tool, 11, 13, 269
- IronRuby, 12
- is_a? method (Object), 75, 267
- iterators, 3–4, 130–140
 - classes/methods and, 10
 - concurrent modification and, 140
 - custom, writing, 133–135
 - external, 137–140, 329
 - numeric, 131
 - Set class and, 349
 - strings, 58

J

- Java programming language, using equality operators, 77
- JRuby, 12

K

- K command-line option, 37, 63
- Kanji characters, 29
- \$KCODE global variable, 398
- Kernel module, 81, 90, 251, 266
 - looping, 138
- Kernel.eval method, 268
- Kernel.lambda method, 193
- Kernel.proc method, 194
- Kernel.rand method, 325
- keys, 67
 - storing in hashes, 342
- keyword literals, 86
- keywords, 30
- kill method, 379
- kill! method, 379
- kind_of? method (Object), 267

L

- l command-line option, 393
- lambdas, 147, 192–200
 - invoking, 195
 - literals, 194
- length method (Array), 64
- length method (String), 56, 59
- less than (<) operator, 55, 79, 102, 105
- less than or equal (<=) operator, 55, 79, 102, 105
- lexical structure, 26–33, 36
- lifetime of objects, 73
- __LINE__ keyword, 87
 - tracing and, 279
- literals, 28, 86
 - characters, 54
 - hashes, 67
 - integer and floating-point, 43
 - strings, 46–54
 - arbitrary delimiters and, 51
 - mutability and, 53
- load function, 252
 - executing code, 255
- load path, 253–255
- \$LOADED_FEATURES global variable, 398

- \$LOAD_PATH global variable, 253, 398
- local variables, 88
- localization, 308
- lock method, 383
- lookups (methods), 90, 258–262
- loop method, 131
- loops, 3, 127–130
 - break keyword, 148
- lvalues, 92
 - abbreviated assignment and, 95
 - parallel assignments and, 97

M

- m (regular expression) modifier, 310
- main method, 39
- makeproc method, 193
- map iterator, 205
- map method (Enumerable), 130
- maps, 67
- Marshal.dump method, 83
- Marshal.load method, 83, 245
- marshal_dump method, 245
- marshal_load method, 245
- match method (Regexp/String), 317
- MatchData object, 316
- Math module, 6, 322
- Matrix class, 324
- Matsumoto, Yukihiro (Matz), 2
- Matz's Ruby Implementation (MRI), 11
- max method, 187
- max method (Enumerable), 333
- max_by method (Enumerable), 333
- member? method (Range), 70
- memberships, 341
 - testing in ranges, 70
- memoization, 208
- metaclass, 257
 - (see also eigenclass)
- metaprogramming, 16, 203, 219, 234, 266–299
- Method class, 203
- method method (Object), 274
- methods, 5, 176–212, 272–277, 272
 - accessors/attributes and, 217
 - aliases, 181
 - arguments, 185–192
 - block structure and, 35
 - chaining for thread safety, 292
 - creating dynamically, 287–290

- defining, undefining, and aliasing, 274
- exception handling and, 178
- exception objects and, 156
- factory, 242
- identifiers and, 28
- invocations, 89–92
- invoking, 274
- invoking on objects, 178
- IO random access, 365
- lookup/name resolution, 258–262
- Method objects, 203
- missing, 284
- mutable, 226
- names, 180–183
- numeric, 321
- omitting parentheses in, 183
- operator, 181
- overriding, 236–238
- parentheses (()) and, 3, 183–185
- return values and, 177
- simple, defining, 177–180
- singleton, 257
 - defining, 179
- UnboundMethod objects, 204
- undefined, handling, 276
- undefining, 179
- visibility
 - public, protected, and private, 232–234
 - setting, 277
- method_missing method, 276, 284, 285
 - XML output and, 296
- min method (Enumerable), 333
- minmax method (Enumerable), 333
- minmax_by method (Enumerable), 333
- minus sign (–) operator, 44, 102
 - unary, 103
- min_by method (Enumerable), 333
- missing constants, 284
- missing methods, 284
- mixin modules, 250
 - object order and, 79
- modifiers, 114, 121–122
 - while and until as, 128
- Module class, 105, 218, 266
- Module.nesting method, 268
- modules, 8–10, 247–252, 395
 - ancestry, 267
 - autoloading, 256
 - block structure and, 35

- defining, 268
- includable namespaces, 251
- loading and requiring, 252–257
- mixins as, 250
- namespaces as, 248–250
- module_function method, 252
- modulo (%) operator, 44, 96, 102
- monkey patching, 290
- MRI (Matz’s Ruby Implementation), 11
- multibyte characters, 59
- multiline comments, 26
- multiplication (*) operator, 5, 102
- multithreaded
 - programs, 373
 - servers, 381
- mutable
 - keys, 68
 - points, 226
- mutator methods, 181
- Mutex object, 283

N

- \n (newline), 47, 49
- n (regular expression) modifier, 310
- n command-line option, 393
- name method (Encoding), 62
- name resolution (methods), 90, 258–262
- named captures
 - local variables, and, 317
 - MatchData, and, 316
 - references in replacement strings, 320
- NameError, 88
- namespaces, 248–250
 - includable modules, 251
 - nested, 249
- NaN (Not-a-Number), 44
- negative numbers, 44
- networking, 366–372
- new keyword, 242
- new method (Class), 73
- newlines, 32
 - using print methods and, 12
 - \n escape, 47, 49
- next keyword, 149–151
- next method, 138
- nil keyword, 2, 72, 86
- <=> operator and, 79
 - characters in strings, accessing, 56
 - conditionals, 118

- else keyword and, 119
 - expressions and, 5
- NoMethodError, 276
- nonoperators, 114
- nonoverridable (=) operator, 6
- nonterminating quotation mark (\"), 47
- not keyword, 103, 107
- Not-a-Number (NaN), 44
- numbers, 42–46, 321–325
 - random, 325
- Numeric class, 77, 132, 321
- numeric iterators, 131

O

- o (regular expression) modifier, 310
- Object class, 6, 266
- object-oriented, 2
- objects, 42, 72–84
 - classes/types, 74
 - conversion, 79–83
 - copying, 83
 - creating and initialization, 241–247
 - equality, 76–78
 - exceptions, creating, 156
 - naming, 158
 - freezing, 84
 - identity, 74
 - lifetime, 73
 - marshaling, 83
 - methods, invoking on, 178
 - order, 78
 - references, 72
 - tainting, 84
- ObjectSpace module, 281
- object_id method (Object), 74, 345
- one-line scripts, 405
- open classes, 10
- open method (Kernel), 357
- operators, 4, 100–115
 - assignments, 112
 - defining, 219
 - methods, 181
 - punctuation and, 28
 - optional parentheses, 183
 - options (command-line), 390
 - or keyword, 103, 107
 - OR operator (see |)
 - ORIGIN constant, 241
 - OS-dependent functions, 405

output, displaying, 12
overriding methods, 236–238

P

-p command-line option, 394
package management systems, 14
parallel assignments, 6, 92, 97, 144
parameter defaults, 185
parentheses (`()`), 115
 function/methods, 3
 if statements and, 119
 method declarations, 33, 90, 183–185
 optional, 183
 parallel assignment and, 99
 required, 184
partial application, 207
partition method (Enumerable), 332
pattern matching, 315–321
percent sign (see `%`)
Perl regular expression syntax, 317
platform (Ruby), 304–386
platform dependencies, 373
plus sign (`+`), 5, 44, 102
 coerce method and, 82
 concatenation and, 304
 strings and, 55
 unary, 103, 209
Point class, using accessors and attributes, 217
Point3D class, 235, 241
 class methods, inheritance of, 239
pointers, 72
precedence, 101
 assignment operators and, 113
predicate methods, 180
preemption (thread), 377
prefixes punctuation, 7
primary expressions, 86
primitive types, 72
print function, IO streams and, 358
print method, 12, 364
printf function, 48, 308
priorities (thread), 377
private methods, 6, 90, 232–234
 overriding, 237
Proc.new method, 193, 199
processes, 406
procs, 176, 192–200
 creating, 192–195
 equality, 197

 invoking, 195
program encoding, 36–39
program execution, 39
\$PROGRAM_NAME global variable, 398
protected methods, 232–234
public methods, 232–234
public_instance_method, 204
public_method method, 203
public_send method, 274
punctuation, 28
 characters, 115
 identifiers and, 30
 suffixes/prefixes, 7
putc method, 364
puts function, 12
puts method (Kernel), 90

Q

%Q sequences, 51
%q sequences, 51
question mark (`?`), 30
 matching characters with, 352
 method names and, 180
queue data structures, 384
quotation marks (`"`), 47
 expressions, interpolating into strings, 308

R

\r (carriage return) escape, 49
"r" (reading) file mode, 357
-r command-line option, 391
%r delimiter, 310
"r+" (reading and writing) file mode, 357
raise method
 exceptions and, 154
 exceptions, raising and, 156
rand method, 325
random access methods, 365
Range object, 57
ranges, 7, 68–71, 70, 109–111
 (see also `..` operator)
 membership, testing, 70
rassoc method (Array), 340
Rational class, 43, 324
.rb source files, 253
rdoc tool, 27
read method, 363
readbytes method, 362

- readline method (IO), 360
- readpartial method, 363
- read_nonblock method, 363
- receiver, 178
 - (see also objects)
- redo keyword, 146, 151, 200
- references
 - constant, 88
 - object, 72
 - variable, 87
- reflection, 203, 266–299
- Regexp, 7
 - (see also regular expressions)
- Regexp objects, 310
 - =~ operator and, 78
 - compile method, 311
 - new method, 311
 - textual patterns and, 46
- Regexp.escape method, 311
- Regexp.last_match method, 316
- Regexp.union method, 311
- regular expressions
 - literals, 310
 - named backreferences, 320
 - named captures, in, 316, 317
 - syntax, 312–315
- reject method (Enumerable), 132
- reject! method, 349
- reject! method (Hash), 343
- remainder method (Numeric), 45
- remove_method method (Module), 276
- replace method (Hash), 342
- require method, 14, 252
 - code, executing, 255
- required parentheses, 184
- rescue keyword, 102
 - exceptions, handling, 158–162
 - method, class, and module definitions, 164
 - methods and exception handling, 178
 - retry statement and, 161
 - statement modifiers and, 164
- reserved words, 31
- respond_to? method, 76, 267
- retry keyword, 146, 152, 200
 - rescue clause and, 161
- return keyword, 32, 120, 146–148
 - blocks and, 142
 - method values and, 177
 - next statement and, 150
- ri tools, 11, 13
 - comments and, 27
- rounding errors, 45
- Rubinius, 12
- Ruby 1.8
 - \$LOAD_PATH, 253
 - blocks and, 143
 - blocks, passing arguments, 144
 - character literals, 54
 - encoding, specifying, 37
 - enumerators, 135
 - Exception objects and, 80
 - hashes and, 67, 344
 - inheritance and class variables, 240
 - installing gem, 14
 - iterating strings, 58
 - modules as mixins and, 251
 - multibyte characters and, 63
 - object identity and, 74
 - parameters, mapping arguments to, 188
 - parentheses, required, 184
 - platform dependencies and, 373
 - regular expressions, 312
 - retry statement and, 152
 - string operators, 55
 - text in, 46
- Ruby 1.9
 - \$LOAD_PATH, 253
 - === operator and, 78, 125
 - arrays, passing to methods, 187
 - ASCII and BINARY encodings and, 60
 - BasicObject class and, 235, 287
 - bindings and, 202
 - blocks and, 143
 - character literals, 54
 - const_get method/const_defined? method,
 - passing false, 272
 - enumerable objects and, 328
 - eval method and, 269
 - fibers for coroutines and, 167
 - filenames and, 351
 - gem and, 14
 - gem command and, 254
 - hashes and, 67
 - implementation and, 11
 - invoking methods and, 274
 - iterating strings, 58
 - mapping arguments to, 188
 - modules, loading, 253

- multibyte characters and, 59
- operators and, 102
- Proc objects and, 196
- public_instance_method and, 204
- Regexp methods and, 311
- respond_to method (Object) and, 273
- Set class and, 349
- stack traces and, 280
- string literals and, 47
- Symbol class and, 72
- text and, 46
- thread scheduling and, 377
- to_proc method and, 209
- whitespace and, 32
- ruby command, 11
- Ruby operator
 - splat operator and, 98
- Ruby platform, 304–386
- ruby-lang.org, 11
- RubyGems, 14, 254
- rubygems command-line option, 14
- RUBYOPT environment variable, 14
- RUBY_PATCHLEVEL constant, 396
- RUBY_PLATFORM constant, 396
- RUBY_RELEASE_DATE constant, 396
- RUBY_VERSION constant, 396
- runnable threads, 378
- rvalues, 92
 - parallel assignments and, 97

S

- \S (nonwhitespace) regexp character class, 314
- s (regular expression) modifier, 310
- \s (space character), 49
- \s (whitespace) regexp character class, 314
- s option, 394
- S option, 394
- %s sequences, 71
- \$_SAFE global variable, 398
- security, 409
- select method (Enumerable), 132, 331
- self keyword, 86, 252
 - class methods and, 229
 - protected methods and, 232
- self. prefix, 248
- semicolons (;), as statement terminators, 32, 115
- semicoroutines, 167
- send method (Object), 274

- sequential execution, 118
- sets, 346–350
 - adding/deleting elements, 348
- setter methods, 95, 180, 218
- set_encoding method (IO), 359
- set_trace_func method (Kernel), 280
- shared variables, 201
- shebang comments, 36
- shell commands, using backtick command
 - execution, 53
- shift method (Hash), 344
- shift operator (see <<)
- side effects of assignments, 93
- signals, trapping, 408
- simple methods, 177–180
- single quotes ('), using for string literals, 46
- single-quoted string literals, 46
- singleton classes, 246
- singleton methods, 6, 73, 179, 257–258
- singleton_methods method (Object), 273
- size method (Array), 64
- size method (String), 56, 59
- SizedQueue data structures, 384
- SJIS, 37
- SJIS characters, 29
- slash (/)
 - regular expressions and, 310
- sleeping threads, 378
- slice method (String), 318
- slices (subarrays), 5
- .so files, loading extensions, 253
- SortedSet class, 346
- sort_by method (Enumerable), 331
- source encoding, 38
- space character (\s), 49
- spaces, 32
- splat operator, 98
- split method (String), 318
- sprintf function, 48, 308
- square-bracket array-index ([]), 5, 56, 60, 64, 115
 - access to arrays/hashtables, 221
 - strings, indexing, 304
- StandardError, 159, 235
- statement modifiers, 114
 - rescue keyword and, 164
- statement terminators, 32
- statements, 86, 118–172
- \$stderr global, 399

- STDERR stream, 360, 396
- \$stdin global, 399
- STDIN stream, 358, 360, 396
- \$stdout global, 399
- STDOUT stream, 358, 360, 396
- store method (Hash), 342
- streams
 - closing, flushing, and testing, 365
 - encoding and, 358
 - opening, 356–358
 - reading from, 360–363
 - text processing globals, 398
 - writing to, 363
- String class, 46, 55, 304
 - =~ operator and, 78
 - Enumerable module and, 58
 - new method, 54
- String.new method, 54
- StringIO class, 76, 357
- strings, 304–310
 - encodings, 59–64, 310
 - evaluating, 268–271
 - formatting, 308
 - iterating, 58
 - literals, 28, 46–54, 51
 - operators, 55–56
 - pattern matching and, 318
- structure of programs, 26–40
- sub method (String), 319
- sub! method (String), 319
- subarrays (slices), 5
- subclassing, 234–241
- substrings, 56–58
- succ method, 69
- Sudoku, 17
- suffixes punctuation, 7
- super method, 238
- superclass method
 - hooks and, 277
- superclass method (Class), 266
- switch statement, 126
- symbols, 4, 71, 209
- synchronize method (Mutex), 283
- synchronized
 - blocks, 283
 - objects, 287
- syntactic structure, 33–35
- syntax, using parentheses and, 184
- sysread method, 363

- SystemCallException, 365

T

- \t (tab), 47, 49
- T option, 394
- tab, 32, 49
 - \t escape, 47
- tables (hash), 68
- tainted data, 409
- tainted? method, 84
- take method (Enumerable), 332
- take_while method (Enumerable), 332
- TCPServer class, 367
- TCPSocket class, 367
- TCPSocket.open method, 367
- terminated normally thread state, 378
- terminated with exception thread state, 378
- test method (Kernel), 355
- text, 46–64, 308
 - (see also strings)
 - formatting, 308
 - global, 398
- text processing options, 393
- thawing objects, 84
- Thread class
 - list method, 380
 - new method, 166, 373
 - pass method, 377
- Thread.abort_on_exception method, 375
- Thread.new method, 166
- ThreadGroup.list method, 380
- threads, 372–386
 - exclusion and deadlock, 382
 - of execution, 166
 - lifecycle, 374
 - safety, 283
 - scheduling, 377
 - states, 378
 - variables and, 375
- throw statement, 146, 153
- tilde (see ~)
- Time class, 325
- times method, 3
- times method (Integer), 130
- tokens, 26
- top-level environment, 394–403
- TOPLEVEL_BINDING constant, 397
- to_a method
 - arrays and, 335

- to_a method (Enumerable), 329
- to_ary method, 80
- to_enum method, 135
- to_hash method, 80
- to_int method, 80
- to_path method, 351
- to_proc method (Symbol), 209
- to_s method, 82, 217, 346
- to_s method (Object), 79
- to_set method (Enumerable), 347
- to_splat method, 330
- to_sym method (String), 71
- trace_var method (Kernel), 280
- tracing, 279
- TRUE constant, 397
- true keyword, 72, 86
- Try Ruby tutorial, 15
- TypeError, 159
- types (objects), 74, 266–268

U

- u (regular expression) modifier, 310
- \u (Unicode) escape, 47, 49
- UCS (Universal Character Set), 62
- UDPServer class, 369
- unary +/-, 103, 209
- UnboundMethod class, 204
- undef keyword, 179
- undefine_finalizer method (ObjectSpace), 281
- undefining methods, 179
- underscore (`_`)
 - constants, 88
 - integer literals, using, 43
- ungetc method, 362
- unhandled exceptions, 375
- Unicode
 - const_missing method and, 284
- Unicode characters, 29
 - escapes, 47, 50
- uninitialized variables, 87
- union method, 348
- Universal Character Set (UCS), 62
- unless keyword, 103, 122
- unreachable objects, 74
- until keyword, 103
 - modifiers, as, 128
 - while loops and, 127
- untrace_var method (Kernel), 280
- upto method, 3, 131

- upto method (Integer), 130
- UTF-8 encoding, 29, 37, 50, 320

V

- \v (vertical tab), 49
- v command-line option, 392
- valid_encoding? method (String), 61
- values, storing in hashes, 342
- variable-length argument lists and, 186
- variables, 271–272
 - \$(global), 158
 - assigning to, 93
 - blocks and, 142
 - classes, 230
 - instance, 8
 - method arguments and, 186
 - object references and, 73
 - querying, setting, and testing, 271
 - references, 87
 - shared, 201
 - threads and, 375
 - uninitialized, 87
- Vector class, 324
- verbose command-line option, 392
- \$VERBOSE global variable, 398
- version command-line option, 392
- vertical tab (`\v`), 49

W

- \W (nonword) regexp character class, 314
- \w (word) regexp character class, 314
- "w" (writing) file mode, 357
- w command-line option, 391
- W command-line option, 392
- "w+" (writing and reading) file mode, 357
- W0 command-line option, 392
- W2 command-line option, 392
- weak reference objects, 281
- when keyword, 124
- while keyword, 103
- while loops, 3, 5, 127
 - modifiers, as, 128
 - retry statements and, 152
- whitespace, 32
- with_index (Enumerable), 330
- with_index method, 136

X

- x (regular expression) modifier, 310
- X option, 394
- x option, 394
- %x syntax, 53
- XML, using `method_missing` method and, 296

Y

- YAML, 84
- YARV, 11
- yield statement, 130
 - blocks and, 142, 189
 - coordinates, enumerating, 222
 - custom iterators, writing, 133
 - method invocations and, 90

Z

- \Z regexp anchor, 315
- \z regexp anchor, 315
- ZeroDivisionError, 44
- zip method (Enumerable), 329