

Index

Please note that some names will be duplicated in capitalized form. Following Java style, the capitalized names refer to Java classes, while lowercase names refer to a general concept.

!

! · 105
!= · 103

&

& · 111
&& · 105
&= · 111

.

.NET · 57
.new syntax · 350
.this syntax · 350

@

@ symbol, for annotations · 1059
@author · 86
@Deprecated, annotation · 1060
@deprecated, Javadoc tag · 87
@docRoot · 85
@inheritDoc · 85
@interface, and extends keyword · 1070
@link · 85
@Override · 1059
@param · 86
@Retention · 1061
@return · 86
@see · 85
@since · 86

@SuppressWarnings · 1060
@Target · 1061
@Test · 1060
@Test, for @Unit · 1084
@TestObjectCleanup, @Unit tag · 1092
@TestObjectCreate, for @Unit · 1089
@throws · 87
@Unit · 1084; using · 1084
@version · 85

[

[], indexing operator · 193

^

^ · 111
^= · 111

|

| · 111
|| · 105
|= · 111

+

+ · 101; String conversion with operator + · 95, 118, 504

<

< · 103
<< · 112
<<= · 112
<= · 103

=

== · 103

>

> · 103
>= · 103
>> · 112
>>= · 112

A

abstract: class · 311; inheriting from
 abstract classes · 312; keyword · 312; vs.
 interface · 328
Abstract Window Toolkit (AWT) · 1303
AbstractButton · 1333
abstraction · 24
AbstractSequentialList · 859
AbstractSet · 793
access: class · 229; control · 210, 234;
 control, violating with reflection · 607;
 inner classes & access rights · 348;
 package access and friendly · 221;
 specifiers · 31, 210, 221; within a
 directory, via the default package · 223
action command · 1358
ActionEvent · 1358, 1406
ActionListener · 1316
ActionScript, for Macromedia Flex · 1417
active objects, in concurrency · 1295
Adapter design pattern · 325, 334, 434,
 630, 733, 737, 795
Adapter Method idiom · 434
adapters, listener · 1328
add(), ArrayList · 390
addActionListener() · 1403, 1410
addChangeListener · 1363
addition · 98

addListener · 1321
Adler32 · 975
agent-based programming · 1299
aggregate array initialization · 193
aggregation · 32
aliasing · 97; and String · 504; arrays · 194
Allison, Chuck · 4, 18, 1449, 1460
allocate() · 948
allocateDirect() · 948
alphabetic sorting · 418
alphabetic vs. lexicographic sorting · 783
AND: bitwise · 120; logical (&&) · 105
annotation · 1059; apt processing tool ·
 1074; default element values · 1062,
 1063, 1065; default value · 1069;
 elements · 1061; elements, allowed types
 for · 1065; marker annotation · 1061;
 processor · 1064; processor based on
 reflection · 1071
anonymous inner class · 356, 904, 1314;
 and table-driven code · 859; generic ·
 645
application: builder · 1394; framework ·
 375
applying a method to a sequence · 728
apt, annotation processing tool · 1074
argument: constructor · 156; covariant
 argument types · 706; final · 266, 904;
 generic type argument inference · 632;
 variable argument lists (unknown
 quantity and type of arguments) · 198
Arnold, Ken · 1306
array: array of generic objects · 850;
 associative array · 394; bounds checking
 · 194; comparing arrays · 777;
 comparison with container · 748;
 copying an array · 775; covariance · 677;
 dynamic aggregate initialization syntax ·
 752; element comparisons · 778; first-
 class objects · 749; initialization · 193;
 length · 194, 749; multidimensional ·
 754; not Iterable · 433; of objects · 749;
 of primitives · 749; ragged · 755;
 returning an array · 753
ArrayBlockingQueue · 1215
ArrayList · 401, 817; add() · 390; get() ·
 390; size() · 390
Arrays: asList() · 396, 436, 816;
 binarySearch() · 784; class, container
 utility · 775
asCharBuffer() · 950
aspect-oriented programming (AOP) · 714

assert, and @Unit · 1087
assigning objects · 96
assignment · 95
associative array · 390, 394; another name
for map · 831
atomic operation · 1160
AtomicInteger · 1167
atomicity, in concurrent programming ·
1151
AtomicLong · 1167
AtomicReference · 1167
autoboxing · 419, 630; and generics · 632,
694
auto-decrement operator · 101
auto-increment operator · 101
automatic type conversion · 239
available() · 930

B

backwards compatibility · 655
bag · 394
bank teller simulation · 1253
base 16 · 109
base 8 · 109
base class · 226, 241, 281; abstract base
class · 311; base-class interface · 286;
constructor · 294; initialization · 244
base types · 34
basic concepts of object-oriented
programming (OOP) · 23
BASIC, Microsoft Visual BASIC · 1394
BasicActionButton · 1334
BeanInfo, custom · 1414
Beans: and Borland's Delphi · 1394; and
Microsoft's Visual BASIC · 1394;
application builder · 1394; bound
properties · 1414; component · 1395;
constrained properties · 1414; custom
BeanInfo · 1414; custom property editor
· 1414; custom property sheet · 1414;
events · 1394; EventSetDescriptors ·
1401; FeatureDescriptor · 1414;
getBeanInfo() · 1398;
getEventSetDescriptors() · 1401;
getMethodDescriptors() · 1401;
getName() · 1400;
getPropertyDescriptors() · 1400;
getPropertyType() · 1400;
getReadMethod() · 1400;
getWriteMethod() · 1400; indexed
property · 1414; Introspector · 1398;
JAR files for packaging · 1412; manifest
file · 1412; Method · 1401;
MethodDescriptors · 1401; naming
convention · 1395; properties · 1394;
PropertyChangeEvent · 1414;
PropertyDescriptors · 1400;
PropertyVetoException · 1414;
reflection · 1394, 1398; Serializable ·
1405; visual programming · 1394
Beck, Kent · 1457
benchmarking · 1272
binary: numbers · 109; numbers, printing ·
116; operators · 111
binarySearch() · 784, 885
binding: dynamic binding · 282; dynamic,
late, or runtime binding · 277; early · 40;
late · 40; late binding · 281; method call
binding · 281; runtime binding · 282
BitSet · 897
bitwise: AND · 120; AND operator (&) ·
111; EXCLUSIVE OR XOR (^) · 111;
NOT ~ · 111; operators · 111; OR · 120;
OR operator (|) · 111
blank final · 265
Bloch, Joshua · 175, 1011, 1146, 1164
blocking: and available() · 930; in
concurrent programs · 1112
BlockingQueue · 1215, 1235
Booch, Grady · 1457
book errors, reporting · 21
Boolean · 132; algebra · 111; and casting ·
121; operators that won't work with
boolean · 103; vs. C and C++ · 106
Borland Delphi · 1394
bound properties · 1414
bounds: and Class references · 566; in
generics · 653, 673; self-bounded
generic types · 701; superclass and Class
references · 568
bounds checking, array · 194
boxing · 419, 630; and generics · 632, 694
BoxLayout · 1320
branching, unconditional · 143
break keyword · 144
Brian's Rule of Synchronization · 1156
browser, class · 229
Budd, Timothy · 25
buffer, nio · 946
BufferedInputStream · 920
BufferedOutputStream · 921
BufferedReader · 483, 924, 927

BufferedWriter · 924, 930
busy wait, concurrency · 1198
button: creating your own · 1329; radio
 button · 1344; Swing · 1311, 1333
ButtonGroup · 1334, 1344
ByteArrayInputStream · 916
ByteArrayOutputStream · 917
ByteBuffer · 946
bytecode engineering · 1101; Javassist ·
 1104

C

C#: programming language · 57
C++ · 103; exception handling · 492;
 Standard Template Library (STL) · 900;
 templates · 618, 652
CachedThreadPool · 1121
Callable, concurrency · 1124
callback · 903, 1312; and inner classes ·
 372
camel-casing · 88
capacity, of a HashMap or HashSet · 878
capitalization of package names · 75
Cascading Style Sheets (CSS), and
 Macromedia Flex · 1423
case statement · 151
CASE_INSENSITIVE_ORDER String
 Comparator · 884, 902
cast · 42; and generic types · 697; and
 primitive types · 133; asSubclass() ·
 569; operators · 120; via a generic class ·
 699
cast() · 568
catch: catching an exception · 447;
 catching any exception · 458; keyword ·
 448
Chain of Responsibility design pattern ·
 1036
chained exceptions · 464, 498
change, vector of · 377
channel, nio · 946
CharArrayReader · 923
CharArrayWriter · 923
CharBuffer · 950
CharSequence · 530
Charset · 952
check box · 1342
checked exceptions · 457, 491; converting
 to unchecked exceptions · 497
checkedCollection() · 710
CheckedInputStream · 973
checkedList() · 710
checkedMap() · 710
CheckedOutputStream · 973
checkedSet() · 710
checkedSortedMap() · 710
checkedSortedSet() · 710
Checksum class · 975
Chiba, Shigeru, Dr. · 1104, 1106
class · 27; abstract class · 311; access · 229;
 anonymous inner class · 356, 904, 1314;
 base class · 226, 241, 281; browser · 229;
 class hierarchies and exception handling
 · 489; class literal · 562, 576; creators ·
 30; data · 76; derived class · 281;
 equivalence, and
 instanceof/isInstance() · 586; final
 classes · 270; inheritance diagrams ·
 261; inheriting from abstract classes ·
 312; inheriting from inner classes · 382;
 initialization · 563; initialization & class
 loading · 272; initialization of fields ·
 182; initializing the base class · 244;
 initializing the derived class · 244; inner
 class · 345; inner class, and access rights
 · 348; inner class, and overriding · 383;
 inner class, and super · 383; inner class,
 and Swing · 1322; inner class, and
 upcasting · 352; inner class, identifiers
 and .class files · 387; inner class, in
 methods and scopes · 354; inner class,
 nesting within any arbitrary scope · 355;
 instance of · 25; keyword · 33; linking ·
 563; loading · 273, 563; member
 initialization · 239; methods · 76;
 multiply nested · 368; nested class
 (static inner class) · 364; nesting inside
 an interface · 366; order of initialization
 · 185; private inner classes · 377; public
 class, and compilation units · 211;
 referring to the outer-class object in an
 inner class · 350; static inner classes ·
 364; style of creating classes · 228;
 subobject · 244
Class · 1335; Class object · 556, 998, 1156;
 forName() · 558, 1326;
 getCanonicalName() · 560; getClass() ·
 459; getConstructors() · 592;
 getInterfaces() · 560; getMethods() ·
 592; getSimpleName() · 560;
 getSuperclass() · 561;
 isAssignableFrom() · 580; isInstance()

- 578; `isInterface()` · 560;
- `newInstance()` · 561; object creation process · 189; references, and bounds · 566; references, and generics · 565; references, and wildcards · 566; RTTI using the `Class` object · 556
- class files, analyzing · 1101
- class loader · 556
- class name, discovering from class file · 1101
- `ClassCastException` · 309, 570
- `ClassNotFoundException` · 574
- `classpath` · 214
- cleanup: and garbage collector · 251; performing · 175; verifying the termination condition with `finalize()` · 176; with `finally` · 473
- `clear()`, `nio` · 949
- client programmer · 30; vs. library creator · 209
- `close()` · 928
- closure, and inner classes · 372
- code: coding standards · 21; coding style · 88; organization · 221; reuse · 237; source code · 18
- collecting parameter · 713, 742
- collection · 44, 394, 427, 884; classes · 389; filling with a `Generator` · 636; list of methods for · 809; utilities · 879
- `Collections`: `addAll()` · 396; `enumeration()` · 894; `fill()` · 793; `unmodifiableList()` · 815
- collision: during hashing · 848; name · 217
- combo box · 1345
- comma operator · 140
- Command design pattern · 381, 603, 1031, 1121
- comments, and embedded documentation · 81
- Commitment, Theory of Escalating · 1146
- common interface · 311
- Communicating Sequential Processes (CSP) · 1299
- `Comparable` · 779, 822, 828
- `Comparator` · 780, 822
- `compareTo()`, in `java.lang.Comparable` · 778, 824
- comparing arrays · 777
- compatibility: backwards · 655; migration · 655
- compilation unit · 211
- compile-time constant · 262
- compiling a Java program · 80
- component, and `JavaBeans` · 1395
- composition · 32, 237; and design · 304; and dynamic behavior change · 306; combining composition & inheritance · 249; vs. inheritance · 256, 262, 830, 895
- compression, library · 973
- concurrency: active objects · 1295; and containers · 887; and exceptions · 1158; and `Swing` · 1382; `ArrayBlockingQueue` · 1215; atomicity · 1151; `BlockingQueue` · 1215, 1235; Brian's Rule of Synchronization · 1156; `Callable` · 1124; `Condition` class · 1212; constructors · 1137; contention, lock · 1272; `CountDownLatch` · 1230; `CyclicBarrier` · 1232; daemon threads · 1130; `DelayQueue` · 1235; `Exchanger` · 1250; `Executor` · 1120; I/O between tasks using pipes · 1221; `LinkedBlockingQueue` · 1215; lock, explicit · 1157; lock-free code · 1161; long and double non-atomicity · 1161; missed signals · 1203; performance tuning · 1270; priority · 1127; `PriorityBlockingQueue` · 1239; producer-consumer · 1208; race condition · 1152; `ReadWriteLock` · 1292; `ScheduledExecutor` · 1242; semaphore · 1246; `sleep()` · 1126; `SynchronousQueue` · 1259; task interference · 1150; terminating tasks · 1179; the Goetz Test for avoiding synchronization · 1160; thread local storage · 1177; thread vs. task, terminology · 1142; `UncaughtExceptionHandler` · 1148; word tearing · 1161
- `ConcurrentHashMap` · 834, 1282, 1287
- `ConcurrentLinkedQueue` · 1282
- `ConcurrentModificationException` · 888; using `CopyOnWriteArrayList` to eliminate · 1281, 1298
- `Condition` class, concurrency · 1212
- conditional compilation · 220
- conditional operator · 116
- conference, Software Development Conference · 14
- console: sending exceptions to · 497; `Swing` display framework in `net.mindview.util.SwingConsole` · 1310
- constant: compile-time constant · 262; constant folding · 262; groups of

- constant values · 335; implicit constants, and String · 504
- constrained properties · 1414
- constructor · 155; and anonymous inner classes · 356; and concurrency · 1137; and exception handling · 481, 483; and finally · 483; and overloading · 158; and polymorphism · 293; arguments · 156; base-class constructor · 294; behavior of polymorphic methods inside constructors · 301; calling base-class constructors with arguments · 245; calling from other constructors · 170; Constructor class for reflection · 589; default · 166; initialization during inheritance and composition · 249; instance initialization · 359; name · 156; no-arg · 156, 166; order of constructor calls with inheritance · 293; return value · 157; static construction clause · 190; static method · 189; synthesized default constructor access · 592
- consulting & training provided by MindView, Inc. · 1450
- container · 44; class · 389; *classes* · 389; comparison with array · 748; performance test · 859
- containers: basic behavior · 398; lock-free · 1281; type-safe and generics · 390
- contention, lock, in concurrency · 1272
- context switch · 1112
- continue keyword · 144
- contravariance, and generics · 682
- control framework, and inner classes · 375
- control, access · 31, 234
- conversion: automatic · 239; narrowing conversion · 120; widening conversion · 121
- Coplien, Jim: curiously recurring template pattern · 702
- copying an array · 775
- CopyOnWriteArrayList · 1252, 1281
- CopyOnWriteArraySet · 1282
- copyright notice, source code · 19
- CountDownLatch, for concurrency · 1230
- covariant · 565; argument types · 706; arrays · 677; return types · 303, 583, 706
- CRC32 · 975
- critical section, and synchronized block · 1169
- CSS (Cascading Style Sheets), and Macromedia Flex · 1423

- curiously recurring: generics · 702; template pattern in C++ · 702
- CyclicBarrier, for concurrency · 1232

D

- daemon threads · 1130
- data: final · 262; primitive data types and use with operators · 123; static initialization · 186
- Data Transfer Object · 621, 797
- Data Transfer Object (Messenger idiom) · 860
- data type, equivalence to class · 27
- database table, SQL generated via annotations · 1066
- DatagramChannel · 971
- DataInput · 926
- DataInputStream · 920, 924, 929
- DataOutput · 926
- DataOutputStream · 921, 925
- deadlock, in concurrency · 1223
- decode(), character set · 953
- decompiler, javap · 505, 610, 660
- Decorator design pattern · 717
- decoupling, via polymorphism · 41, 277
- decrement operator · 101
- default constructor · 166; access the same as the class · 592; synthesizing a default constructor · 245
- default keyword, in a switch statement · 151
- default package · 211, 223
- defaultReadObject() · 995
- defaultWriteObject() · 994
- DeflaterOutputStream · 973
- Delayed · 1238
- DelayQueue, for concurrency · 1235
- delegation · 246, 716
- Delphi, from Borland · 1394
- DeMarco, Tom · 1459
- deque, double-ended queue · 410, 829
- derived: derived class · 281; derived class, initializing · 244; types · 34
- design · 307; adding more methods to a design · 235; and composition · 304; and inheritance · 304; and mistakes · 234; library design · 210
- design pattern: Adapter · 325, 334, 630, 733, 737, 795; Adapter method · 434; Chain of Responsibility · 1036;

- Command · 381, 603, 1031, 1121; Data Transfer Object (Messenger idiom) · 621, 797, 860; Decorator · 717; Façade · 577; Factory Method · 339, 582, 627, 928; Factory Method, and anonymous classes · 361; Flyweight · 800, 1301; Iterator · 349, 406; Null Iterator · 598; Null Object · 598; Proxy · 593; Singleton · 232; State · 306; Strategy · 322, 332, 737, 764, 778, 780, 903, 910, 1036, 1238; Template Method · 375, 573, 666, 859, 969, 1173, 1279, 1284; Visitor · 1079
- destructor · 173, 175, 473; Java doesn't have one · 251
- diagram: class inheritance diagrams · 261; inheritance · 42
- dialog: box · 1364; file · 1368; tabbed · 1349
- dictionary · 394
- Dijkstra, Edsger · 1224
- dining philosophers, example of deadlock in concurrency · 1224
- directory: and packages · 220; creating directories and paths · 912; lister · 902
- dispatching: double dispatching · 1048; multiple, and enum · 1047
- display framework, for Swing · 1310
- dispose() · 1365
- division · 98
- documentation · 17; comments & embedded documentation · 81
- double: and threading · 1161; literal value marker (d or D) · 109
- double dispatching · 1048; with EnumMap · 1055
- double-ended queue (deque) · 410
- do-while · 138
- downcast · 261, 308; type-safe downcast · 569
- drawing lines in Swing · 1360
- drop-down list · 1345
- duck typing · 721, 733
- dynamic: aggregate initialization syntax for arrays · 752; behavior change with composition · 306; binding · 277, 282; proxy · 594; type checking in Java · 814; type safety and containers · 710

E

- early binding · 40, 281
- East, BorderLayout · 1317
- editor, creating one using the Swing JTextPane · 1341
- efficiency: and arrays · 747; and final · 271
- else keyword · 135
- encapsulation · 228; using reflection to break · 607
- encode(), character set · 953
- end sentinel · 626
- endian: big endian · 958; little endian · 958
- entrySet(), in Map · 845
- enum: adding methods · 1014; and Chain of Responsibility design pattern · 1036; and inheritance · 1020; and interface · 1023; and multiple dispatching · 1047; and random selection · 1021; and state machines · 1041; and static imports · 1013; and switch · 1016; constant-specific methods · 1032, 1053; groups of constant values in C & C++ · 335; keyword · 204, 1011; values() · 1011, 1017
- enumerated types · 204
- Enumeration · 894
- EnumMap · 1030
- EnumSet · 642, 899; instead of flags · 1028
- equals() · 104; and hashCode() · 822, 853; and hashed data structures · 843; conditions for defining properly · 842; overriding for HashMap · 842
- equivalence: == · 103; object equivalence · 103
- erasure · 696; in generics · 650
- Erlang language · 1113
- error: handling with exceptions · 443; recovery · 443; reporting · 492; reporting errors in book · 21; standard error stream · 450
- Escalating Commitment, Theory of · 1146
- event: event-driven programming · 1312; event-driven system · 375; events and listeners · 1322; JavaBeans · 1394; listener · 1321; model, Swing · 1321; multicast, and JavaBeans · 1407; responding to a Swing event · 1312
- EventSetDescriptors · 1401

exception: and concurrency · 1158; and constructors · 481; and inheritance · 479, 489; and the console · 497; catching an exception · 447; catching any exception · 458; chained exceptions · 498; chaining · 464; changing the point of origin of the exception · 463; checked · 457, 491; class hierarchies · 489; constructors · 483; converting checked to unchecked · 497; creating your own · 449; design issues · 485; Error class · 468; Exception class · 468; exception handler · 448; exception handling · 443; exception matching · 489; exceptional condition · 445; FileNotFoundException · 485; fillInStackTrace() · 461; finally · 471; generics · 711; guarded region · 447; handler · 445; handling · 49; logging · 452; losing an exception, pitfall · 477; NullPointerException · 469; printStackTrace() · 461; reporting exceptions via a logger · 454; restrictions · 479; re-throwing an exception · 461; RuntimeException · 469; specification · 457, 493; termination vs. resumption · 449; Throwable · 458; throwing an exception · 445, 446; try · 473; try block · 447; typical uses of exceptions · 500; unchecked · 469

Exchanger, concurrency class · 1250

executing operating system programs from within Java · 944

Executor, concurrency · 1120

ExecutorService · 1121

explicit type argument specification for generic methods · 398, 635

exponential notation · 109

extending a class during inheritance · 35

extends · 226, 243, 307; and @interface · 1070; and interface · 330; keyword · 241

extensible program · 286

extension: sign · 112; zero · 112

extension, vs. pure inheritance · 306

Externalizable · 986; alternative approach to using · 992

Extreme Programming (XP) · 1457

F

Façade · 577

Factory Method design pattern · 339, 582, 627, 928; and anonymous classes · 361

factory object · 285, 664

fail fast containers · 888

false · 105

FeatureDescriptor · 1414

Fibonacci · 629

Field, for reflection · 589

fields, initializing fields in interfaces · 335

FIFO (first-in, first out) · 423

file: characteristics of files · 912; dialogs · 1368; File class · 901, 916, 925; File.list() · 901; incomplete output files, errors and flushing · 931; JAR file · 212; locking · 970; memory-mapped files · 966

FileChannel · 947

FileDescriptor · 916

FileInputStream · 927

FileOutputStream · 916

FileLock · 971

FilenameFilter · 901

FileNotFoundException · 485

FileOutputStream · 917

FileReader · 483, 923

FileWriter · 923, 930

fillInStackTrace() · 461

FilterInputStream · 916

FilterOutputStream · 917

FilterReader · 924

FilterWriter · 924

final · 316, 622; and efficiency · 271; and private · 268; and static · 263; argument · 266, 904; blank finals · 265; classes · 270; data · 262; keyword · 262; method · 282; methods · 267, 303; static primitives · 264; with object references · 263

finalize() · 173, 254, 485; and inheritance · 295; calling directly · 175

finally · 251, 254; and constructors · 483; and return · 476; keyword · 471; not run with daemon threads · 1135; pitfall · 477

finding .class files during loading · 214

FixedThreadPool · 1122

flag, using EnumSet instead of · 1028

Flex: OpenLaszlo alternative to Flex · 1416; tool from Macromedia · 1416

flip(), nio · 948
 float: floating point true and false · 106;
 literal value marker (F) · 109
 FlowLayout · 1318
 flushing output files · 931
 Flyweight design pattern · 800, 1301
 focus traversal · 1305
 folding, constant · 262
 for keyword · 138
 foreach · 141, 145, 199, 200, 219, 376, 393,
 422, 429, 545, 629, 631, 694, 1011,
 1036; and Adapter Method · 434; and
 Iterable · 431
 format: precision · 517; specifiers · 516;
 string · 514; width · 516
 format() · 514
 Formatter · 515
 forName() · 558, 1326
 FORTRAN programming language · 110
 forward referencing · 184
 Fowler, Martin · 209, 495, 1457
 framework, control framework and inner
 classes · 375
 function: member function · 29; overriding
 · 36
 function object · 737
 functional languages · 1113
 Future · 1125

G

garbage collection · 173, 175; and cleanup ·
 251; how the collector works · 178; order
 of object reclamation · 254; reachable
 objects · 889
 Generator · 285, 627, 636, 645, 695, 732,
 763, 780, 794, 1021, 1042; filling a
 Collection · 636; general purpose · 637
 generics: @Unit testing · 1094; and type-
 safe containers · 390; anonymous inner
 classes · 645; array of generic objects ·
 850; basic introduction · 390; bounds ·
 653, 673; cast via a generic class · 699;
 casting · 697; Class references · 565;
 contravariance · 682; curiously
 recurring · 702; erasure · 650, 696;
 example of a framework · 1282;
 exceptions · 711; explicit type argument
 specification for generic methods · 398,
 635; inner classes · 645; instanceof ·
 663, 697; instanceof() · 663; methods ·

 631, 795; overloading · 699; reification ·
 655; self-bounded types · 701; simplest
 class definition · 413; supertype
 wildcards · 682; type tag · 663;
 unbounded wildcard · 686; varargs and
 generic methods · 635; wildcards · 677
 get(): ArrayList · 390; HashMap · 420; no
 get() for Collection · 811
 getBeanInfo() · 1398
 getBytes() · 929
 getCanonicalName() · 560
 getChannel() · 948
 getClass() · 459, 558
 getConstructor() · 1335
 getConstructors() · 592
 getenv() · 433
 getEventSetDescriptors() · 1401
 getInterfaces() · 560
 getMethodDescriptors() · 1401
 getMethods() · 592
 getName() · 1400
 getPropertyDescriptors() · 1400
 getPropertyType() · 1400
 getReadMethod() · 1400
 getSelectedValues() · 1347
 getSimpleName() · 560
 getState() · 1357
 getSuperclass() · 561
 getWriteMethod() · 1400
 Glass, Robert · 1458
 glue, in BorderLayout · 1321
 Goetz Test, for avoiding synchronization ·
 1160
 Goetz, Brian · 1156, 1160, 1272, 1302
 goto, lack of in Java · 146
 graphical user interface (GUI) · 375, 1303
 graphics · 1368; Graphics class · 1361
 greater than (>) · 103
 greater than or equal to (>=) · 103
 greedy quantifiers · 529
 GridBagLayout · 1320
 GridLayout · 1319, 1392
 Grindstaff, Chris · 1430
 group, thread · 1146
 groups, regular expression · 534
 guarded region, in exception handling ·
 447
 GUI: graphical user interface · 375, 1303;
 GUI builders · 1304
 GZIPInputStream · 973
 GZIPOutputStream · 973

H

handler, exception · 448
Harold, Elliott Rusty · 1415, 1456; XOM XML library · 1003
has-a · 32; relationship, composition · 258
hash function · 847
hashCode() · 833, 839, 847; and hashed data structures · 843; equals() · 822; issues when writing · 851; recipe for generating decent · 853
hashing · 844, 847; and hash codes · 839; external chaining · 848; perfect hashing function · 848
HashMap · 834, 877, 1287, 1331
HashSet · 415, 821, 872
Hashtable · 877, 895
hasNext(), Iterator · 407
Hexadecimal · 109
hiding, implementation · 228
Holub, Allen · 1295
HTML on Swing components · 1370

I

I/O: available() · 930; basic usage, examples · 927; between tasks using pipes · 1221; blocking, and available() · 930; BufferedInputStream · 920; BufferedOutputStream · 921; BufferedReader · 483, 924, 927; BufferedWriter · 924, 930; ByteArrayInputStream · 916; ByteArrayOutputStream · 917; characteristics of files · 912; CharArrayReader · 923; CharArrayWriter · 923; CheckedInputStream · 973; CheckedOutputStream · 973; close() · 928; compression library · 973; controlling the process of serialization · 986; DataInput · 926; DataInputStream · 920, 924, 929; DataOutput · 926; DataOutputStream · 921, 925; DeflaterOutputStream · 973; directory lister · 902; directory, creating directories and paths · 912; Externalizable · 986; File · 916, 925; File class · 901; File.list() · 901; FileDescriptor · 916; FileInputReader ·

927; FileInputStream · 916; FilenameFilter · 901; FileOutputStream · 917; FileReader · 483, 923; FileWriter · 923, 930; FilterInputStream · 916; FilterOutputStream · 917; FilterReader · 924; FilterWriter · 924; from standard input · 941; GZIPInputStream · 973; GZIPOutputStream · 973; InflaterInputStream · 973; input · 914; InputStream · 914; InputStreamReader · 922, 923; internationalization · 923; interruptible · 1189; library · 901; lightweight persistence · 980; LineNumberInputStream · 920; LineNumberReader · 924; mark() · 926; mkdirs() · 914; network I/O · 946; new nio · 946; ObjectOutputStream · 981; output · 914; OutputStream · 914, 917; OutputStreamWriter · 922, 923; pipe · 915; piped streams · 936; PipedInputStream · 916; PipedOutputStream · 916, 917; PipedReader · 923; PipedWriter · 923; PrintStream · 921; PrintWriter · 924, 930, 932; PushbackInputStream · 920; PushbackReader · 924; RandomAccessFile · 925, 926, 934; read() · 914; readDouble() · 934; Reader · 914, 922, 923; readExternal() · 986; readLine() · 485, 924, 931, 942; readObject() · 981; redirecting standard I/O · 942; renameTo() · 914; reset() · 926; seek() · 926, 934; SequenceInputStream · 916, 925; Serializable · 986; setErr(PrintStream) · 943; setIn(InputStream) · 943; setOut(PrintStream) · 943; StreamTokenizer · 924; StringBuffer · 916; StringBufferInputStream · 916; StringReader · 923, 928; StringWriter · 923; System.err · 941; System.in · 941; System.out · 941; transient · 991; typical I/O configurations · 927; Unicode · 923; write() · 914; writeBytes() · 933; writeChars() · 933; writeDouble() · 934; writeExternal() · 986; writeObject() · 981; Writer · 914, 922, 923; ZipEntry · 977; ZipInputStream · 973; ZipOutputStream · 973
Icon · 1335
IdentityHashMap · 834, 877
if-else statement · 116, 135

IllegalAccessException · 573
 IllegalMonitorStateException · 1199
 ImageIcon · 1336
 immutable · 600
 implementation · 28; and interface · 257, 316; and interface, separating · 31; and interface, separation · 228; hiding · 209, 228, 352; separation of interface and implementation · 1321
 implements keyword · 316
 import keyword · 211
 increment operator · 101; and concurrency · 1153
 indexed property · 1414
 indexing operator [] · 193
 indexOf(), String · 592
 inference, generic type argument inference · 632
 InflaterInputStream · 973
 inheritance · 33, 226, 237, 241, 277; and enum · 1020; and final · 270; and finalize() · 295; and generic code · 617; and synchronized · 1411; class inheritance diagrams · 261; combining composition & inheritance · 249; designing with inheritance · 304; diagram · 42; extending a class during · 35; extending interfaces with inheritance · 329; from abstract classes · 312; from inner classes · 382; initialization with inheritance · 272; method overloading vs. overriding · 255; multiple inheritance in C++ and Java · 326; pure inheritance vs. extension · 306; specialization · 258; vs. composition · 256, 262, 830, 895
 initial capacity, of a HashMap or HashSet · 878
 initialization: and class loading · 272; array initialization · 193; base class · 244; class · 563; class member · 239; constructor initialization during inheritance and composition · 249; initializing with the constructor · 155; instance initialization · 191, 359; lazy · 239; member initializers · 294; non-static instance initialization · 191; of class fields · 182; of method variables · 181; order of initialization · 185, 302; static · 274; with inheritance · 272
 inline method calls · 267
 inner class · 345; access rights · 348; and overriding · 383; and control frameworks · 375; and super · 383; and Swing · 1322; and threads · 1137; and upcasting · 352; anonymous inner class · 904, 1314; and table-driven code · 859; callback · 372; closure · 372; generic · 645; hidden reference to the object of the enclosing class · 349; identifiers and .class files · 387; in methods & scopes · 354; inheriting from inner classes · 382; local · 355; motivation · 369; nesting within any arbitrary scope · 355; private inner classes · 377; referring to the outer-class object · 350; static inner classes · 364
 InputStream · 914
 InputStreamReader · 922, 923
 instance: instance initialization · 359; non-static instance initialization · 191; of a class · 25
 instanceof · 576; and generic types · 697; dynamic instanceof with instanceof() · 578; keyword · 569
 Integer: parseInt() · 1368; wrapper class · 196
 interface: and enum · 1023; and generic code · 617; and implementation, separation of · 31, 228, 1321; and inheritance · 329; base-class interface · 286; classes nested inside · 366; common interface · 311; for an object · 26; initializing fields in interfaces · 335; keyword · 316; name collisions when combining interfaces · 330; nesting interfaces within classes and other interfaces · 336; private, as nested interfaces · 339; upcasting to an interface · 319; vs. abstract · 328; vs. implementation · 257
 internationalization, in I/O library · 923
 interrupt(): concurrency · 1185; threading · 1143
 interruptible io · 1189
 Introspector · 1398
 invocation handler, for dynamic proxy · 595
 is-a · 306; relationship, inheritance · 258; and upcasting · 260; vs. is-like-a relationships · 37
 isAssignableFrom(), Class method · 580
 isDaemon() · 1133

isInstance() · 578; and generics · 663
isInterface() · 560
is-like-a · 307
Iterable · 629, 797; and array · 433; and
 foreach · 431
Iterator · 406, 409, 427; hasNext() · 407;
 next() · 407
Iterator design pattern · 349

J

Jacobsen, Ivar · 1457
JApplet · 1317; menus · 1352
JAR · 1412; file · 212; jar files and classpath
 · 216; utility · 978
Java: and set-top boxes · 111; AWT · 1303;
 bytecodes · 506; compiling and running
 a program · 80; Java Foundation
 Classes (JFC/Swing) · 1303; Java
 Virtual Machine (JVM) · 556; Java Web
 Start · 1376; public Java seminars · 15
Java standard library, and thread-safety ·
 1232
JavaBeans, see Beans · 1393
javac · 81
javadoc · 82
javap decompiler · 505, 610, 660
Javassist · 1104
JButton · 1335; Swing · 1311
JCheckBox · 1335, 1342
JCheckBoxMenuItem · 1353, 1357
JComboBox · 1345
JComponent · 1337, 1360
JDialog · 1364; menus · 1352
JDK 1.1 I/O streams · 922
JDK, downloading and installing · 80
JFC, Java Foundation Classes (Swing) ·
 1303
JFileChooser · 1368
JFrame · 1317; menus · 1352
JIT, just-in-time compilers · 181
JLabel · 1340
JList · 1347
JMenu · 1352, 1357
JMenuBar · 1352, 1358
JMenuItem · 1336, 1352, 1357, 1358, 1360
JNLP, Java Network Launch Protocol ·
 1376
join(), threading · 1143
JOptionPane · 1350
Joy, Bill · 103

JPanel · 1334, 1360, 1392
JPopupMenu · 1359
JProgressBar · 1373
JRadioButton · 1335, 1344
JScrollPane · 1316, 1349
JSlider · 1373
JTabbedPane · 1349
JTextArea · 1315
JTextField · 1312, 1338
JTextPane · 1341
JToggleButton · 1334
JUnit, problems with · 1083
JVM (Java Virtual Machine) · 556

K

keyboard: navigation, and Swing · 1305;
 shortcuts · 1358
keySet() · 877

L

label · 146
labeled: break · 147; continue · 147
late binding · 40, 277, 281
latent typing · 721, 733
layout, controlling layout with layout
 managers · 1317
lazy initialization · 239
least-recently-used (LRU) · 838
left-shift operator (<<) · 112
length: array member · 194; for arrays ·
 749
less than (<) · 103
less than or equal to (<=) · 103
lexicographic: sorting · 418; vs. alphabetic
 sorting · 783
library: creator, vs. client programmer ·
 209; design · 210; use · 210
LIFO (last-in, first-out) · 412
lightweight: object · 406; persistence · 980
LineNumberInputStream · 920
LineNumberReader · 924
LinkedBlockingQueue · 1215
LinkedHashMap · 834, 838, 877
LinkedHashSet · 416, 821, 872, 874
LinkedList · 401, 410, 423, 817
linking, class · 563
list: boxes · 1347; drop-down list · 1345

- List · 389, 394, 401, 817, 1347;
 - performance comparison · 863; sorting and searching · 884
 - listener: adapters · 1328; and events · 1322; interfaces · 1326
 - Lister, Timothy · 1459
 - ListIterator · 817
 - literal: class literal · 562, 576; double · 109; float · 109; long · 109; values · 108
 - little endian · 958
 - livelock · 1301
 - load factor, of a HashMap or HashSet · 878
 - loader, class · 556
 - loading: .class files · 214; class · 273, 563; initialization & class loading · 272
 - local: inner class · 355; variable · 71
 - lock: contention, in concurrency · 1272; explicit, in concurrency · 1157; in concurrency · 1155; optimistic locking · 1290
 - lock-free code, in concurrent programming · 1161
 - locking, file · 970, 971
 - logarithms, natural · 110
 - logging, building logging into exceptions · 452
 - logical: AND · 120; operator and short-circuiting · 106; operators · 105; OR · 120
 - long: and threading · 1161; literal value marker (L) · 109
 - look & feel, pluggable · 1373
 - LRU, least-recently-used · 838
 - lvalue · 95
-
- M**
- machines, state, and enum · 1041
 - Macromedia Flex · 1416
 - main() · 242
 - manifest file, for JAR files · 978, 1412
 - Map · 389, 394, 419; EnumMap · 1030; in-depth exploration of · 831; performance comparison · 875
 - Map.Entry · 845
 - MappedByteBuffer · 966
 - mark() · 926
 - marker annotation · 1061
 - matcher, regular expression · 531
 - matches(), String · 525
 - Math.random() · 419; range of results · 871
 - mathematical operators · 98, 971
 - member: initializers · 294; member function · 29; object · 32
 - memory exhaustion, solution via References · 890
 - memory-mapped files · 966
 - menu: JDialog, JApplet, JFrame · 1352; JPopupMenu · 1359
 - message box, in Swing · 1350
 - message, sending · 27
 - Messenger idiom · 621, 797, 860
 - meta-annotations · 1063
 - Metadata · 1059
 - method: adding more methods to a design · 235; aliasing during method calls · 97; applying a method to a sequence · 728; behavior of polymorphic methods inside constructors · 301; distinguishing overloaded methods · 160; final · 267, 282, 303; generic · 631; initialization of method variables · 181; inline method calls · 267; inner classes in methods & scopes · 354; lookup tool · 1324; method call binding · 281; overloading · 158; overriding private · 290; polymorphic method call · 277; private · 303; protected methods · 259; recursive · 510; static · 172, 282
 - Method · 1401; for reflection · 589
 - MethodDescriptors · 1401
 - Meyer, Jeremy · 1059, 1100, 1376
 - Meyers, Scott · 30
 - microbenchmarks · 871
 - Microsoft Visual BASIC · 1394
 - migration compatibility · 655
 - missed signals, concurrency · 1203
 - mistakes, and design · 234
 - mixin · 713
 - mkdirs() · 914
 - mnemonics (keyboard shortcuts) · 1358
 - Mock Object · 606
 - modulus · 98
 - monitor, for concurrency · 1155
 - Mono · 58
 - multicast · 1406; event, and JavaBeans · 1407
 - multidimensional arrays · 754
 - multiparadigm programming · 25
 - multiple dispatching: and enum · 1047; with EnumMap · 1055

multiple implementation inheritance · 371
multiple inheritance, in C++ and Java · 326
multiplication · 98
multiply nested class · 368
multitasking · 1112
mutual exclusion (mutex), concurrency · 1154
MXML, Macromedia Flex input format · 1416
mxmcl, Macromedia Flex compiler · 1418

N

name: clash · 211; collisions · 217;
collisions when combining interfaces · 330; creating unique package names · 214; qualified · 560
namespaces · 211
narrowing conversion · 120
natural logarithms · 110
nested class (static inner class) · 364
nesting interfaces · 336
net.mindview.util.SwingConsole · 1310
network I/O · 946
Neville, Sean · 1416
new I/O · 946
new operator · 173; and primitives, array · 195
newInstance() · 1335; reflection · 561
next(), Iterator · 407
nio · 946; and interruption · 1189; buffer · 946; channel · 946; performance · 967
no-arg constructor · 156, 166
North, BorderLayout · 1317
not equivalent (!=) · 103
NOT, logical (!) · 105
notifyAll() · 1198
notifyListeners() · 1411
null · 67
Null Iterator design pattern · 598
Null Object design pattern · 598
NullPointerException · 469
numbers, binary · 109

O

object · 25; aliasing · 97; arrays are first-class objects · 749; assigning objects by

copying references · 96; Class object · 556, 998, 1156; creation · 156; equals() · 104; equivalence · 103; equivalence vs. reference equivalence · 104; final · 263; getClass() · 558; hashCode() · 833; interface to · 26; lock, for concurrency · 1155; member · 32; object-oriented programming · 553; process of creation · 189; serialization · 980; standard root class, default inheritance from · 241; wait() and notifyAll() · 1199; web of objects · 981
object pool · 1246
object-oriented, basic concepts of object-oriented programming (OOP) · 23
ObjectOutputStream · 981
Octal · 109
ones complement operator · 111
OOP: basic characteristics · 25; basic concepts of object-oriented programming · 23; protocol · 316; Simula-67 programming language · 26; substitutability · 25
OpenLaszlo, alternative to Flex · 1416
operating system, executing programs from within Java · 944
operation, atomic · 1160
operator · 94; + and += overloading for String · 242; +, for String · 504; binary · 111; bitwise · 111; casting · 120; comma operator · 140; common pitfalls · 119; indexing operator [] · 193; logical · 105; logical operators and short-circuiting · 106; ones-complement · 111; operator overloading for String · 504; overloading · 118; precedence · 95; relational · 103; shift · 112; String conversion with operator + · 95, 118; ternary · 116; unary · 101, 111
optional methods, in the Java containers · 813
OR · 120; (||) · 105
order: of constructor calls with inheritance · 293; of initialization · 185, 272, 302
ordinal(), for enum · 1012
organization, code · 221
OSExecute · 944
OutputStream · 914, 917
OutputStreamWriter · 922, 923
overflow, and primitive types · 133
overloading: and constructors · 158; distinguishing overloaded methods ·

160; generics · 699; lack of name hiding during inheritance · 255; method overloading · 158; on return values · 165; operator + and += overloading for String · 242, 504; operator overloading · 118; vs. overriding · 255
overriding: and inner classes · 383;
function · 36; private methods · 290; vs. overloading · 255

P

package · 210; access, and friendly · 221; and directory structure · 220; creating unique package names · 214; default · 211, 223; names, capitalization · 75; package access, and protected · 258
paintComponent() · 1360, 1368
painting on a JPanel in Swing · 1360
parameter, collecting · 713, 742
parameterized types · 617
parseInt() · 1368
pattern, regular expression · 527
perfect hashing function · 848
performance: and final · 271; nio · 967; test, containers · 859; tuning, for concurrency · 1270
persistence · 996; lightweight persistence · 980
PhantomReference · 889
philosophers, dining, example of deadlock in concurrency · 1224
pipe · 915
piped streams · 936
PipedInputStream · 916
PipedOutputStream · 916, 917
PipedReader · 923, 1221
PipedWriter · 923, 1221
pipes, and I/O · 1221
Plauger, P.J. · 1458
pluggable look & feel · 1373
pointer, Java exclusion of pointers · 372
polymorphism · 38, 277, 310, 554, 613; and constructors · 293; and multiple dispatching · 1048; behavior of polymorphic methods inside constructors · 301
pool, object · 1246
portability in C, C++ and Java · 123
position, absolute, when laying out Swing components · 1320
possessive quantifiers · 529
post-decrement · 102
postfix · 102
post-increment · 102
pre-decrement · 102
preferences API · 1006
prefix · 102
pre-increment · 102
prerequisites, for this book · 23
primitive: comparison · 104; data types, and use with operators · 123; final · 263; final static primitives · 264; initialization of class fields · 182; types · 65
primordial class loader · 556
printf() · 514
printStackTrace() · 458, 461
PrintStream · 921
PrintWriter · 924, 930, 932; convenience constructor in Java SE5 · 937
priority, concurrency · 1127
PriorityBlockingQueue, for concurrency · 1239
PriorityQueue · 425, 827
private · 31, 210, 221, 224, 258, 1155; illusion of overriding private methods · 268; inner classes · 377; interfaces, when nested · 339; method overriding · 290; methods · 303
problem space · 24
process control · 944
process, concurrent · 1112
ProcessBuilder · 944
ProcessFiles · 1100
producer-consumer, concurrency · 1208
programmer, client · 30
programming: basic concepts of object-oriented programming (OOP) · 23; event-driven programming · 1312; Extreme Programming (XP) · 1457; multiparadigm · 25; object-oriented · 553
progress bar · 1371
promotion, to int · 122, 132
property · 1394; bound properties · 1414; constrained properties · 1414; custom property editor · 1414; custom property sheet · 1414; indexed property · 1414
PropertyChangeEvent · 1414
PropertyDescriptor · 1400
PropertyVetoException · 1414

protected · 31, 210, 221, 225, 258; and package access · 258; is also package access · 227
protocol · 316
proxy: and java.lang.ref.Reference · 890; for unmodifiable methods in the Collections class · 817
Proxy design pattern · 593
public · 31, 210, 221, 222; and interface · 316; class, and compilation units · 211
pure substitution · 37, 307
PushbackInputStream · 920
PushbackReader · 924
pushdown stack · 412; generic · 625
Python · 1, 5, 9, 53, 60, 722, 787, 1113, 1460

Q

qualified name · 560
quantifier: greedy · 529; possessive · 529; regular expression · 529; reluctant · 529
queue · 389, 410, 423, 827; performance · 863; synchronized, concurrency · 1215
queuing discipline · 425

R

race condition, in concurrency · 1152
RAD (Rapid Application Development) · 588
radio button · 1344
ragged array · 755
random selection, and enum · 1021
random() · 419
RandomAccess, tagging interface for containers · 441
RandomAccessFile · 925, 926, 934, 948
raw type · 651
reachable objects and garbage collection · 889
read() · 914; nio · 948
readDouble() · 934
Reader · 914, 922, 923
readExternal() · 986
reading from standard input · 941
readLine() · 485, 924, 931, 942
readObject() · 981; with Serializable · 992
ReadWriteLock · 1292

recursion, unintended via toString() · 509
redirecting standard I/O · 942
ReentrantLock · 1160, 1192
refactoring · 209
reference: assigning objects by copying references · 96; final · 263; finding exact type of a base reference · 555; null · 67; reference equivalence vs. object equivalence · 104
reference counting, garbage collection · 178
Reference, from java.lang.ref · 889
referencing, forward · 184
reflection · 588, 1324, 1398; and Beans · 1394; and weak typing · 496; annotation processor · 1064, 1071; breaking encapsulation with · 607; difference between RTTI and reflection · 589; example · 1334; latent typing and generics · 726
regex · 527
Registered Factories, variation of Factory Method design pattern · 582
regular expressions · 523
rehashing · 878
reification, and generics · 655
relational operators · 103
reluctant quantifiers · 529
removeActionListener() · 1403, 1410
removeXXXListener() · 1322
renameTo() · 914
reporting errors in book · 21
request, in OOP · 27
reset() · 926
responsive user interfaces · 1145
resume(), and deadlocks · 1184
resumption, termination vs. resumption, exception handling · 449
re-throwing an exception · 461
return: an array · 753; and finally · 476; constructor return value · 157; covariant return types · 303, 706; overloading on return value · 165; returning multiple objects · 621
reusability · 32
reuse: code reuse · 237; reusable code · 1393
rewind() · 953
right-shift operator (>>) · 112
rollover · 1337
RoShamBo · 1048
Rumbaugh, James · 1457

running a Java program · 80
 runtime binding · 282; polymorphism · 277
 runtime type information (RTTI) · 308;
 Class object · 556, 1335;
 ClassCastException · 570; Constructor
 class for reflection · 589; Field · 589;
 getConstructor() · 1335; instanceof
 keyword · 569; isInstance() · 578;
 Method · 589; misuse · 613;
 newInstance() · 1335; reflection · 588;
 reflection, difference between · 589;
 shape example · 553; type-safe
 downcast · 569
 RuntimeException · 469, 498
 rvalue · 95

S

ScheduledExecutor, for concurrency · 1242
 scheduler, thread · 1117
 scope: inner class nesting within any
 arbitrary scope · 355; inner classes in
 methods & scopes · 354
 scrolling in Swing · 1316
 searching: an array · 784; sorting and
 searching Lists · 884
 section, critical section and synchronized
 block · 1169
 seek() · 926, 934
 self-bounded types, in generics · 701
 semaphore, counting · 1246
 seminars: public Java seminars · 15;
 training, provided by MindView, Inc. · 1450
 sending a message · 27
 sentinel, end · 626
 separation of interface and
 implementation · 31, 228, 1321
 sequence, applying a method to a sequence
 · 728
 SequenceInputStream · 916, 925
 Serializable · 980, 986, 991, 1001, 1405;
 readObject() · 992; writeObject() · 992
 serialization: and object storage · 996; and
 transient · 991; controlling the process
 of serialization · 986;
 defaultReadObject() · 995;
 defaultWriteObject() · 994; Versioning · 995

Set · 389, 394, 415, 821; mathematical
 relationships · 641; performance
 comparison · 872
 setActionCommand() · 1358
 setBorder() · 1340
 setErr(PrintStream) · 943
 setIcon() · 1337
 setIn(InputStream) · 943
 setLayout() · 1317
 setMnemonic() · 1358
 setOut(PrintStream) · 943
 setToolTipText() · 1337
 shape: example · 34, 282; example, and
 runtime type information · 553
 shift operators · 112
 short-circuit, and logical operators · 106
 shortcut, keyboard · 1358
 shuffle() · 885
 side effect · 94, 103, 166
 sign extension · 112
 signals, missed, in concurrency · 1203
 signature, method · 72
 signed twos complement · 116
 Simula-67 programming language · 26
 simulation · 1253
 sine wave · 1360
 single dispatching · 1047
 SingleThreadExecutor · 1123
 Singleton design pattern · 232
 size(), ArrayList · 390
 size, of a HashMap or HashSet · 878
 sizeof(), lack of in Java · 122
 sleep(), in concurrency · 1126
 slider · 1371
 Smalltalk · 25
 SocketChannel · 971
 SoftReference · 889
 Software Development Conference · 14
 solution space · 24
 SortedMap · 837
 SortedSet · 825
 sorting · 778; alphabetic · 418; and
 searching Lists · 884; lexicographic · 418
 source code · 18; copyright notice · 19
 South, BorderLayout · 1317
 space: namespaces · 211; problem space · 24; solution space · 24
 specialization · 258
 specification, exception specification · 457, 493
 specifier, access · 31, 210, 221

split(), String · 322, 525
 sprintf() · 521
 SQL generated via annotations · 1066
 stack · 410, 412, 895; generic pushdown · 625
 standard input, reading from · 941
 standards, coding · 21
 State design pattern · 306
 state machines, and enum · 1041
 stateChanged() · 1363
 static · 316; and final · 263; block · 190; construction clause · 190; data initialization · 186; final static primitives · 264; import, and enum · 1013; initialization · 274, 558; initializer · 582; inner classes · 364; keyword · 76, 172; method · 172, 282; strong type checking · 492; synchronized static · 1156; type checking · 615; vs. dynamic type checking · 814
 STL, C++ · 900
 stop(), and deadlocks · 1184
 Strategy design pattern · 322, 332, 737, 764, 778, 780, 903, 910, 1036, 1238
 stream, I/O · 914
 StreamTokenizer · 924
 String: CASE_INSENSITIVE_ORDER Comparator · 884; class methods · 503; concatenation with operator += · 118; conversion with operator + · 95, 118; format() · 521; immutability · 503; indexOf() · 592; lexicographic vs. alphabetic sorting · 783; methods · 511; operator + and += overloading · 242; regular expression support in · 524; sorting, CASE_INSENSITIVE_ORDER · 902; split() method · 322; toString() · 238
 StringBuffer · 916
 StringBufferInputStream · 916
 StringBuilder, vs. String, and toString() · 506
 StringReader · 923, 928
 StringWriter · 923
 strong static type checking · 492
 Stroustrup, Bjarne · 207
 structural typing · 721, 733
 struts, in BoxLayout · 1321
 Stub · 606
 style: coding style · 88; of creating classes · 228
 subobject · 244, 256
 substitutability, in OOP · 25
 substitution: inheritance vs. extension · 306; principle · 37
 subtraction · 98
 suites, @Unit vs. JUnit · 1095
 super · 245; and inner classes · 383; keyword · 243
 superclass · 243; bounds · 568
 supertype wildcards · 682
 suspend(), and deadlocks · 1184
 SWF, Flash bytecode format · 1416
 Swing · 1303; and concurrency · 1382; component examples · 1332; components, using HTML with · 1370; event model · 1321
 switch: and enum · 1016; keyword · 151
 switch, context switching in concurrency · 1112
 synchronized · 1155; and inheritance · 1411; and wait() & notifyAll() · 1198; block, and critical section · 1169; Brian's Rule of Synchronization · 1156; containers · 887; deciding what methods to synchronize · 1411; queue · 1215; static · 1156
 SynchronousQueue, for concurrency · 1259
 System.arraycopy() · 775
 System.err · 450, 941
 System.in · 941
 System.out · 941
 System.out, changing to a PrintWriter · 942
 systemNodeForPackage(), preferences API · 1007

T
 tabbed dialog · 1349
 table-driven code · 1033; and anonymous inner classes · 859
 task vs. thread, terminology · 1142
 tearing, word tearing · 1161
 Template Method design pattern · 375, 573, 666, 859, 969, 1173, 1279, 1284
 templates, C++ · 618, 652
 termination condition, and finalize() · 176
 termination vs. resumption, exception handling · 449
 ternary operator · 116

testing: annotation-based unit testing with
 @Unit · 1083; techniques · 367; unit
 testing · 242
 Theory of Escalating Commitment · 1146
 this keyword · 167
 thread: group · 1146; interrupt() · 1185;
 isDaemon() · 1133; notifyAll() · 1198;
 priority · 1127; resume(), and deadlocks
 · 1184; safety, Java standard library ·
 1232; scheduler · 1117; states · 1183;
 stop(), and deadlocks · 1184;
 suspend(), and deadlocks · 1184; thread
 local storage · 1177; vs. task, terminology
 · 1142; wait() · 1198
 ThreadFactory, custom · 1131
 throw keyword · 447
 Throwable base class for Exception · 458
 throwing an exception · 446
 time conversion · 1238
 Timer, repeating · 1207
 TimeUnit · 1127, 1238
 toArray() · 877
 tool tips · 1337
 TooManyListenersException · 1406
 toString() · 238; guidelines for using
 StringBuilder · 508
 training seminars provided by MindView,
 Inc. · 1450
 transferFrom() · 949
 transferTo() · 949
 transient keyword · 991
 translation unit · 211
 TreeMap · 834, 837, 877
 TreeSet · 416, 821, 825, 872
 true · 105
 try · 254, 473; try block in exceptions · 447
 tryLock(), file locking · 971
 tuple · 621, 639, 647
 twos complement, signed · 116
 type: argument inference, generic · 632;
 base · 34; checking, static · 492, 615;
 data type equivalence to class · 27;
 derived · 34; duck typing · 721, 733;
 dynamic type safety and containers ·
 710; finding exact type of a base
 reference · 555; generics and type-safe
 containers · 390; latent typing · 721,
 733; parameterized · 617; primitive · 65;
 primitive data types and use with
 operators · 123; structural typing · 721,
 733; tag, in generics · 663; type checking

and arrays · 747; type safety in Java ·
 119; type-safe downcast · 569
 TYPE field, for primitive class literals · 562

U

UML: indicating composition · 32; Unified
 Modeling Language · 29, 1457
 unary: minus (-) · 101; operator · 111;
 operators · 101; plus (+) · 101
 unbounded wildcard in generics · 686
 UncaughtExceptionHandler, Thread class ·
 1148
 unchecked exception · 469; converting
 from checked · 497
 unconditional branching · 143
 unicast · 1406
 Unicode · 923
 Unified Modeling Language (UML) · 29,
 1457
 unit testing · 242; annotation-based with
 @Unit · 1083
 unmodifiable, making a Collection or Map
 unmodifiable · 885
 unmodifiableList(), Collections · 815
 unsupported methods, in the Java
 containers · 813
 UnsupportedOperationException · 815
 upcasting · 42, 260, 278; and interface ·
 319; and runtime type information ·
 555; inner classes and upcasting · 352
 user interface: graphical user interface
 (GUI) · 375, 1303; responsive, with
 threading · 1145
 userNodeForPackage(), preferences API ·
 1007
 Utilities, java.util.Collections · 879

V

value, preventing change at run time · 262
 values(), for enum · 1011, 1017
 varargs · 198, 728; and generic methods ·
 635
 Varga, Ervin · 7, 1191
 variable: defining a variable · 139;
 initialization of method variables · 181;
 local · 71; variable argument lists

(unknown quantity and type of arguments) · 198
Vector · 870, 894
vector of change · 377
Venners, Bill · 176
versioning, serialization · 995
Visitor design pattern, and annotations, mirror API · 1079
Visual BASIC, Microsoft · 1394
visual programming · 1394; environments · 1304
volatile · 1151, 1160, 1165

W

wait() · 1198
waiting, busy · 1198
Waldrop, M. Mitchell · 1459
WeakHashMap · 834, 892
WeakReference · 889
web of objects · 981
Web Start, Java · 1376
West, BorderLayout · 1317
while · 137
widening conversion · 121
wildcards: and Class references · 566; in generics · 677; supertype · 682; unbounded · 686
windowClosing() · 1365

word tearing, in concurrent programming · 1161
write() · 914; nio · 949
writeBytes() · 933
writeChars() · 933
writeDouble() · 934
writeExternal() · 986
writeObject() · 981; with Serializable · 992
Writer · 914, 922, 923

X

XDoclet · 1060
XML · 1003
XOM XML library · 1003
XOR (Exclusive-OR) · 111

Y

You Aren't Going to Need It (YAGNI) · 601

Z

zero extension · 112
ZipEntry · 977
ZipInputStream · 973
ZipOutputStream · 973