No. 18-956

IN THE
Supreme Court of the United States

GOOGLE LLC,
Petitioner,
v.
ORACLE AMERICA, INC.,
Respondent.

On Writ of Certiorari to the
U.S. Court of Appeals for the Federal Circuit

SUPPLEMENTAL JOINT APPENDIX

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PETITION FOR A WRIT OF CERTIORARI FILED JANUARY 24, 2019
CERTIORARI GRANTED NOVEMBER 15, 2019

SUPPLEMENTAL JOINT APPENDIX

Exhibit A, Demonstrative of Expert Witness Douglas C. Schmidt, Dist. Ct. Doc. 1993-2 (excerpts).....SJA1

Trial Exhibit 1028, Poster: The Java Class Libraries, Java 2 Platform, SE 5.0..... SJA3

SJA1

Exhibit A, Demonstrative of Expert Witness Douglas C. Schmidt

(ECF No. 1993-2)

Use of Declaring Code and Design of Java APIs in Android—A Technical Perspective

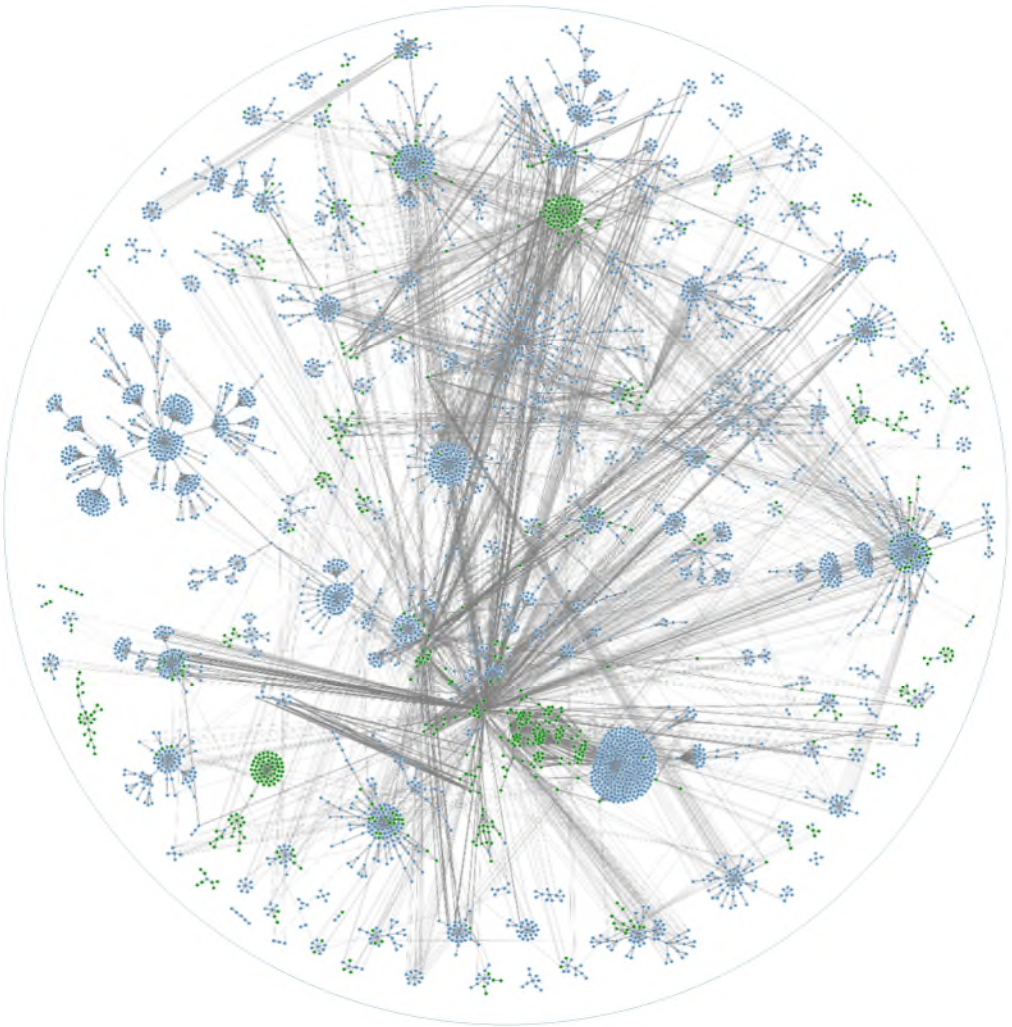
PROF. DOUGLAS C. SCHMIDT

MAY 17, 2016

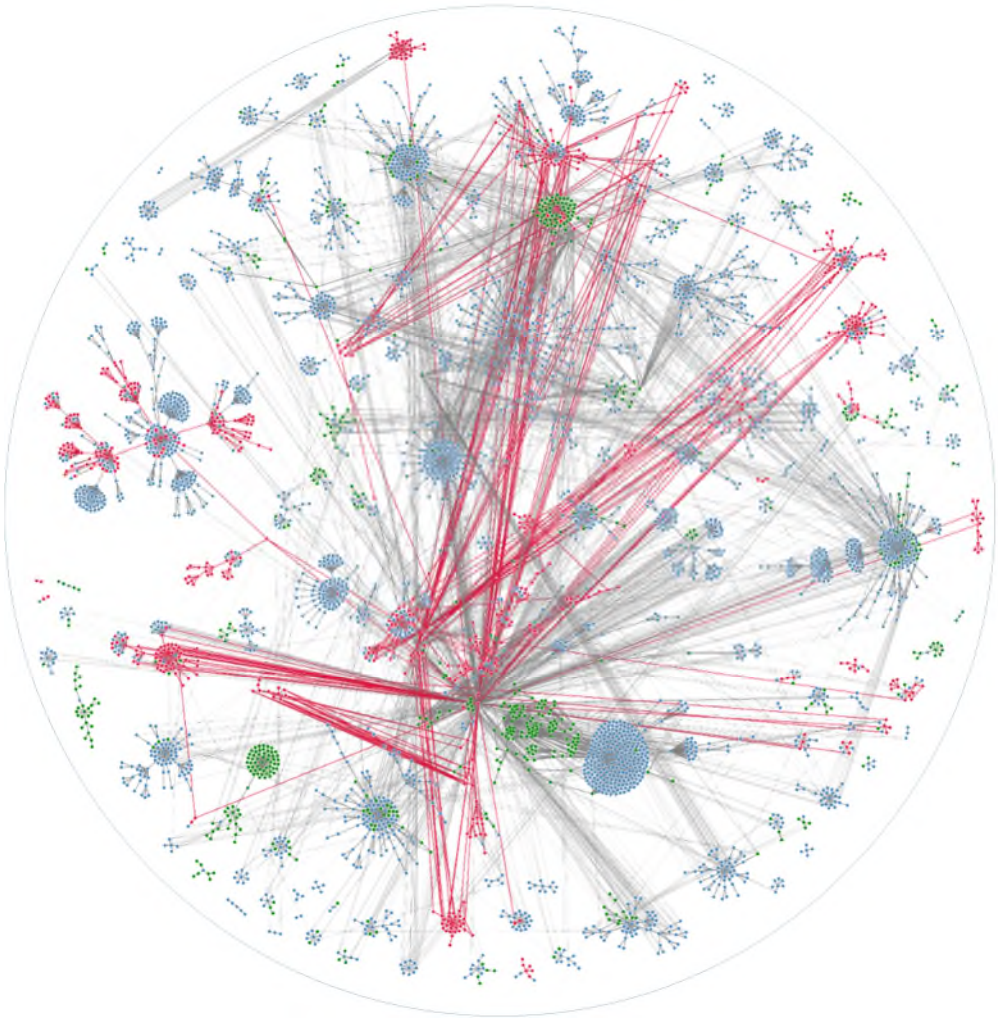
* * *

Software Map of the Java SE5 APIs

Relationships Between Classes and Interfaces



The Heart of the Java SE5 API is Found in Android



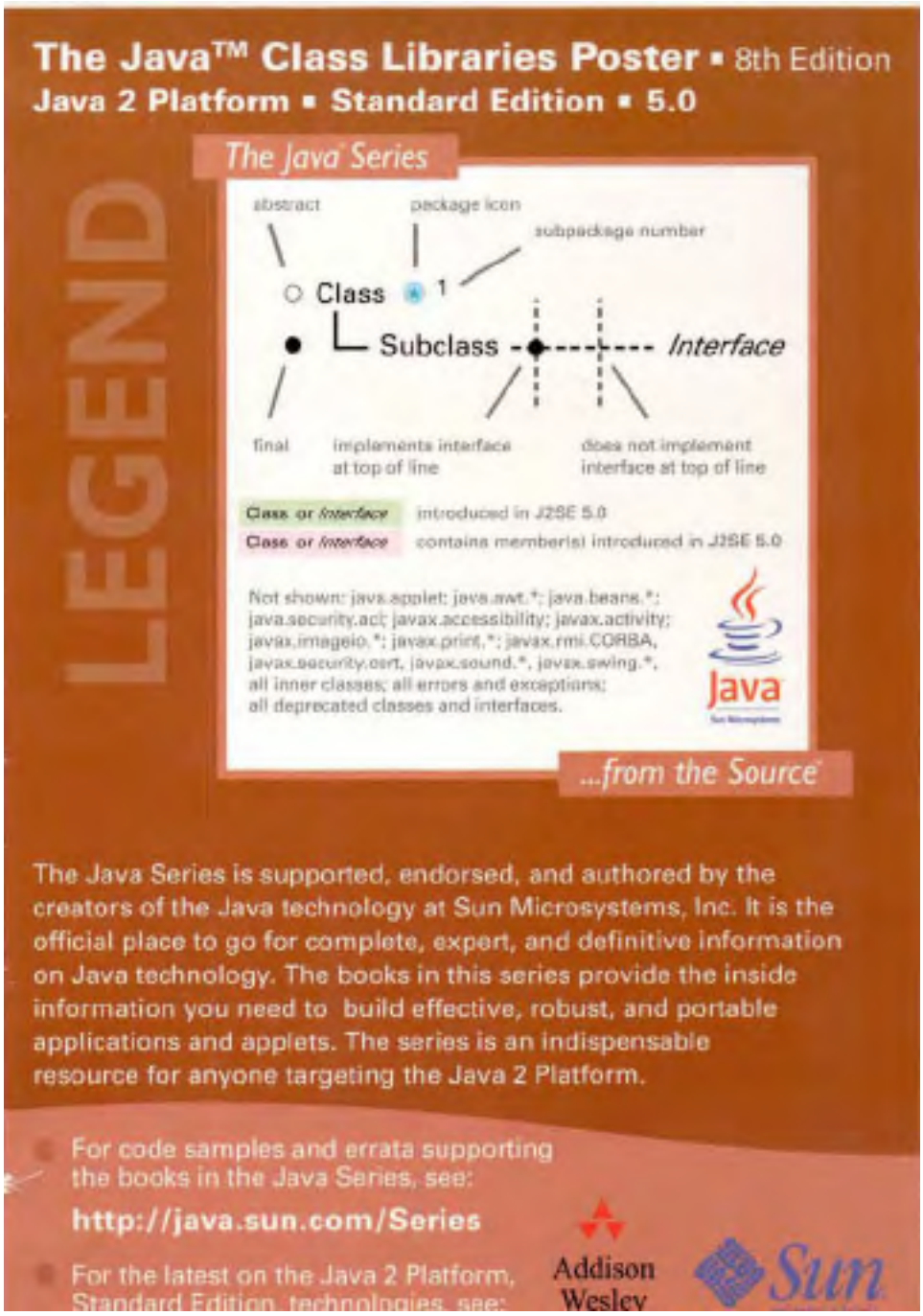
SJA3

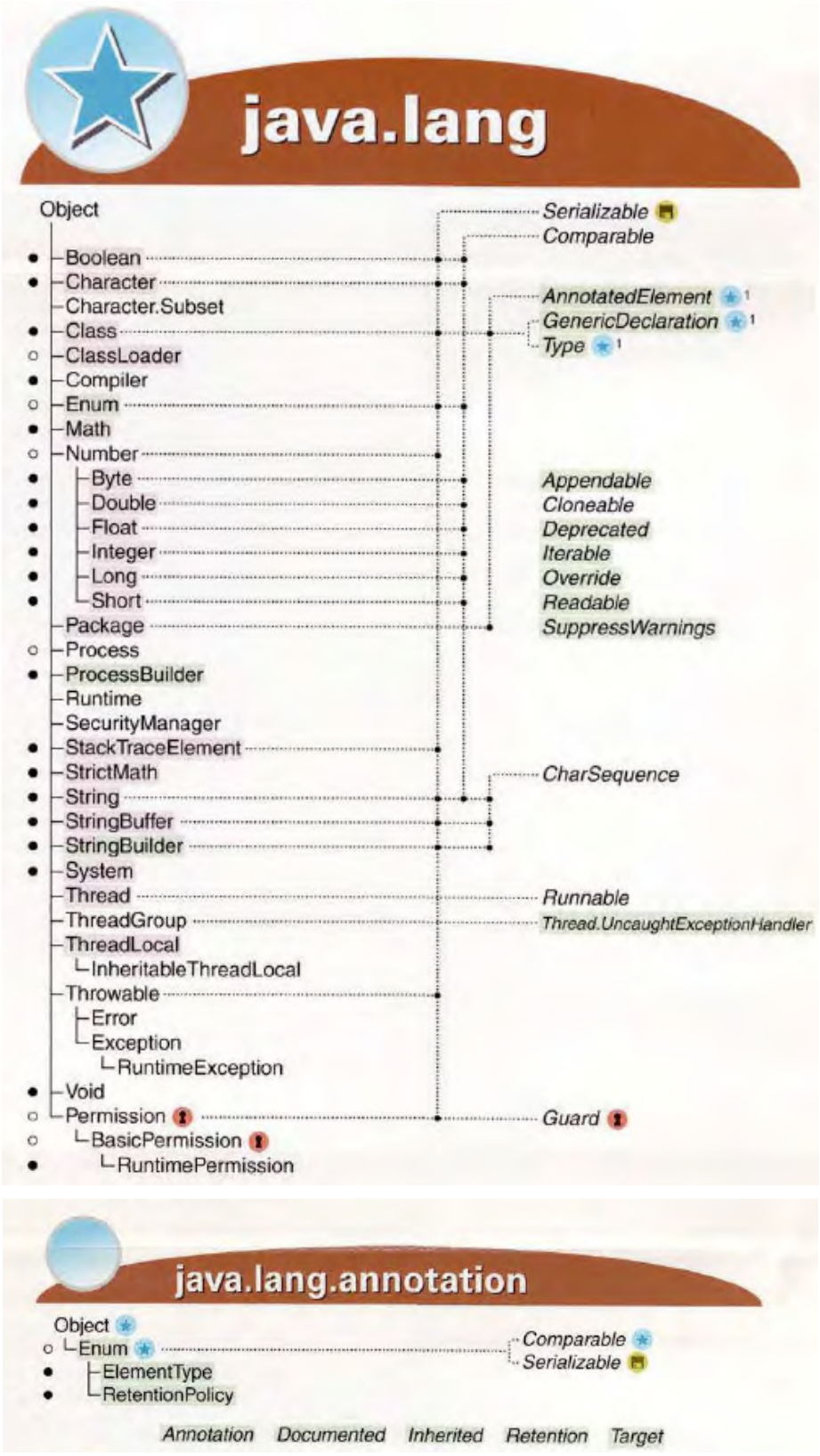
Trial Exhibit 1028

The Java Class Libraries

Java 2 Platform Standard Edition 5.0 Patrick Chan Rosanna Lee

Trial Exhibit 1028, Page 1 of 1


The Java™ Class Libraries Poster • 8th Edition
Java 2 Platform • Standard Edition • 5.0
The Java Series
LEGEND
abstract
package icon
subpackage number
Class
1
Subclass
Interface
final
implements interface at top of line
does not implement interface at top of line
Class or Interface
introduced in J2SE 5.0
Class or Interface
contains member(s) introduced in J2SE 5.0
Not shown: java.applet; java.awt.*; java.beans.*; java.security.acl; javax.accessibility; javax.activity; javax.imageio.*; javax.print.*; javax.rmi.CORBA, javax.security.cert, javax.sound.*, javax.swing.*, all inner classes; all errors and exceptions; all deprecated classes and interfaces.
Java
...from the Source
The Java Series is supported, endorsed, and authored by the creators of the Java technology at Sun Microsystems, Inc. It is the official place to go for complete, expert, and definitive information on Java technology. The books in this series provide the inside information you need to build effective, robust, and portable applications and applets. The series is an indispensable resource for anyone targeting the Java 2 Platform.
For code samples and errata supporting the books in the Java Series, see:
http://java.sun.com/Series
For the latest on the Java 2 Platform, Standard Edition, technologies, see:
Addison Wesley
Sun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Boolean
Character
Character.Subset
Class
ClassLoader
Compiler
Enum
Math
Number
Byte
Double
Float
Integer
Long
Short
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Process
ProcessBuilder
Runtime
SecurityManager
StackTraceElement
StrictMath
String
StringBuffer
StringBuilder
System
Thread
ThreadGroup
ThreadLocal
InheritableThreadLocal
Throwable
Error
Exception
RuntimeException
Void
Permission
BasicPermission
RuntimePermission
Serializable
Comparable
AnnotatedElement 1
GenericDeclaration 1
Type 1
Appendable
Cloneable
Deprecated
Iterable
Override
Readable
SuppressWarnings
CharSequence
Runnable
Thread.UncaughtExceptionHandler
Guard
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Enum
ElementType
RetentionPolicy
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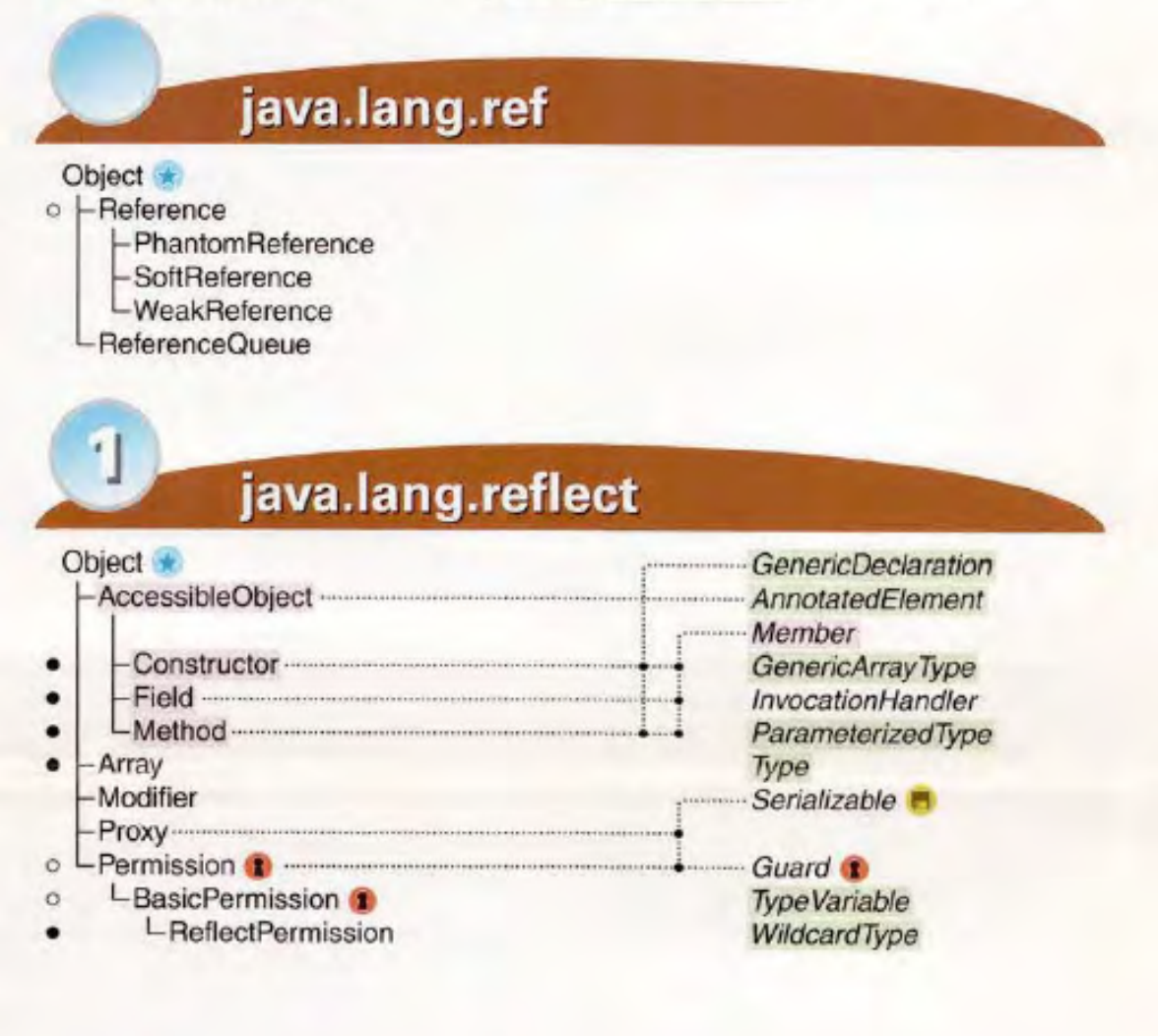
Serializable
Annotation
Documented
Inherited
Retention
Target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Object
Reference
PhantomReference
SoftReference
WeakReference
ReferenceQueue
java.lang.reflect
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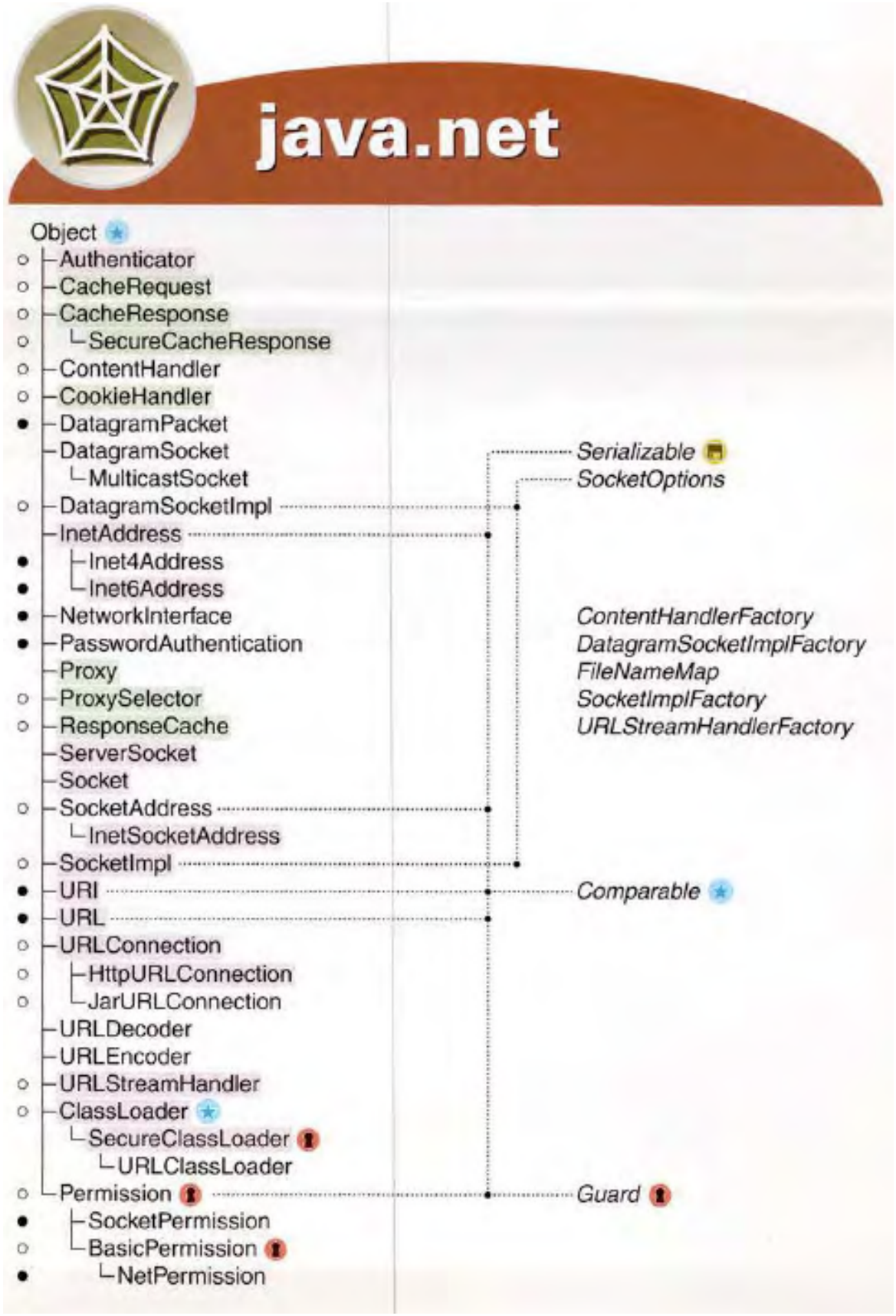
AccessibleObject
Constructor
Field
Method
Array
Modifier
Proxy
Permission
BasicPermission
ReflectPermission
GenericDeclaration
AnnotatedElement
Member
GenericArrayType
InvocationHandler
ParameterizedType
Type
Serializable
Guard
TypeVariable
WildcardType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CacheRequest
CacheResponse
SecureCacheResponse
ContentHandler
CookieHandler
DatagramPacket
DatagramSocket
MulticastSocket
DatagramSocketImpl
InetAddress
Inet4Address
Inet6Address
NetworkInterface
PasswordAuthentication
Proxy
ProxySelector
ResponseCache
ServerSocket
Socket
SocketAddress
InetSocketAddress
SocketImpl
URI
URL
URLConnection
HttpURLConnection
JarURLConnection
URLDecoder
URLEncoder
URLStreamHandler
ClassLoader
SecureClassLoader
URLClassLoader
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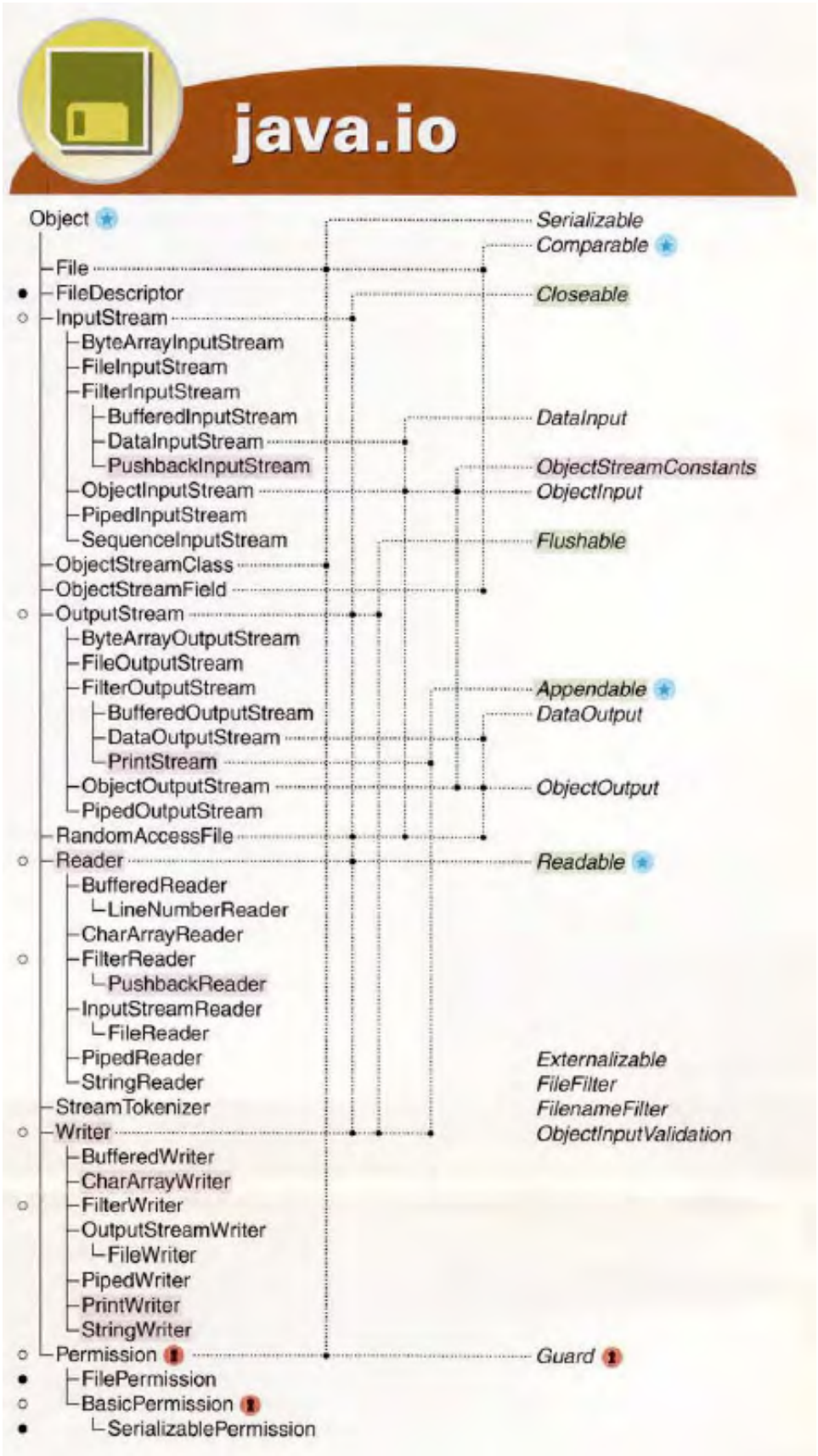
SocketPermission
BasicPermission
NetPermission
Serializable
SocketOptions
ContentHandlerFactory
DatagramSocketImplFactory
FileNameMap
SocketImplFactory
URLStreamHandlerFactory
Comparable
Guard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Object
File
FileDescriptor
InputStream
ByteArrayInputStream
FileInputStream
FilterInputStream
BufferedInputStream
DataInputStream
PushbackInputStream
ObjectInputStream
PipedInputStream
SequenceInputStream
ObjectStreamClass
ObjectStreamField
OutputStream
ByteArrayOutputStream
FileOutputStream
FilterOutputStream
BufferedOutputStream
DataOutputStream
PrintStream
ObjectOutputStream
PipedOutputStream
RandomAccessFile
Reader
BufferedReader
LineNumberReader
CharArrayReader
FilterReader
PushbackReader
InputStreamReader
FileReader
PipedReader
StringReader
StreamTokenizer
Writer
BufferedWriter
CharArrayWriter
FilterWriter
OutputStreamWriter
FileWriter
PipedWriter
PrintWriter
StringWriter
Permission
FilePermission
BasicPermission
SerializablePermission
Serializable
Comparable
Closeable
DataInput
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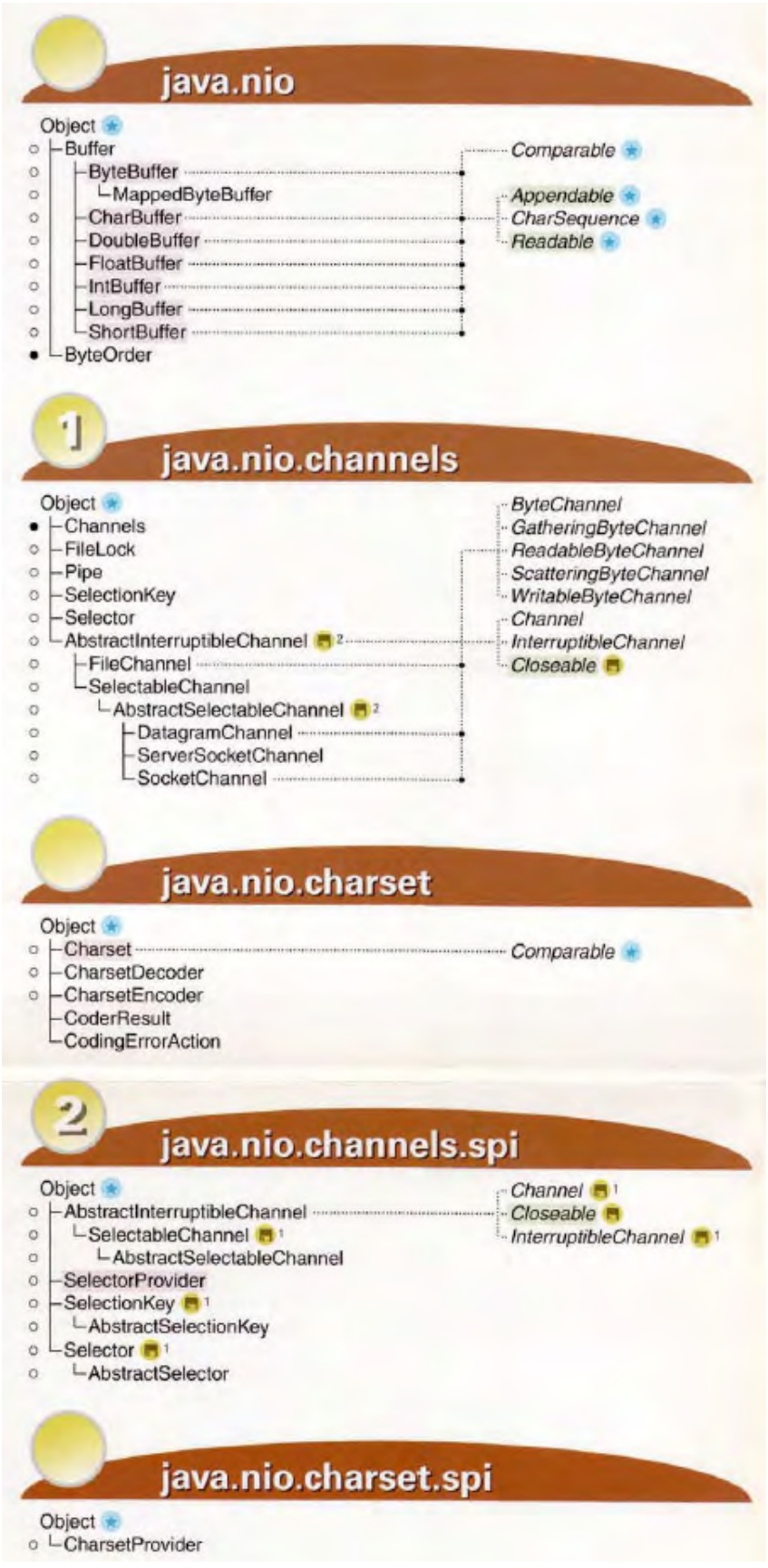
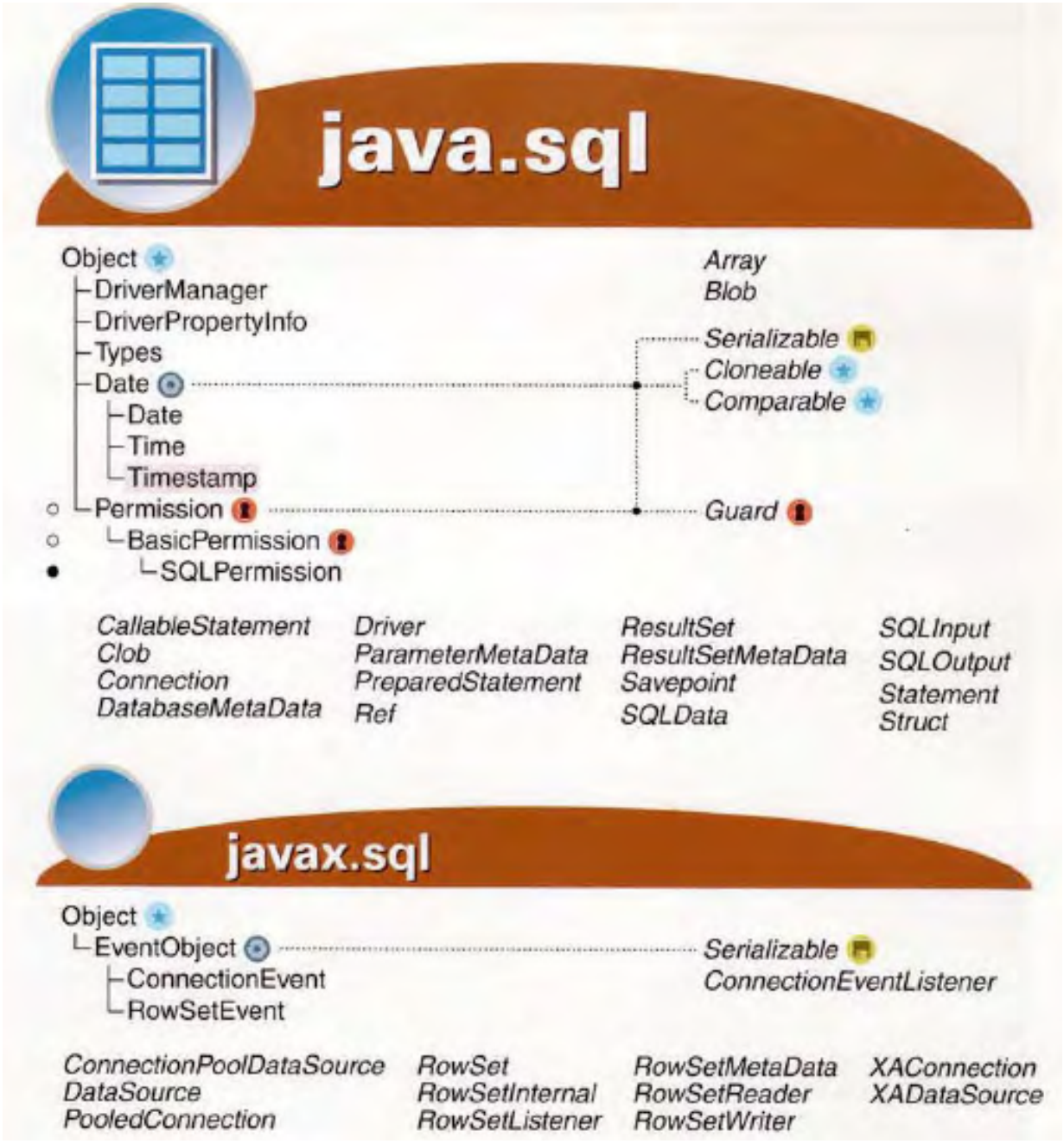
Appendable
DataOutput
ObjectOutput
Readable
Externalizable
FileFilter
FilenameFilter
ObjectInputValidation
Guard


java.nio
Object
Buffer
ByteBuffer
MappedByteBuffer
CharBuffer
DoubleBuffer
FloatBuffer
IntBuffer
LongBuffer
ShortBuffer
ByteOrder
Comparable
Appendable
CharSequence
Readable
1
java.nio.channels
Object
Channels
FileLock
Pipe
SelectionKey
Selector
AbstractInterruptibleChannel
FileChannel
SelectableChannel
AbstractSelectableChannel
DatagramChannel
ServerSocketChannel
SocketChannel
ByteChannel
GatheringByteChannel
ReadableByteChannel
ScatteringByteChannel
WritableByteChannel
Channel
InterruptibleChannel
Closeable
java.nio.charset
Object
Charset
CharsetDecoder
CharsetEncoder
CoderResult
CodingErrorAction
Comparable
2
java.nio.channels.spi
Object
AbstractInterruptibleChannel
SelectableChannel
AbstractSelectableChannel
SelectorProvider
SelectionKey
AbstractSelectionKey
Selector
AbstractSelector
Channel
Closeable
InterruptibleChannel
java.nio.charset.spi
Object
CharsetProvider

java.security
Object
AccessControlContext
AccessController
AlgorithmParameterGenerator
AlgorithmParameterGeneratorSpi
AlgorithmParameters
AlgorithmParametersSpi
CodeSigner
CodeSource
GuardedObject
KeyFactory
KeyFactorySpi
KeyPair
KeyPairGeneratorSpi
KeyPairGenerator
KeyRep
KeyStore
KeyStoreSpi
MessageDigestSpi
MessageDigest
Permission
AllPermission
BasicPermission
SecurityPermission
UnresolvedPermission
PermissionCollection
Permissions
Policy
ProtectionDomain
SecureRandomSpi
Security
SignatureSpi
Signature
SignedObject
Timestamp
ClassLoader
SecureClassLoader
Dictionary
Hashtable
Properties
Provider
AuthProvider
InputStream
FilterInputStream
DigestInputStream
OutputStream
FilterOutputStream
DigestOutputStream
Random
SecureRandom
Serializable
Guard
DomainCombiner
Key
Principal
PrivateKey
PrivilegedAction
PrivilegedExceptionAction
PublicKey
Cloneable
Map
Closeable
Flushable

java.security.cert
Object
Certificate
X509Certificate
CertificateFactory
CertificateFactorySpi
CertPath
CertPathBuilder
CertPathBuilderSpi
CertPathValidator
CertPathValidatorSpi
CertStore
CertStoreSpi
CollectionCertStoreParameters
CRL
X509CRL
LDAPCertStoreParameters
PKIXCertPathChecker
PKIXCertPathValidatorResult
PKIXCertPathBuilderResult
PKIXParameters
PKIXBuilderParameters
PolicyQualifierInfo
TrustAnchor
X509CertSelector
X509CRLEntry
X509CRLSelector
Serializable
X509Extension
PolicyNode
Cloneable
CertStoreParameters
CertPathValidatorResult
CertPathBuilderResult
CertPathParameters
CertSelector
CRLSelector
1
java.security.interfaces
DSAKey
DSAKeyPairGenerator
DSAParams
DSAPrivateKey
DSAPublicKey
ECKey
ECPrivateKey
ECPublicKey
RSAKey
RSAMultiPrimePrivateCrtKey
RSAPrivateCrtKey
RSAPrivateKey
RSAPublicKey
2
java.security.spec
Object
DSAParameterSpec
DSAPrivateKeySpec
DSAPublicKeySpec
ECFieldF2m
ECFieldFp
ECGenParameterSpec
ECParameterSpec
ECPoint
ECPrivateKeySpec
ECPublicKeySpec
EllipticCurve
EncodedKeySpec
PKCS8EncodedKeySpec
X509EncodedKeySpec
MGF1ParameterSpec
PSSParameterSpec
RSAKeyGenParameterSpec
RSAOtherPrimeInfo
RSAPrivateKeySpec
RSAMultiPrimePrivateCrtKeySpec
RSAPrivateCrtKeySpec
RSAPublicKeySpec
AlgorithmParameterSpec
DSAParams
KeySpec
ECField

SJA12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Object
DriverManager
DriverPropertyInfo
Types
Date
Date
Time
Timestamp
Permission
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SQLPermission
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Blob
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Cloneable
Comparable
Guard
CallableStatement
Clob
Connection
DatabaseMetaData
Driver
ParameterMetaData
PreparedStatement
Ref
ResultSet
ResultSetMetaData
Savepoint
SQLData
SQLInput
SQLOutput
Statement
Struct
javax.sql
Object
EventObject
ConnectionEvent
RowSetEvent
Serializable
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DataSource
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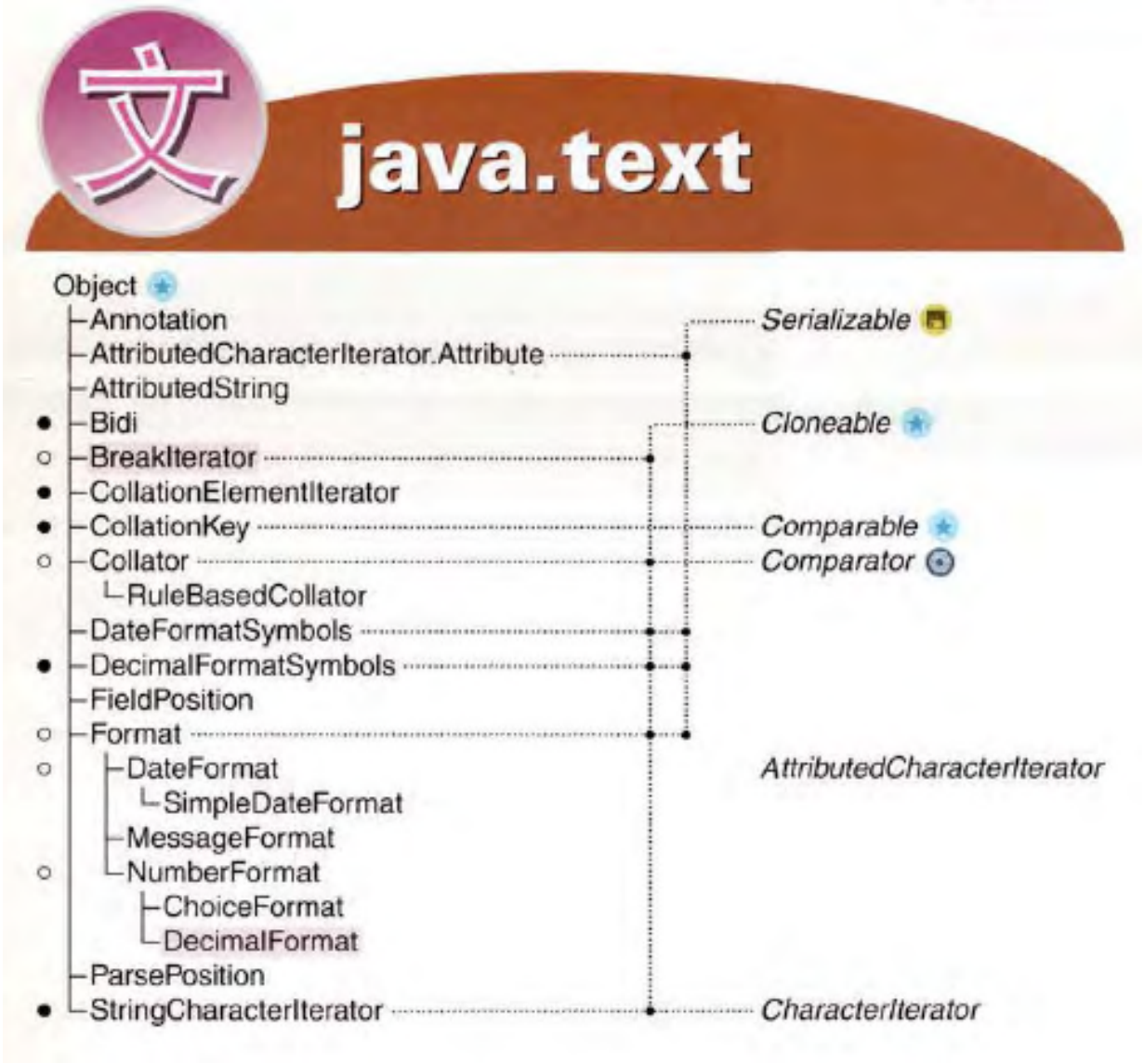
RowSetInternal
RowSetListener
RowSetMetaData
RowSetReader
RowSetWriter
XAConnection
XADataSource


java.text
Object
Annotation
AttributedCharacterIterator.Attribute
AttributedString
Bidi
BreakIterator
CollationElementIterator
CollationKey
Collator
RuleBasedCollator
DateFormatSymbols
DecimalFormatSymbols
FieldPosition
Format
DateFormat
SimpleDateFormat
MessageFormat
NumberFormat
ChoiceFormat
DecimalFormat
ParsePosition
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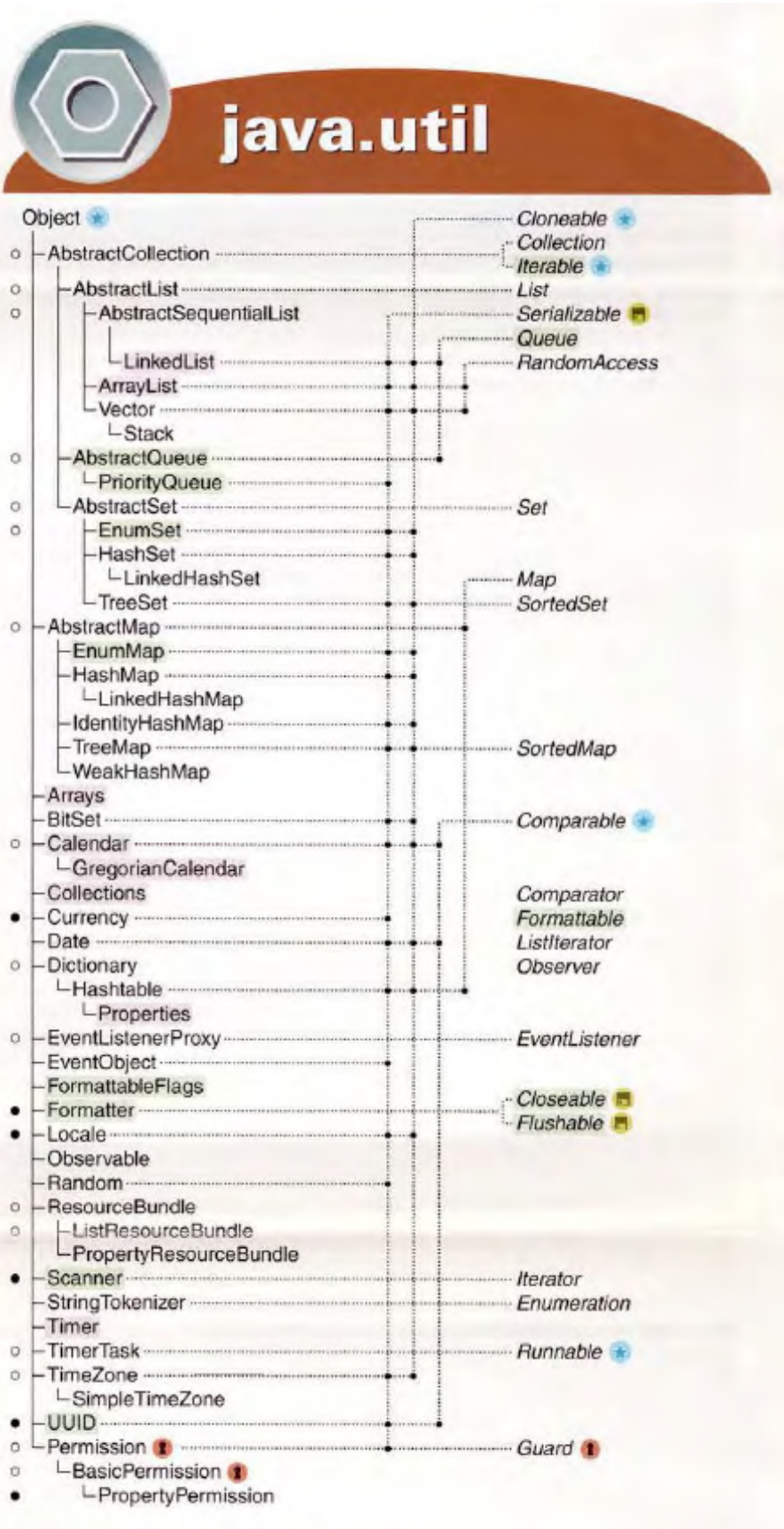
Cloneable
Comparable
Comparator
AttributedCharacterIterator
CharacterIterator


java.util
Object
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AbstractList
AbstractSequentialList
LinkedList
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Vector
Stack
AbstractQueue
PriorityQueue
AbstractSet
EnumSet
HashSet
LinkedHashSet
TreeSet
AbstractMap
EnumMap
HashMap
LinkedHashMap
IdentityHashMap
TreeMap
WeakHashMap
Arrays
BitSet
Calendar
GregorianCalendar
Collections
Currency
Date
Dictionary
Hashtable
Properties
EventListenerProxy
EventObject
FormattableFlags
Formatter
Locale
Observable
Random
ResourceBundle
ListResourceBundle
PropertyResourceBundle
Scanner
StringTokenizer
Timer
TimerTask
TimeZone
SimpleTimeZone
UUID
Permission
BasicPermission
PropertyPermission
Cloneable
Collection
Iterable
List
Serializable
Queue
RandomAccess
Set
Map
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ListIterator
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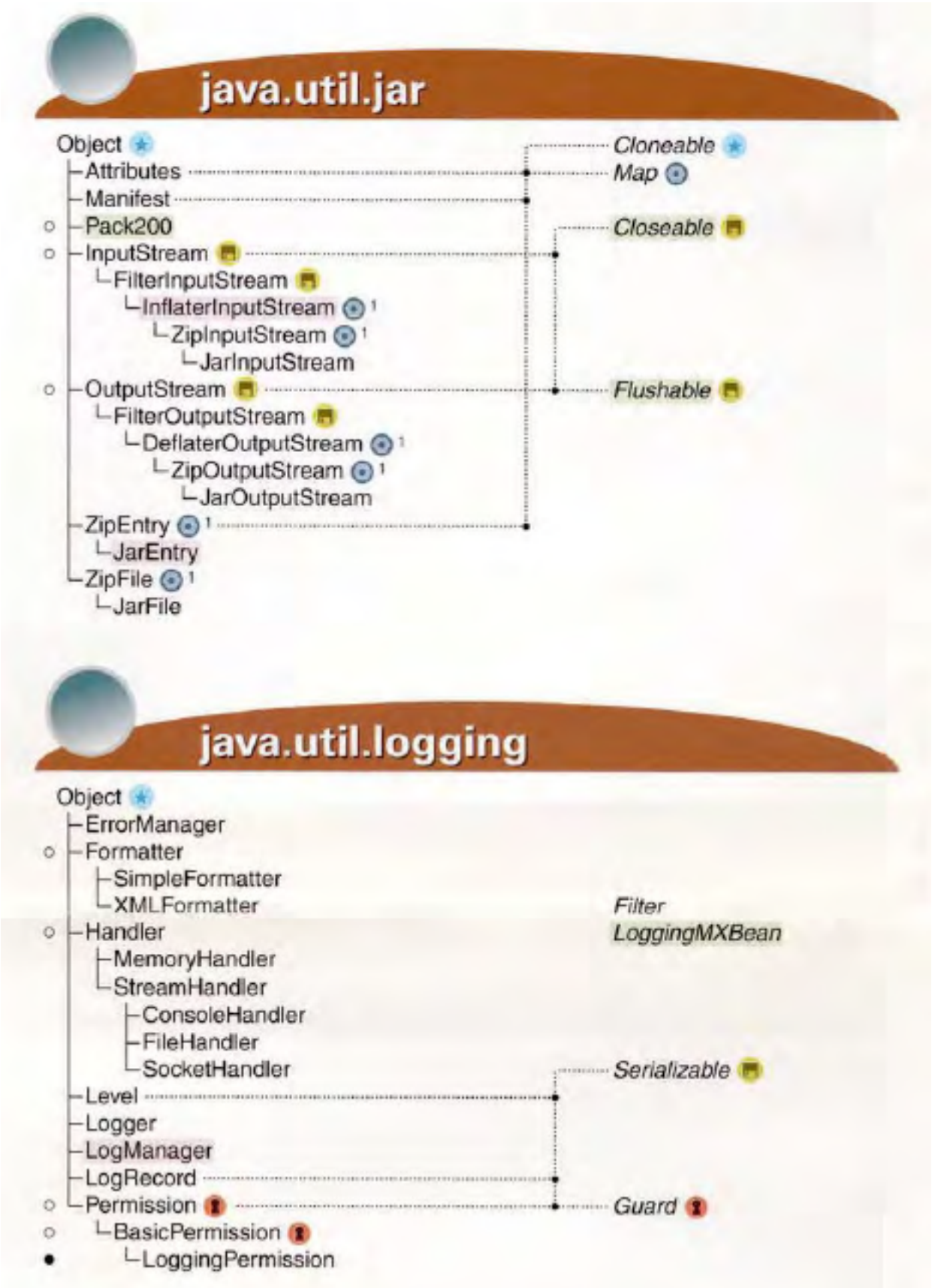
Flushable
Iterator
Enumeration
Runnable
Guard


java.util.jar
Object
Attributes
Manifest
Pack200
InputStream
FilterInputStream
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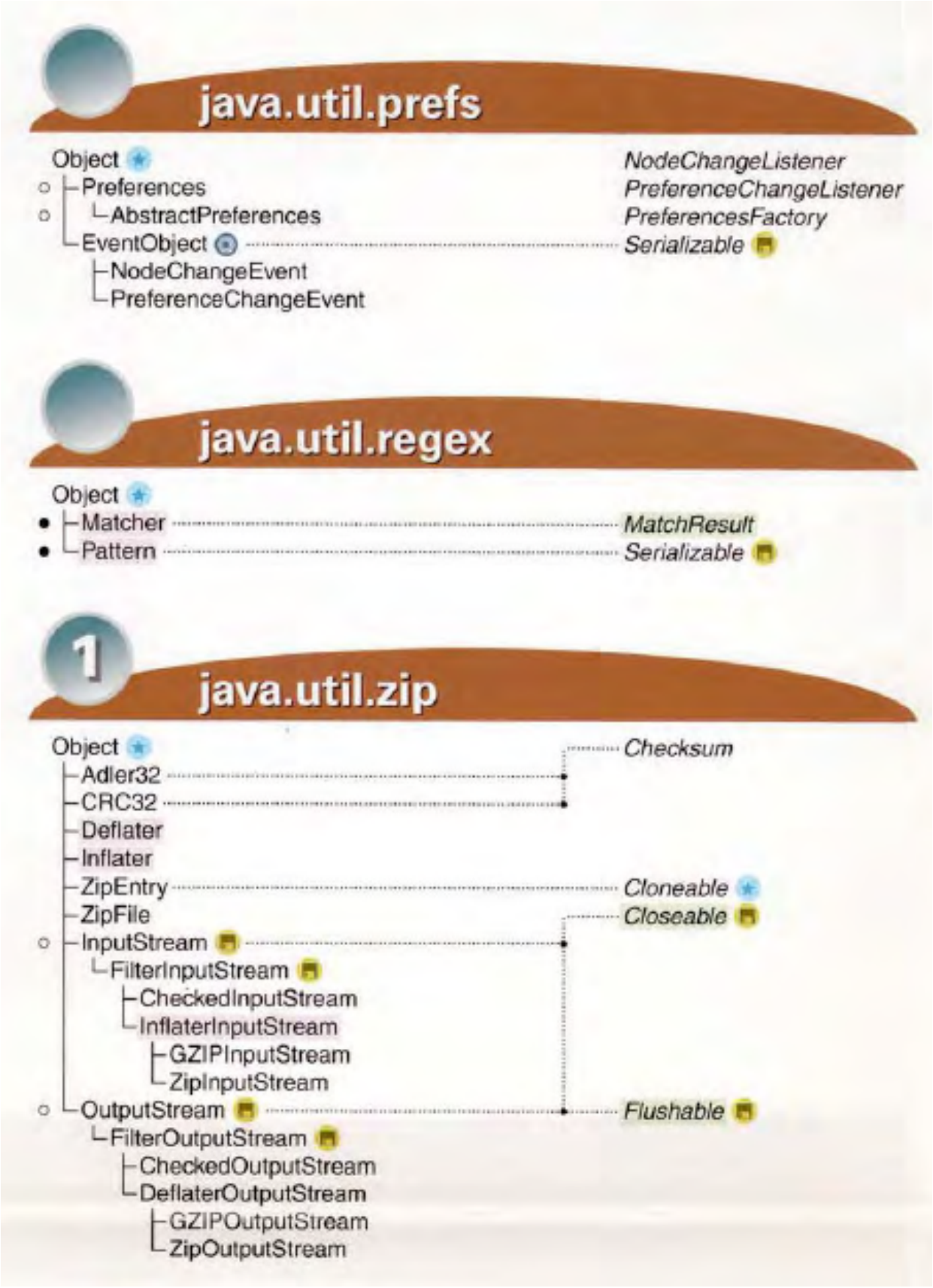
ZipInputStream
JarInputStream
OutputStream
FilterOutputStream
DeflaterOutputStream
ZipOutputStream
JarOutputStream
ZipEntry
JarEntry
ZipFile
JarFile
Cloneable
Map
Closeable
Flushable
java.util.logging
Object
ErrorManager
Formatter
SimpleFormatter
XMLFormatter
Handler
MemoryHandler
StreamHandler
ConsoleHandler
FileHandler
SocketHandler
Level
Logger
LogManager
LogRecord
Permission
BasicPermission
LoggingPermission
Filter
LoggingMXBean
Serializable
Guard


java.util.prefs
Object
Preferences
AbstractPreferences
EventObject
NodeChangeEvent
PreferenceChangeEvent
NodeChangeListener
PreferenceChangeListener
PreferencesFactory
Serializable
java.util.regex
Object
Matcher
Pattern
MatchResult
Serializable
1
java.util.zip
Object
Adler32
CRC32
Deflater
Inflater
ZipEntry
ZipFile
InputStream
FilterInputStream
CheckedInputStream
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GZIPInputStream
ZipInputStream
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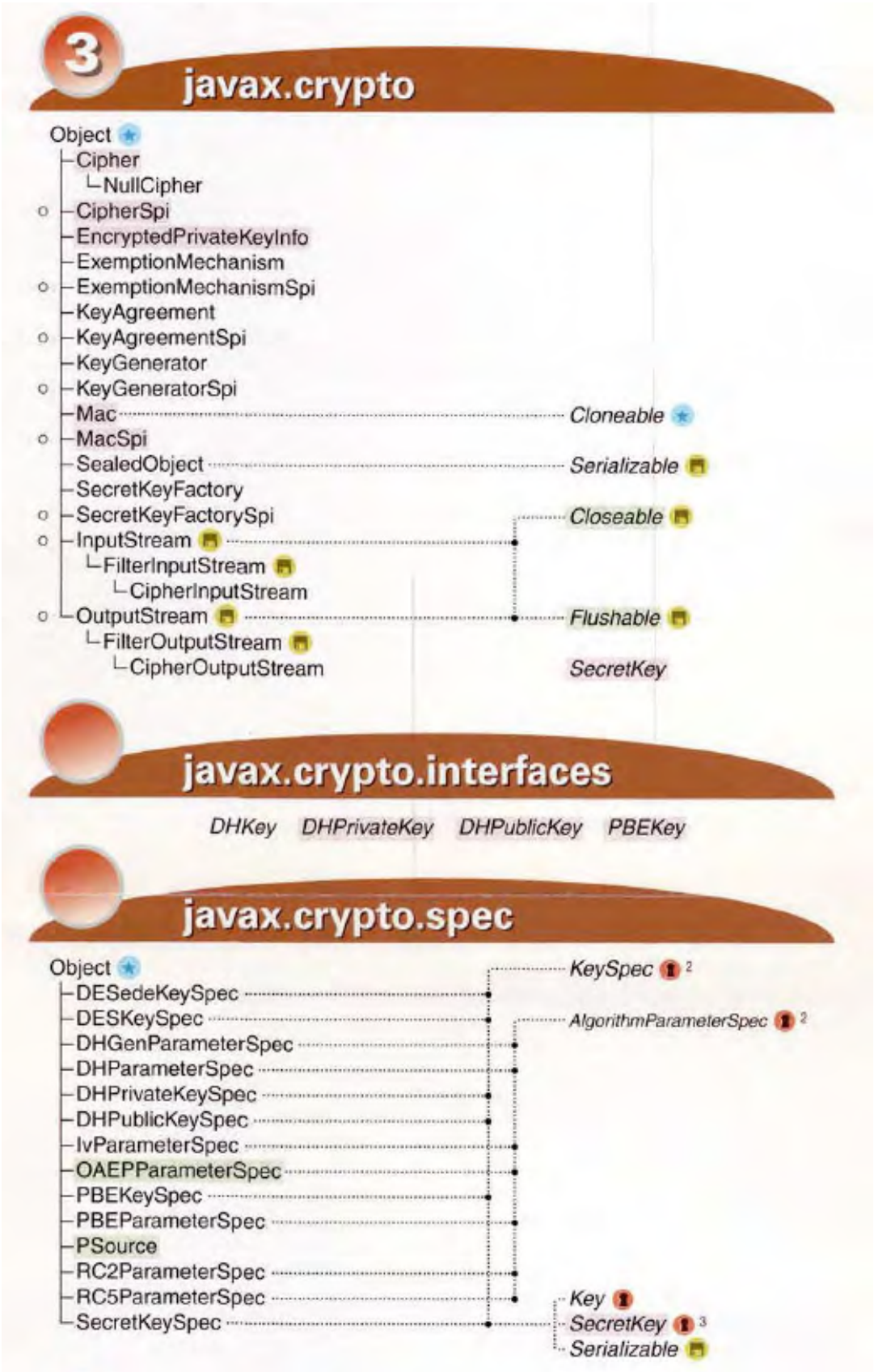
ZipOutputStream
Checksum
Cloneable
Closeable
Flushable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javax.crypto
Object
Cipher
NullCipher
CipherSpi
EncryptedPrivateKeyInfo
ExemptionMechanism
ExemptionMechanismSpi
KeyAgreement
KeyAgreementSpi
KeyGenerator
KeyGeneratorSpi
Mac
MacSpi
SealedObject
SecretKeyFactory
SecretKeyFactorySpi
InputStream
FilterInputStream
CipherInputStream
OutputStream
FilterOutputStream
CipherOutputStream
Cloneable
Serializable
Closeable
Flushable
SecretKey
javax.crypto.interfaces
DHKey
DHPrivateKey
DHPublicKey
PBEKey
javax.crypto.spec
Object
DESedeKeySpec
DESKeySpec
DHGenParameterSpec
DHParameterSpec
DHPrivateKeySpec
DHPublicKeySpec
IvParameterSpec
OAEPParameterSpec
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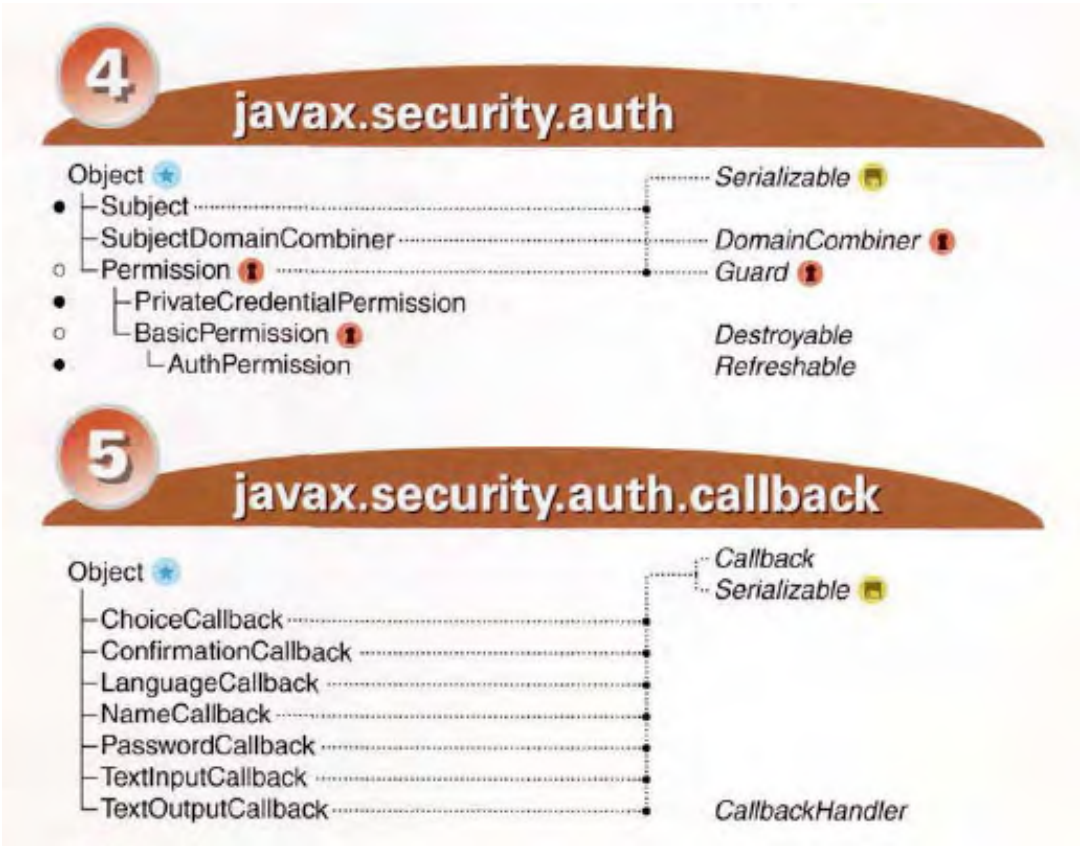
PSource
RC2ParameterSpec
RC5ParameterSpec
SecretKeySpec
KeySpec 2
AlgorithmParameterSpec 2
Key
SecretKey 3
Serializable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javax.security.auth
Object
Subject
SubjectDomainCombiner
Permission
PrivateCredentialPermission
BasicPermission
AuthPermission
Serializable
DomainCombiner
Guard
Destroyable
Refreshable
5
javax.security.auth.callback
Object
ChoiceCallback
ConfirmationCallback
LanguageCallback
NameCallback
PasswordCallback
TextInputCallback
TextOutputCallback
Callback
Serializable
CallbackHandler
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Configuration
LoginContext
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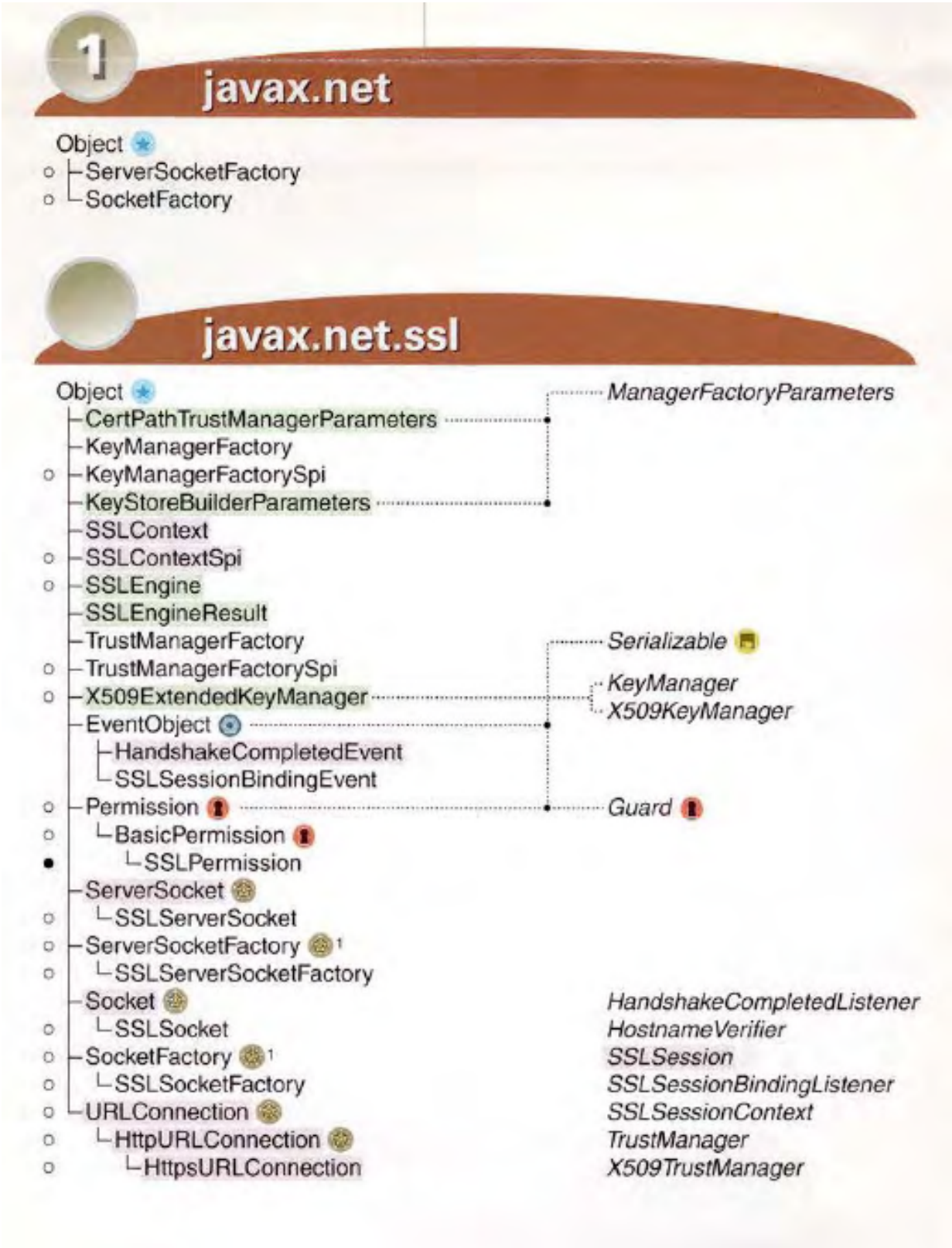
X500Principal
X500PrivateCredential
Principal
Serializable
Destroyable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KeyManagerFactory
KeyManagerFactorySpi
KeyStoreBuilderParameters
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SSLContextSpi
SSLEngine
SSLEngineResult
TrustManagerFactory
TrustManagerFactorySpi
X509ExtendedKeyManager
EventObject
HandshakeCompletedEvent
SSLSessionBindingEvent
Permission
BasicPermission
SSLPermission
ServerSocket
SSLServerSocket
ServerSocketFactory
SSLServerSocketFactory
Socket
SSLSocket
SocketFactory
SSLSocketFactory
URLConnection
HttpURLConnection
HttpsURLConnection
ManagerFactoryParameters
Serializable
KeyManager
X509KeyManager
Guard
HandshakeCompletedListener
HostnameVerifier
SSLSession
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SSLSessionContext
TrustManager
X509TrustManager