

INDEX

A

ABS, 428
 abstract class, 112, 252
 abstract data types, 104
 abstract entities, 315
 accessor method, 159, 238
 ACOS, 428
 Add, 256, 259, 260, 262
 aggregate objects, 34
 aggregation, 126
 A-Kind-Of, 126
 ALGOL, 13
 ALGOL 60, 17
 Allocated-Occurrences, 428
 American National Standards Institute (ANSI), 5
 analysis, 310, 313, 314
 Annuity, 428
 ANSI/ISO, 349
 Aristotle, 109
 Array, 253, 254
 ArrayedCollection, 253
 As, 213, 214
 AsArray, 257, 259, 263
 asBag, 257, 259, 280, 281, 299
 As Universal, 215

ASIN, 428
 association, 126, 128, 252, 293, 294, 296, 315
 associationAt, 301, 302
 AT&T Bell Labs, 15
 at, 283, 300
 ATAN, 428
 atPut, 256, 259, 278, 297
 automata theory, 149
 automatic garbage collection, 153, 350

B

Bag, 252–254
 Base, 37, 125, 154, 253, 353, 361
 behaviors, 33
 Binary, 441
 Binding, 204
 Booch, G., 77, 311
 By Content, 138
 By Reference, 138

C

C, 13
 C++, 5, 13, 15, 143, 153, 155
 Call, 137
 Call ... by Content, 70, 231

498 INDEX

- Call by Reference, 70
Call Of Self, 217
Callback, 252, 271, 273
Cancel, 105
candidate classes, 310, 314, 315, 328, 329
capacity, 257, 259, 265, 266, 268, 282, 300,
categories of collection classes, 256
CBL-Base, 352
CBL-New, 353
Char, 428
Char-National, 428
CharacterArray, 252–254, 276, 279, 291
Class, 350
Class clause, 438
class data, 31, 95
class definition, 45, 47, 319, 329
class diagrams, 314, 315, 319, 323, 312, 320, 324
Class-Id, 31, 32, 44, 49, 71, 100
class interface, 66
class libraries, 36
Class Library, 125
class method data, 95
class methods, 31, 94, 113
class-name, 49, 72
Class-Object, 351
class program, 44
class relationship diagrams, 126
class visibility, 319
classes, 29, 75, 350
client, 7, 9, 26, 136
Coad, P., 312
Coad/Yourdon, 311
COBOL, 4, 104
COBOL 68, 13
COBOL 74, 13
COBOL 85, 13, 350, 433
COBOL 89 addendum, 433
COBOL 97, 5, 13, 339
COBOL for MVS, 356
COBOL Reserved Words, 419
COBOL Set for AIX, 356
CobolPicX, 293, 294, 296
CODASYL (Committee on Data Systems Language), 3
cohesion, 24
collaborate, 24
collaborating objects, 331
Collection, 101, 152, 252, 253, 333
collection classes, 166, 252, 304
Communication Section, 57
Comp, 441
Comp-3, 441
Comp-5, 254
Comp-x, 254
composite, 34
Composition, 126
concrete class, 112
Configuration Section, 50, 61, 71, 73, 91
confluence, 87
Conformance, 199, 201, 202
conformance checking, 155, 168
constructor operation, 156
container class, 252
Continue, 440
continuity, 310
contract, 22
conversion methods, 264
Copy, 257, 259, 264
copyEmpty, 257, 259, 281

CORBA (Common Object Request Broker Architecture), 11, 346, 356
 COS, 428
 coupling, 24
 CRC (Class, Responsibility, Collaborator), 76, 106
 CRC cards, 312, 317, 318, 320, 324
 CRC sessions, 183
 Creating Bag Instances: ofReferences, 258
 creating instances, 259
 Creating Objects, 154
 Current-Date, 428, 439

D

Dahl, J., 17
 data dictionary, 320, 324
 Data Division, 25, 54, 72, 74, 75
 data-flow diagrams (DFDs), 146
 Data is Protected, 359
 data items, 116
 data name conflicts, 70
 Data Records clause, 58
 data values, 116
 DataBase Manager Class, 329
 Date is Private, 359
 Date-Of-Integer, 428, 439, 440
 Day-Of-Integer, 428, 439, 440
 Declaratives, 73, 74
 deepCopy, 299
 deepFinalize, 257, 301–303
 deferred classes, 112
 Design, 310
 design patterns, 311
 Destroying Objects, 175
 Dictionary, 252, 253, 256, 292, 296–298, 302

Dijkstra, E., 109
 Display-Of, 428
 Distributed System Object Model (DSOM), 346
 do, 257, 259, 269, 271
 Do-Until, 436
 Do-While, 436
 DSOM (Distributed SOM), 356
 DynamicArrayedCollection, 253
 dynamic binding, 204, 350
 dynamic objects, 153

E

E, 428
 EDVAC, 12
 Eiffel, 143
 elements, 254
 emergent behavior, 87
 encapsulate, 22
 encapsulation, 350
 End Class, 31, 75
 End Factory, 74
 End Method, 25, 74
 End Object, 25, 75, 90
 ENIAC, 12
 Environment Division, 47, 50, 54, 55, 71–73, 75
 equal, 257, 259, 285
 equalByLengthValue, 259, 285, 288
 equalsIgnoreCase, 257, 259, 285–287
 Evaluate, 278
 evolution of programming languages, 103
 Exception-File, 428
 Exception-Location, 428
 Exception-Statement, 429
 Exception-Status, 429

500 INDEX

Exit Method, 65, 74

EXP, 429

EXP10, 429

External, 435

external system view, 316

F

Factorial, 429, 438

Factory, 72

factory data, 31

Factory Data Division, 57

Factory Definition, 45, 54

Factory Environment Division, 55

factory methods, 31, 113

Factory Object, 31, 54

Factory Of Self, 217

Factory Procedure Division, 58

FD description entries, 72, 74

File Section, 57, 72, 74

File-Control, 72, 73, 91

Filler, 441

Finalize, 176, 257, 259, 302, 361

FORTRAN, 13, 104

Fraction-Part, 429

frameworks, 311

Function, 438

G

Gamma, E., 311

Gang of Four, 311

generalization/specialization, 126

GetClass, 219

getValue, 257, 259, 283, 284

Global, 435

grow, 256, 259, 279, 298

growTo, 256, 259, 279, 280

H

Has-A, 126, 127

hierarchies, 109

High-Level design, 313, 317

Hitachi, 349, 350

Hitachi's Object-Oriented COBOL, 340

HP UX, 350

hybrid object-oriented language, 15

I

IBM, 11, 349, 356

IBM 702, 104

IBM 704, 104

IBM's SOM (System Object Model), 356

IBM's VisualAge for COBOL, 340

ICON, 13

Identification Division, 32, 48, 71–74

IdentifyDictionary, 253, 256

IdentifySet, 253, 256

impedance mismatch, 37

In-line invocation, 221, 222, 225

includes, 259, 274

includesKey, 301, 303

inheritance, 32, 110, 114, 115, 212, 350

Inherits, 34, 110, 122

Inherits Base, 172

Inherits with Data, 359

Initial, 105

Initialize, 441

I-O-Control, 72, 73, 91

Input-Output Section, 56, 61, 72, 73, 91

instance, 29

instruction formats, 491

Integer, 429

Integer-Of-Date, 429, 439, 440

Integer-Of-Day, 429, 440

- Integer-Part, 429
- interface, 354
- International Standards Organization (ISO), 5
- Intrinsic, 293
- intrinsic classes, 252
- intrinsic data, 252, 254
- Intrinsic Function, 427
- Invariant, 354
- invariant methods, 354
- Invoke, 5, 8, 27, 119, 137, 154
- Is-a, 126, 127
- is at, 301
- isEmpty, 257
- Iterating in Phase I, 317
- Iteration, 312

- J**
- Jacobson, I., 312, 316
- Justified, 441

- K**
- Kay, A., 149
- key, 294
- key/component pair, 294
- key value, 297, 298

- L**
- Label Records clause, 58
- legacy code, 223, 337, 341
- Length, 429
- Length-An, 429
- levels of abstraction, 82
- Linkage Section, 57, 64, 74, 145
- Local-Storage Section, 360
- Log, 429
- Log10, 429
- low-level design, 313, 319
- Lower-Case, 429

- M**
- Max, 429
- Mean, 429
- Median, 429
- memory leakage, 153
- messages, 7, 26, 136
- Message-Trace Diagram, 321, 324
- method data, 59
- Method Data Division, 63
- Method Definition, 45, 60, 75, 89, 97
- Method Environment Division, 61
- Method-Id, 25, 61, 73, 98, 121
- Method Procedure Division, 65
- method prototype, 354
- method resolution, 119
- methods, 7, 23, 25, 59, 94, 350
- Methods—Invariant, 350
- Methods—prototype, 350
- Micro Focus, 349, 357
- Micro Focus class library, 252
- Micro Focus' Visual Object COBOL, 340
- Micro Focus Workbench, 357
- Midrange, 430
- Min, 430
- Mod, 430
- Modeling, 314
- modern languages, 235
- multiple inheritance, 122, 350
- MVS, 10

- N**
- National-Of, 430
- nested, 433

502 INDEX

Nested Properties, 233
 Nesting In-Line Invocations, 227
 New, 31, 154, 361
 NewClass, 294, 295
 New COBOL Reserved Words, 425
 No Get, 230, 232
 No Set, 230, 231
 Norwegian Computing Centre, 17
 Not On Exception, 140
 Null, 216
 Null object, 176
 numeric key, 297
 Numval, 430
 Numval-C, 430
 Nygaard, K., 17

O

object, 6, 22, 25, 29, 74, 350
 Object COBOL, 357
 Object-Computer, 50, 72, 73
 object creation, 186
 object data, 95
 Object Data Division, 25, 92
 Object Definition, 45, 89, 90
 Object Environment Division, 91
 object handle, 35, 98, 206
 object instance, 29
 object interface, 6
 Object Life Span, 152
 Object Management Group (OMG), 11
 object-message diagram, 146, 310, 312, 320,
 324
 object method data, 95
 object methods, 94, 158
 object notation, 102
 object-oriented analysis, 310

Object-Oriented COBOL (OOCOBOL), 5, 10,
 153, 155, 169, 349
 object-oriented design, 146, 310
 object-oriented programming, 22
 Object paragraph, 90, 159
 Object Reference, 98, 217
 Object-Relation Conditions, 198
 Object sequences chart, 310
 Object-Storage Section, 360
 Object technology, 5
 object visibility, 323
 Object Procedure Division, 93
 Objects in Tables, 163
 occurrencesOf, 257, 259, 303, 304
 Occurs clause, 163
 ofAssociations, 295
 ofReferences, 257
 ofValues, 257
 OMG (Object Management Group),
 356
 OMT (Object Modeling Technique),
 77
 On Exception, 140
 Only, 168, 204
 Opler, A., 191
 Ord, 430
 OrderedCollection, 253, 254
 Ord-Max, 430
 Ord-Min, 430
 OS/2, 10
 Override, 115, 121
 Overriding Inheritance, 121

P

Packed-Decimal, 441
 Parameterized classes, 350, 362

parameters, 138

Pascal, 13

patterns, 311

Perform, 435

Persistence, 105

Persistent objects, 153, 177

Phase I, 314, 316, 325

Phase II, 317, 328

Phase III, 319

Pi, 430

PL/I, 13

Policy classes, 332

Polymorphism, 27, 28, 200

predefined classes, 254

Present-Value, 430

Problem Description, 314

problem domain, 314

problem statement, 324

Procedure Division, 54, 55, 73, 74, 145

Property clause, 229, 230, 236

R

Random, 430

Range, 430

rapid application development (RAD), 5

recursive, 438

reference modification, 437

Rem, 430

Remove, 257, 259, 273, 301

removeAll, 259

removeAssociation, 301, 302

Remove-Name, 179

Report Section, 57, 73, 74

Repository, 50–52, 72, 110, 260, 296

Repository paragraph, 157

reserved words, 49

responsibility-driven design, 20, 21, 106,

149, 183

Returning, 139

Reuses, 361

Reverse, 430

role name, 128

Rolling Lifecycle, 310, 324

Rolling Lifecycle Perspective (RLP), 313

Rolling Lifecycle phases, 314

rules of inheritance, 119

Rumbaugh, J., 77, 311

S

scenarios, 310, 316, 324, 326, 333

scope, 70

scope of variables, 192

Select, 257

Self, 141, 142, 172, 174, 175

SequencedCollection, 253

server, 26, 136

service request, 6

Set, 176, 210, 275

Sign, 430

simple aggregate data types, 104

Simple class, 180, 239, 244, 350

Simula, 11, 14, 17, 143

Simula 67, 151

SIN, 430

single inheritance, 350

size, 257, 259, 265, 268, 282, 300

Smalltalk, 5, 14, 81, 143, 149, 153, 155

SNOBOL, 13

software architectures, 311

SOMClass, 357

SOMFree, 357

SOMNew, 357

504 INDEX

SOMObject, 357
 SortedCollection, 253, 254
 Source-Computer, 50, 71, 73
 source program, 46
 source unit, 46
 Special-Names, 50, 51, 72, 73
 spiral model, 20
 SQRT, 431
 Standard-Deviation, 431
 Standish, 104
 state, 147
 state-transition diagrams, 147
 static binding, 204
 static objects, 180, 181, 239, 245
 stereotype, 75
 Strachey, 104
 strong typing, 5
 Stroustrup, B., 15
 structured analysis, 146
 subclass, 33, 110, 114
 subtypes, 200
 Sum, 438
 Super, 174
 superclass, 33, 110
 superclass-defined data, 118
 system identifier, 30
 System-Object, 177
 System Object Model (SOM), 346

T

Tables of Objects, 101
 TAN, 431
 templates, 362
 Test After, 435
 Test Before, 435
 Tool Class Library, 351

Turing, A., 149
 type checking, 155
 typed objects, 155, 168, 350
 typing, 204

U

Unified Method, 77, 102, 146, 186, 312
 UNIVAC, 12
 Universal, 214
 Unix, 10, 350
 untyped objects, 166, 168, 350
 Upper-Case, 431
 Usage clause, 99
 Usage phrase, 155
 usage scenarios, 314
 use-case scenarios, 316
 user-defined key, 297
 user-defined words, 49
 User Interface Manager, 330
 Using, 139

V

Value Of clause, 58
 ValueSet, 253, 256
 Variance, 431
 VisualAge for COBOL, 356
 von Neumann, J., 12, 191

W

waterfall model, 20
 When-Compiled, 431
 whole/part, 126, 127
 Windows 95, 10, 350
 Windows NT, 10, 350
 Wirsfs-Brock, R., 21, 312
 withLengthValue, 277

Working Draft 1.1, 349
Working-Storage Section, 57, 72, 74
Wrapping Programs, 342
Wrapping Strategies, 343

X

Xerox PARC (Palo Alto Research Center), 14
‘\$’ symbol, 78