Index

ABB Process Automation, Inc., 85, 86
Accessing, 73, 218
AccuRay, 85, 86
ACS, 20
Actor, 41, 50, 74, 151, 277
Ada, 46, 149
Advanced Programming
  Environment (APE), 144
Aegis, 41
AI (see Artificial intelligence)
Åke Larson AB, 180n
Aldus Corporation, 94
Alternative media, 217
American Airlines, 95-96
AOS, 228
APL, 228, 232
Apple Computer, 83-84, 151, 233n
Apple Scientific Computing, 73
Applied Intelligent Systems (AIS), 89-90
Apprentice, 161
Architect, 84, 100-103, 160, 163, 171-174
Architectural partitioning, 150n
ARPA (see DARPA)
Artecon, Inc., 84
ArteDraft, 84
ArteGKS, 84
Articulate Systems, 154n
Artificial Intelligence (AI), 17, 22n, 253

Ascent Logic Corporation, 87, 228
AT&T:
  Bell Laboratories, 151
  UNIX, 14, passim
Automatic Teller Machine (ATM), 109, 186
AXE telephone switching system, 80

Behavior:
  functional, 110
  inherited, 192
  of objects, 43, 64, 687
  polymorphic, 192
Behavioral specification, 113
Bell Labs (see AT&T)
Bildschirmtext, 20, 21
Binary messages, 231
Binding, dynamic, 29-30, 42, 46, 50, 87, 91, 139, 232
BLISS, 233
Borland C++, 152
Browser, 64
C, 228, passim (see also C++, Objective C, Complete C)
C++, 65, passim
CAD (see Computer-aided design)
CAM, 11
CareView 9000, 90
CASE, 122, 136, 138, passim
CASE tools, 204
CD-Rom, 217
Champions, 209, 213n
Change process, 208-209
Checkpoints, 209
CHILL compiler, 81
CIM (see Computer-integrated manufacturing)
Clastic, 83
Cloned, 219
Cloning, 239
CLOS, 227
COBOL, 17, 80, 151, 204, 205, 228, 232, 253
Code reading, 191-194
Coding, 20, 119, 178
phase, 20
Comments, 43, 58, 64, 75, 89, 195
Communications, 204-205
packages, 237
protocol, 237
Complete C (see C)
Component:
design, 117, 211, 236
integration, 210
library, 51, 140, 150, 153, 162-165, 190, 217-218, 243
packages, 153
reusable, 148, 150
suppliers, 217-218
Computer-aided design (CAD), 11, 128-130, 133-134, 239
Computer-aided software engineering (CASE) (see CASE)
Computer-integrated manufacturing (CIM), 11, 82
Compute servers, 250
Concurrency, 81, 119, 126, 134
control, 126, 130, 131, 140
Configuration control, 251
Consistency checking, 127
Constraints, 17, 108, 117, 137, 154, 218, 221, 227
Construction management, 172-173
Contact tools (see Tools)
Corporate culture, 207
CRC cards, 114-115
Customer Information Control System (CICS), 14
Customer Information System (CIS), 88
DARPA, 145
Data:
access, 201
fusion, 201
modeling, 204
Data General, 228
Database, 84, 93, 126-136, 151-153, 202, 203
Database Management System (DBMS), 126-, 128, 131-138, 179
DataDesk, 204
Debugging, 152, 188
Dependency graph, 116-117
Design:
phase, 171
process, 102-104, 121, 216
validation, 120
Digital Equipment Corporation (DEC), 250, 252
<table>
<thead>
<tr>
<th>Index</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation tools, 204, 232</td>
<td></td>
</tr>
<tr>
<td>Dylan, 151, 152, 227</td>
<td></td>
</tr>
<tr>
<td>Econometric modeling, 202</td>
<td></td>
</tr>
<tr>
<td>EDS, 232</td>
<td></td>
</tr>
<tr>
<td>Eiffel, 74, 152, 227</td>
<td></td>
</tr>
<tr>
<td>EMACS, 149</td>
<td></td>
</tr>
<tr>
<td>Enactor Functional Systems, 86</td>
<td></td>
</tr>
<tr>
<td>Encapsulation, 30, 33, 34, 50, 80, 86, 146, 181</td>
<td></td>
</tr>
<tr>
<td>Ensemble, 110-112, 117, 118, 237</td>
<td></td>
</tr>
<tr>
<td>Entity-relationship attribute (ERA), 132</td>
<td></td>
</tr>
<tr>
<td>Ergonomics, 105, 187</td>
<td></td>
</tr>
<tr>
<td>Ericsson, L.M., 80</td>
<td></td>
</tr>
<tr>
<td>Environment, 150-152</td>
<td></td>
</tr>
<tr>
<td>development, 40, 64-65, 121, 154, 230, 232, 250</td>
<td></td>
</tr>
<tr>
<td>object-oriented, 152, 163</td>
<td></td>
</tr>
<tr>
<td>programming, 20, 47n, 141n, 144, 145, 232</td>
<td></td>
</tr>
<tr>
<td>Error message, 96, 203</td>
<td></td>
</tr>
<tr>
<td>Executive champion, 209</td>
<td></td>
</tr>
<tr>
<td>Extensibility, 37, 230</td>
<td></td>
</tr>
<tr>
<td>Factory, 188n</td>
<td></td>
</tr>
<tr>
<td>methods, 32, 42-43</td>
<td></td>
</tr>
<tr>
<td>Fairchild, 165</td>
<td></td>
</tr>
<tr>
<td>Falcon Framework, 92</td>
<td></td>
</tr>
<tr>
<td>Finite Message Machine (FMM), 81</td>
<td></td>
</tr>
<tr>
<td>Flavors, 91</td>
<td></td>
</tr>
<tr>
<td>FORTRAN, 17, passim</td>
<td></td>
</tr>
<tr>
<td>Foundry, 236-246</td>
<td></td>
</tr>
<tr>
<td>General Electric (GE), 88</td>
<td></td>
</tr>
<tr>
<td>General Motors (GM), 11</td>
<td></td>
</tr>
<tr>
<td>Generic:</td>
<td></td>
</tr>
<tr>
<td>code, 34</td>
<td></td>
</tr>
<tr>
<td>components (see also Components), 211, 219, 236</td>
<td></td>
</tr>
<tr>
<td>user interface, 211</td>
<td></td>
</tr>
<tr>
<td>Geographic Information Systems, 87</td>
<td></td>
</tr>
<tr>
<td>GKS graphics standard, 84</td>
<td></td>
</tr>
<tr>
<td>Godfather in system implementation, 209</td>
<td></td>
</tr>
<tr>
<td>Gunakara Sun Systems, 71</td>
<td></td>
</tr>
<tr>
<td>Hewlett-Packard Corporation (HP), 51, 86, 90, 93, 97n, 250, 254</td>
<td></td>
</tr>
<tr>
<td>HP (see Hewlett-Packard Corporation)</td>
<td></td>
</tr>
<tr>
<td>Hybrid vs. pure object systems, 39</td>
<td></td>
</tr>
<tr>
<td>languages (see Languages)</td>
<td></td>
</tr>
<tr>
<td>object-oriented languages (see Languages)</td>
<td></td>
</tr>
<tr>
<td>HyperCard, 50, 65, 69, 71, 121</td>
<td></td>
</tr>
<tr>
<td>Hypertext, 141, 217</td>
<td></td>
</tr>
<tr>
<td>IBM 3083, 108, 203, 205</td>
<td></td>
</tr>
<tr>
<td>IBM 5100, 228</td>
<td></td>
</tr>
<tr>
<td>Icon, 93</td>
<td></td>
</tr>
<tr>
<td>ICpak 101, 153</td>
<td></td>
</tr>
<tr>
<td>ICpak 201, 153, 190, 194, 195</td>
<td></td>
</tr>
<tr>
<td>IDE, 74</td>
<td></td>
</tr>
<tr>
<td>Incremental compilers, 204</td>
<td></td>
</tr>
<tr>
<td>Information Technology Institute of Singapore, 90</td>
<td></td>
</tr>
<tr>
<td>Inheritance:</td>
<td></td>
</tr>
</tbody>
</table>
260

[Inheritance]

of behavior (see Behavior)
classes and metaclasses, 35-37
defined, 34, 47n
lattices, 37
multiple, 231
property of, 118
trees, 43, 118, 121, 192

Instance, 31, 42
methods, 42
variables, 42, 64, 116, 119

IntelliCorp., 40
Intelligent C, 89
Interaction diagrams, 114, 123n
Interface Builder, 91
Interleaf, 238
Interlisp, 149
Interoperability, 105
Interpreter, 86, 147, 151, 204
IS-A relationship, 134
ISDN, 20
IS-PART-OF relationship, 134
Iterative development process, 177

ITT, 11, passim

LAN (see Local Area Network)
Languages:
extended, 151
higher-level, 36
hybrid, 151
object-oriented, 41, 131, 152, passim
procedural, 29, 46, 15, 204
programming (see also Modeling), 27, 40, 42, 43, 82
pure, 150
Laptop, 55, 58
Large-system development, 105
Lawrence Livermore National Laboratory, 84-85
Leitz, 78
Lisp, 40, 90, 165, 230
Common, 90
Local Area Network (LAN), 129
LOOPS, 46
Lotus 1-2-3, 12, 210

Mac, 227
MacApp, 73
Mainframe, 153, passim
Maintainability, 85, 105, 230
Margin of safety, 148, 171, 226
Massachusetts Computer Associates, 154n
Massachusetts Institute of Technology (MIT), 135, 190, 209
Memory management, 94, 151, 152
Mentor graphics, 92
Message, 28-31, 33, 41-43, 81, 96, 101, 114, 116, 131, 139, 151, 189, 203, 231
Metaclass, (see also Classes), 32, 37

JOVIAL, 232

KEE, 40
Knowledge-based-systems, 133
Knowledge Systems Corporation (KSC), 50, 51, 58, 97n, 114, 164
Index

Metaproject, 226
Method, 28-31, 39, 42-43, 64, 110, 118, 121, 130, 134, 146, 151, 173, 191, 220, 227
and data definition, 115
of design/development, 106, 107, 148, 152
elaboration, 117
inherited, 116, 193
private, 116
Microsoft, 12, 213n, 250
Microsoft NT++, 252
Microsoft Word, 74
MIS, 88, 204
MIT (see Massachusetts Institute of Technology)
Modeling (see also Programming), 43, 44, 46, 54, 85, 127, 133, 140, 180n, 201, 204, 205
data model, 127
Modifiability, 105
Modularity, 85, 86
Multimedia, 135, 251, 254
Multiple inheritance, 38, 118, 231
MVS, 18, 203, 252

Object, 26, 28-40, 43-47, 53-54, passim
Object Expo ‘92, 93
Objective-C, 41, passim
Objective Systems, 123n
Object Management Group (OMG), 250
Object-oriented:
applications, 25, 126, 131-132
 databases (OODBs), 126, 132
design, 106
languages, 29-31, 33, 39, 41, 45, 50, passim
programming, 28, 58, 131, 139, 141n, 153, 252
software engineering, 41, 46, 46, 165, passim
technology, 40-41, 46, 96, 139, 250, 254
Object-Pascal, 41, 46, 50, 65, 73-75, 83, 151, 228
ObjectWorks, 95
Ontologic Inc., 129, 196n
OODBs (see Objects)
OOPC, 228
OOPS/LA, 51, 89, 97n, 114, 141n
Operating systems, 18, 184, 203, 251, 252
Operator, 231
overloading, 231
Optimization, 151, 165
Oracle, 14, 15

Names, 131
Naming, 131, 218
Neon, 41
NeXT, 91, 97n, passim
NeXTstep Application Kit, 91
NLS, 145n, 154n
NT++, 252

PageMaker, 94
ParcPlace Systems, 95, 153
Pascal, 17, 83, 151, 159, 160, 228
Pay per use, 245
Persistence, 128
object bases, 136
<table>
<thead>
<tr>
<th>Objects</th>
<th>Quality College, 186</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pink operating system, 252</td>
<td>RAT (see Recorder of ad hoc tests)</td>
</tr>
<tr>
<td>Plex, 80</td>
<td>RDBMSs (see Relational database management systems)</td>
</tr>
<tr>
<td>PLM, 232</td>
<td>RDD-100, 87, 115</td>
</tr>
<tr>
<td>Polymorphism (see Objects)</td>
<td>Receiver (see Message)</td>
</tr>
<tr>
<td>Portability, 14</td>
<td>Recorder of ad hoc tests (RAT), 191-192</td>
</tr>
<tr>
<td>Port of Singapore, 82, 90</td>
<td>Redundancy, 34, 38, 92, 111, 131, 135</td>
</tr>
<tr>
<td>PPI, 41, 233n</td>
<td>Refactoring, 120-121</td>
</tr>
<tr>
<td>Prime Computer, 87</td>
<td>Relational database management systems (RDBMSs), 129, 136, 137</td>
</tr>
<tr>
<td>Process control, 85, 115, 239</td>
<td>Reusability, 19, 33, 55, 149, 178, 191, 225, 229</td>
</tr>
<tr>
<td>Product champion (see Champions)</td>
<td>Reusable, 34, 148 components, 149-150, 217</td>
</tr>
<tr>
<td>Productivity, 14, 17, 85, passim coordinator, 208</td>
<td>Reuse, 21, 38, 50, 104, 118, 121, 219-220, 225, 232, 237-239</td>
</tr>
<tr>
<td>Productivity Products International, 228</td>
<td>Robotics, 239</td>
</tr>
<tr>
<td>Programmer’s Assistant, 149</td>
<td>Royalties, 244</td>
</tr>
<tr>
<td>Programming environment (see Environment)</td>
<td>Rule-based programming, 58</td>
</tr>
<tr>
<td>Program segments, 80</td>
<td>Run time, 130</td>
</tr>
<tr>
<td>ProGraph, 72, 50, 65, 71, 227</td>
<td>Saturn, 11</td>
</tr>
<tr>
<td>Project teams (see Teams)</td>
<td>Scenarios, 108-112, 120, 123n</td>
</tr>
<tr>
<td>Pro-Kappa, 227</td>
<td>Schlumberger, 83, 253</td>
</tr>
<tr>
<td>Prototypers, 220</td>
<td>Scientific Data Systems (SDS)</td>
</tr>
<tr>
<td>Prototypes, 119, 220, 153, 161</td>
<td>Sigma-7, 228</td>
</tr>
<tr>
<td>Prototyping, 40, 144, 153, 162, 216, 220</td>
<td>Security, 127, 130, 135, 172</td>
</tr>
<tr>
<td>Pseudocode, 118</td>
<td></td>
</tr>
<tr>
<td>Purchased components, 208, 210, 238</td>
<td></td>
</tr>
<tr>
<td>Pure object-oriented system, 39</td>
<td></td>
</tr>
<tr>
<td>Pure object systems, 40, 152, 184-196, 218</td>
<td></td>
</tr>
</tbody>
</table>
Index

Self, 227
Semantics, 133, 151
Sender (see Message)
Simplicity, 14, 34
Single inheritance, 231
SLOC, 11
Smalltalk, 58, 64, 71, 75, 82, 88, 149, 184, 228, 230, 250
Smalltalk-80 (ST-80), 30, 37, 46, 47n, 50, 82, 83, 95, 149, 150, 152, 153, 163, 228
Smalltalk-V, 41, 46, 50
SNA, 240
Snohol, 228
Software:
assets, 148
components, 21, 38
costs, 11
development, 18
engineering, 14, 213n, passim
industry, 11
products, 14
projects, 16
quality (see Quality Assurance)
revision, 18
team, 170
Software-ICs, 47n, 189, 217-218
Software development environment, 147
SPSS, 204
Standard Electric Lorenz, 21
Standard query language (SQL), 130
State diagram, 114
Static:
  binding of procedures and data, 43
  object-oriented languages, 231
Statistical Analysis Institute, 16
Statistical Analysis System (SAS), 16, 204
SASGRAF, 204
Statpack, 16
Stepstone Corporation, 41, 42, 153, 190, 217
Strong typing, 232
Structured:
  analysis, 19
design, 19
  programming, 19, 23n, 229
Subclass, (see Classes)
Subroutine, 27, passim
Superclasses (see Classes)
Support staff, 161
Suzuki, 158, 166n
System:
  administration, 40
design, 112
development:
  champions in, 209
  Godfather in, 209
  object-oriented, 40, 106
  verification and validation, 120, 121
System 9, 87
System 1240, 11, 81

Tasks, concurrent, 119
Teams, 117, 149, 170-171, 176, 178, 223, 229, 240
Technical writers, 161, 165
Technology general contractor, 208
Test, 82, 121, passim
class, 192
method, 192
process, 193-194
scripts, 188
TestDroid, 191, 193
Tester (see Test)
Testing tools (see Tools)
Texas Instruments, 165
Tools, 189, 222, 147, passim
# Object Lessons

building of, 221-222

for contact (i.e., mutual) use, 149, 150

maintenance of, 184

for optimization, 204

software, 184, 222

for solitary use, 149

for testing, 147, 204
toolsmithing of, 221-222

Traceability, 108, 147

Traditional databases, *(see Database)*

Training, 14, 19, passim

Transaction management, 14

Trellis, 74

Troubled projects, 19

TRW Defense Systems Group, 177

TSO, *(see MVS)*

VAX-UNIX, 228

VEE, 93-94, 232, 254

Verification, 1220, 107

VisiCalc, 17

VISTA, 85

VLSI, 128

VMS, 18, 41, 203, 228, 252

Voice Navigator, 140n

Voice recognition, 140n, 149

Wang Laboratories, 209

Waterfall model, 104, 177

Whirlwind, 190

Wild Heerbrug, 86

Workstation, 133, 149, 250, 251

UCC, 22n

Ulrix, 86

Uniforum, 22n

University of Alabama, 228

University of Pennsylvania, 253

University of Washington, 228

UNIX *(see AT&T)*

Unsuccessful software projects, 18

Usage scenarios, 108-110

User annoyance rating (UAR), 190

User interface, 54, 65, 75, 203, 211, 240

Validation, 119, 120

Vamp, 94, 97n

VAX, 83, 203, 204

Xerox, 40, 97n, 228, 238

PARC, 39, 149, 150

Special Information Systems, 82