

The New Apple II User's Guide
David Finnigan

All text, photographs, and illustrations are
copyright 2012 by David Finnigan. All rights reserved.

No part of this book may be reproduced or redistributed
in any form or by any electronic or mechanical means,
including information storage and retrieval systems,
without permission in writing from the author, except
by a reviewer who may quote brief passages in a review.
The computer program listings may be entered, stored,
and executed in a computer system, but only for
personal use.

ISBN-10: 0615639879

ISBN-13: 978-0-615-63987-1

This book was prepared using Adobe software products
on Macintosh computers. The display face is Futura.
Text is in Bookman Old Style.



Published by Mac GUI

Index

This index contains just under 2,000 entries and was entirely created by a human person. To help you use this index, here is some information about how it is arranged.

The terms in the Glossary are not indexed since they are already in alphabetical order. Likewise, the command and function entries in Appendix B are not indexed for the same reason.

When alphabetizing, numbers are alphabetized according to the spelling of the most common pronunciation. For example, the entry for 6502 is alphabetized as if it were “six-five-oh-two.”

If an entry title is not entirely clear, then clarification is provided in parentheses. These parentheses and their contents are ignored when alphabetizing the entries.

Integer BASIC error messages which are prefixed by three asterisks and Applesoft error messages which begin with a question mark are all alphabetized as if those symbols were not there. For example, ?SYNTAX ERROR is under S.

Example BASIC programs of any significance (more than just a few lines) are indexed, as are most photos, illustrations, and screenshots.

Entries are capitalized according to the most common convention. Therefore, error messages and BASIC keywords are in all caps, whereas generic terms such as “disk” and “semicolon,” are not capitalized.

A

- accelerators, 29, 51
- Accumulator, 465-467
- active 40 mode, 175
- active 80 mode, 175
- ADB, 32-33
 - port for, 23
- ADB mouse, photo of, 25
- ADT, 221, 649-658
 - bootstrapping, 653-656
 - connecting with, 650-653
 - transferring disks with, 656-658
- ADTPro, 649
- ampersand, 497
- analog RGB, 36
- APPEND command, 246-247
 - machine language fix for, 516-517
- Apple
 - recent happenings in the world of, 28-30
- Apple 5.25" controller card, 14
- Apple 5.25" drive
 - connected to IIe
 - photo of, 43
 - connecting to Apple II, II Plus, and IIe, 41-42
 - connecting to the Apple IIc, 44
 - connecting to the Apple IIc Plus, 44
 - loud noises of, 52-53
- Apple II
 - disabling speaker, 53
 - escape key sequences on, 57
 - identification of, 2
 - keyboard
 - photo of, 9
 - misidentification of, 5-6
 - motherboard
 - photo of, 12
 - one selling point of, 293
 - production dates of, 2
 - RAM chips used in, 694-695
 - RAM configurations
 - table of, 695
 - removing the cover, 10
 - revisions of, 669
 - signature bytes for, 668
 - specifications of, 668-669
 - startup, 49
 - startup screen
 - screenshot of, 50
 - typical memory size of, 12
- Apple II Plus
 - disabling speaker, 53
 - identification of, 2
 - keyboard
 - photo of, 9
 - motherboard
 - photo of, 12
 - photo of, 3
 - production dates of, 2
 - RAM chips used in, 694-695
 - RAM configurations,
 - table of, 695
 - removing the cover, 10
 - signature bytes for, 668
 - specifications of, 670
 - startup, 49
 - startup screen,
 - screenshot of, 50
 - typical memory size of, 12
- Apple IIc
 - adjusting volume of speaker, 53
 - commonality to Enhanced IIe, 3
 - disk port, 44
 - 80/40 switch, 175-176
 - example program, 176
 - external power supply, 48

- Apple IIc, continued*
- Flat Panel Display, 36
 - headphones jack
 - photo of, 54
 - identification of, 2
 - keyboard
 - photo of, 9
 - keyboard layout switch, 7
 - Memory Expansion Card, 673
 - monitor port compatibility, 36
 - monitor port of, 36
 - photo of, 4
 - RAM chips used in, 696
 - release date of, 2
 - revisions of, 674
 - self-test, 693
 - signature bytes for, 668
 - specifications of, 672-673
 - startup, 51
 - supported disk drives, 44
 - volume knob, photo of, 54
 - warning against early revisions, 27
- Apple IIc Plus
- accelerator, 51
 - disabling at startup, 51
 - adjusting volume of speaker, 53
 - commonality to Enhanced IIe, 3
 - compatible disk drives, 44
 - identification of, 2
 - monitor port compatibility, 36
 - monitor port of, 36
 - order of external disk drives, 44
 - RAM chips used in, 696
 - release date of, 2
 - self-test, 693
 - signature bytes for, 668
 - specifications of, 673-674
- Apple IIe
- differences between Standard and Enhanced, 671-672
 - disabling speaker of, 53
 - Enhanced
 - features of, 2-3
 - identification of, 27
 - release date of, 2
 - startup, 49
 - startup screen
 - screenshot of, 51
 - identification of, 2-3
 - keyboard
 - photo of, 9
 - photo of, 3
 - Platinum
 - keyboard of, 3
 - numeric keypad, 3, 6, 8
 - release date of, 3
 - production dates of, 2
 - RAM chips used in, 695
 - removing the cover, 10
 - revisions of, 671
 - self-test, 692-693
 - trigger, 8
 - signature bytes for, 668
 - specifications of, 670-672
 - startup, 49
 - startup screen
 - screenshot of, 50
- Apple IIe Card, 5, 397, 667-668
- release date of, 5
 - specifications of, 5
- Apple IIgs
- adjusting sound of, 486
 - adjusting volume of speaker, 53
 - back side ports
 - photo of, 33
 - battery, 487-488
 - photo of, 488
 - built-in expansion cards, 11

Apple IIgs, continued

- composite video color, 35
- composite video of, 35
- configuring a RAM disk for, 486
- configuring startup device, 486
- connecting a disk drive to, 44-45
- Control Panel, 484-489
- disk drives connected
 - photo of, 45
- dual nature of, 471
- enhanced sound
 - capabilities of, 351
- identification of, 5
- keyboard, 32
 - photo of, 11
- Memory Expansion card, 27
 - RAM chips used in, 696
- modem port, 33
- monitor
 - incompatibility with Macintosh, 36
- order of external disk drives, 45
- photo of, 4
- ports on, 33
- RAM chips used in, 696
- release date of, 5
- removing the cover, 10
- revisions of, 5, 675-676
- RGB monitor connection
 - photo of, 37
- ROM 00 revision, 5
 - warning against, 27
- ROM 01 revision, 5
- ROM 3 revision, 5
- ROM compatibility of, 5
- self-test, 693-694
- serial ports
 - configuration of, 393
 - setting the clock, 486

- 16-bit registers in, 466
- specifications of, 675
- startup, 51
 - easter egg, 51
- startup screen
 - screenshot of, 52
- suitability for beginners, 6
- system speed, 485
- table of CPU registers and flags, 467

Apple III

- signature bytes for, 668

Apple menu, 477

Apple models

- identification of, 2-5, 667-668
- most superior of them all, 6
- timeline of, 6

Apple monitors, 36

Apple 3.5" drive, 19-20

- compatibility with Apple IIc Plus, 44
- photo of, 20

Apple Workstation Card, 397

- photo of, 398

AppleMouse. *See also* mouse, 33-34, 154

- peripheral card for, 14, 24
- photo of, 25

AppleShare

- compatible versions of, 400
- definition of, 397

- file server, 397

- mounting volumes

- on the Apple IIe, 401

- on the Apple IIgs, 400-401

- unmounting volumes on the Apple IIgs, 401

- use with Apple IIe Card, 5

- Applesoft, 67
 - abbreviation for PRINT statement, 76
 - applications suited for, 67
 - case-insensitivity in, 69
 - description of, 55
 - differences from Integer BASIC, 67, 638-641
 - errors, 70-71
 - message format, 703
 - table of, 714
 - expressions in, 73-75
 - fractions in, 74
 - line number limits of, 72
 - multistatement program lines, 82
 - numerical range of, 75
 - prompt symbol for, 55
 - reserved words, 636-637
 - rounding of numbers, 92
 - significant digits in, 74
 - starting up, 68
 - switching to Integer BASIC, 68
 - uppercase commands in, 69
 - variable types in, 94
- Applesoft Firmware card, 457
- AppleTalk, 397-404
 - configuring Apple IIgs slots for, 486
 - connecting the network, 398-400
 - definition of, 397
 - network, photo of, 402
 - network startup, 401, 403-404
- AppleWin, 29
- AppleWorks, 221
- applications software, 17
- ARC (compression format), 483
- argument
 - definition of, 118
- arrays, 95-99
 - definition of, 95
 - dimensions
 - definition of, 97
 - dimensioning, 97
 - dimensions of, 97
 - elements
 - definition of, 95
 - examples of, 95
 - index number of, 95
 - legal types
 - in Applesoft, 95
 - in Integer BASIC, 95
 - limit of dimensions in Applesoft, 96
 - multidimensional, 96
 - multidimensional dimensioning, 97
 - name
 - definition of, 95
 - one-dimensional, 95
 - redimensioning
 - Applesoft, 98
 - Integer BASIC, 98-99
 - sample program with, 96
 - size limits of, 97
- ASC function, 122
- ASCII, 90, 105
 - conversion of, 122
 - table of characters, 660-661
- assembler. *See also* Mini-Assembler, 30, 456-462
- asterisk
 - denoting a locked file, 217
- A2RetroSystems, 404, 414
- A2V2, 649
- AUTO command, 84-85
 - canceling effects of, 85
- automation, 273-276
- Autostart ROM, 211, 437, 668, 670
 - escape keys without, 57

Aux slot
 location of, 15
averages
 computation of, 110-111

B

*** BAD BRANCH ERR, 718
*** BAD NEXT ERR, 718
*** BAD RETURN ERR, 718
?BAD SUBSCRIPT ERROR, 713
Bar Graph program, 311-313
BASIC
 differences between
 versions, 638-641
 differences from other
 languages, 66
 history of, 65-66
 prompt symbol for input, 55
 set of recognized
 commands, 71
 starting up, 68
BASIC.SYSTEM, 214, 291,
 437-438
battery
 replacing in Apple IIgs,
 487-488
Bazyar, Jawaid, 492
Beagle Bros, 82
Beethoven, 350
bell, 90, 122
Bennett, Richard, 29, 413
binary conversion table,
 663-664
Binary II, 483
BinScii, 483
Bird, Alan, 82
BLOAD command, 278-279,
 454
Boole, George, 105
BOOT13, 206
booting
 definition of, 211
BrainSystems, 29

branch, 127-131
 conditional. *See* IF statement
 definition of, 128
 unconditional, 128
BREAK IN *x*, 144
Breakout game, 22
BRUN command, 277-278
Brutal Deluxe Software, 490
BSAVE command, 279-280,
 453
buffer
 file, 234
bug
 definition of, 148
buying an Apple
 tips for, 26-27
byte, 12
 allowed range of, 147
 definition of, 12

C

C (programming language), 30
CALL -936, 84
CALL statement, 148, 469-470
 use of negative notation with,
 148
?CAN'T CONTINUE ERROR,
 714
CAPS LOCK key, 10, 69
carriage return, 235
cassette ports
 photo of, 40
cassette tape
 checksum of, 452-453
 recorder, 39-41
 adjustment of tone, 40
 adjustment of volume,
 40-41
 connection to Apple, 39-40
 identification of jacks,
 39-40
 obsolescence of, 39

- cassette tape, continued*
 - substitutes for, 40
 - supported Apple models, 39
 - reference tone of, 452
- CAT command (ProDOS), 88
 - description of columns, 524
- cat command (GNO/ME), 497-500
- catalog, 21
- CATALOG command, 88, 215-218
 - description of columns in ProDOS, 526
- cd command, 500-501
- CFFA, 29, 230
 - compatibility of, 230
- CFFA3000, 231
- chips
 - cleaning and repairing, 678-679
- CHR\$ function, 122, 172
 - positioning cursor with, 188
- Circle Plotting program, 313-315
- Classic Desk accessories, 489-490
- CLEAR command, 113
- clock, 218, 228
- CLOSE command, 236, 239-240, 262
- CLOSED-APPLE key. *See* SOLID-APPLE key
- CLR command, 113
 - example of, 113-114
 - limitation of, 113
- cold-start, 145
- colon
 - use to separate statements, 82
- COLOR statement, 297-298
- colors
 - high-resolution
 - table of, 660
 - low-resolution
 - table of, 659
- comma, 78-79, 178-178
 - use in PRINT statement, 114
 - use to separate DATA elements, 111
 - use to separate input values, 116
- command
 - definition of, 66
- COMMAND key, 10, 475
 - renamed from OPEN-APPLE key, 10
- COMMAND-O, 475
- Compact Flash, 21, 29, 229-230
- composite monitor port, 33
- Compuserve, 417
- CON command, 144
- concatenation
 - definition of, 101
 - strings
 - in Applesoft, 101
 - in Integer BASIC, 121-122
- Connor CP-2064, 230
- constant
 - definition of, 93
- CONT command, 144-145
- Contiki, 29, 407-413
 - configuration of, 408-409
 - FTP client, 410-411
 - IRC client, 411-413
 - requirements of, 408
 - versions of, 407
 - web browser, 409-410
 - screenshot of, 410
- control characters, 90, 172
 - table of, 173
- CONTROL key, 7, 172
 - use with other keys, 7

- Control Panel, 484-489
 - common settings for, 485-486
 - differences between ROM versions, 484-485
 - disabling, 489
 - resetting to defaults, 489
 - screenshot of, 485
- CONTROL-A, 363
- CONTROL-B, 144
- CONTROL-C, 79
- CONTROL-D, 232
- CONTROL-E, 465-467
- CONTROL-G, 90
 - debugging with, 149
 - use for auditory alert, 90
- CONTROL-I, 363
- CONTROL-K, 446-447
- CONTROL-L, 370
- CONTROL-P, 446-448
- CONTROL-S, 79
- CONTROL-X, 85, 440
 - use to cancel a line, 60
- Copy II Plus, 221
- COPY (program), 226
- COPYA (program), 226
- cp command, 501
- CREATE command, 223
- cursor, 56, 186-188
 - definition of, 56
 - finding position of, 188
 - home position of, 84
- D**
- daisy-chaining
 - disk drives on the IIgs, 44
- Dash command, 280
- Data Communication Equipment, 389
- DATA statement, 111-112
 - allowed types
 - in Applesoft, 111
 - in Integer BASIC, 111
 - example program, 112
- Data Terminal Equipment, 389
- database program, 264-272
- date command, 501
- DCOM, 394-396
 - screenshot of, 396
- debugging. *See* programs
- decimal
 - conversion table, 663-664
- DEF FN statement, 123-124
- deferred execution
 - definition of, 72
- DEL command, 81
- DELETE command, 224
- DELETE key, 8
 - as alternative to LEFT ARROW key, 8
 - not recognized in some versions of BASIC, 8
- Delphi, 417
- Desk Accessories, 484, 489-490
- DHCP
 - use in Contiki, 408
 - use in Marinetti, 414-415
- Diaz, Tony, 229
- die rolling
 - simulation of, 126
- digital RGB monitor
 - incompatibility with Apple IIgs, 36
- DIM statement, 97-99
 - use to initialize strings in Integer BASIC, 93
- *** DIM ERR, 99, 718
- directories
 - changing, 222-223
 - creating, 223
 - with Filer, 288
 - reading from, 248-249
- Directory Full error, 712
- disassembler, 454-456
 - definition of, 454-455

- disk archive, 484
- disk controller
 - models with built-in controller, 41
- Disk Copy, 491
- disk drives
 - activity indicator light, 52
 - daisy-chaining
 - photo of with Apple IIs, 45
 - definition of, 203
 - drive numbers of, 42
 - 5.25"
 - adjusting speed of, 679-688
 - cleaning the head, 688-689
 - disassembling, 679-687
 - oxide buildup on head
 - photo of, 689
 - rotational speed of, 679
- Disk Full error, 706, 710
- Disk II. *See also* disks, 5.25";
 - disk drives, 5.25", 18
 - connecting to Apple II, II Plus, and IIe, 41-42
 - controller card, 14
 - photo of, 43
 - loud noises of, 52-53
 - photo of, 19
 - disk operating system
 - versions of, 203
 - disk port
 - on Apple IIs, 20
 - disk systems, 17-22
 - fixed, 18
 - method of operation, 21
 - original capacity of, 18
 - original release of, 18
 - removable, 17
- DiskMaker, 491-492
- disks
 - archiving, 484
 - converting between formats, 226-229
 - copying, 226
 - copy-protection of, 226
 - definition of, 203
 - ejecting with GS/OS, 482
 - 5.25", 18-19
 - description of, 18
 - disadvantages of, 18
 - incompatibility with other computers, 18
 - inserting, 207-208
 - photo of, 207
 - lifetime of, 19
 - prevalence of, 18
 - proper storage of, 18-19
 - protecting against
 - overwriting, 209
 - removing, 208
 - warning against HD disks, 22
 - where to purchase, 22
 - write protect notch
 - photo of, 210
 - formatting, 219-221
 - greeting program, 219-220
 - example of, 220
 - images
 - creating, 491-492
 - mounting, 490-491
 - lifetime of, 204
 - locating for purchase, 22
 - proper care of, 204
 - 13 sectors, 206
 - 3.5", 19-20
 - description of, 19
 - drive built-in to
 - Apple IIc Plus, 20
 - inserting, 208
 - photo of, 209
 - protecting against
 - overwriting, 209

disks, continued

- readable by older Macintosh computers, 19
- reliability of HD disks, 22
- removing, 208
- superiority over 5.25" disks, 19
- uncommonness of, 19
- unusable with early Apple IIc, 19
- where to purchase, 22
- write protect tab
 - photo of, 210
- unauthorized duplication of, 226
- verifying contents of, 225
- warning against leaving in drives, 206-207
- displaying text, 71-72
- ?DIVISION BY ZERO ERROR, 714-715
- DOS. *See also* DOS 3.3; ProDOS, 16-17
 - as extension of BASIC, 214
 - booting, 211-213
 - commanding from BASIC, 232
 - connecting, 214-215
 - definition of, 16-17
 - empty command, 233
 - null command, 233
 - purpose of, 16
 - specifying slot, drive, and volume, 215
- DOS 3.3. *See also* DOS
 - booting
 - screenshot of, 212-213
 - catalog
 - description of, 217-218
 - maximum capacity of, 229
 - screenshot of, 216

- sector count wraparound bug, 217
- checking if loaded, 258
- converting to ProDOS, 226-229
- errors
 - message format, 703
 - table of, 705
- file naming rules, 218
- file types
 - table of, 217, 664
- INIT command, 219-229
- limited to 5.25" disks, 205
- master disk, 219
- minimum RAM
 - requirements of, 219
- older versions of, 206
- tracing commands, 281
- dot-matrix printers, 24
 - versatility of, 24
- double-high-resolution (graphics), 343
- DRAW statement, 334
- Dreher, Richard, 230
- DSP command, 151-152
 - debugging with, 151-152
 - disabling with NO DSP, 152
- Dunkels, Adam, 407
- DUPLICATE FILE NAME error, 223, 225, 713
- Dvorak, 7

E

- 80-Column Card, 174, 670
- 80/40 switch, 175-176
 - example program, 176
- ellipsis, 478
- email, 423-425
- empty string. *See* null string
- emulators, 29
- END command, 76-77, 145
 - purpose of, 76

- END command, continued*
 requirement in Integer BASIC, 76-77
- END OF DATA error, 242, 246, 248, 263-264, 704-705, 709-710
- end of file, 263-264
- Enhanced Apple IIe. *See* Apple IIe, Enhanced
- Ensoniq, 351, 675
- Epson printers, 354
- errors. *See also* specific error message
 code numbers of, 242-243, 703-704
 error handling routine, 243-245
 in Applesoft, 70-71
 in Integer BASIC, 70-71
 line number of, 704
 message formats, 703
- ESCAPE-@, 84
- Escape codes
 table of, 662
- ESCAPE key, 7
- Escape key sequences, 7, 57, 79
 clearing screen with, 84
- Escape mode, 57
 additional keys on the Enhanced Apple IIe, 57
 arrangement of keys, 57
 canceling, 57
 definition of, 57
 erasing to end of screen, 61
 keys used, 57
 use to add text to a line, 58-59
 use to erase to end of line, 60
 use to remove text from a line, 59-60
- ESCAPE-X, 370
- Ethernet. *See also* Uthernet; LANceGS, 404
 expansion cards for, 29
- EXEC command, 273-276
- exit command, 501
- expansion cards, 11, 14-15
 built into the IIgs, 11
 list of common cards, 14
 photo of, 16
 typical arrangement of, 15
- expressions, 73-75, 99-108
 boolean, 105-107
 integer, 102-103
 examples in Applesoft, 103
 examples in Integer BASIC, 103
 modulus, 103
 operators used with, 102
 order of operations, 102
- mixed, 107-108
 order of operations, 108
 truncation in, 108
- reals, 103
 examples of, 103
 order of operations, 103
- relational, 104-105
 examples of, 104
 operators, 105
 use of functions in, 118
- Extended 80-Column Card, 14, 27, 670, 695
- F**
- Farallon. *See also* PhoneNet, 398
- FID program, 226, 282-286
 cataloging disks with, 284
 copying files with, 284
 deleting files with, 285
 locking and unlocking files with, 285
 main menu
 screenshot of, 283

FID program, continued

- memory requirements of, 282
 - reporting free space with, 285
 - use of wild cards in, 282-283
 - verifying files with, 286
- fields, 233-235
- definition of, 233
 - separation of, 238-239
- FILE BUSY error, 713
- FILE LOCKED error, 224, 706-707, 711
- FILEM (program), 282
- FILE NOT FOUND error, 87, 239, 705
- FILE NOT OPEN error, 712
- file pointer, 237
- FILE TYPE MISMATCH error, 87, 707, 711
- files
- binary, 277-280
 - loading, 278-279
 - running, 277-278
 - saving, 279-280
 - buffers, 234
 - definition of, 234
 - flushing contents if, 264
 - maximum allowed under DOS 3.3, 234
 - maximum allowed under ProDOS, 234
 - DOS 3.3, 272-273
 - closing, 239-240
 - compression of, 482-484
 - copying
 - with FID, 284
 - with ProDOS Filer, 288
 - data
 - programming, 231-272
 - definition of, 203-204
 - deleting, 224

- end of file, 242-245
- EXEC, 273-276
- creating, 274
- locking, 224-225
- effects of, 224
- overwriting, 239
- random-access, 233-234
- advantages of, 234
 - closing, 262
 - database program, 264-272
 - end of file, 263-264
 - opening, 260
 - reading, 262-263
 - record length, 260, 262
 - suitable applications of, 259
 - writing, 261-262
- renaming, 225
- sequential-access, 233-249
- advantages of, 234
 - closing, 239-240
 - envisioned as a scroll, 234
 - opening, 235-236
 - overwriting data, 238
 - reading, 240-242
 - example program, 241-242
 - seeking in, 247-248
 - warning against flashing characters, 236
 - writing, 236-238
 - appending to, 246-247
 - example program, 237
- types
- B, 277
 - BIN, 277
 - DOS 3.3 file types, 217, 664
 - ProDOS file types, 280
- undeleting, 224
- unlocking, 224-225
- verifying consistency of, 225

- FILE(S) STILL OPEN error, 713
filename
 definition of, 204
Finder, 475-482
Firmware Card
 location for Integer BASIC,
 68
firmware. *See* ROM
5.25" disks. *See* disks, 5.25"
fixed disk. *See also* hard disks,
21
FLASH command, 170
 Integer BASIC equivalent,
 170
flashing text, 170
 health hazards of, 170
 use in 80-columns mode,
 170
flippy disk
 creation of, 18
 definition of, 18
floating point numbers. *See*
 real numbers
flow control. *See* branches
FLUSH command, 264
FN statement, 124
Focus Formatter. *See also*
 FocusDrive, 230
FocusDrive, 29, 229-230
 compatibility of, 230
 Focus Formatter, 230
 low-level formatting of, 230
 release date of, 29
folder. *See* directory
FOR statement, 132-135
?FORMULA TOO COMPLEX
 ERROR, 715
FOR-NEXT, syntax of, 132-134
FP command, 68
FTP client. *See also* Contiki;
 SAFE2, 410-411, 430-432
functions, 118-125
 ascii conversion, 122
 nesting of, 124-125
 order of execution, 125
 string, 119-122
 user-defined, 123-124
 invocation of, 124
- G**
game controllers. *See also*
 game paddles, 163
 input range of, 163
 programming, 163-166
 reading button of, 164
 reading simultaneously,
 164
 reading value of, 163-164
game paddle menu sample
 program, 164-166
game paddles, 22-23
 connecting, 38
 description of, 23
 photo of, 23
 typical number of, 23
 use of, 22
game port, 33
 Apple models with, 38
game socket
 Apple models with 38
 fragility of pins, 38
 photo of in Apple II, 37
 photo of in Apple IIe, 39
GET statement, 168-169
 flexibility of, 168
 use to pause a program,
 168
getty, 394
GNO/ME, 492-505
 expected integration with
 Marinetti, 492
 installation of, 493-494
 integration with ORCA
 products, 492

GNO/ME, continued

- list of common commands, 500-505
- requirements of, 493
- shell
 - accessing, 494
 - basis on UNIX shell, 494
 - command completion, 496
 - command history, 496
 - connecting commands, 498-499
 - entering commands, 495-496
 - entering multiple commands on a line, 496
 - exiting, 499-500
 - input redirection, 497-498
 - output redirection, 497-498
 - pipes, 498-499
 - running commands in the background, 497
 - running Finder programs from, 499
- GOSUB statement, 139-140
 - computed, 142
 - difference from GOTO, 139
 - example of, 139
- GOTO statement, 128
 - computed, 130-131
 - example program, 128
- GR command, 296
- graphics. *See* low-resolution; high-resolution
- Grappler card, 14, 26, 46, 354
- *** >255 ERR, 717
- *** >32767 ERR, 717
- GS/OS, 472-482
 - Apple menu, 477
 - ejecting disks, 482
 - Finder tutorial, 475-482
 - HFS, 482

- icons, 476
 - deleting, 482
 - moving, 477
 - opening, 476-477
 - renaming, 482
- latest version of, 472
- menu bar, 477
- menus, 477-478
- mouse tutorial, 473-475
- starting up, 472-473
- Trash can, 482
- windows, 478-481
 - icon view, 481
 - list view, 481

H

- hand controls. *See also* game controls; game paddles; joysticks
 - definition of, 22
- hard disks, 21
 - capacity of, 21
 - definition of, 21
 - expense of, 21
 - recent developments of, 21
 - systems, 229-231
- hardware test, 28
- Hayes, James, 394
- HCOLOR statement, 308
- headphones port
 - on the Apple IIc, 54
 - on the Apple IIgs, 33
- hexadecimal, 436-437
 - conversion table, 663-664
- HFS, 480-481
- HGR command, 307-308
- high-resolution (graphics)
 - activating, 307-308
 - Bar Graph program, 311-313
 - clearing the screen, 310
- colors
 - table of, 660

high-resolution, continued

- definition of, 294
- peculiarities of, 308-309
- plotting circles, 313-315
- plotting points, 309-310
- plotting polygons, 316-317
- screen dimensions of, 294
- setting background color, 310
- setting colors, 308
- shapes
 - complementary colors, 335
 - creating manually, 318-325
 - drawing on screen, 334
 - erasing, 335-336
 - examples of, 317
 - loading from cassette tape, 330
 - loading from disk, 328-329
 - saving on disk, 328
 - saving to cassette tape, 329-330
 - setting rotation of, 334-335
 - setting scale of, 333-334
 - Shape Sampler program, 336-337
 - Shape Table Maker, 330-333
 - storing in memory, 326-328
 - table, 317
 - format of, 325
 - Tic Tac Toe Game, 337-343
 - vectors, 317-318
 - direction codes, 321
 - switching to full screen, 307
 - switching to mixed mode, 307-308

HIMEM

- current value of, 555

HLIN statement, 303-304

HOME command, 84

- home directory
 - definition of, 494
- home position
 - definition of, 84
- HPLOT statement, 309-310
- HTAB statement, 186-187
 - 80-column display on older Apple models, 187
- hyphen, 79

I

- IDE. *See also* FocusDrive; hard disks, 21, 29, 229
- identification bytes. *See* signature bytes
- IF statement, 143-144
 - shortcut in Applesoft, 143
- Ilter, 432
- ?ILLEGAL DIRECT ERROR, 715
- ?ILLEGAL QUANTITY ERROR, 119, 131, 299, 715
- ImageWriter II. *See also* printers, 24, 356-361
 - 32K Memory option, 26
 - adding single sheets of paper, 356
 - adding tractor feed paper, 358-359
 - adjusting paper thickness, 359-360
 - AppleTalk option card for, 361
 - connected to Apple II, II Plus, or IIe
 - photo of, 48
 - connected to Apple IIgs
 - photo of, 47
 - connecting, 46
 - control characters
 - table of, 371-372
 - fixing paper jams, 360

ImageWriter II, continued

- interior
 - photo of, 357
 - line feed button, 370
 - paper feed lever
 - photo of, 357
 - paper thickness lever, 360
 - photo of, 25
 - printing on envelopes, 359
 - replacing the ribbon,
 - 360-361
 - self-test, 361
 - setting margins with,
 - 370-373
 - standard lines per page,
 - 368
 - tractor feed
 - photo of, 358
 - troubleshooting, 361
- immediate execution
 - definition of, 72
- index number
 - definition of, 95
- infinite loop, 130
- INIT command, 219-220,
 - 501-502
- input
 - enter anything subroutine,
 - 169
 - phone numbers, 194-201
 - user-friendly, 166-167
 - example of, 166
 - extra work required for programmer, 167
- INPUT statement, 115-118
 - prompts, 117-118
- input switch, 214
- INT function, 181
- Integer BASIC, 67
 - automatic line numbering in,
 - 84-85
 - description of, 55

- differences from Applesoft,
 - 67, 638-641
- errors, 70-71
 - message format of, 703
- expressions in, 73-75
- incompatibility with ProDOS,
 - 68, 228
- line number limits, 72
- locations of, 68
- multistatement program
 - lines, 82-83
- numerical range of, 74
- prompt symbol for, 55
- reserved words, 637-638
 - in variable names, 95
- speed of, 67
- switching from Applesoft, 68
- integers, 91
 - definition of, 91
 - format of, 91
 - range of, 91
- interior of the Apple
 - description of, 11
- INVALID OPTION error, 711
- INVERSE command, 170
 - Integer BASIC equivalent,
 - 170
- inverse text, 170
- I/O ERROR, 225, 706, 710
- iPod
 - as substitute for cassette tape recorder, 40
- IRC client, 411-413

J

- Java, 30
- Java Virtual Machine, 30
- Jones, Glenn, 404
- joysticks. *See also* game controls; game paddles, 22-23,
 - 163
 - connecting, 38
 - photo of, 23

K

- keyboard, 6-10
 - ADB cable substitution, 32
 - BELL key, 7
 - detached keyboard on IIgs, 6
 - input from, 167-169
 - location of RESET key on
 - Apple II and II Plus, 61
 - models with built-in keyboard, 6
 - new style keyboard on
 - Apple II and II Plus, 62
 - numeric keypad
 - on Apple IIgs, 6
 - on Platinum IIe, 3, 6, 8
 - old style keyboard on
 - Apple II, 62
 - on Apple IIgs, 32
 - practice with, 56-57
 - RESET mode switch
 - location of, 62
 - photo of, 61
 - resistance to damage, 52
 - special keys on all models, 7
 - unresponsive keys, 677-678
 - uppercase only on Apple II and II Plus, 7
- kilobyte, 12
 - abbreviation for, 12
 - definition of, 12

L

- LANceGS, 29, 404
 - release date of, 29
 - using with ADT, 652
- Language Card, 12, 14, 27, 49, 205, 457, 668, 670
 - addition of memory to the Apple, 13
 - effects on startup, 49
 - location for Integer BASIC, 68
 - photo of, 13
- Language Not Available error, 704
- LEFT ARROW key, 7, 56
 - use for fixing mistakes, 7
 - use of, 56
- LEFT\$ function, 118-119
- LEN function, 121
 - used to align text, 181, 183
- LET keyword, 109
- letter-quality printer, 24
- line editing
 - adding text, 58-59
 - canceling a line, 60
 - erasing to end of line, 60
 - removing text, 59-60
 - use to erase to end of screen, 61
- line numbers, 72
 - limits in Applesoft, 72
 - limits in Integer BASIC, 72
- Linux, 393, 397
- LIST command, 78-79
- LOAD command, 86-87
- LocalTalk
 - connectors for, 398
 - definition of, 397
- LOCK command, 224-225
- logic error, 71
- LOMEM, current value of, 572
- loops, 131-137
 - condition
 - definition of, 131
 - definition of, 131
 - infinite, 130
 - example of, 130
 - nested, 135-137
 - definition of, 135
 - running backward, 134-135
 - use with arrays, 135
- lowercase
 - use with BASIC, 69

- low-resolution (graphics)
 - activating, 296
 - clearing the screen, 296
 - colors
 - table of, 659
 - definition of, 294
 - determining colors on screen, 306-307
 - example program, 294
 - plotting
 - diagonal lines, 305-306
 - horizontal lines, 303-304
 - lines, 303-306
 - points, 298-299
 - vertical lines, 304
 - screen coordinates of, 298-299
 - screen dimensions of, 294
 - setting background color, 304-305
 - setting colors, 297-298
 - simple drawing program, 299-303
 - switching to full screen, 296
 - switching to mixed mode, 297
- ls command, 495-496, 502
- M**
- Mac OS X, 393
- MacADT, 649
- Machine Language, 436
 - debugging, 462-467
 - integrating with BASIC, 148, 468-470
 - problems, 470
- Monitor, 16, 34-37, 49, 54-55
 - abilities of, 436
 - accessing, 437-438
 - bank number, 440
 - booting a disk, 447
 - built-in subroutines, 698-701
 - calculator, 449-450
 - changes in, 437
 - changing screen display mode, 454
 - comparing memory, 444-445
 - copying memory, 442-44
 - debugging machine language programs, 462-467
 - description of, 55
 - disassembling machine code with, 454-456
 - displaying memory, 438-440
 - range, 439-440
 - single byte, 438-439
 - displaying processor registers, 465-466
 - entering multiple commands, 468
 - executing DOS commands, 447-448
 - exiting, 448
 - filling memory, 442-444
 - hexadecimal and decimal conversion, 450
 - literal ASCII, 440-441
 - loading memory from tape, 452-45
 - modifying memory, 440-441
 - modifying processor registers, 466-467
 - pattern search, 446
 - prompt symbol for, 55
 - purpose of, 16
 - redirecting input and output, 446-447
 - running programs, 442

- Machine Language, continued*
- saving memory to tape, 451-452
 - searching memory, 445-446
 - single stepping machine language programs, 464-465
 - speaker subroutine, 347-349
 - switching to 80-columns mode, 448
 - tracing machine language programs, 462-464
 - User-Defined Command, 468
 - using built-in subroutines in BASIC, 469-470
- Macintosh, 36, 483
- Macintosh LC, 667
- monitor port, 36
 - use with Apple IIe card, 5
- Mahon, Michael J., 29, 433-434
- man command (GNO), 502-503
- MAN command (Integer BASIC), 85
- Marinetti, 29, 413-415
- configuration of, 414-415
 - expected integration with GNO/ME, 492
 - installation of, 413-414
 - Link Layer for Uthernet, 414
 - list of Internet applications, 413
 - release date of, 413
- MASTER CREATE, 219
- master disk, 219
- MAXFILES command, 234, 258, 272-273, 276
- effect on HIMEM, 555, 574
 - sample program, 272
 - use with Integer BASIC, 276
- *** MEM FULL ERR, 718
- memory. *See also* RAM; ROM, 12-13
- accessing with BASIC, 146-148
 - address format in BASIC, 147
 - banks of, 146
 - definition of, 12-12
 - reading from disk, 454
 - saving to disk, 278-279, 453
 - total number of locations, 146
- menu bar, 477
- MicroDrive, 29, 230
- MID\$ function, 120
- Mini-Assembler, 456-462, 470
- accessing, 456-457
 - description of, 55
 - exiting, 457
 - instruction formats, 458-459
 - prompt symbol for, 55
 - syntax errors in, 459
 - using, 459-462
 - using Monitor commands from, 457
- mkdir command, 503
- modem port, on Apple IIgs, 33
- Modem.MGR, 394
- modes, 54-55
- default for Apple II, 54-55
 - default for most Apple models, 55
 - definition of, 54
- MON command, 281
- disabling effects of, 281
- Monitor (machine language). *See* Machine Language
- monitor (display), RGB port, 33

- more command, 503
 - MountIt, 490-491
 - requirements of, 490
 - mouse, 23-24, 33-34
 - activating, 154-155
 - button on, 154
 - connecting
 - to Apple II Plus, 33
 - to Apple IIc, 33
 - to Apple IIc
 - photo of, 34
 - to Apple IIgs, 33
 - coordinates of, 155
 - deactivating, 156
 - description of, 23
 - dragging, 154
 - expansion card required for, 24
 - interface card, 34
 - typical slot location of, 154
 - location of port, 34
 - photo of, 25
 - pointer
 - displaying, 156-160
 - programming, 154-163
 - recommended environment
 - for, 34
 - setup of, 154
 - status of, 155-156
 - tutorial of, 473-475
 - uncommonness of, 24, 33
 - use of, 23
 - Mouse Menu sample program, 160-163
 - mouse pad
 - recommendation for, 34
 - Mouse Pointer sample program, 157-160
 - MouseText, 189-193
 - activating, 189
 - characters changed on Apple IIgs, 189
 - compatible models, 189
 - sample program, 191-193
 - table of characters, 190
 - MTR command, 437-438
 - multitasking. *See* GNO/ME
 - Music program, 349-350
 - music. *See* sound
 - mv command, 503
- N**
- Nadanet, 29-30, 433-434
 - adapters for, 434
 - commands added to
 - Applesoft, 434
 - parallel computing with, 30
 - negative notation, 147-148, 640
 - use by FRE function, 622
 - nesting
 - functions, 124-125
 - loops, 135-137
 - subroutines, 143
 - netatalk, 397
 - netbooting, 401, 403-404
 - networking
 - Ethernet, 29
 - NadaNet, 29-30
 - recent improvements in, 29
 - NEW command, 70
 - New Desk accessories, 489-490
 - newsgroups
 - Usenet, 427-429
 - newsreader
 - Usenet, 425-430
 - ?NEXT Without FOR ERROR, 715
 - NNTP, 426
 - NO BUFFERS AVAILABLE
 - error, 272, 707, 711
 - NO DEVICE CONNECTED
 - error, 708
 - NO DSP command, 152
 - *** NO END ERR, 77, 145, 718
 - NOMON command, 281

- nonprinting characters
 - definition of, 90
 - in strings, 90
 - NORMAL command, 170
 - Integer BASIC equivalent, 170
 - normal text, 170
 - NOT DIRECT COMMAND error, 236, 240, 708, 712
 - NOTRACE command, 150
 - NTSC, 35
 - video peculiarities of, 35
 - null string, 109
 - definition of, 89
 - numbers. *See also* integers; reals
 - prime, 137-138
 - random, 125-126
 - seeding, 125
 - numeric functions
 - derived
 - list of, 635
- O**
- Old Monitor ROM, 437, 456, 669
 - ONERR GOTO statement, 242-246, 703-704
 - machine language fix for, 245-246, 580-581
 - problems with, 245-246
 - ON-GOSUB statement, 142
 - ON-GOTO statement, 131
 - OPEN command, 235-236, 260-263
 - OPEN-APPLE key, 8
 - connection to paddle button 0, 8
 - renamed to COMMAND, 10
 - similarity to CONTROL key, 8
 - use for gaming, 8
 - use for resetting the Apple, 8
 - use with other keys, 8
 - opening the Apple, 10
 - operand. *See* argument
 - operating system
 - definition of, 16
 - operator, 99
 - arithmetic, 99
 - OPTION key. *See also* SOLID-APPLE key, 10
 - renamed from SOLID-APPLE key, 10
 - ORCA, 492
 - order of operations, 100
 - changing, 100
 - ?OUT OF DATA ERROR, 113, 715
 - ?OUT OF MEMORY ERROR, 143, 246, 715-716
 - ?OVERFLOW ERROR, 716
 - oxide
 - buildup on chips, 678
- P**
- paddle menu sample program, 164-166
 - paddles. *See* game paddles
 - parallel computing, 29-30, 433
 - Parallel Interface card, 362-363
 - parentheses, 100
 - used to change order of operations, 100
 - passwd command, 504
 - PATH NOT FOUND error, 710
 - pathnames, 223
 - PDL function, 163-164
 - PEEK function, 146-147
 - use to read key presses, 167-168
 - useful locations, 643-648
 - Peltier, Cédric, 29
 - phone numbers
 - program for, 194-201

The New Apple II User's Guide

- PhoneNet, 398-400
 - photo of, 399
- pipe
 - definition of, 498
- PLASMA, 30
- Platinum IIe. *See* Apple IIe
- PLOT statement, 298-299
- plus sign, 101
 - used in string concatenation, 101
- POKE statement, 147-148
 - effect on soft-switches, 147
 - useful locations, 643-648
- Polygon Plotting program, 316-317
- POP statement, 140-142
 - common use of, 141
 - warning against, 141
- POP3, 423-424
- ports
 - on Apple IIgs, 33
- POS function, 188
- POSITION command, 247-248, 261-262
- power cord, 48
- power on light, 49
 - burnt-out bulb, 49
 - LED, 49
 - location of, 49
- power supply
 - warning for international models, 48
- PR# command, 211
- PR#3, 174
 - use with DOS, 174
- PREFIX command, 222-223
- prime numbers, 137-138
- PRINT statement, 71-73, 99, 114, 176-177
 - Applesoft shortcut for, 76
 - concatenation in, 75-76
 - debugging with, 149
 - formatting output, 114-115
 - using expressions with, 73-75, 99
- printers. *See also*
 - ImageWriter II, 24-26
 - activating from BASIC, 362
 - advantages of, 24
 - buffers
 - advantages of, 26
 - definition of, 26
 - cable for Apple II, II Plus, and IIe
 - photo of, 47
 - cable for Apple IIc Plus and IIgs
 - photo of, 46
 - cable required for, 45
 - connection types, 26
 - control characters, 370-373
 - table of, 371-372
 - deactivating from BASIC, 365
 - DIN-8 cable required for Apple IIc, 46
 - ImageWriter II. *See also main entry for*
 - ImageWriter II, 356-361
 - parallel connection, 46
 - interface card for, 46
 - peripheral cards for, 353-354
 - port
 - on Apple IIgs, 33
 - programming, 365-367
 - serial connection
 - interface card for, 45
 - Super Serial Card, 353-355
 - required for, 45
 - types of, 24
 - typical slot for, 353
- printing
 - changing line width, 363
 - controlling page breaks, 368-369

- printing, continued*
 - disk catalog, 364
 - example program, 366
 - formatting output, 367-369
 - program listing, 364
 - setting margins, 370-373
 - to screen and paper, 362-364
 - Word Processor program, 374-383
- Processor Status register, 465-467
- Procyon Software, 492
- ProDOS
 - booting
 - screenshot of, 213
 - catalog, 218
 - checking if loaded, 258
 - compatibility of, 205-206
 - Converter, 226-229
 - limitations of, 228-229
 - screenshot of, 227
 - converting to DOS 3.3, 226-229
 - CPU requirements of, 206
 - directories, 221-222
 - effects of locking, 224
 - reading from, 248-249
 - disks
 - formatting, 220-221
 - space of, 218
 - errors
 - message format of, 703
 - table of, 709
 - file naming rules, 218
 - file types
 - table of, 665
 - Filer (program), 220-221, 225, 286-291
 - copying disks with, 289-290
 - copying files with, 288
 - deleting files with, 288
 - formatting disks with, 289
 - main menu
 - screenshot of, 287
 - testing disks with, 291
 - forcing boot on GS/OS, 212
 - incompatibility with Integer BASIC, 68
 - maximum disk capacity, 218
 - pathnames, 223
 - RAM requirements of, 205
 - short catalog
 - screenshot of, 216
 - system programs, 280
 - use with clock, 218
 - User's Disk, 220, 226
- PROGRAM TOO LARGE error, 707-708, 711-712
- Program Writer, 82
- programmed mode. *See* deferred execution
- Programmer's Aid #1, 668, 690-691
 - RAM test of, 690-692
- programming languages
 - recent developments, 30
- programs (BASIC)
 - adding comments to, 83
 - adding lines to, 80
 - automatic line numbering of, 84-85
 - changing lines in, 79-80
 - convenient spacing of line numbers, 80
 - debugging, 148-152
 - definition of, 148
 - with DSP command, 151-152
 - with PRINT statement, 149
 - with TRACE statement, 149-150
 - definition of, 66

programs, continued

- editing with Program Writer, 82
 - listing, 78-79
 - arrangement of lines in, 78
 - pausing, 79
 - to text file, 275-276
 - loading from disk, 87
 - loading from tape, 86-87
 - modification of, 79-81
 - removing lines from, 80-81
 - saved on disk
 - listing, 88
 - saving on disk, 86
 - saving on tape, 85
 - stopping, 144-145
- prompts, 54-55
- character entry limit of, 54
 - definition of, 54
 - symbol for Applesoft BASIC, 55
 - symbol for BASIC input, 55
 - symbol for Integer BASIC, 55
 - symbol for Machine Language Monitor, 55
 - symbol for Mini-Assembler, 55
- ProSEL, 221
- ProTERM, 394
- purchasing an Apple
 - tips for, 26-27
- pwd command, 495, 504

Q

- question mark
 - use as prompt, 115
- quotation marks, 71, 73, 75, 89-90, 109, 441
- Qwerty, 7

R

- RAM. *See also* memory, 13
 - definition of, 13

- use as disk, 486
 - replacing, 694-696
 - testing, 690-694
 - transience of, 13
- random numbers, 125-126
- die rolling, 126
 - seeding, 125
- random-access files, 259-272
- *** RANGE ERR, 299, 718
- RANGE error, 263, 704, 708
- RCA video jack, 35-36
- READ command, 240-241, 262-263
- READ statement, 111-113
- data pointer of, 112
 - example program, 112
- real numbers, 91
- definition of, 91
 - format of, 91
- recent Apple II developments, 28-30
- records, 233-234
- definition of, 233
 - length, 262
 - range of
 - in DOS 3.3, 260
 - in ProDOS, 260
- recursion
- definition of, 143
 - not allowed by BASIC, 143
- ?REDIM'D ARRAY ERROR, 98, 716
- ?REENTER, 115
- registers
- definition of, 465
 - displaying values of, 465-466
 - modifying from Integer BASIC, 697
 - modifying values of, 466-467
- relocatable
- definition of, 470
- REM command, 83
- RENAME command, 225

- RENUMBER program, 272
 REPT key, 7
 use of, 7-8
 reserved words, 94-95,
 636-638
 in Integer BASIC variable
 names, 95
 RESET key, 7, 62
 avoiding accidental resets, 7,
 61
 function of on Apple II and
 II Plus, 63
 location on IIgs keyboard, 10
 removal
 photo of, 63
 use on IIgs, 10
 use to simulate a restart, 62
 use to stop a BASIC program,
 144-145
 RESTORE command, 113
 RESUME command, 245
 RETURN command, 139
 ?RETURN WITHOUT GOSUB
 ERROR, 716
 RETYPE LINE, 115, 719
 revisions. *See entry for specific
 model*
 RF modulator, 35
 channels for, 35
 connecting to the Apple, 35
 photo of, 36
 picture quality of, 35
 switch box for, 35
 RGB, 36
 RIGHT ARROW key, 7, 56
 use of, 56
 RIGHT\$ function, 119-120
 rm command, 504
 RND statement, 125-126
 ROM. *See also* memory, 13
 contents of, 13
 definition of, 13
 root directory. *See* volume
 directory
 ROT statement, 334-335
 rounding, 92
 RS-232-C, 386
 RUN command, 77, 87
- S**
 SAFE2, 430-432
 connecting to an FTP server
 with, 431
 installation of, 430-431
 requirements of, 430
 screenshot of, 433
 transferring files with,
 431-432
 SAM2, 423-425
 configuration of, 423-424
 installation of, 423
 reading email with, 424
 requirements of, 423
 sending email with, 425
 SAVE command, 85-86
 overwriting disk files with, 86
 SCALE statement, 333-334
 Schmenk, David, 30
 Schmidt, Oliver, 29, 407
 scientific notation, 75, 92
 screen characters
 table of, 663
 screen
 clearing, 84
 screen formatting. *See* text
 SCRN command, 306-307
 use with text screen, 629
 SDK (compression format), 484
 sector
 definition of, 21
 self-test
 Apple IIc, 694
 Apple IIc Plus, 694
 Apple IIe, 692-693
 Apple IIgs, 693-694

- semicolon, 75-76, 496
 - use in PRINT statement, 114
- serial
 - analogy to, 385-386
- serial communication
 - models with built-in serial ports, 386
- Serial Communications Card, 386
- Serial Interface Card, 386
- serial port
 - models with built-in port, 26
- Shape Sampler program, 336-337
- shape tables. *See also*
 - high-resolution; shapes
 - definition of, 317
- Shape Table Maker, 330-333
- shapes. *See also*
 - high-resolution
 - 317-343
- Shepherd, Eric, 491
- SHIFT key, 69
- SHK (compression format), 483
- SHLOAD command, 330
- ShrinkIt, 221, 483
- ShrinkItGS, 483-484
 - screenshot of, 483
- signature bytes, 439, 667-668
 - table of, 668
- Simple Drawing Program, 299-303
- SIS, 418-422
 - browsing the Web with, 421-422
 - installation of, 418-419
 - requirements of, 418
 - screenshot of, 422
- 6502, 206, 435, 454, 458, 465
- 65C816, 435, 440, 454, 465, 485
 - table of CPU registers and flags, 467
- 65C02, 454, 458, 465
- *** 16 FORS ERR, 717
- *** 16 GOSUBS ERR, 143, 718
- 16Sector (vendor), 229
- 16 sector format, 18
- slave disk, 219
- sleep command, 496-497, 504-505
- slot 0
 - location of, 15
- slots, 11, 14
 - description of, 15
- smart run command. *See* Dash command
- SmartPort, 33, 44
- SMTP, 423-424
- SNAP, 425-430
 - adding newsgroups to, 427-428
 - configuration of, 426-427
 - installation of, 426
 - posting with, 429-430
 - reading newsgroups with, 428-429
 - requirements of, 426
- soft-switch, 146-147
 - definition of, 146
- software, 16-17
 - compatibility of, 17
 - definition of, 16
 - incompatibility with older models, 17
- SOLID-APPLE key, 8, 10
 - connection to paddle button 1, 8
 - referred to as CLOSED-APPLE, 8
 - renamed to OPTION, 10
 - used to trigger self-test, 8
- sound, 344-351
 - on the Apple IIgs, 351
 - adjusting, 486
 - speaker, 344

- sound, continued*
 - machine language
 - subroutine, 346-349
 - memory location of, 344
 - Music program, 349-350
 - programming, 345-346
 - tweaking, 344-346
 - varying duration, 346
 - varying pitch, 345
- SPC function
 - used to align text, 183
- speaker. *See also* sound
 - adjusting volume of, 53
 - disabling, 53
- special keys
 - on the Apple II and II Plus, 7-8
 - on the Apple IIc Plus, 10
 - on the Apple IIe and IIc, 8
 - on the Apple IIgs, 10
- Spectrum, 415-418
 - installation of, 416-417
 - requirements of, 415
 - using as a telnet client, 417-418
- SPEED command, 171-172
- SQR function, 119
- Stack Pointer, 465, 467
- start up, 49
 - disks, 52-53
 - screen, 49-52
 - of Apple II, 49
 - slot, 53
- statements,
 - definition of, 66
 - placing many on a line, 82-83
 - disadvantages of, 82
 - restrictions in Integer BASIC, 82-83
- stevie, 505
- STOP statement, 145
 - use for, 145
- STOPPED AT *x*, 144, 719
- *** STRING ERR, 719
- STR\$ function, 181
- *** STR OVFL ERR, 117, 719
- ?STRING TOO LONG ERROR, 716
- strings, 89-90
 - allowed characters in, 90
 - comparisons of, 105
 - concatenation
 - example program, 101
 - in Applesoft, 101
 - in Integer BASIC, 121-122
 - relation to parts, 102
 - visualization of, 102
 - definition of, 89
 - examples of, 90
 - joining. *See* concatenation
 - length of, 89
 - nonprinting characters in, 90
 - versatility of, 90
- StuffIt, 483
- subroutines, 138-143
 - advantages of, 140
 - definition of, 138
 - nested, 143
 - definition of, 143
 - limits of, 143
- substrings, 119-120
 - definition of, 119
 - functions in Integer BASIC, 120-121
 - examples, of, 119
- Suenaga, Ryan, 432
- super high-resolution (graphics), 344
- Super Serial Card, 14, 45, 386-393
 - capabilities of, 386
 - configuration of, 388-392
 - configuring for printing, 354-355

Super Serial Card, continued

- forwarding of interrupts, 392
- identification of, 387-388
- installation of, 392-393
- jumper block, 388-389
- photo of, 387, 389
- switch settings for
 - ImageWriter II, 355
- switches, 389-392
- typical slot location, 46, 392
- using with ADT, 651-652
- SuperDrive, 20
 - description of, 20
 - requirements for, 20
- Sup-R-Mod II, 35
- Swedish Institute of Computer Science, 407
- Sweet16, 29, 430
- Syndicomm, 220, 472
- syntax, 66-67
 - definition of, 66-67
- *** SYNTAX ERR, 719
- ?SYNTAX ERROR, 52
- syntax errors
 - Applesoft, 716
 - definition of, 70
 - DOS 3.3, 707
 - ProDOS, 712
- synthesizer, 351, 675
- System 6. *See* GS/OS
- System Master disk, 53, 282, 457, 690

T

- TAB, 180-181
- TAB key, 8, 496
 - not recognized in some versions of BASIC, 8
- tab stops, 178
 - 80-column display on older Apple models, 179
- TCP/IP, 29

- television set
 - connecting to the Apple, 35
- terminals, 393-396
- testing
 - any Apple II model for basic operation, 28
- text
 - aligning
 - by column, 177-179
 - by decimal point, 181-182
 - right, 182-184
 - with TAB, 180-181
 - flashing, 170
 - formatting, 172-184
 - screen line length, 174-176
 - vertical spacing, 176-177
 - inverse, 170
 - normal, 170
 - speed of, 171-172
 - styles, 170-171
 - example program 171
 - window, 184-186
 - altering dimensions of, 185-186
 - default dimensions of, 185
- TEXT command, 185, 295, 308
- text mode
 - switching to, 295
- The Byte Works, 492
- 13 sector format, 18
 - capacity of, 18
 - uncommonness of, 18
- 3.5" disks. *See* disks
- Tic Tac Toe Game, 337-343
- *** TOO LONG ERR, 719
- TRACE statement, 149-150
 - debugging with, 149-150
 - disabling with NOTRACE, 150
- track
 - definition of, 21
- TransWarp GS, 29

Trash can, 482
 truncation, 108
 truth table, 106-107
 definition of, 106
 Twitter.com, 432
 ?TYPE MISMATCH error, 717

U

UHF, 35
 UNABLE TO LOAD PRODOS,
 212
 unconditional branch,
 definition of, 128
 ?UNDEF'D FUNCTION ERROR,
 124, 717
 ?UNDEF'D STATEMENT
 ERROR, 717
 UniDisk, 44, 19-20, 673
 compatibility with Apple IIc,
 44
 photo of, 20
 Universal Disk Image, 490-491
 UNIX, 393, 483, 494
 UNLOCK command, 224-225
 uppercase
 use with BASIC, 69
 USB flash drive
 storage with, 29
 Usenet, 425-430
 user function. *See* functions
 User-Defined Command, 468
 user-friendly
 definition of, 166
 user-hostile
 example of, 166-167
 USR statement, 470
 Uthernet, 29, 404-407
 compatibility of, 404
 installation of, 405-407
 Link Layer for Marinetti, 414
 photo of, 405
 release date of, 29
 troubleshooting, 407

typical slot for, 405
 using with ADT, 652

V

values
 displaying, 114-115
 entering, 115-118
 limitations of strings, 116
 variables, 93-95
 Applesoft name suffixes, 94
 assigning values to, 108-110
 clearing values of, 113-114
 definition of, 93
 examples of illegal names in
 Integer BASIC, 94
 maximum name length in
 Integer BASIC, 93
 reserved words in names,
 94-95
 rules for naming
 in Applesoft, 94
 in Integer BASIC, 93-94
 types of, 93
 VERIFY command, 225
 copyright message, 225
 vertical blanking interval,
 644-645
 vertical spacing. *See* text
 VHF, 35
 vi command, 505
 Videx Videoterm, 27
 virtual machine, 30
 Virtual][, 29, 649
 VLIN statement, 304
 VM02, 30
 volume directory, 222
 VOLUME MISMATCH error,
 706
 volume
 of speaker, 53
 volumes (disk)
 formatting, 289
 VT100, 394, 417-418

The New Apple II User's Guide

VTAB statement, 186-187

W

WAIT statement, 145

Wannop, Ewen, 414-415, 418,
423, 425, 430

warm-start, 144

wc command, 498-499, 505

Web Browser. *See also* Contiki;
SIS, 409-410, 418-422

Weiss, Geoff, 418

Wigginton, Randy, 638

Winchester disk, 21

windows, 478-481

Word Processing Program,
249-259

with Printing, 374-383

Workstation disk, 401

Wozniak, Steve, 67, 638

WRITE command, 236-238,
261-262

WRITE PROTECTED error,
704, 708

write protecting disks, 208-209

X

X register, 465-467

XDRAW statement, 335-336
complementary colors for,
335

Y

Y register, 465-467