

RUN

November 1989
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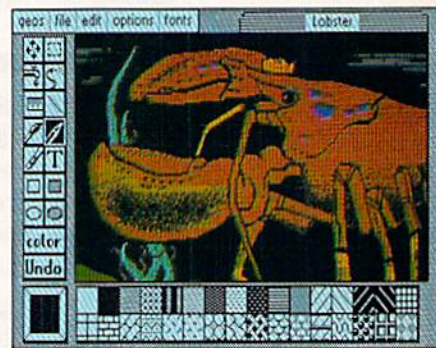
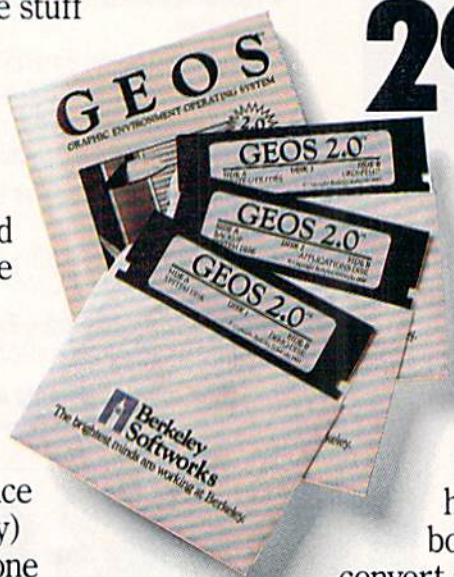
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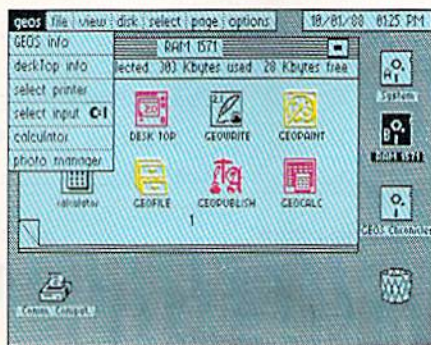
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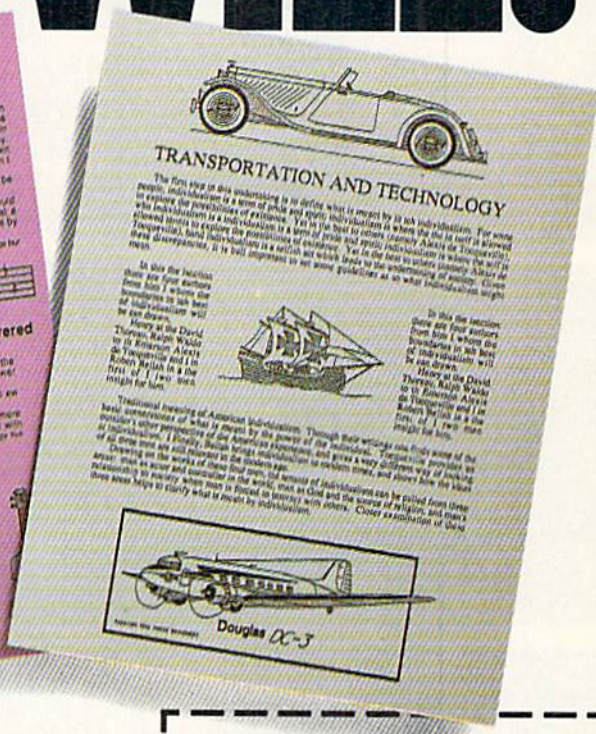
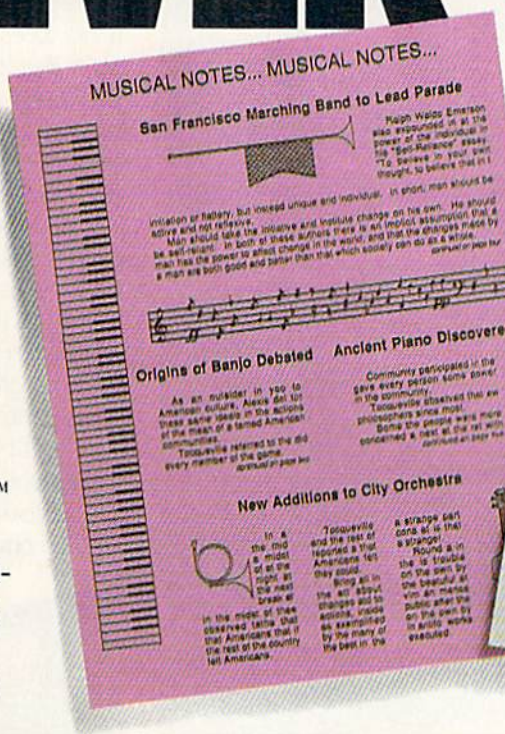


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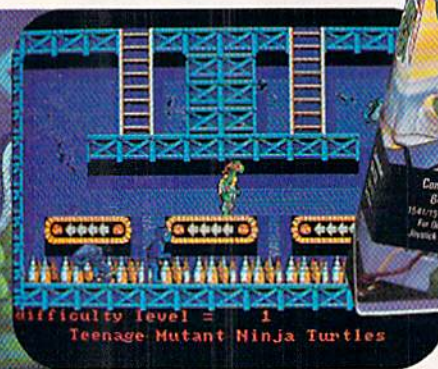
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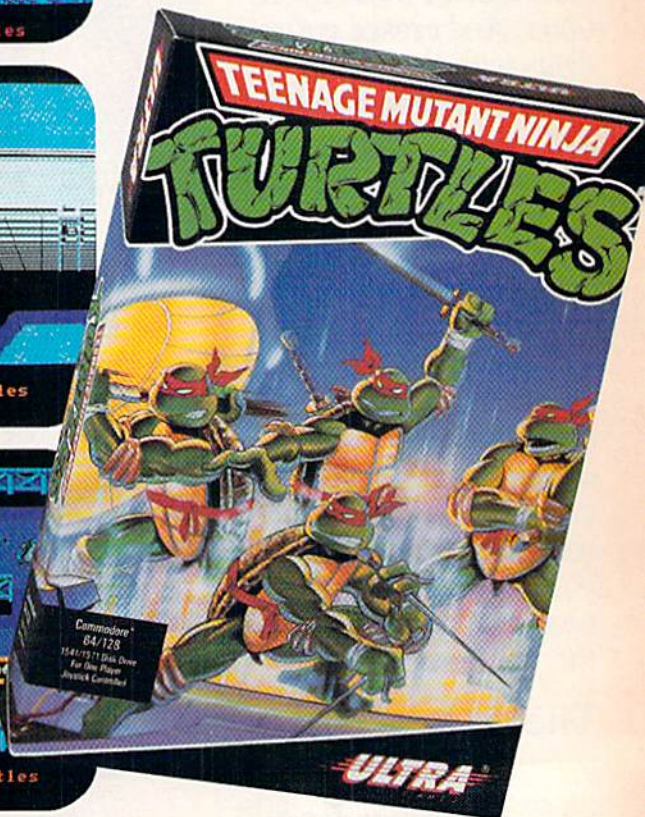
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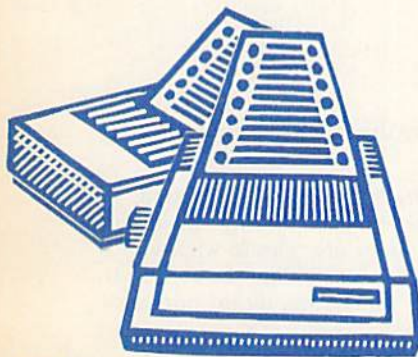
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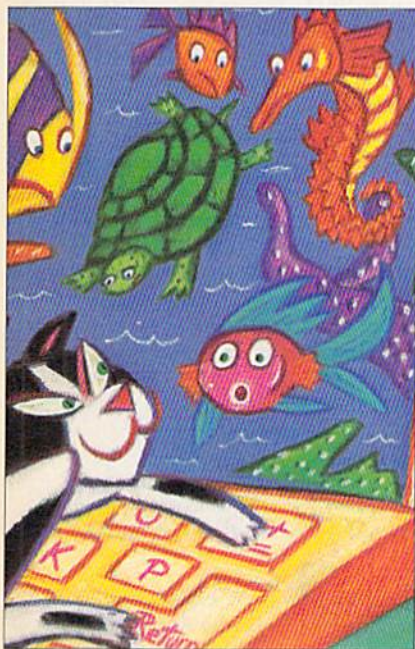


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BY LARRY DUNN

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are \$22.97 for one year, \$34.97 for two years and \$48.97 for three years. In Canada and Mexico, the one-year subscription rate is \$27.97, with U.S. funds drawn on a U.S. bank. Foreign surface mail subscriptions are \$42.97 for one year, and foreign air mail one-year subscriptions are \$77.97, with U.S. funds drawn on a U.S. bank. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster:** Send address changes to *RUN*, Subscription Services, PO Box 58711, Boulder, CO 80322-8711. (Canadian address changes to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.)

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RUNNING RUMINATIONS

Dear *Commodore Magazine* Reader,

I am pleased to take this opportunity this month to welcome you to the pages of *RUN*.

RUN has recently acquired *Commodore Magazine*, which ceased publication with its October issue. This represents a win-win situation, as they say. Commodore can devote its energies to what it does best—manufacture computers. *RUN*, in fulfilling the subscription obligations of *Commodore Magazine*, gains a significant number of new readers and active computer users.

Without relinquishing its own identity, *RUN* will continue to keep alive the spirit of *Commodore Magazine*, which can trace its origins back to the early days of Commodore computing. Beginning with next month's issue, *RUN* will incorporate two of *Commodore Magazine's* most popular columns—Gold Mine, an exciting compilation of gaming hints and tips, and 128 Mode, which is one of the few regular columns in the industry devoted specifically to 128 owners.

The astute reader will notice *RUN's* slightly different approach to the Commodore market. *RUN* is a no-nonsense, informational publication that emphasizes how users can get the most out of their computers. *RUN* has, over the years, gained renown as an active and involved supporter of the user community. We will continue meeting the needs of the marketplace through our participation at computer shows and on-line, the publication of blockbuster articles and programs and the production of special disk projects, the most recent of which are a games software disk for C-128 users and a disk of applications and utilities for GEOS owners.


You will also note that *RUN's* editorial coverage is not diluted with Amiga material; it remains a magazine dedicated to eight-bit owners.

RUN's acquisition of *Commodore Magazine* bolsters our efforts to cover this market and significantly enhances *RUN's* leadership position.

Whether you're a long-time Commodore owner or a newcomer to computing, you'll find much valuable information in this and the coming months in the pages of *RUN*.

We are delighted to offer you, and thousands of new readers, the opportunity to judge for yourself. You can join the tens of thousands of regular readers who have made *RUN* an essential ingredient of their computing experience. Welcome!

Regards,



Dennis Brisson
Editor-in-Chief

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ceases; a
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MAGIC

Performing screen magic and giving you quick access to ASCII equivalents are some of the things this month's tricks provide.

Compiled by TIM WALSH

\$55B C-64 SCREEN ANIMATION

Liven up any C-64 screen display with Animation Lines 64. Unlike other line-scrolling utilities, Animation Lines is interrupt-driven and unaffected by most other computer operations. To activate it after running, just enter SYS 4096. To deactivate it, use SYS 4160. For more dramatic effects, enter POKE 56325,100.

```
Ø REM ANIMATION LINES 64 - JUSTIN REYNOLDS
:REM*217
1Ø FORA=4Ø96TO4173:READX:POKEA,X:CK=CK+X:N
EXTA :REM*42
2Ø IFCK<>81Ø3THENPRINT"DATA ERROR..." :END
:REM*27
3Ø PRINT"{SHFT CLR)ENABLE - SYS4Ø96 / DISA
BLE - SYS416Ø" :REM*197
4Ø DATA 76,14,16,162,Ø,169,234,157,Ø,74,23
2,2Ø8,248,96,16Ø,64,14Ø,9,16,32 :REM*28
5Ø DATA 3,16,2ØØ,192,75,2Ø8,245,169,96,141
,Ø,75,12Ø,169,16,141,21,3,169 :REM*14Ø
6Ø DATA 45,141,2Ø,3,88,96,162,Ø,142,32,2Ø8
,142,33,2Ø8,32,Ø,64,232,224,2 :REM*233
7Ø DATA 2Ø8,242,76,49,234,12Ø,169,234,141,
21,3,169,49,141,2Ø,3,88,96,Ø :REM*87
```

—JUSTIN R. REYNOLDS, HOWELL, NJ

\$55C 128 POP-ON SCREENS

Magic Trick \$52A, C-64 Pop-On Screens (May 1989), demonstrates how to make C-64 screens that immediately pop into view. Pop-on screens are remarkably easy in the C-128's 40-Column mode, since switching to Fast mode instantaneously blanks the screen, and Slow mode instantly re-displays the screen.

Making pop-on screens in the C-128's 80-Column mode requires a little more programming knowledge, though. Fortunately, the 80-column VDC has a screen-blanking routine that's activated by entering SYS 52684,0,35. The screen display will instantly re-appear by entering SYS 52684,100,35. I wrote C-128 80-Column Pop-On Screens to demonstrate these commands at work in a simple but effective program.

```
Ø REM 128 8Ø-COLUMN POP-ON SCREEN - AARON
PEROMSIK :REM*35
1Ø GOTO4Ø :REM*138
2Ø SYS 52684,Ø,35:RETURN:REM SCREEN OFF
:REM*152
3Ø SYS 52684,1ØØ,35:RETURN:REM SCREEN ON
:REM*193
4Ø REM START PROGRAM HERE :REM*74
```

```
5Ø FAST:GRAPHIC 5,1:COLOR 5,7 :REM*152
6Ø FOR X= Ø TO 1:IF X=Ø THEN GOSUB 2Ø
:REM*31
7Ø FOR Y= 1 TO 117: PRINT "A POP-ON SCREEN
! ";:NEXT :REM*71
8Ø IF X=Ø THEN WINDOW 32,9,48,11,1:COLOR 5
,4:PRINT"{CRSR DN){2 SPACES){CTRL 9)PRE
SS ANY KEY":GOSUB 3Ø:GETKEYA$:PRINT"{2
HOMES)":SCNCLR:COLOR 5,7 :REM*118
9Ø NEXT :REM*22Ø
```

—AARON PEROMSIK, WORCESTER, MA

\$55D MAGIC BACKDROP 64

Magic Backdrop, a C-64 screen animator, makes the entire screen, or any part of it, scroll in four directions. The character used for the effect is reverse @ (POKE 128). Here are the numbers needed to use the program:

```
POKE 2,0 to move left
POKE 2,1 to move right
POKE 2,2 to move up
POKE 2,3 to move down
POKE 2,4 to stop scroll
```

Speed is controlled by memory address 820, with 0 the fastest speed.

SYS 52224 sets up a new character set.

SYS 52227 starts the smooth scroll determined by address 2 (direction) and 820 (speed).

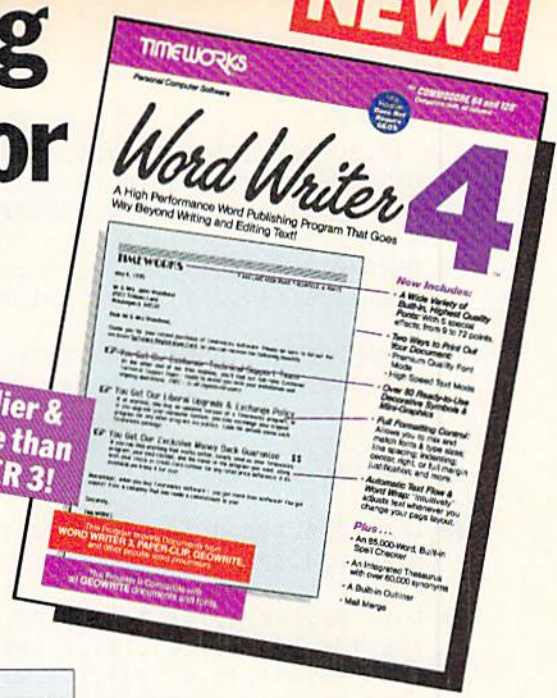
SYS 52230 disables the utility.

Run the demo below for examples of the above.

```
Ø REM MAGIC BACKDROP 64 - PETER M.L. LOTTR
UP :REM*114
1Ø FORT=52224 TO 5251Ø:READD:POKET,D:CK=CK
+D:NEXT :REM*15Ø
2Ø IF CK <> 34777 THEN PRINT"ERROR IN DATA
..." :END :REM*93
3Ø DATA 76,9,2Ø4,76,1Ø8,2Ø4,76,255,2Ø4,169
,8,32,21Ø,255,169,2ØØ,141,136,2 :REM*53
4Ø DATA 169,147,32,21Ø,255,16Ø,Ø,173,24,2Ø
8,2Ø1,23,2Ø8,2,16Ø,1,185,27,2Ø5:REM*157
5Ø DATA 72,169,Ø,141,Ø,221,169,32,141,24,2
Ø8,12Ø,165,1,41,25Ø,133,1,1Ø4 :REM*238
6Ø DATA 133,252,169,Ø,168,133,253,133,251,
169,192,133,254,162,8,177,251 :REM*25Ø
7Ø DATA 145,253,2ØØ,2Ø8,249,23Ø,252,23Ø,25
4,2Ø2,2Ø8,242,165,1,9,7,133,1 :REM*37
8Ø DATA 88,16Ø,Ø,185,29,2Ø5,153,Ø,196,2ØØ,
192,8,144,245,96,96,12Ø,169,121:REM*139
9Ø DATA 141,2Ø,3,169,2Ø4,141,21,3,88,96,23 ▶
```

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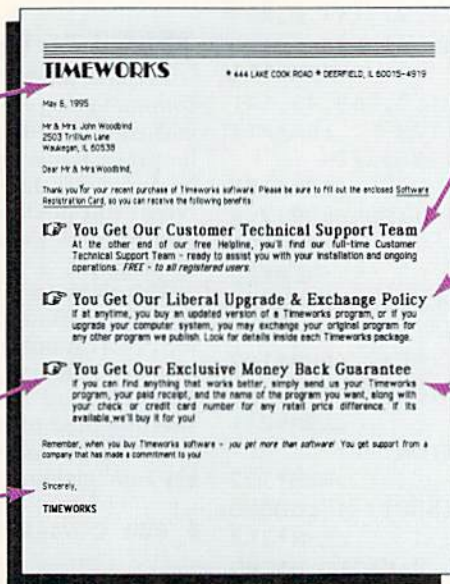
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M A G I C

```

8,53,3,173,53,3,205,52,3,176,3 :REM*255
100 DATA 76,49,234,169,0,141,53,3,173,17,2
    08,16,251,160,0,165,2,208,20,185
                                :REM*21
110 DATA 0,196,24,10,144,2,9,1,153,0,196,2
    00,192,8,144,239,76,49,234,201,1
                                :REM*158
120 DATA 208,20,185,0,196,24,74,144,2,9,12
    8,153,0,196,200,192,8,144,239,76
                                :REM*27
130 DATA 49,234,201,2,208,25,185,0,196,72,
    200,185,0,196,136,153,0,196,200
                                :REM*162
140 DATA 200,192,8,144,243,104,141,7,196,7
    6,49,234,201,4,240,24,173,7,196
                                :REM*111
150 DATA 72,160,6,185,0,196,200,153,0,196,
    136,136,16,245,104,141,0,196,76:REM*74
160 DATA 49,234,76,49,234,169,27,141,0,221
    ,169,21,141,24,208,169,4,141,136
                                :REM*114
170 DATA 2,120,169,234,141,21,3,169,49,141
    ,20,3,88,96,208,216,255,129 :REM*14
180 POKE53280,0:POKE53281,6:SYS52224
                                :REM*107
190 PRINT"{SHFT CLR}{CTRL 1}";:POKE820,2:P
    OKE2,4 :REM*19
200 GOSUB460 :REM*28
210 PRINT"{HOME}{CTRL 0}";:POKE2,2 :REM*56
220 DIM V$(24):V$(0)="{HOME}":FORI=1TO24:V
    $(I)=V$(I-1)+"{CRSR DN}":NEXT :REM*192
230 D$="":FORI=1TO16:D$=D$+"{CRSR RT}":NEX
    T :REM*241
240 E$=LEFT$(D$,15):F$=LEFT$(D$,10)
                                :REM*192
250 B$="{SHFT -}{17 SPACES}{SHFT -}":GOSUB
    430 :REM*219
260 PRINTV$(12)TAB(13)"{CTRL 9}MAGIC BACKD
    ROP" :REM*252
270 SYS52227:GOSUB490 :REM*197
280 GOSUB430:PRINTV$(12)TAB(18)"{CTRL 9}UP
    !":GOSUB490:GOSUB430:POKE2,3 :REM*234
290 PRINTV$(12)TAB(17)"{CTRL 9}DOWN!":GOSU
    B490:GOSUB430:POKE2,0 :REM*82
300 PRINTV$(12)TAB(17)"{CTRL 9}LEFT!":GOSU
    B490:GOSUB430:POKE2,1 :REM*190
310 PRINTV$(12)TAB(17)"{CTRL 9}RIGHT!":GOS
    UB490:POKE2,0 :REM*12
320 POKE2,2:B=2 :REM*175
330 FORI=1TO5:READA:POKE820,A:B=B+1:IFB>3T
    HENB=0 :REM*210
340 DATA15,7,3,2,0 :REM*255
350 POKE2,B:GOSUB490:NEXT :REM*6
360 POKE2,4:FORI=49520TOI+7:POKEI+656,PEEK
    (I):NEXT:POKE2,2 :REM*148
370 PRINTV$(11)E$"{CTRL 9}(R)ESTART"
                                :REM*171
380 PRINTV$(12)E$"{CTRL 9}{9 SPACES}"
                                :REM*124
390 PRINTV$(13)E$"{CTRL 9}(E)ND{2 SPACES}"
                                :REM*217
400 GETA$:IFA$="R"THENRUN :REM*161
410 IFA$<>"E"THEN400 :REM*83
420 SYS52230:PRINT"{SHFT CLR}":END :REM*59
430 PRINTV$(9)F$"{COMD 8}{CTRL 9}{COMD A}{
    17 SHFT *s}{COMD S}" :REM*153
440 FORI=10TO14:PRINTV$(I)F$"{CTRL 9}"B$:N
    EXT :REM*15
450 PRINTV$(15)F$"{CTRL 9}{COMD Z}{17 SHFT
    *s}{COMD X}":RETURN :REM*245
460 A$="{CTRL 9}":FORI=1TO40:A$=A$+"@":NEX
    T :REM*150
470 FORI=1TO24:PRINTA$;:NEXT:PRINTLEFT$(A$
    ,40);:POKE52199,128:POKE56295,0
                                :REM*221
480 RETURN :REM*108
490 FORDY=1TO1500:NEXT:RETURN :REM*75

```

—PETER LOTTRUP, BUENOS AIRES, ARGENTINA

\$55E THE KEY TO ASCII

Even the most efficient, long-time C-64 programmers can't commit to memory all of the ASCII equivalents of characters and control codes. The Key to ASCII eliminates the need for programmers to check C-64 reference charts and manuals by displaying the decimal ASCII code of the character most recently printed to the screen. Consequently, programming printers and writing advanced Basic programs are made much easier.

The program responds instantaneously whenever a key is pressed or a Basic program is run or listed. A colon preceding the ASCII number in the upper-right corner of the screen acts as a delimiter, allowing you to use commands such as Run, List and Save on the top-most screen line without affecting their functions. The Key to ASCII is enabled with a SYS 53000 and disabled by pressing the run-stop/restore key combination.

0 REM C-64 KEY TO ASCII - EDGAR LOSBERG

```

                                :REM*163
10 FOR M=53000 TO 53083:READ A:CS=CS+A:POK
    E M,A:NEXT :REM*96
20 IF CS <> 9034 THEN PRINT"ERROR IN DATA.
    ..":END :REM*201
30 SYS 53000 :REM*139
40 DATA 120,169,21,141,20,3,169,207,141,21
    ,3,88,96,169,48,141,37,4,141 :REM*247
50 DATA 38,4,141,39,4,169,58,141,36,4,165,
    215,133,251,56,233,200,144,9 :REM*71
60 DATA 133,251,169,50,141,37,4,16,14,165,
    251,56,233,100,144,7,133,251 :REM*150
70 DATA 169,49,141,37,4,162,48,165,251,56,
    233,10,232,176,251,202,142,38 :REM*145
80 DATA 4,24,105,58,141,39,4,76,49,234
                                :REM*28

```

—EDGAR LOSBERG, HUNTSVILLE, AL

\$55F TRULY USEFUL C-128 TRICKS

Four valuable C-128 "tricks" that I use almost daily are largely unknown to a number of C-128 users, so I'll use this opportunity to pass them along to my following of Magic fans.

MAGIC

First, the C-128 Basic 7.0's Copy command can easily be enhanced to make multiple copies of a program, sequential or any other file by placing it into a For-Next loop. The syntax for making, say, three copies is as follows:

```
FOR X=1 TO 3: COPY "FILE" TO "FILE" + STR$(X): NEXT
```

Second, the F1 function key can be defined into a single keypress file deletion key by using the following Key definition:

```
KEY 1, SC{Shifted R} + "{3 tabs}" + ":" + CHR$(13) + "Y"
```

Just list the directory, place the cursor at the left-most column on the same line as the file to be deleted and press F1. Naturally, any function key can be used in place of F1.

My third C-128 trick is a habit I've adopted after heeding the advice of a number of seasoned C-128 veterans. Whenever I use Basic 7.0 disk commands, I always include the `ONU{device#}` command to minimize the potential of confusing the two or more disk drives connected to my computer. The significance of doing so is readily apparent to programmers who are aware of disk-sensitive 1541/1571/1581-compatible routines.

For example, `DLOAD"filename"` becomes `DLOAD "filename" ONU8` (ONU9 if loading from device 9); `BOOT` becomes `BOOTONU8`; `COLLECT` becomes `COLLECT-ONU8`; and so on. Besides making disk commands easier for both the user and computer to decipher, it further makes programming easier by eliminating the need for the inherently weak use of a comma when loading from a secondary disk drive using a directory displayed on the screen; e.g., `BOOT"RUN SHELL",U9:` can be entered as `BOOT "RUN SHELL"ONU9:`.

The final trick that I constantly use is the `RGR(0)` command within C-128 programs to detect whether the computer is running in 40- or 80-Column mode. A value of 5 indicates 80-Column mode, while a value of 0 is returned by 40-Column mode. A sample mode detection line I incorporate into 40-column programs usually appears as:

```
10 IF RGR(0)=5 THEN PRINT "PLEASE SWITCH MONITOR  
TO 40-COLUMN MODE"  
20 PRINT "PRESS A KEY TO CONTINUE. . .":GETKEY$
```

If you need 80-Column mode exclusively, just change `RGR(0)=5` in the above statement to `RGR(0)<>5`.

—TIM WALSH, MAGIC COLUMNIST

\$560 LISTEN TO THE MUSIC

Tired of having a household member constantly telling you to turn down the volume of your computer? If you're using a television or video monitor equipped with headphone jacks, just plug them in. You can then blast your ear drums to a substantial level of permanent hearing loss without disturbing any innocent bystanders. Besides reproducing fantastic music, the sounds generated by all manner of flight simulators never sounded more realistic.

—JOHN McDONALD, PALM BAY, FL ■

If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

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NEWS AND NEW PRODUCTS

Something for your wallet, your ears—even for your eyes. Plus, news of Commodore's renewed commitment to the C-64.

Compiled by HAROLD R. BJORNSEN

HURRY! ORDER YOURS NOW!

WARWICK, RI—If *User Friendly—The Computer User's Guide to Incredible Savings!* sounds just like the television ads for the Miracle Painter and Armourcote Cookware, that's because it's published by the same company, V&B Communications (5 Division St., PO Box 518, East Greenwich, RI 02818).

This monthly newsletter aims to cut your computer expenses like a Ginsu Knife cuts through aluminum cans. It tells you such things as how to get free software, where to buy supplies at a fraction of their cost, how to double the memory capacity of 3½-inch disks, and more. A yearly subscription is \$99.99.

Check Reader Service number 400.

KEEP MOVING!

GRANADA HILLS, CA—In *Fire Power*, a C-64 tank-combat game, one or two players must guide one of three tanks through a surrealistic world of heavily guarded military bases. The objective is to capture your opponent's flag. You may follow the roads and take the gates or head cross-country and blast through trees, walls and buildings. En route, you'll encounter enemy turrets, fuel stations and gulags. Just don't stay in one place too long, or the choppers will get you. Available from Micro-Illusions (17408 Chatsworth St., Granada Hills, CA 91344) for \$24.95.

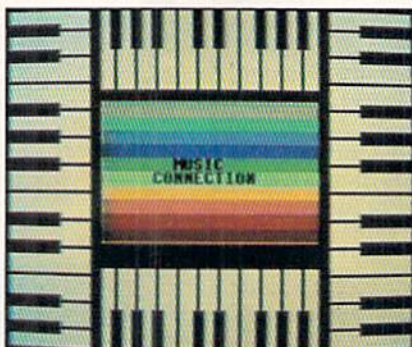
Check Reader Service number 401.

IN SPACE OR IN A PATIENT'S HEAD

HUNT VALLEY, MD—Medalist International (180 Lakefront Drive, Hunt Valley, MD 21030) has released two games for the C-64. Prices are \$29.95 for each.

Xenophobe, an arcade game, puts you in command of three squads of scientists, soldiers and ne'er-do-wells in a battle to reclaim abandoned space stations from alien invaders, who are everywhere. A joystick is required.

Weird Dreams puts you into the subconscious mind of a hospital patient as



What's the latest composition from Keith Jarrett or the Eurythmics? Find out on Q-Link's Music Connection.

he undergoes surgery. You'll encounter giant wasps, carnivorous rose bushes, a psychopathic lawn mower and a little girl who is not all sugar and spice. Your success at confronting the challenges in the game directly affects the patient's health on the operating table.

Check Reader Service number 403.

MUSIC FOR YOUR EARS

VIENNA, VA—Commodore 64/128 owners can now hear music and sound effects while chatting, competing in game shows and participating in music forums on QuantumLink, an online service. The new service, called *Music Connection*, offers over 6500 music selections, ranging from classical and jazz to heavy metal, pop, golden oldies and advertising jingles. Users can also express themselves with sound effects such as whistles, laughs and the wild cheers of the online audience during game shows. For pricing and other information, contact QuantumLink at 8619 Westwood Center Drive, Vienna, VA 22182, or call 1-800-782-2278.

Check Reader Service number 407.

THE EYES HAVE IT

EAST ROCKAWAY, NY—Kaizen Products (PO Box 28, East Rockaway, NY 11518) has released the *Eyes-Massager*, which, according to the company, al-

leviates eye strain and headaches associated with long hours in front of computer monitors. Through vibration, the product stimulates the seven acupressure points around the eyes and forehead to increase blood circulation and provide relief. It's available for \$24.95 plus \$5 s/h.

Check Reader Service number 402.

HELP SOLVE A MYSTERY

SAN MATEO, CA—*Fire King*, an action/adventure game for the C-64, begins with the death of the Fire King, ruler of the land and presumed until now to be its most powerful wizard. His demise has plunged the land into disarray and created a mystery that needs to be solved. You must journey through the land while fighting off the creatures of chaos that threaten to overrun it. You must also solve intricate puzzles and plots while you gather the clues for solving the ultimate mystery of the death of the King. Available for \$29.95 from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404.

Check Reader Service number 405.

MAKE MONEY OR MAKE SOUNDS

KUTZTOWN, PA—Free Spirit Software (PO Box 128, Kutztown, PA 19530) has released two 80-Column-mode programs for the C-128. Each retails for \$29.95.

In *Wheel & Deal*, a game with graphics, sound and music, the object is to amass property and wealth by shrewd dealing and taking risks. A player may win by accumulating over \$100,000 or by forcing all other players into bankruptcy. The game may be played with two to four players. *Wheel & Deal* requires a mouse or joystick, an 80-column color monitor and a 1571 disk drive.

With *Digitalker 128*, the user can add digitized speech to C-128 programs in 80-Column mode. It's a set of machine language routines that can play digitized sound samples from within a program. These sounds—over 500,000 ▶

BAD TO THE BONE

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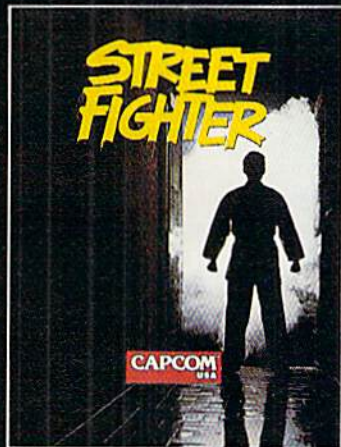
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bytes' worth—are included on the Clip-Sound Disk supplied with the package. Digitalker supports, but does not require, a 1700 or 1750 RAM expansion unit. The program and ClipSounds are supplied on two 1571-formatted disks. Included are several speech demos and talking 80-column games.

Check Reader Service number 404.

COMMODORE RENEWS ITS COMMITMENT TO THE C-64

WEST CHESTER, PA—President Harold Copperman of Commodore Business Machines has announced that the company has added former Casio executive **Robert Larsen** to its new management team as vice president of consumer sales.

Larsen, who was a senior vice president at Casio with responsibility for the divisions of electronic musical instruments and professional dealer products, brings to his new position over 25 years of experience in electronic design, manufacturing, marketing, sales and business management. During his tenure at Casio, Larsen directed the

growth of the company's music business from zero dollars to over \$200 million.

Copperman said, "Larsen's selection demonstrates Commodore's renewed commitment to the U.S. consumer market. Larsen will actively pursue new sales and merchandising strategies for the . . .C-64" and other Commodore products.

UPTIME GOES DOWNTIME

SHREVEPORT, LA—**Softdisk Publishing** has announced that it would begin fulfilling all subscriptions to *UpTime's* C-64 disk magazine, which has been plagued by dwindling numbers of subscribers, with issues of *Loadstar*, its own monthly software collection for that computer. Softdisk also expects to offer selected programs from the newly acquired *UpTime* C-64 collection for sale in the near future.

KUBISM

PENFIELD, NY—In **KaleidoKubes**, a domino-like strategy board game for the C-64, you must place your "kubes"

on the playing board, matching the sides with pieces already on the board. You can play against the computer or another player or even against yourself. Different board shapes are provided on the disk, and you can also design and save your own boards. It's available for \$24.95 from Artworx, 1844 Penfield Rd., Penfield, NY 14526.

Check Reader Service number 408.

FOR YOUR EYES ONLY

WARSAW, IN—Terminal Optics (2314 DuBois, Warsaw, IN 46580) has released a line of **Eyewear** that reduces computer eye strain and the headaches and blurred vision that often follow a day's work at the computer terminal. Its ultraviolet coating protects the eyes from potential ultraviolet rays. The line utilizes optically ground magnifying powers to reduce eye strain and custom tinting to reduce the problem created by screen blinding. Eyewear is available in three frame colors, in prescription and non-prescription lenses at a price of \$49.95 to \$89.95.

Check Reader Service number 406. ■

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SANTA CLAUS IS COMING TO TOWN

Better watch out!

After a test ride on *Pocket Rockets*, the high-speed motorcycle simulation game, Santa picked up a new sleigh that will make this year's rounds faster than ever. And whether you've been naughty or nice, you could win this Suzuki 600 Katana during "Santa's Sleigh Giveaway" in January.

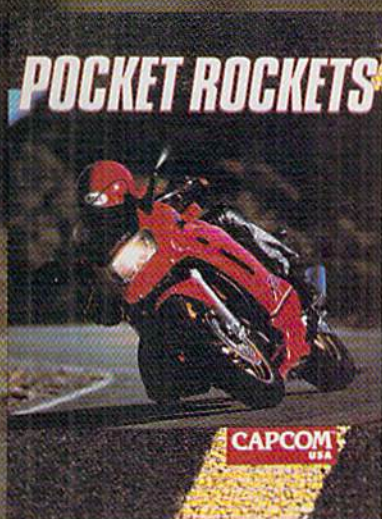
Meanwhile, experience all the thrills and spills of high-speed racing with machines that take you from zero to 60 in under four seconds. Already gaining critical acclaim, *Pocket Rockets* lets you choose from four of the quickest, most exotic bikes on the planet. The action's as real as the adrenaline you'll feel.

Then, enter "Santa's Sleigh Giveaway" from Capcom U.S.A. Besides the chance to win a new Suzuki motorcycle, you could get a Bell full coverage helmet, or Capcom computer game software. Look to enter in all Capcom computer game packages or visit your favorite computer game retailer for more information. Capcom's belated Christmas giveaway is just around the bend so don't miss out on your chance to win!



LEFT: Try your skill against the clock with a couple of laps around the test track. RIGHT: Drag racing demands a quick wrist and fast shifting. Just don't blow the engine!

Circle 19 on Reader Service card.



SWEEPSTAKES RULES How to Enter:

1. NO PURCHASE NECESSARY. Fill out and mail official entry found in package or you can enter by hand printing your name, address and zip code on a 3" x 5" piece of paper and mailing it to CAPCOM Santa's Sleigh Giveaway, 3303 Scott Blvd., Santa Clara, CA 95054. Enter as often as you wish. Each entry must be mailed separately by JANUARY 15, 1990. No mechanical reproductions of entry will be accepted and all mail-in entries must be received at the above address by JANUARY 31, 1990. No responsibility is assumed for lost, late, misdirected, or damaged entries.
2. Prize winners will be determined by means of a random drawing to be conducted by an independent judging organization whose decision shall be final. All prizes listed will be awarded, but there can be only one prize winner per household, group or organization. Odds of winning depend on the number of entries received. Approximate grand prize retail value is as follows: Suzuki Katana \$4,495.00. Winners will be notified by mail by FEBRUARY 15, 1990 and may be required to execute affidavits and advertising release. Taxes on prize winnings are solely the responsibility of the winners.
3. Sweepstakes is open to U.S. residents except employees of CAPCOM U.S.A. and their immediate families, its subsidiaries and affiliates, its advertising and promotional agencies, and the judging firm. Prizes won by minors may be awarded to parent or legal guardian. Void where prohibited or restricted by law. All Federal, State and Local regulations apply. For a list of major prize winners send a stamped, self-addressed envelope to CAPCOM Santa's Sleigh Giveaway Winners List, 3303 Scott Blvd., Santa Clara, CA 95054 by MARCH 31, 1990.

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MAIL RUN

Readers tell about their unusual applications and RUN solves the Case of the Jumping Pointer in RUN Paint.

COMMODORE TRACKS LIFE-SAVING UNITS

I enjoyed reading about the uses Commodore owners have found for their machines ("Sculptor, Lawyer, Editor-in-Chief," *RUN*, August 1989). As a volunteer at the local hospital, I install and troubleshoot their Lifeline Systems. People who live alone and have an ailment that could require immediate attention can press a button on a tiny transmitter that automatically dials the hospital's emergency room to dispatch help to their home.

When I began work on the systems, I found that some units were out but not in use, two were missing, some needed repair, and a small transmitter was missing from some units. With a C-128 spreadsheet I was able to arrange all units in numerical order, determine the status of each unit and the parts needed, and to locate all units.

—ALVAN O. WHITEHEAD
WINCHESTER, KY

THAT'S ENTERTAINMENT!

For the past 16 years, I've operated Germinal Stage Denver, a small, live theatre in Denver, Colorado. We bought our first C-64 in 1984 to help keep track of our growing mailing list. Since then, our use of the 64 has widened extensively, both administratively and artistically.

In '86 we upgraded to a C-128, with two disk drives and an Epson FX-80 printer. We now use Superbase 128 for our mailing list (some 6500 names), for the theatre's records, statistics and subscriber lists, for detailed profiles of our Denver acting pool, for box office lists and even to print tickets. We use FontMaster 128 for all correspondence and to typeset our programs and other promotional material. We use SwiftCalc 128 for our spreadsheet needs, including grant writing and budgeting. The theatre's books are kept on disk, using the Totl. Ledger program for the C-64.

Artistically, we use Superbase 128 for plugging schedules for our stage lights,

and have even formatted it to handle blocking (stage movement) patterns with rudimentary animation. In addition, our CADPAK-128 program was invaluable in rough-designing our new space and for stage set floorplans.

—ED BAIERLEIN
DENVER, CO

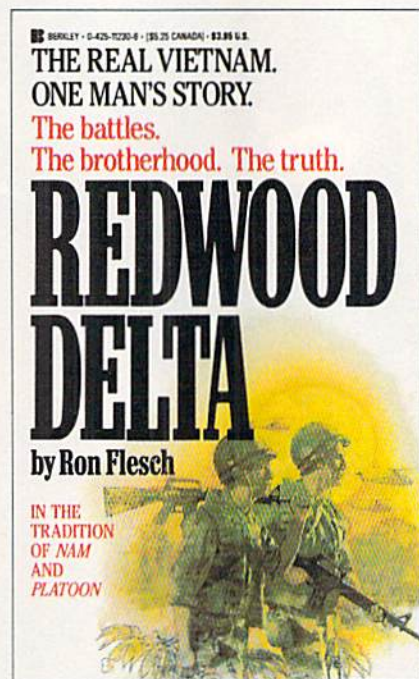
plays for the school drama club.

If I ever change to an IBM clone, it will only be because I'll have to start sending my Word Perfect manuscripts via modem—I don't believe I'll be able to do this with my C-64.

—RON FLESCH
SAN DIEGO, CA

RUN's technical manager, Lou Wallace, says you can send your manuscripts via modem with your C-64.

—EDITORS



NOVEL C-64 USE

Enclosed is my book on Vietnam, *Redwood Delta*, which was completely written and edited on my C-64, using WordPro 3 Plus/64 software. Recently I met another author who had also written a Vietnam memoir, and he was amazed that I had used a Commodore computer to do the job. He thought one had to use an IBM or an Apple. That just goes to show how many people have been brainwashed with that type of nonsense!

My wife uses our computer for her book as well as for correspondence for her wildlife volunteer work. And our daughters use it when they are writing

THE COMMODORE IN INDIA

The Commodore 64 is just beginning its marketing life in India under the name Commander. It is identical to the American version except that it utilizes the color television system used in most European countries. My goal is to make computers accessible to the East Indian musician with low-cost hardware, bilingual operation (Hindi/English) and menu-driven software. I am also presently working on a database of Indian music for educational purposes.

—DAVID COURTNEY
HOUSTON, TX

David is one of the few Americans to excel in the art of the Tabla, which are small hand drums used in Hindu music. He is the author of An Introduction to Tabla. He also accompanies his wife, Chandrakantha, on the Tabla. She is an exponent of the Gwalior tradition of Kheyal singing.

—EDITORS

WRITING SEX AND GORE ON A C-64

Reader Roy Showalter of Baltimore sent the RUN editorial staff a copy of Encore, the Chevron newsletter for Chevron/Gulf retirees. It describes how one Gulf retiree, Donna Williams, started writing a novel the day after she retired. She now uses her 13-year-old daughter's C-64 and a copy of the PaperClip word processor to write sex-and-gore crime thrillers. Her first book, Orchestration in Death, was scheduled to hit

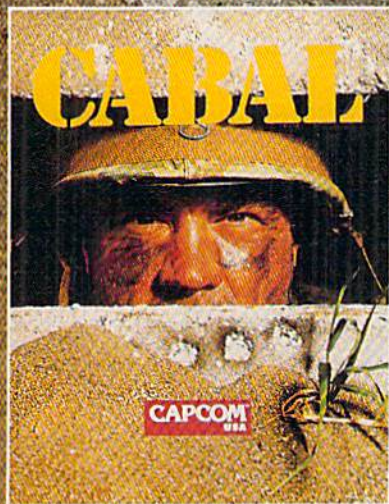
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the Waldenbooks and Crown bookstores last April, and she's already working on her fourth novel. Thanks for the story, Roy, and congratulations, Donna. And thanks to all of you who have contributed their unusual applications to this column.

Readers: If you or someone you know uses a C-64 or 128 computer in an unusual way, let us know about it. Include the user's name, occupation, Commodore system and as much detail about the application as possible. We'll feature them in a future Mail RUN.

—EDITORS

THE MOUSE THAT JUMPED

For the most part, I must concur with the good reviews of the RUN Paint paint-and-draw program in the July 1989 Mail RUN. However, my 1351 mouse works poorly with this program. The pointer jumps all over the screen of its own accord.

—P. CEPERLEY
ANNANDALE, VA

A number of readers who have entered the RUN Paint program experienced the same

problem, which happens with the Japanese-made version of the 1351 mouse. Readers with this version of the mouse will be happy to learn that Robert Rockefeller, author of RUN Paint, has fixed the problem with the following program.

Type in the Mouse Fix listing and save a copy to your RUN Paint disk; then run the program. (Note: You won't be able to use a joystick with the modified RUN Paint program, so keep an unmodified copy on a separate disk.) It will make the necessary changes to RUN Paint and then save the modified copy for you.

With this modified version of RUN Paint, you must plug your mouse into port 1 and use the right mouse button for clicking.

```

1Ø REM FIX MOUSE BUG IN RUN PAI
  NT                               :REM*224
2Ø IF A=Ø THEN A=1: LOAD"Ø:OB.R
  P",8,1                             :REM*51
3Ø POKE 5337,1: POKE 59Ø8,1: PO
  KE 5911,1: POKE 592Ø,1Ø6: PO
  KE 5921,1Ø6                         :REM*96
4Ø POKE 5922,234                       :REM*97
5Ø FOR A=5819 TO 5836: POKE A,2
  34: NEXT                             :REM*2Ø2
6Ø OPEN15,8,15,"SØ:OB.RP": CLOS
  
```

```

E 15                               :REM*2Ø9
7Ø POKE 45,PEEK(174): POKE 46,P
  EEK(175): POKE 43,Ø: POKE 44
  ,17: SAVE"Ø:OB.RP",8 :REM*29
8Ø PRINT"{SHFT CLR}{2 CRSR DNS}
  WHEN USING RUN PAINT,"
                                           :REM*48
9Ø PRINT"PLUG THE MOUSE INTO PO
  RT 1.": PRINT"{CRSR DN}THE J
  OYSTICK NO LONGER WORKS."
                                           :REM*129
1ØØ PRINT"{CRSR DN}USE THE RIGH
  T MOUSE BUTTON TO MAKE": PR
  INT"SELECTIONS."                   :REM*38
1Ø5 END                               :REM*233
11Ø POKE 43,1: POKE 44,8: NEW
                                           :REM*181
  
```

—EDITORS ■

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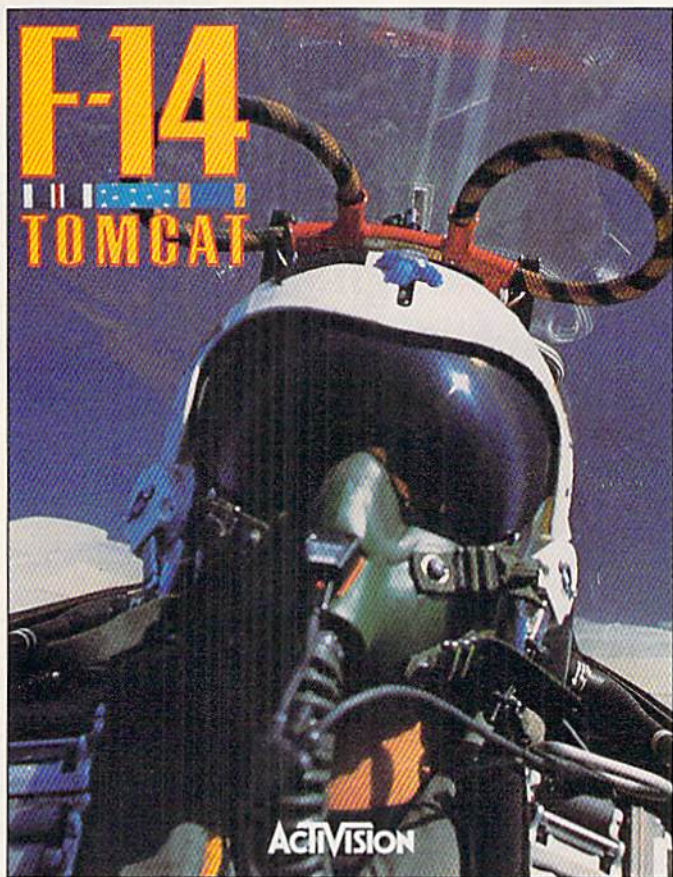
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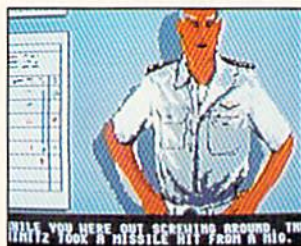
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— *Compute's Gazette*

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— *Computer Gaming World*

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PEOPLE

CONTEST WINNERS "CHEAT DEATH" IN WILD BLUE YONDER WITH "WILD BILL" STEALEY



Miss MicroProse pulls skyward with one of the three winners of the "I Cheated Death with Major Bill" Contest. The successful contestants came from New York, Pennsylvania and California.

Bill Stealey is enthusiastic, infectiously enthusiastic, especially about two things: 1) flying and 2) the computer games developed by MicroProse Software, the company he started in his basement in 1982.

In late August, three MicroProse fans felt Stealey's exuberance up close — and upside down at 5000 feet. They were the winners in the "I Cheated Death with Major Bill" Contest.

For writing the best short essays on why they like MicroProse products, Stealey brought them to MicroProse headquarters in Hunt Valley, Maryland for death-defying, acrobatic jaunts in Miss MicroProse, the



Miss MicroProse is a 1425-horsepower T-28 Trojan.

company's 1425-horsepower T-28 Trojan airplane.

David Thompson, a 47-year-old manager for Hughes Aircraft in California, had written about Gunship, MicroProse's best-selling simulation of the US Army's Apache attack helicopter. "Don't play Gunship as part of your stress management program," he advised.

The MicroProse simulation of nuclear submarine combat, Red Storm Rising (based on the Tom Clancy novel), was the overwhelming favorite of Rich Costello, 38, a captain in the Philadelphia Police Department.

Joe Bianco, 28, an electrical engineering student from Staten Island, New York, had written to say that F-19 Stealth Fighter, the MicroProse game based on America's top-secret radar-elusive jet, had fulfilled his dream of becoming a fighter pilot — even though years earlier his near-sightedness had kept him from pursuing a pilot's career.

On a quiet, humid Sunday afternoon, "Wild Bill" Stealey drove David, Rich and Joe to Martin State Airport near Baltimore. Standing on the wings of Miss MicroProse,



Bill Stealey helps Rich Costello prepare for take-off.

assisted by his son Bill, Jr., Stealey showed the contest winners which cockpit levers to pull and which buttons to push — and which to leave perfectly alone. "If you touch this one," Stealey joked, thinking of the nearby Chesapeake Bay over which they would soon be flying, "I'll call the Coast Guard to pick you up."

Breathtakingly powerful, Miss MicroProse roared to life. In turn, the three winners winged their way skyward with Stealey giving them as much control of the plane as they wanted to take. Above the shimmering Chesapeake, Miss MicroProse looped



David Thompson touches down as Joe Bianco climbs aboard.

and rolled and dashed across the sky. Each session of death-cheating lasted about 30 minutes.

When the flying was over, David Thompson summed it up best. "It was great to see someone like Bill with all that enthusiasm and energy. He makes everything interesting and fun."

Everything. Especially flying and computer games. —Jack Kammer, Gary T. Almes in Hunt Valley

"I Challenge You To Win A Caribbean Vacation!"

— Major "Wild Bill" Stealey

President, MicroProse

Enter "The Major's Mission" Contest and take off to the Caribbean!

Just ask your retailer for details on how to receive your Top Secret documents. They contain your mission orders and a tough set of questions on four of our hottest games: F-19 STEALTH FIGHTER, RED STORM RISING, F-15 STRIKE EAGLE II and M1 TANK PLATOON. To find the answers, read through your documents. Then send in your answers to win!

You'll get to preview these four games, plus you'll have the chance

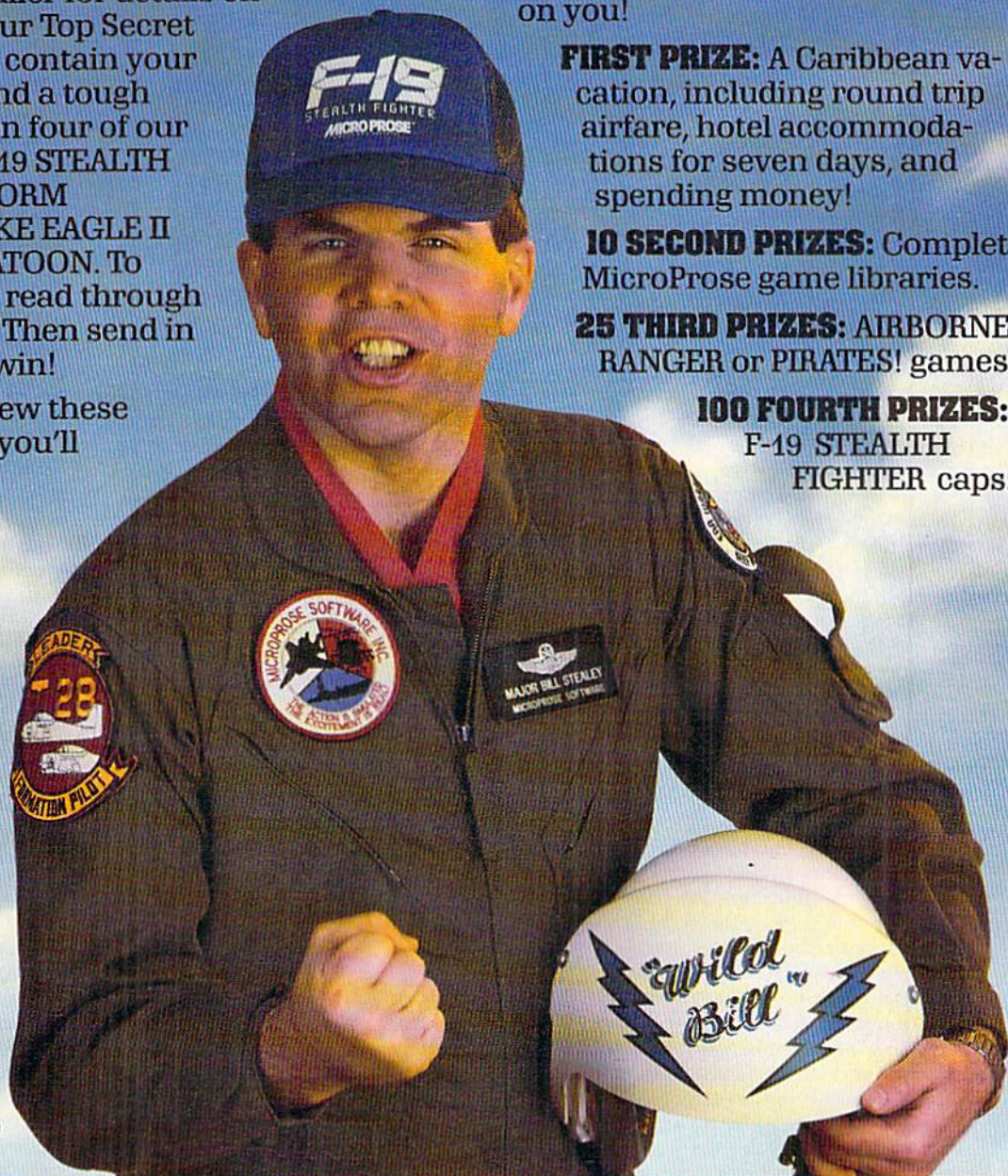
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Compiled by BETH S. JALA

HOLLYWOOD SQUARES A-

"I Agree" "I Disagree"

"Can You Repeat the Question?"

Another summer gone by and you still haven't made it to game-show heaven? Well, thanks to GameTek, you can appear on Hollywood Squares, rake in oodles of money and amaze your friends by placing among the top ten big winners.

As in the television show, Hollywood Squares' computer contestants aim to win by making tic-tac-toe matches. To be able to place an "X" or an "O" on a square, you must decide whether a celebrity guest's answer to some question is correct or not. If you're right, your symbol goes on the board; a wrong decision places your opponent's symbol. The first player to get three in a row wins a match.

The player with the highest total at the end of three contests wins the game and gets a shot at the car. Naturally, winning the automobile makes all the difference when it comes to top placement among the big winners.

The nine celebrities are shown seated in the game grid ("Squares") on the lower right quarter of your screen. You, your opponent and the show's host appear to the left. Most of the upper screen is used to display the question, correct answer and money totals.

Beeps, honks, music and partially animated figures set just the right semifrenzied game-show atmosphere. To hold your interest, Squares offers hundreds of questions that run the gamut from pop trivia to serious history, psychology and science. Also, as in the TV version, celebrities always respond with a humorous answer first.

Squares takes a while to load, and you must flip the disk for the car sequence; otherwise, this is a game that does just about everything right. Restart is fast, you can take on another human or computer player (who does, sometimes, miss a question), and high scores are saved to disk. The program



Turn to your on-screen celebs for answers in Hollywood Squares.

flags each question to avoid repeats; I found that even in a subsequent reboot, only about 15 percent of the questions were oldies.

Maybe you won't toss out your trusty Trivial Pursuit cards, but they're sure to get a much needed rest. For information, value and just plain fun, it's three

REPORT CARD

A Superb!

An exceptional program that outshines all others.

B Good.

One of the better programs available in its category. A worthy addition to your software library.

C Average.

Lives up to its billing. No major hassles or disappointments here.

D Poor.

This program has some problems. There are better on the market.

E Failure.

Many problems; should be deep-sixed!

in a row for Hollywood Squares. (GameTek, 2999 NE 191st St., North Miami Beach, FL 33180. C-64/\$14.95.)

—JEFF HURLBURT
HOUSTON, TX

CHOMP! A-

Find Fishbowl Frenzy

With Your On-Screen Jaws

When playing Paragon Software's Master Ninja, I assumed the role of a deadly martial arts warrior, and I became a daring commando during sessions of Konami's Rush 'N Attack. But, oddly enough, I had far more fun when Cosmi's Chomp! transformed me into a goldfish.

Loading this game finds you in a pet shop's fishbowl. Your ultimate goal is an open window, which you reach by swimming through a series of tanks. At the journey's end, you leap to the freedom of a river that flows next to the store.

You begin your joystick-controlled quest by feasting on harmless brine shrimp, which builds up your strength and body mass. Then it's on to food that fights back—other fish and marine creatures that swallow you unless you devour them first. Successful battles not only bring you closer to the window but also increase your point total for that game.

At the same time, you must avoid the pet shop's cat and monkey, who would love to have you for a snack. For added danger, there are occasional shark attacks. However, by eating a magic waterbug, you temporarily switch sizes with the shark, who then becomes your prey.

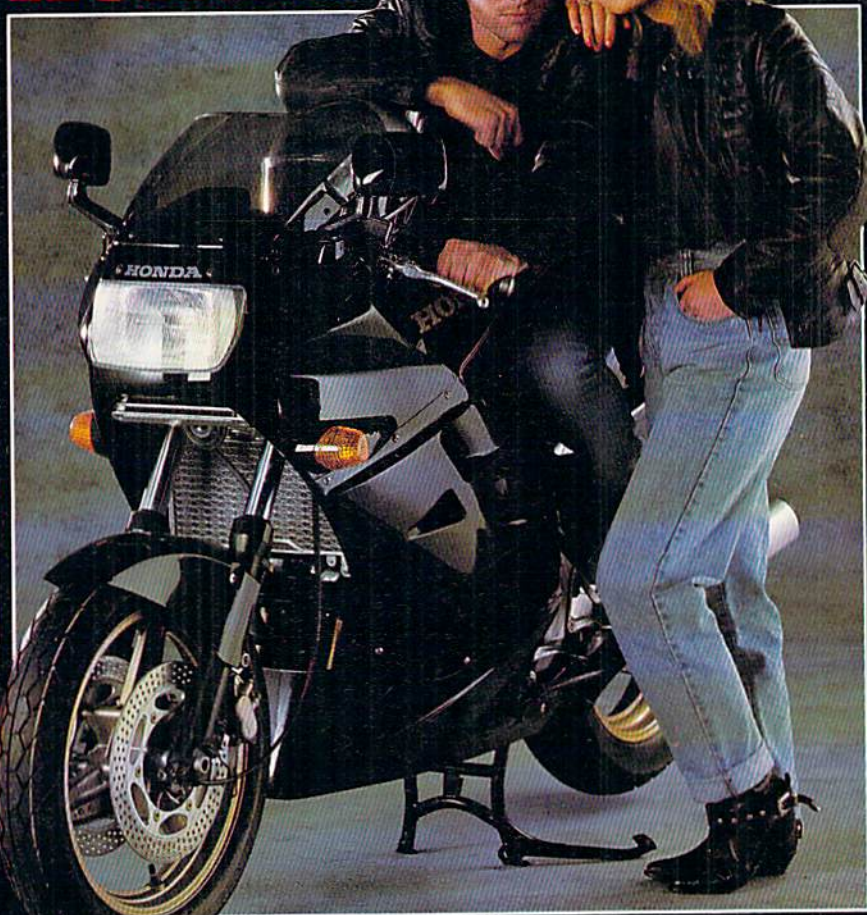
Chomp! includes many amusing features. If, for example, you jump poorly and miss landing in one of the bowls, the scene immediately shifts to the time-honored exit route for many aquarium pets—a flushing toilet!

While the program is cute, it's also challenging. The battles with your opponents demand polished arcade skills, and sound tactical decisions are needed to survive the other hazards in the shop.

Supporting the gameplay are tre- ▶

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mendous graphics and great sound effects. The program's animation provides a convincing illusion of underwater motion.

The software does contain one obvious problem—a wait of approximately three and a half minutes while the game loads. According to the instructions, this dead time is necessary because of the program's vastly extended memory. Cosmi acknowledges this difficulty, stating that "Your patience will be rewarded." Correct!

The only other objection to the software might come from those players who must have awesomely heroic figures in all their games. The plucky little goldfish just won't measure up to that requirement. Others who can appreciate a good game in any type of setting will find much to like in Chomp!. (Cosmi, 431 N. Figueroa, Wilmington, CA 90744. C-64/\$24.95.)

—WALT LATOCHA
OAK PARK, IL

THUNDER BLADE B+

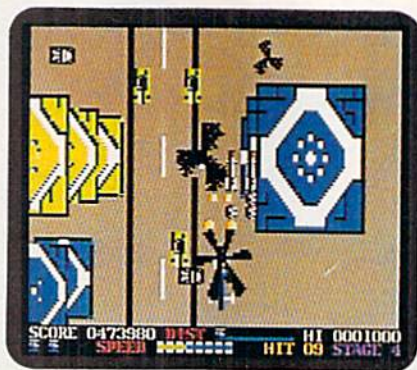
*Climb into This
Attack Chopper and
Exterminate the Enemy*

Thunder Blade is an arcade-style shoot-'em-up that lets you pilot a heavily armored attack helicopter. However, unlike many coin-op translations, Thunder Blade isn't a game that you can simply load and play.

There are several stages to Thunder Blade. Each stage consists of three parts: You can view the action from above your chopper as you maneuver through a heavily fortified canyon; get a first-person perspective from behind while jet fighters fly around you; and return to an overhead view as you make your way over a large, well-armed ship. At the end of each stage, you're awarded points depending on the number of enemies you've eliminated.

Although the game comes with only a small, leaflet-style instruction sheet, you must read it thoroughly to understand how to handle your helicopter. One problem is that each part of the game uses a different method of joystick control. For instance, the forward/backward movement used in the first part affects speed and altitude, but in the third part, even though the perspective is the same, you no longer control those two factors, but rather your helicopter's position on the screen.

While Thunder Blade's unorthodox



The view from above your attack helicopter in Thunder Blade.

control system can be very frustrating at first, the game can be mastered with some practice. Is it worth the effort? I think so. Thunder Blade has a great arcade feel to it, and although the quality of the graphics varies in the different sections, they are quite good overall. I particularly like the last section of each stage, where you can single-handedly battle a huge, heavily armed ship or tank. Simply trying to reach these payoffs will keep you battling through the early stages and coming back for more. (Sega; distributed by Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. C-64/\$34.95.)

—BOB GUERRA
CHARLESTOWN, MA

ROBOCOP B-

*Part Man, Part Machine,
All Business*

It's not pretty in Old Detroit. Whole blocks are swarming with gun-toting thugs; anyone can become a hostage. Things are rough enough for the average citizen, rougher if you're a cop, and really rough for the guy who's actually supposed to do something: RoboCop.

Nominally based upon the movie, RoboCop's scenarios take you from the streets, hostage situations and deadly duels with cop-killers and rogue robots to the final confrontation with OCP Corp's Dick Jones. You have just a few minutes to complete each mission. If time expires or power reaches zero, you're finished!

In five scenarios, you move your RoboCop figure left to right (and sometimes up and down) against colorful, thug-drenched multi-screen backdrops. With responsive six-position-plus-firebutton controls, you direct movement, aim and (with practice!) pull

off combinations like duck-and-fire. To balance the odds, you can pick up precious power-boosting food packets, clips of handy three-way bullets and boxes of gang-busting armor piercers. Backgrounds are not scrolled, but screen changes are so fast you'll hardly notice. Overall, the effect is very similar to an FBI training village, except that everybody is a bad guy, and you are fair game!

Two hostage sequences, including a boardroom shootout, challenge pure aim-and-blast skills. Ammo is limited and, naturally, blowing away a hostage is considered bad form. You get a breather in one scenario where you construct a composite picture of a key gang member.

RoboCop does a lot of things right: action figures are large enough for good detail, and you can look forward to realistic animation. Add an option for stirring music, and the result is a game that looks and sounds great.

Failure to maintain high scores on disk is only a minor annoyance, since in this game, winning each scenario is what counts. The big problem is high difficulty combined with no Save Game option and no provision to let a player skip levels. Expect many, many replays of the first scenario before you even see the second. If you're good—very good—with a stick, you can also expect many hours of thug-blasting fun. (Data East, 470 Needles Drive, San Jose, CA 95112. C-64/\$34.95.)

—JEFF HURLBURT
HOUSTON, TX

DESTROYER ESCORT B+

Prepare to Protect

Your job is to command a destroyer on one of six escort missions in the North Atlantic and to protect your convoy against attacks from enemy planes, surface vessels and submarines.

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Be aware, however, that you must access the disk each time you change battle stations. Even when it isn't being read, the disk continues to spin in the drive—probably to speed access time. ▶

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<<<<K->>>>CURSOR UP, DOWN, LEFT, RIGHT,
<CTRL-D> DELETE, <CTRL-P> NEW PARAGRAPH,
<CTRL-O> QUIT, ANYTHING ELSE TO INSERT?
    
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Your orders are to chaperone the fleet in Destroyer Escort.

Initially, I found this to be disconcerting, but I didn't notice it much after I'd been out at sea for a while.

One of the game's strong points is that you can adjust the ship's speed and heading from the four major battle screens. This is a great advantage when trying to chase down a German U-boat or defend the convoy against an enemy ship.

Another favorable aspect of Destroyer Escort is that you can generate an automatic air, ship or submarine attack with one keystroke at any time during a mission. This is handy if the going gets too slow, or if you simply want additional practice against a particular type of attack.

Destroyer Escort comes with a well-organized user's manual that clearly explains each station's operation and also provides historical commentary on the use of destroyer escorts during WW II, notes on the equipment and tactics of both destroyers and U-boats, and strategy tips based on the experiences of the game's playtesters. (*Medalist International, a division of MicroProse Software, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/\$39.95.*)

—BOB GUERRA
CHARLESTOWN, MA

BAAL B

An Out-of-this-World

Kill and Retrieve Mission

Time to beam out of nowhere to the waiting platform below, as I start this game all over again. Oh no—it's the same green goblin in the same place, snorting fireballs at me. I fought him the last time—drat! Too bad my sixth alter ego got zonked in the previous game, recreating this whole mess. Well, here I go again. Rat-a-Tat-Tat-Tat! Scratch one Slime Mold.

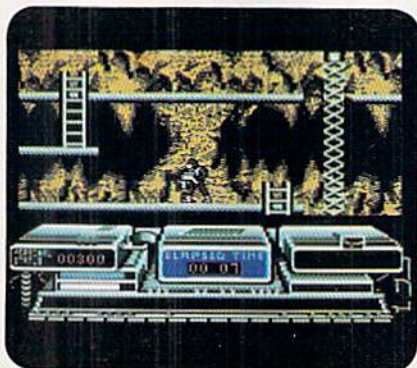
The directions come to mind as I

jump and turn, run and climb. I've got to save the earth from Baal and his evil minions who stole a War Machine. That means a life-and-death struggle in every nook and cranny of this booby-trapped, multi-level lair.

Now to blast that generator. I just love watching its outer casing explode. Target shooting like this scores points, which are shown on the info console at the bottom of the screen. Hmmmm—think I'll climb down that ladder. I'd best be careful; last time I slipped off. Think, think, think—I'm a Time Warrior, trained for strategy.

What's this? A flying serpent, coughing green mucus at me and lowering itself, hovering into my sight. Okay hero, blast away!

Whew, that was close. Now I've got to refuel my laser rifle and find pieces of the War Machine. Then I can transport to the next domain, get a new life and receive an eight-digit code that I



Careful on those ladders; you've got to recover the War Machine in Baal.

can use at any time I want or need to enter this level.

I also need to obtain new cartridges to receive additional firing modes, charge up my personal energy field, find a convenient Hovercraft for easy gliding and practice my movements in response to joystick and keyboard controls.

Whoa! Step easy. Wish the Grand Designer hadn't been so whimsical in places. Some pitfalls can't be avoided, except through trial and error. In addition to that, I have a sense of déjà vu every time I start a new game. It's like seeing reruns of your favorite movie *ad infinitum*.

Oh, well, nothing's perfect. At least the eye-tickling graphics and intricate sound effects have me doing somersaults.

The directions tell me this game has over 250 separate screens with over 400 traps and 100 monsters, so I can't waste time. I've got to beat the evil Baal and his slimy horde.

B--b-but wait. . . what's that *thing* I see. . . ? (*Psygnosis, PO Box 483, Addison, IL 60101. C-64/\$29.95.*)

—JOHN DIPRETE
CRANSTON, RI

SKY SHARK C+

Flying over Enemy Lines

Was Never This Dangerous!

If you've played the arcade hit Sky Shark, you were probably excited to hear that Taito adapted the game for the C-64. In fact, you might even have become frantic if you're familiar with Taito's successful coin-op-to-Commodore conversions of Arkanoid, Operation Wolf and Bubble Bobble.

Relax. After being chopped, sliced and diced to fit into the C-64, Sky Shark lacks the allure of its coin-op progenitor.

Sky Shark is, however, still fun. You command a P-40 fighter plane that flies over a vertically scrolling landscape filled with boats, planes, tanks, forts and other enemy targets.

The key to Sky Shark is to increase your firepower by flying over tokens gained from shooting down eight red planes. Acquiring these tokens increases the P-40's basic two-shot firing rate through a series of six increments.

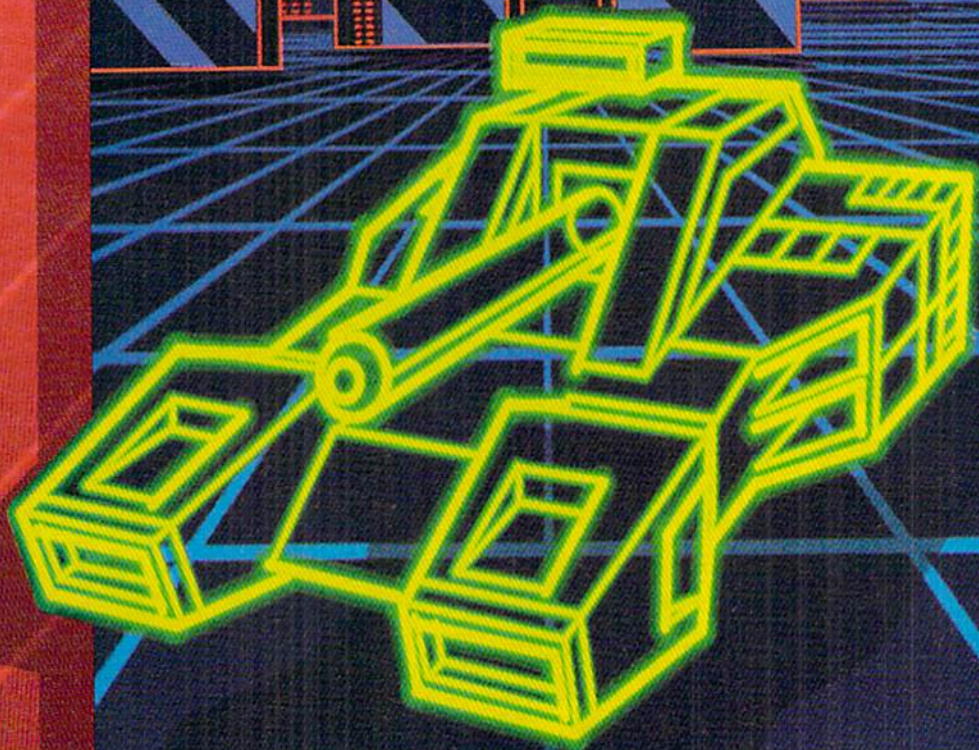
Controlling your plane is intuitive, which invites you to grab your joystick and start flying. In the first mission, you fly over a forest filled with tanks and forts that unleash an incessant torrent of enemy fire (looking remarkably like big yellow tennis balls!). While engaging the ground targets, you encounter plane after plane shooting at you in your flight path. It's generally advantageous to shoot at everything that comes your way.

Sky Shark suffers from three main drawbacks. When your plane is shot down, you start over only at certain predetermined points in each level. Also, dropping a bomb requires wrenching a hand from the joystick—thus relinquishing control of the plane—to slam the space bar. Finally, the game quickly comes down to memorizing the patterns taken by enemy craft.

Despite these drawbacks, Sky Shark is a solid, straightforward, addicting game. It will provide hours of nerve-rattling fun, unless, of course, you tear up the disk in frustration. (*Taito Software, Inc., 267 West Esplanade, North Vancouver, British Columbia, Canada V7M 1A5. C-64/\$29.95.*)

—WILLIAM GATES
DAVIS, CA ■

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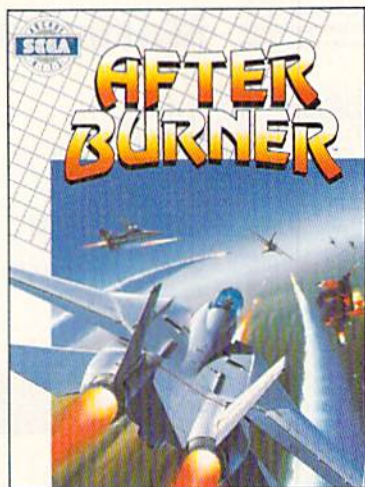


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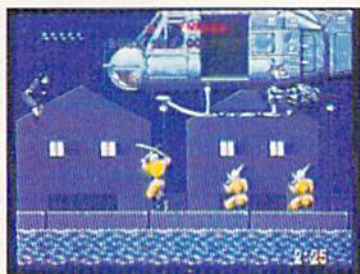
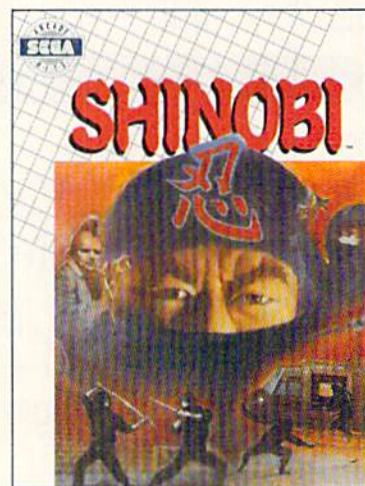


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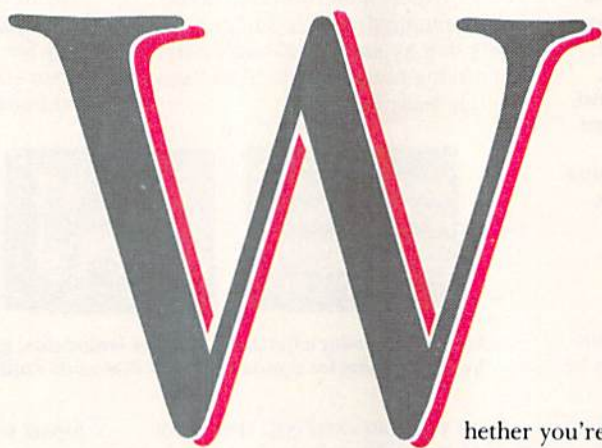
CITY/STATE/ZIP _____ 5411-119

Accredited Member National Home Study Council

Making an Impression with Printers



Looking for outstanding output at reasonable cost? Here's some advice for potential printer purchasers.



Whether you're a first-time buyer or a long-time user, choosing a new printer can be frustrating because there are so many on the market. To make selection easier, *RUN* takes a look each year at new machines that are likely to appeal to C-64 and C-128 users.

Since the last roundup (October 1988), a number of new 9- and 24-pin printers priced below \$600 have appeared. Technology in this price range has advanced significantly, and features such as paper-parking and multiple fonts, formerly found only on high-end printers, have become more common. Consequently, shopping for a printer is more exciting than ever before, and you're more likely to be pleased with your purchase.

A new trend in the printers I tested this year is the use of sound to signal control-panel input. With older machines, one beep usually meant you were out of paper. With 1989 models, two beeps might represent a particular font selection or indicate that you pressed control-panel buttons in the wrong sequence, while three beeps might mean the printer is ready to accept pitch changes via the control panel. ►

By TIM WALSH



Speaking of control panels, two printers in this roundup, the Panasonic KX-P1191 and Star Micronics NX-2400, have panels that are small technological marvels, sporting a multitude of lights and print options. However, they're a bit complicated to use, and not everyone will enjoy memorizing long sequences of button presses. Fortunately, any well-designed software should provide for letting you select print options from the keyboard.

ASCII YOUR PRINTER

In the past, a half dozen or more Commodore-dedicated serial printers would normally appear each year, each equipped with a 6-pin DIN plug so it could be connected to a C-64 or C-128 serial port just like a second disk drive. However, the only Commodore-dedicated serial printers introduced in 1989 have been the Star NX-1000C and the NX-1000C Rainbow, which I reviewed in the April 1989 issue of *RUN*. All the other new machines, from which I selected the ones described here, are Centronics-type parallel printers that are not dedicated to the Commodore and that therefore require an interface.

All of the printers I tested work well with the C-64 and C-128 if one potential problem can be avoided. Since they are not Commodore-specific, they expect to receive commands in standard ASCII for switching print modes and for acti-

vating special features. Now it can happen that even if the output from your computer is in standard ASCII, your interface may convert it to Commodore ASCII, in which case the printer options won't work properly. Compounding this confusion are the scores of different printer drivers found in Commodore programs, plus the wide range of interfaces and printer configurations available.

Fortunately, many programs, including GEOS, have reduced the likelihood of problems by providing custom drivers for every printer, from the current and fashionable to the obsolete and obscure. Besides, most Commodore computerists soon learn the ins and outs of printer control, so they know what works and what doesn't.

If you're a novice printer user and need help getting your printer to work with a specific program, try contacting the software manufacturer or publisher. If the machine won't work properly with *any* software, contact the printer retailer or manufacturer. You can also try your local user's group or an on-line service, such as Q-Link, or a local BBS. Never despair—help is available.

All of the printers I examined for this article come with good documentation, including instructions and listings for programming the printer. The listings are in Microsoft Basic, intended for MS-DOS computers, but C-64 and C-128 programmers can use most of them by

Printer Comparison Chart

Manufacturer	Model	Printer Emulation	Bit Image Density (Low-High dpi)	Print Pitches (cpi)	NLQ Fonts @ 10 or 12 cpi
Star Micronics	NX-2400	Epson LQ series IBM Proprinter	V 6-360 (EP) H 60-360 (EP)	10,12,15,17,20,P	Courier, Prestige, Script
Epson	LQ-510	Epson LQ series	V 6-360 H 60-360	10,12,15,P	roman, sans serif
	LX-810	Epson LX series	V 6-216 H 60-240	10,12,15,20	roman, sans serif
Panasonic	KX-P1180	Epson FX series IBM Proprinter	V 6-216 (EP) H 60-240 (EP)	10,12,15,17,20,P	Courier, bold PS, Prestige, sans serif
	KX-P1191	Epson FX series IBM Proprinter	V 6-216 (EP) H 60-240 (EP)	10,12,15,17,20,P	Courier, bold PS, Prestige, sans serif
Seikosha	SP-1600AI	Epson LQ series IBM Proprinter	V 6-216 (EP) H 60-240 (EP)	10,12,17,20	Standard NLQ
Okidata	Microline 182 Turbo	Okidata Microline	V 6-144 H 72-144	10,12,17	Standard NLQ

cpi=characters per inch; cps=characters per second; CS=speed claimed by the manufacturer; dpi=dots per inch; H=Horizontal; V=Vertical; LQ=Letter Quality; NLQ=Near Letter Quality; P=Proportional; PS=Proportional Spacing; EP=both Epson and IBM Proprinter modes

substituting OPEN 4,4,7 for statements such as WIDTH "LPT1:",255, and PRINT#4 for LPRINT.

INTERFACING

As to interfaces, no new ones have appeared recently, so I stand by my previous favorites: Omnitronix's Hot Shot Plus and Xetec's Super Graphix. I've used both for over a year, printing out text and graphics on many different machines without a hitch.

Regardless of the interface you use, you must be sure it's configured properly for your software. For example, you can keep the interface in MPS-803/1525 mode for normal printing from a word processor, but that mode may not permit underlining and italics. If not, you must set the interface to Transparent mode and select ASCII output from within your software.

Similarly, when printing from graphics-based packages, such as GEOS or RUN Paint, it's important to use the highest density available on your printer to get good definition. For instance, when using an Epson printer driver with an Epson-type printer, you should set the interface to Epson configuration and Transparent mode.

THE LAST WORD

After working with these printers for almost two months, I've picked favorites based on per-

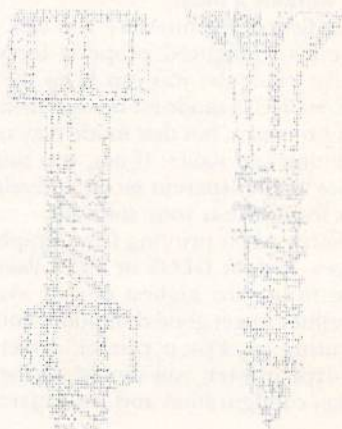
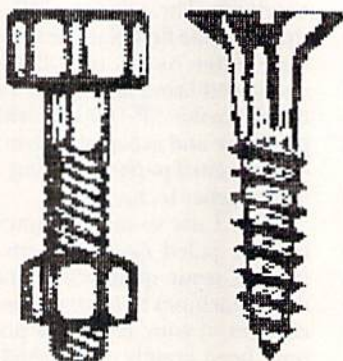
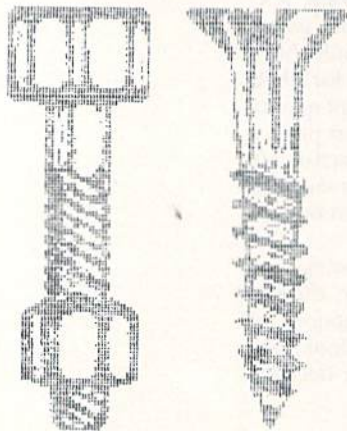
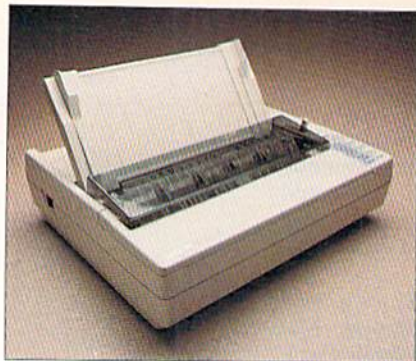
formance and ease of use. In the 24-pin category, I favor the Epson LQ-510 over the Star Micronics NX-2400, both for its darker print in every mode and its superior label handling. If Star could figure out how to darken their print and improve their tractor-feed design, they could corner the 24-pin market on general quality.

As far as the 9-pins are concerned, it's a dead heat for first place between the Panasonic KX-P1191 and the Epson LX-810 for overall excellence. Second place goes to the Panasonic KX-P1180 because of its fine print quality and paper handling. The Okidata 182 Turbo would have shared in the first place tie if its provision for labels were better. As it is, the 182's superb print quality and speed bring it in third. Tailing in last place is the Seikosha SP-1600AI, with an attractive appearance and acceptable print quality and speed, but marginal paper handling and other remnants of an earlier technology.

Since I use so many printers in my work, I've become jaded towards them. However, the improved print quality and increased options of these machines have given me a new outlook. The chances of your making a poor printer decision have been greatly diminished. ►

Tim Walsh, formerly RUN's technical editor, is now a contributing editor to the magazine, as well as technical editor of our sister magazine, AmigaWorld.

NLQ or LQ Matrix @ 10 cpi	NLQ or LQ Print Speed @ 10 cpi (CS)	Draft Mode Print Speed @ 10 cpi (CS)	Italic Characters	Underlining	Super- and Subscripts	Buffer Capacity	Dimensions In Inches
24 x 35 (LQ)	47 cps	142 cps	Yes	Yes	Yes	7K	16.1 x 12.9 x 4.7
24 x 29 (LQ)	50 cps	150 cps	Yes	Yes	Yes	8K	16.5 x 13.7 x 5.5
18 x 12	25 cps	200 cps	Yes	Yes	Yes	4K	16.5 x 13.7 x 5.5
18 x 18	32 cps	160 cps	Yes	Yes	Yes	2K	16.7 x 13.4 x 5.2
18 x 18	40 cps	200 cps	Yes	Yes	Yes	6K	16.7 x 13.4 x 5.2
18 x 18	40 cps	160 cps	Yes	Yes	Yes	2.3K	15.4 x 10.5 x 4.7
18 x 18	40 cps	186 cps	Yes	Yes	Yes	n/a	14.2 x 10.8 x 3.2



THE TRADITION CONTINUES

◆ The Epson LQ-510 ◆

I never met a late model Epson printer I didn't like, and the 24-pin LQ-510 is no exception. It may not be as option-laden as more expensive models—lacking, for instance, a Quiet mode—but what it does is well done, and it even offers some welcome surprises.

The LQ-510 has two letter-quality fonts: sans serif and roman. As I've come to expect from Epson printers, the print in the letter-quality fonts and graphics is excellent for a dot matrix printer. The characters are beautifully detailed.

You can select Condensed mode from the control panel by pressing the dedicated button. Italics cannot be selected from the control panel, but that's fine, because rarely does an entire document need to be in italic, and that mode is available via software commands.

The LQ-510 powers up in Letter Quality mode. To switch to Draft mode using the control panel, four keypresses are required: the On-line button once, the Font button twice and On-line once more.

The SelecType control panel has been kept simple, and, probably to keep costs down, it forgets settings when the printer is turned off. A built-in push, rather than pull, tractor feed makes the LQ-510's paper handling exceptional, and the feed's adjustability makes mailing labels easy to generate.

While lacking a bottom-feed passageway, the LQ-510 has a handy paper-parking feature called SmartPark that toggles between continuous forms and single sheets. Press the Load/Eject button once and the tractor-feed paper retracts so you can friction-feed single sheets; press it again, and the tractor-feed paper advances, correctly positioned for printing to begin just below the top of the form. With the LQ-510, you never have to worry about manually "fine-tuning" the paper position.

... AND CONTINUES AGAIN

◆ The Epson LX-810 ◆

The LX-810, a 9-pin printer, is nearly identical in appearance to the LQ-510. Also like its 24-pin brother, it produces excellent print quality and comes with the SmartPark system, placing it well ahead of other low-end 9-pin printers in paper-handling. The documentation is the most thorough you'll find for a 9-pin printer.

The LX-810 differs from the LQ-510 in its control panel. While still a SelecType, it issues a number of beeps to indicate the various print modes and character pitches. For example, one beep means Draft mode, two mean Roman Near Letter Quality (NLQ) mode and three mean Sans Serif mode. Because the beeps are emitted rapidly, you have to tune your ears a bit to distinguish between two and three, and because the beeps are quiet, they may be a problem for those with impaired hearing. An advantage of the LX-810 control panel is its ability to remember settings, even when the printer is turned off.

Oddly, I found this printer louder and slower in NLQ mode than other Epson printers. Fortunately, a high-speed Draft mode complements the normal Draft mode to speed up the printing process.

Overall, the machine is a joy to use on a daily basis.

A POTENTIAL SUCCESS STORY

◆ The Star Micronics NX-2400 ◆

The NX-2400 features the quality and low price traditional with Star Micronics machines, as well as amenities like the Quiet mode and letter quality printing that are common among 24-pin printers.

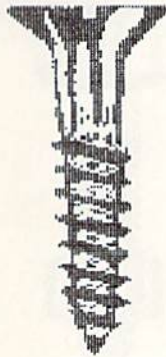
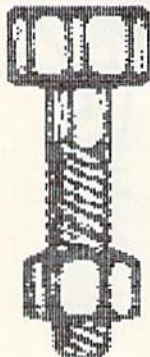
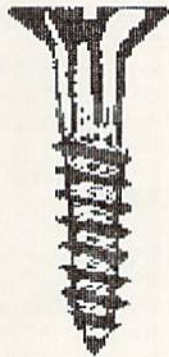
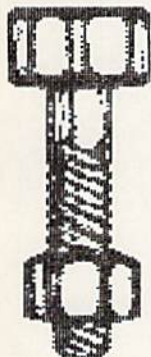
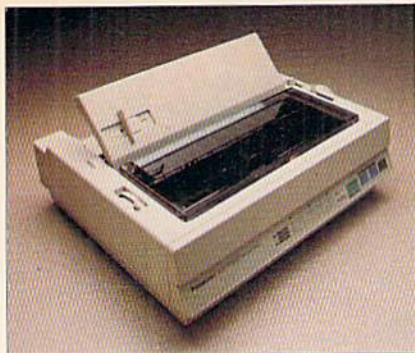
One of the NX-2400's most interesting features is a control panel that offers four fonts, each with an optional Italics mode, and five print pitches. One of the fonts—Script, or long-hand—is particularly impressive for a budget-priced 24-pin printer. Through the control panel, you can also make paper-handling selections, including reverse microfeeding of forms.

On the minus side, the panel is complicated to use. For example, 11 presses on three different buttons are needed to select the Prestige Italic font with a condensed 10-pica pitch.

On power up, the NX-2400 defaults to Letter Quality mode instead of Draft mode—perhaps to increase sales of replacement ribbons. The letter quality print is clear and crisp, but too light in my opinion—even lighter than near letter quality on some 9-pin printers.

Draft mode can be accessed through software, by flipping an internal DIP switch, or by grappling with the control panel. Just press On-Line once, the Style Pitch button once, the Quiet Mode button eight times or the Paper Feed button once, then On-Line again!

The NX-2400 excels at paper-handling, except for labels, which frequently jam in the tractor-feed unit (located under a removable cover at the rear of the printer). It takes little space, having a footprint smaller than many 9-pin machines.



WHAT A BARGAIN!

◆ The Panasonic KX-P1180 ◆

It was a tough order to better the outstanding KX-P1091 9-pin printer, a long-time favorite among Commodore users, but its replacement, the Panasonic KX-P1180, is packed with improvements. The upgrades include a half-speed Quiet mode in NLQ, four control-panel or software-selectable NLQ fonts and a print-head gap-adjustment lever on top of the machine, all of which reflect the new trends in low-end printer technology.

Paper handling has been refined to offer both top- and bottom-feed, plus a fully adjustable push or pull tractor feed for continuous paper. Paper parking has also been added, so you can park continuous forms in the tractor feed while printing individual forms by use of the removable single-sheet guide. Like its predecessor, the KX-P1180 specializes in printing continuous labels; just load the paper and away you go!

In day-to-day use, this printer performs flawlessly. However, until you get the hang of it, selecting print options from the control panel is a bit confusing. First, you must place the printer offline and press the Function button, then press the Form Feed button to cycle forward through the three main print options: Fonts, Pitch and Others. The Others option covers Quiet mode and page length, which can range from 8½ to 14 inches. The Line Feed button cycles back through Others, Pitch and Font, and LEDs indicate the selection you have made.

The KX-P1180 quickly became one of my favorite printers. It's fast, pleasant to use and easy to program via either the control panel or software, and it produces graphics that are second to none for a 9-pin, dot matrix machine. This is an all-around great printer.

A GUSSIED-UP 9-PIN

◆ The Panasonic KX-P1191 ◆

As good as the KX-P1180 is, the KX-P1191 performs even better. It's faster (240 characters per second in Draft mode, versus the 1180's 192 cps), it has an expanded control panel with eight LEDs and four buttons, it provides a larger print buffer (6K versus 2K), and Italic mode is selectable via the control panel. The 1191 also offers a Quiet mode, four fonts, nine pitches and a variety of other print options that rival high-end 24-pin machines.

Looking like a clone of its little brother, the 1191 is equipped with the same first-rate paper handling and turns out the same excellent graphics. Moreover, its small size makes it easy to move from desk to desk or office to office.

With the exception of the 24-pin Epson LQ-510, I found myself using the KX-P1191 more than any other printer in this group. It's fast, software-friendly and relatively quiet, and it produces excellent, dark printouts. ►

THE NUTS AND BOLTS OF GEOS TO RUN PAINT

THE SAMPLE PRINTOUTS accompanying this article were originally GEOS images of bolts drawn with geoPaint by artist Susan Lamb. I imported them into RUN Paint, then printed them. After a little practice using my technique, you too can get geoPaint screens into RUN Paint with a minimum of file fiddling. Here's how I did it:

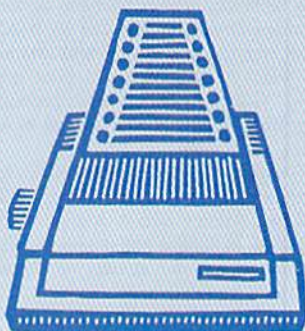
First, I ran the GEOS 2.0 version of geoPaint on a C-128D, loaded the clip art page on RUN's GEOS Power Pak II disk and positioned the page so the full image of the bolts was centered in geoPaint's visible window.

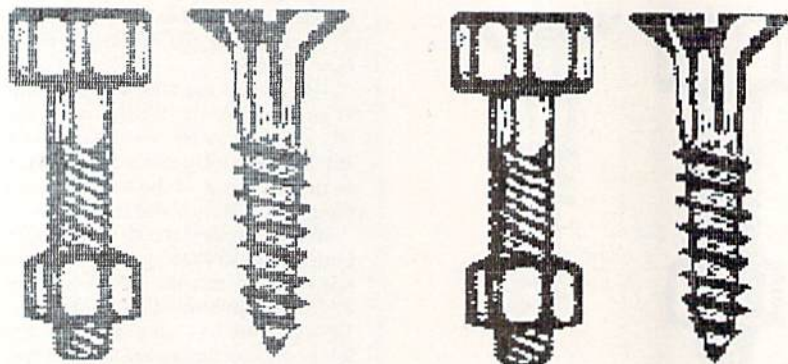
Next, I pressed the C-128D's reset button (the only odd part of this procedure) and ran the GEOS-to-Doodle! utility published in RUN's May 1988 geoWatch column. Only the visible portion of the geoPaint screen was saved to disk as a Doodle! screen-image file. Renaming that file with OPEN 15,8,15,"R0:RPH.GEOS=DD GEOS":CLOSE 15 added the prefix RPH. to the filename, so RUN Paint was able to recognize it as a hi-res screen.

Finally, I printed the image with each printer, keeping my Omnitronix Hot Shot Plus set to Transparent mode and selecting the Epson printer driver from the choices on the RUN Paint print menu.

Give my technique a try the next time you want to import a geoPaint or other GEOS screen into RUN Paint. It's remarkably easy! ☐

—TW





A BLAST FROM THE PAST?

◆ The Seiksha SP-1600AI ◆

With its lack of paper parking, fancy fonts and other amenities, the 9-pin SP-1600AI seems to come from a bygone technological era. Paper handling is clumsy with this machine, and the pull-type tractor feed unit, resting atop the printer, has an unhealthy appetite for even the most carefully aligned continuous paper. Unlike the fully automated Epsons and Panasonics in this printer collection, the SP-1600AI must have paper adjusted manually most of the time, and mailing labels are a "maybe" proposition at best.

On the bright side, the 1600AI's fully programmable control panel makes it easy to set print pitches and margins: Just hold down the On-line button to select the desired settings. Also, while Draft mode is slow (160 cps) and the NLQ characters are marginal, the Graphics mode is fantastic, producing much tighter and darker images than, say, the Star NX-2400. Furthermore, the 1600AI's Epson and IBM modes offer a wide, flexible range of print options, including four pitches, italics, proportional spacing, double-strike and more, all at a relatively low noise level.

The Seiksha pales in comparison to the other printers in this parade, but then, it wasn't built for high-volume output. A busy office environment is definitely not where it belongs. On the other hand, for student or home use, the 1600AI is certainly acceptable.

FRIENDLIER THAN EVER

◆ The Okidata Microline 182 Turbo ◆

Okidata's best 9-pin printer is the Microline 182 Turbo. Following other recent Okidata machines in offering full Epson compatibility, it works well with any C-64 and C-128 software that has either an Okidata or Epson printer driver. Its graphic reproductions are among the darkest and most finely detailed of all the printers in this group, and the control panel is easy to use. You won't be up nights memorizing sequences of button presses in order to operate this printer.

The 182 Turbo offers three print pitches and just one font in NLQ mode. Along with its default Microline mode, it offers an IBM mode with similar pitch and NLQ options.

When it comes to feeding paper through this machine, all is well until you want to print on continuous-feed labels. The tractor-feed sprockets are located at either end of the platen and can be moved only about one inch, so it's impossible to use labels on narrow backing. The paper handling is also marginal. In spite of top- and bottom-feed options for continuous paper, it's difficult to align the paper properly.

Outside of the mailing-label problem, the 182 Turbo is one of my favorite 9-pin printers. ■

Table 1. Retail prices and manufacturers' addresses.

NX-2400

\$529

Star Micronics, Inc.
200 Park Ave.
New York, NY 10166

LQ-510

\$529

LX-810

\$299

Epson America, Inc.
23530 Hawthorne Blvd.
Torrance, CA 90505

KX-P1180

\$299.95

KX-P1191

\$399.95

Panasonic Computer Products
Division
2 Panasonic Way
Secaucus, NJ 07094

SP-1600AI

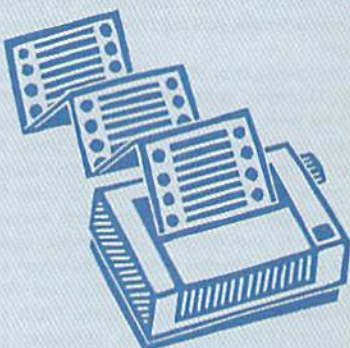
\$329

Seiksha America, Inc.
111 MacArthur Blvd.
Mahwah, NJ 07430

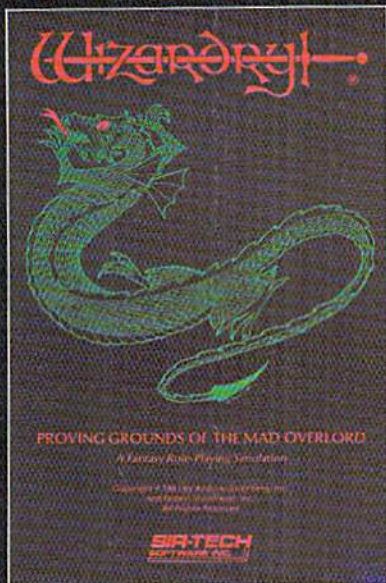
Microline 182 Turbo

\$339

Okidata
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Friendly File Copier

*Fast and menu-driven for ease of use, it works
with any two Commodore-compatible drives.*



By ED PARRY

RUN Copy is a versatile and easy-to-use C-64 multifile/multidrive file copier. It's written completely in machine language for speed, can copy up to 200 files at a time and works with any two C-64-compatible disk drives.

PRELIMINARIES

Type in Listing 1, "runcopy.bas", using *RUN's* Checksum program to catch any typing errors, then save it to disk. The disk must be formatted and must also contain at least 50 free blocks. Running "runcopy.bas" will generate the RUN Copy machine language program on the disk.

The writing process takes about five minutes. As the program runs, it displays the numbers of the lines as it works on them. When the disk-write pass is complete, an "all done" message appears on the screen. You then will have a working machine language file copier!

To use RUN Copy, reset your computer (to make sure memory is clear), then load and run it like any Basic program. It loads quickly and will soon display its self-explanatory main screen. The screen lists various fields, including filename, file type, file size, files chosen to copy, files actually copied, and so forth, and offers a choice of three program options, which are explained below. The screen also contains a window that displays messages as you use the program.

While using RUN Copy, you can reset the program at any input prompt by pressing the left-arrow key. To exit RUN Copy, press the run-stop key when no option is pending.

THE COPY FILES OPTION

Copy Files, the main RUN Copy option, is invoked by pressing the C key.

When the program prompts you for the source and destination drive numbers, specify each by using the cursor-right key to increase the default number, or the cursor-down key to decrease it, and then pressing the return key to enter your choice.

Automatic drive limits range from device number 6 (if you're using a hard drive or RAM disk program) through 30. After you have pressed the return key, RUN Copy automatically checks for the presence of the drive, and, if it doesn't find it there, displays an error message.

Note that when it asks for your input, RUN Copy always offers a logical default. To accept the default, just press the return key.

After you've chosen drive numbers, the program will prompt you for a copy pattern. Any standard directory pattern is acceptable, with the default being *

(all files). Examples of acceptable copy patterns are shown in Table 1.

Next, RUN Copy will read the source directory, display the first filename that fits in the pattern you chose and ask if you want it copied. Press Y, for yes, to place the filename in the program's internal list of files to be copied, or N, for no, to exclude the file from the list. Pressing A will abort the copy option and reset the program.

Once you've specified the files, copying begins. The program uses the standard disk read/write routines, so you can copy files easily from any standard Commodore disk drive to any other. Slower than some commercial copiers with customized DOS routines, RUN Copy compensates through its maximum disk-drive compatibility.

Utilities (such as JiffyDOS) that speed up read/write operations work well with RUN Copy. Also, when you're us- ▶

Table 1. Examples of acceptable copy patterns.

Command	Pattern
*	All files in the directory
*=P	PRG files only
*=S	SEQ files only
A*	Files whose names start with A

Table 2. Examples of acceptable disk commands.

Command	Function
>i0	Initializes a disk (loads the BAM)
>v0	Validates (cleans up) a disk
>n0:target disk,RC	Formats a disk as the target, with an ID of RC
>n0:erase disk	Erases a formatted disk
>u0>m0	Puts a 1571 drive in 1541 mode
>u0>m1	Puts a 1571 drive in 1571 mode
>s0:filename	Scratches a file

RUN it right: C-64; two disk drives

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RDD001

FILE COPIER

ing a C-128 and 1571, you can speed things up by putting the drive in 1571 mode via the RUN Copy wedge. Type `u0>m1` and then press return to activate this mode.

During copying, the R/W field indicators flash back and forth to indicate which phase, read or write, the program is in. Filenames are displayed and the files copied in the order that you chose them.

The * field shows the file number currently being copied, the To Copy field shows the total number of files yet to be done, and the Copied field shows the number of files already completed. A "copy complete" message appears when a copy is finished.

You can abort a copy operation at any time by holding down the run-stop key. It may take several seconds for the abort to take, so keep pressing the key until you see the "copy aborted" message.

THE DISK COMMAND OPTION

This option lets you send any standard C-64 disk command, so you can scratch files, format new disks, validate disks, and so forth, from RUN Copy.



The RUN Copy main screen.

Examples of acceptable disk commands appear in Table 2. For further help, see the section on disk commands in your drive manual.

Press the @ key to activate the Disk Command option. Then use the cursor and return keys to specify the number of the drive that should receive the command.

Here again, acceptable drive numbers range from 6 to 30, inclusive. RUN Copy will verify the presence of the drive and then prompt you for the com-

mand to be sent. Type the command and press return. After execution, the program will display the disk status as returned by the drive.

THE DIRECTORY COMMANDS OPTION

The third RUN Copy option lets you display disk directories. This is similar to using the Disk Command wedge. Specify a drive device number with the cursor and return keys. Then, at the \$0> prompt, enter any valid directory pattern (see Table 1) or press return to accept the * default.

In addition to the normal directory information, RUN Copy shows how many files are in the list. At the "pause" message, press any key to return to the main screen.

RUN Copy might not be the fastest file copier around, but it loads quickly, offers maximum drive compatibility and is easy to use. It will make a valuable addition to your utility library. [R]

Ed Parry, author of EBBs bulletin board software, writes programs and articles for a variety of publications.

Running Instructions: Type in Listing 1, using RUN's Checksum program, save it to disk and run it to create the RUN COPY program.

Listing 1. RUN Copy.Bas program. (Available on ReRun disk. See card at page 44.)

```

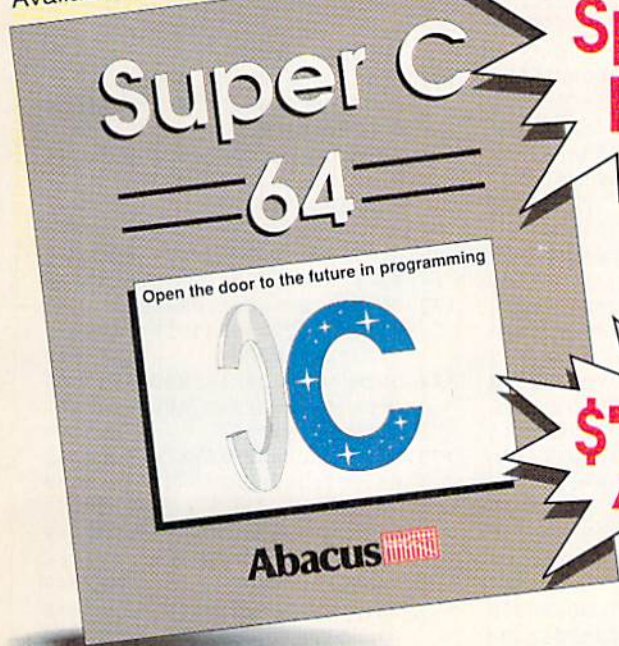
0 REM THIS LISTING CREATES (AND :REM*140
  SHOULD NOT BE CALLED) RUNCOPY :REM*226
  Y :REM*168
5 OPEN 8,8,8,"RUNCOPY,P,W" :REM*76
  :REM*140
6 CT=0:PRINT"(SHFT CLR)":REM*56
10 READ A$:IF A$="-1" THEN CLOS :REM*56
  E8:PRINT:PRINT"ALL DONE!":EN :REM*84
  D :REM*129
12 PRINT"(HOME)READING LINE "+S :REM*148
  TR$(CT):CT=CT+1 :REM*160
15 IF LEN(A$)<62 THEN 55 :REM*160
  :REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22, :REM*242
  20)+MID$(A$,43,20) :REM*181
25 FOR I=1 TO 30 :REM*181
30 C$=MID$(B$, (I*2)-1,2):H$=LEF :REM*209
  T$(C$,1):L$=RIGHT$(C$,1) :REM*85
  :REM*209
35 H=VAL(H$):IF H$>"9" THEN H=A :REM*85
  SC(H$)-55 :REM*99
40 L=VAL(L$):IF L$>"9" THEN L=A :REM*136
  SC(L$)-55 :REM*67
45 BY=H*16+L:PRINT#8,CHR$(BY); :REM*115
  :REM*115
50 NEXT:GOTO 10 :REM*184
55 IF LEN(A$)<21 THEN B$=A$:GOT :REM*184
  O 70 :REM*176
60 IF LEN(A$)<42 THEN B$=LEFT$( :REM*248
  A$,20)+RIGHT$(A$, (LEN(A$)-21 :REM*248
  )):GOTO 70 :REM*248
65 B$=LEFT$(A$,20)+MID$(A$,22,2 :REM*248
  0)+RIGHT$(A$,LEN(A$)-42) :REM*248
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$, (I*2)-1,2):H$=LEF :REM*80
  T$(C$,1):L$=RIGHT$(C$,1) :REM*174
109 DATA F7C914D01CAC2A08F0EE*C :REM*1174
  E2A08A90085D4203508*209D9D2 :REM*174
  09D1220929D00 :REM*174
110 DATA 4CE708C90DF011C95FD0*0 :REM*210
  34C5E08AC2A08C01EF0*C52016E :REM*210
  7AC2A08999F15 :REM*210
111 DATA C8C90DD0A8A90085D4A9*2 :REM*111
  04C16E7A90120550BAE*2D08A90 :REM*111
  020CDBDA92020 :REM*111
112 DATA 16E720E4FFF0FBC90DD0*0 :REM*112
  EA90020550BAD2D088D*2B084C8 :REM*112
  108C95FD0034C :REM*112
113 DATA 5080C91DD00CAD2D08C9*1 :REM*113
  EF0D7EE2D08D0C0C911*D00CAD2 :REM*113
  D08C906F0C7CE :REM*113
114 DATA 2D08D0B04C3909A90120*7 :REM*114
  A0BAE2C08A9002020CDBD*A920201 :REM*114
  6E720E4FFF0FB :REM*114
115 DATA C90DD00EA900207A0BAD*2 :REM*115
  C088D2B084C8108C95F*D0034C5 :REM*115
  E08C91DD00CAD :REM*115
116 DATA 2C08C91EF0D7EE2C08D0*C :REM*116
  0C911D00CAD2C08C906*F0C7CE2 :REM*116
  C08D0B04C8C09 :REM*116
117 DATA A90120C40BAE2B08A900*2 :REM*117
  0CDBDA9202016E720E4*FFF0FBC :REM*117
  90DD006A90020 :REM*117
118 DATA C40B60C95FD0034C5E08*C :REM*118
  91DD00CAD2B08C91EF0*DFEE2B0

```

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8D0C8C911D0C :REM*121
119 DATA AD2B08C906F0CFCE2B08*D
0B84CDF09D01018A20B*A02320F
0FF2035082020 :REM*11
120 DATA 200060EE320818A20BA0*2
320FFFA900AE32084C*CDBDD01
018A209A0220 :REM*110
121 DATA F0FF203508202020060*E
E3308AD3308D003EE34*0818A20
9A0220FF0FAD :REM*195
122 DATA 3408AE33084CCBDD010*1
8A20BA01720FF2035*0820202
0060EE310818 :REM*244
123 DATA A20BA01720FFFA900AE*3
1084CCDBD18A209A00F*20FF2
03508202000 :REM*25
124 DATA 18A209A00F20FFFA900*E
E308AE3084CCBDD18A209A00
720FF203508 :REM*173
125 DATA 20202020018A209A007*2
0FFFA012B99F152016*E7C8C01
5D0F56018A207 :REM*27
126 DATA A00720FFFA002B99F15*2
016E7C8C012D0F56018A207A01
E20F0FF203508 :REM*208
127 DATA 2020200018A207A01E20*F
0FFAE9F15ADA0154CCD*BD4818A
209A01520F0FF :REM*201
128 DATA 68D00B20350805D29A2F*0
5D70060C901D00D2035*080512D
2929A2F05D700 :REM*179
129 DATA 6020350805D29A2F1205*D
79200604818A20DA015*20F0FF6
8F005A9122016 :REM*203
130 DATA E72035089FC44535449*4
E4154494F4E923A0500*604818A
20DA00220F0FF :REM*194
131 DATA 68F005A9122016E72035*0
89FD34F555243459205*3A00604
818A20FA01520 :REM*99
132 DATA F0FF68F005A9122016E7*2
035089F289EC39F2999*20C34F5
05920C6494C45 :REM*237
133 DATA 53920500604818A20BA0*0
220F0FF68F005A91220*16E7203
50896C4524956 :REM*163
134 DATA 452023923A0500604818*A
211A01520F0FF68F005*A912201
6E72035089F28 :REM*153
135 DATA 9E249F299920C4495245*4
3544F52599205006048*18A211A
00220F0FF68F0 :REM*162
136 DATA 05A9122016E72035089F*2
89E409F299920C44953*4B20C34
F4D4D414E4405 :REM*55
137 DATA 006018A213A00220FFFA*A
024A9202016E788D0FA*18A213A
00220F0FF60A9 :REM*89
138 DATA 0120200BA20220C6FFA0*0
020E4FF999E16A5908D*2E08D00
5C8C0FED0EE8C :REM*110
139 DATA 2A0820CCFF60A9022020*0
BAD2E08F003EE2A08A2*0320C9F
FA000B99E1620 :REM*161
140 DATA D2FFC8CC2A08D0F420CC*F
FA900602035080A0E09*931110
02035081FB0C0 :REM*135
141 DATA C0C0C0C0C0C0C0C0C0*C
0C0C0C0B2C0C0C0C0C0*0C0C0C0C
0C0C0C0C0C0C0 :REM*123
142 DATA C0C0C0C0C0C0A0DDDD20*9
ED2D5CEC3CFD092056*312E302
0201FDD209F32 :REM*224
143 DATA 20C45249564520C6494C*4
520C34F50494552201F*DD0DABC
0C0C0C0C0C0C0 :REM*145
144 DATA C0C0C0C0C0C0C0C0B1C0*0
0C0C0C0B2C0C0C0C0C0*0C0C0C0C
0C0C0C0C0C0C0 :REM*127
145 DATA B30DDDD2005D75249545*4
54E20425920C54420D0*4152525
9201FDD2099D5 :REM*40
146 DATA 50444154453A38393032*3
230201FDD0DABC0C0C0*0C0C0C0C
0C0C0C0C0C0C0 :REM*199
147 DATA C0C0C0C0C0C0C0C0B1B2*0
0C0C0C0C0C0C0C0C0C0*0C0C0C0C
0B30D00203508 :REM*141
148 DATA DD209ECE414D453A202*2
0202020202020202020*2020202
01FDD209FD349 :REM*114
149 DATA 5A453A2020202020202*2
01FDD0DABC0C0C0C0*0C0C0C0C
0C0B2C0C0C0C0 :REM*105
150 DATA C0C0C0C0C0C0C0B1C0B2*0
0C0C0C0C0C0C0C0C0C0*0C0C0B30
DDD2099D45950 :REM*33
151 DATA 453A202020201FDD2005*2
33A202020201FDD2005*D22FD72
01FDD209AC24C :REM*144
152 DATA 4F434B53A202020201F*D
D0DABC0C0C0C0C0C0C0*0C0C0C0B
1C0B2C0C0C0C0 :REM*206
153 DATA C0B1C0C0C0C0C0B1B2*0C
0C0C0C0C0C0C0C0C0*0B30DDDD2
096C452495645 :REM*82
154 DATA 20233A2020201FDD201E*D
44F20C34F50593A2020*201FDD2
09EC34F504945 :REM*40
155 DATA 443A2020201FDD0D0020*3
508ABC0C0C0C0C0C0C0*0C0C0C0C
0C0B1C0C0C0C0 :REM*112
156 DATA C0B2C0C0C0C0C0B1C0*0C
0C0C0C0C0C0C0C0C0*0B30DDDD2
09FD34F555243 :REM*249
157 DATA 453A2020202020202*2
0201FDD209FC4455354*494E415
4494F4E3A2020 :REM*61
158 DATA 2020201FDD0DABC0C0C0*0
0C0C0C0C0C0C0C0C0*0C0C0C0C
0C0DB0C0C0C0C0 :REM*231
159 DATA C0C0C0C0C0C0C0C0C0*0C
0C0C0C0B30DDDD2005*03CFD0C
9C5D220CFD0D4 :REM*30
160 DATA C9CFCE033A201FDD209F*2
89EC39F292099C34F50*5920C64
94C4553202020 :REM*51
161 DATA 1FDD0DABC0C0C0C0C0*0C
0C0C0C0C0C0C0C0C0*0C0CDB0C
0C0C0C0C0C0C0 :REM*71
162 DATA C0C0C0C0C0C0C0C0C0*0C
0B30D00203508DD209F*289E409
F292099C44953 :REM*141
163 DATA 4B20C34F4D4D414E4420*1
FDD209F289E249F2920*99C4495
24543544F5259 :REM*166
164 DATA 202020201FDD0DABC0C0*0C
0C0C0C0C0C0C0C0C0*0C0C0C0C
0C0C0C0C0C0C0 :REM*33
165 DATA C0C0C0C0C0C0C0C0C0*0C
0C0C0C0B30DDDD2002*20202020
02005D94520CF :REM*41
166 DATA 4C444520CD4553534147*4
520D7494E444F572020*2020202
020201FDD0DAB :REM*124
167 DATA C0C0C0C0C0C0C0C0C0*0C
0C0C0C0C0C0C0C0C0C0*0C0C0C0C
0C0C0C0C0C0C0 :REM*116
168 DATA C0C0C0C0C0C0C0B30DDD*2
020209BD55345201205*0C3D2D3D
292209B4B4559 :REM*82
169 DATA 5320544F204348414E47*4
5204452495645202320*20201FD
D0D00203508AD :REM*43
170 DATA C0C0C0C0C0C0C0C0C0*0C
0C0C0C0C0C0C0C0C0C0*0C0C0C0C
0C0C0C0C0C0C0 :REM*119
171 DATA C0C0C0C0C0C0C0BD050D*0
020E4FFF0FBC943D003*4CEC11C
940D0034C6610 :REM*54
172 DATA C924D00334CF51020E1FF*D
0E118A217A00020F0FF*60A9012
00E0C20DF0920 :REM*214
173 DATA 81089008A900200E0C4C*3
E1020390C2035089F12*04CFD39
2209E3E005020 :REM*72
174 DATA D608AD9F15C90DD0034C*5
E08A90F20C3FFAD2A08*A29FA01
520BDDFA90FAE :REM*191
175 DATA 2B08A00F20BAFF20C0FF*2
0390C2035089FD35441*5455530
53A201CD35441 :REM*243
176 DATA 4E4442599D9D9D9D9D*9
D0500A20F20C6FF20E4*FF2016E
7A590F0F620CC :REM*47
177 DATA FFA20F20C3FFA900200E*0
C4C3E10A90120E50B20*DF09208
1089008A90000 :REM*207
178 DATA E50B4C3E1020390C2035*0
8129F2430929E3E052A*00A924A
23A003A8D9C15 :REM*18
179 DATA 8E9D158C9E15A92A8D9F*1
5A00120D808AD9F15C9*0DD0034
C5E08AD2A0818 :REM*211
180 DATA AD2A086903A29CA01520*B
DFFA902AE208A00020*BAFF20C
0FFA9932016E7 :REM*98
181 DATA A99F2016E7A9FE8D2908*A
20220C6FF20E4FF20E4*FF20E4F
F20E4FF20E4FF :REM*190
182 DATA AA20E4FF20CDBDA92020*1
6E720E4FF2016E7D0F8*EE2908A
90D2016E720E1 :REM*224
183 DATA FFF02820E4FF20E4FFD0*D
4A900AE290820CDBD20*3508204
449524543544F :REM*79
184 DATA 52592045E4542494553*2
E0D0020CCFFA90220C3*FF20350
80D2020202020 :REM*235
185 DATA 9E2D205041553452020*0
7050020E4FFF0FB4C5E*0820390
CA901209A0B20 :REM*57
186 DATA 8C099008A900209A0B4C*3
E10203909B0F3AD2D08*CD2C08D
0252035089EC4 :REM*115
187 DATA 52495645202327532043*4
14E2754204245205448*4520534 ▶

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14D452E05004C	: REM*17	0FB20E4FF20E4FFF003*4CDC12A	207 DATA A20AA940A230A03A8D81*1
188 DATA EF1120390C2035089FC3*4		90020200B20CC	58E82158C8315A000B9*A115996
F505920D04154544552*4E209E2		198 DATA FFA90220C3FFAD2908C9*0	315998415C8C0
4303A052A00A9	: REM*212	1B0034C5E08A29DA017*86FB84F	208 DATA 10D0F2A92C9963159984*1
189 DATA 24A230A03A8D9C158E9D*1		CA900202A0AA2	5B9A115C89963159984*15C8A92
58C9E15A92A8D9F15A0*0120D80		199 DATA 05A02886FD84FEA90020*7	C996315998415
8AD9F15C90DD0	: REM*247	D0AA0008C30088C3108*8C3208B	209 DATA C8A952996315A9579984*1
190 DATA 034C5E0820390C203508*9		1FB999F15C8C0	5A914A263A01520BDF*A902AE2
ED2454144494E4720D3*4F55524		200 DATA 15D0F618A5FB691585FB*9	C08A820BAFF20
34520C4495245	: REM*4	002E6FC20EA0A20000B*20C40A2	210 DATA C0FFA917A281A01520BD*F
191 DATA 43544F52590500A90120*2		0A20A20390C20	FA903AE2D08A00120BA*FF20C0F
00BA29DA01786FB84FC*18AD2A0		201 DATA 35089FC34F5059205448*4	FA900204F0A20
86903A29CA015	: REM*197	9532046494C45209E28*592F4E2	211 DATA 540C20E1FFD007A9018D*2
192 DATA 20BDFFA902AE2C08A000*2		F41293F052012	F08D00D20790CA90120*4F0AAD2
0BAFF20C0FF9008A902*20C3FF4		202 DATA 20929D0020E4FFF0FBC9*5	E08F0E420CCFF
C5E08A00008C29	: REM*31	9D027A901207D0AA000*B99F159	212 DATA A90220C3FFA90320C3FF*A
193 DATA 08A20220C6FFA00020E4*F		1FDC8C015D0F6	90020200BA901202A0A*AD3208C
FC8C022D0F8A90D2016*E720E4F		203 DATA 18A5FD691585FD9002E6*F	D3108F0034C44
F8D9F1520E4FF	: REM*235	EAD2908CD3008F0194C*9213C94	213 DATA 14A900209A0B20390CAD*2
194 DATA 8DA015A0020A90999F15*C		ED00BAD2908CD	F08F01D203508129EC3*4F50592
8C012D0F820E4FFA690*D05BC92		204 DATA 3008F00A4C9213C941D0*B	0C1424F525445
2D0F5A0020E4	: REM*93	D4C5E08AD3108D0034C*5E08203	214 DATA 442192050020E1FFF0FB*4
195 DATA FF999F15C8A690D04AC9*2		90C20350812C3	C3E10203508129FC34F*505920C
2D0F188A9A0999F1520*E4FFC92		205 DATA CFD0D9C9CEC79200A205*A	34F4D504C4554
0F0F98DB11520	: REM*1	02886FD84FEA2008E30*08A0008	215 DATA 45219205004C3E10
196 DATA E4FF8DB21520E4FF8DB3*1		C33088C3408B1	: REM*42
5A000EE2908B99F1591*FBC8C01		206 DATA FD999F15C8C015D0F618*A	216 DATA -1
5D0F618A5FB69	: REM*245	5FD691585FD9002E6FE*20EA0A2	: REM*74
197 DATA 1585FB9002E6FC20E4FF*D		0000B20C40A20	: REM*121

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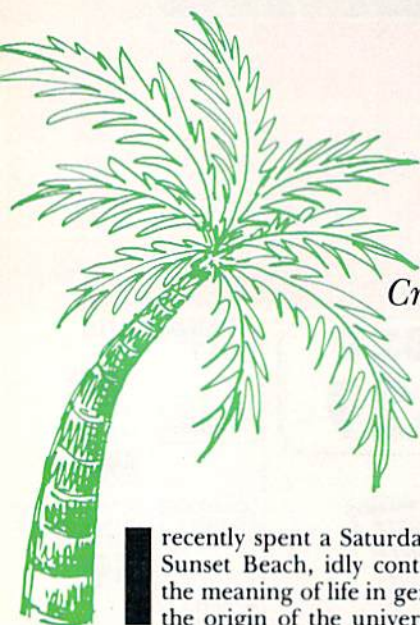
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Caribe Bein'

Create your own online character and mingle with others in Q-Link's new tropical hot spot.



By JOHN RYAN

I recently spent a Saturday night at Sunset Beach, idly contemplating the meaning of life in general, and the origin of the universe in particular. A tropical beach is a good place to do that, especially if it's situated at QuantumLink's new attraction, Club Caribe. As I studied my rugged yet handsome visage (somewhere between RoboCop and Max Headroom) on my monitor, it became apparent that holes in the ozone layer, the search for Spock and the world-wide plankton shortage would have to wait: An island resort beckoned!

Sadly, my good looks are a figment of my C-64's imagination, and the closest I came to sand was the silicon in my computer's central processing unit. Be that as it may, Club Caribe is the nearest many of us will ever come to a tropical resort.

Produced in cooperation with Lucasfilm, Club Caribe is a new interactive online service that incorporates chatting, cartoon animation and real-time simulation into a vacation-like environment. If you belong to a service such as Q-Link, GEnie or American People-Link, you may be familiar with the concept of online chatting; assuredly, it's one of the more popular (and lucrative)

areas offered by the big commercial boards.

Q-Link has taken the concept one step further by incorporating interactive graphics. The result: You can now see who you're talking to and have the opportunity to move from room to room, explore new places and meet new people. Club Caribe is the first and only world-simulation to be implemented on an online chat service.

The Club Caribe environment comes on a double-sided disk ordered directly from QuantumLink (8619 Westwood Center Drive, Vienna, VA 22182; 703-448-8700). (You must also have version 3.0 of Q-Link's program disk.) Once you install the environment on Q-Link's master disk, you can dial Q-Link as usual, then access Club Caribe via the People Connection.

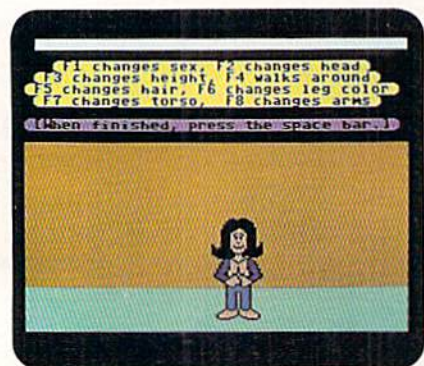
YOU ARRIVE...

On your first visit, you must specify how you want your on-screen self to look. The selection process is straightforward and involves choosing your character's sex, clothes, garment colors and physical attributes. This is really the heart of Club Caribe, for each member is a unique entity—a personality reflected in an on-screen persona.

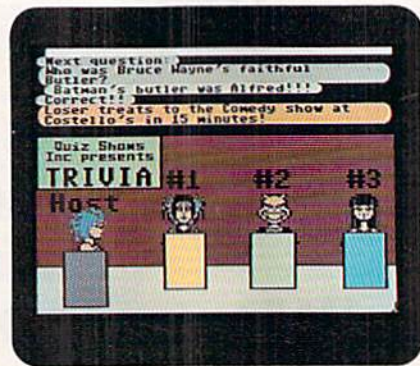
Once past the preliminaries, you can enter the resort as a spectator or guest. As a spectator, your character vanishes and is replaced with a single "eye" in the corner of the screen. This mode provides easy access to any part of the club, even where it's crowded. However, you can't interact with anyone else (which may be fine on your first visit).

As a guest, you guide your character through the club with a joystick. Actions and movements are based on getting, putting, going and doing, each selectable by pressing the joystick in a certain direction.

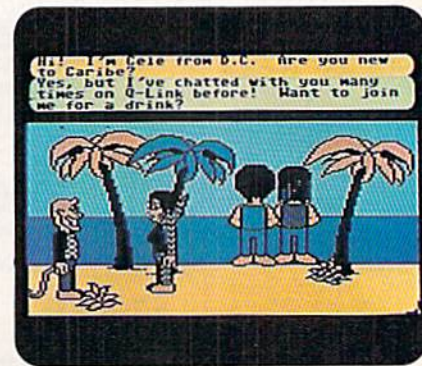
If you've ever played Lucasfilm's Maniac Mansion or Zak MacKraken and the Alien Mindbenders, you'll probably feel comfortable with Club Caribe's user interface and graphics. The graphics, while not sensational, are nicely done considering the limitations of a project this size on an eight-bit machine, and they're presented in a quasi-three-dimensional aspect. The resort is set up like an adventure, with opportunities to pick up items and store them, either in your pockets or in containers that you purchase. Likewise, you can put tokens (the island's currency) into receptacles such as vending machines and teleports, or spend them



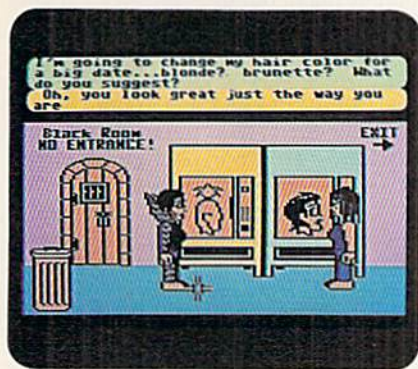
You have a lot of flexibility in designing your character.



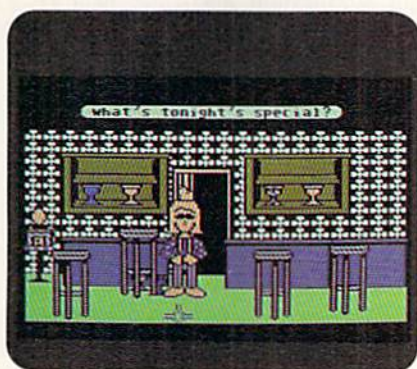
One room lets you exercise your memory skills in competition.



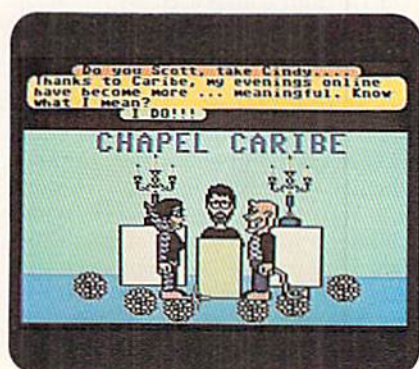
You can meet new or old friends on the beach or in the bar.



If you don't like the way you look, you can make alterations.



A cool drink in Club Caribe's bar is a hot day treat.



There's almost no limit to what can happen in Club Caribe!

Non-Habitat Forming

"If ever there was a wiz that was. . ."
—Chorus from *The Wizard of Oz*

If ever there was a wiz that was, it's Club Caribe, the interactive online extravaganza derived from an idea that lit up in the head of programmer Chip Morningstar some years ago. The idea was Habitat, an immense, graphics-based, interactive world-simulation that Lucasfilm proudly announced in 1986 as the new flagship for the young QuantumLink online service.

It was almost too good to be true, really. Assuredly, everyone knew of the graphics prowess of the C-64, which, incidentally, had grabbed the burgeoning software market by its lapels in 1986. Also well known was Lucasfilm, a young software firm respected for its talent with fractal graphics (*The Eidolon*, *Rescue on Fractalus!* and *Koronis Rift*). They seemed the right company at the right time with the right idea.

The technology that makes Club Caribe work today is nothing more than a step-child of the original Habitat idea. Imagine, if you will, a total graphics environment with over 500 different locations, where each user has a separate room to sculpt and decorate as desired. Imagine a world where adventures await you and where teams can be gathered to search for clues, play capture the flag, and do other things that can be

done in real life. All from the comfort and safety of your home, connected via modem to Q-Link's massive computer in Vienna, Virginia.

Habitat promised to be a dream-world for the online user—an alternate reality, a far cry from the crude CB-type interaction available at the time. So the Commodore world waited with eager anticipation. Now, three years later, Habitat remains an elusive dream, replaced with a pared-down version that incorporates only the essence of the technology that would have brought Habitat to life. While this is not necessarily bad (and "something" is always better than nothing at all), what happened?

Steve Arnold, vice-president and general manager of Lucasfilm, explains: "We found that we had pushed the C-64 to its limits, and, if we had it to do all over again—and I'm not trying to insult C-64 owners—we really would have developed the Habitat program on a different system. Once we finished Habitat and really sat down and looked at it, we realized there was a lot more technology needed to do multiplayer gaming—a lot more than we could effectively do on the C-64. So, Club Caribe uses only the technology that was developed by Lucasfilm for Habitat, because of the limitations of the C-64.

"The concept for Club Caribe was

conceived by Quantum. They designed the environment and activities of the service, using the technology that had been created for Habitat. Which is why, as Quantum presented Club Caribe to the world, it was promoted as a product that used Lucasfilm's Habitat technology."

Whether Club Caribe will evolve into the system envisioned by the pioneers of Habitat remains to be seen, but considering the enthusiastic initial reaction of the public, it's in both Lucasfilm's and Quantum's interest to pursue the idea further.

Arnold remains optimistic about enhancements to Club Caribe. "Certainly, we would be interested in seeing the world of Club Caribe evolve in new directions, based on the things users are interested in and the feedback we get from the people playing it. One of the visions of Habitat was users themselves helping to shape the universe, although that was one of the things that became technically difficult to implement."

Don't get the idea that Club Caribe is a half-baked attempt to implement a vision that was too far ahead of its time. Both Lucasfilm and Quantum are proud of the technology and innovation behind Club Caribe—and rightly so. Club Caribe is light-years ahead of Q-Link's closest competition, and even brighter lights will shine in the future. ☐

—JR

C A R I B E B E I N '

in any of the resort's numerous shops. The Do command is used to manipulate the multitude of objects you'll find at Club Caribe.

Each section of the island is divided into "rooms." When you enter a room, you'll probably find several other guests there, engaged in one activity or other, whether it be idle chatter or exploration. You converse with others by typing comments into a command line, which then appears in a "balloon" over your character. Moreover, your character can walk, jump, wave, point, bend and frown—just about anything to get your point across. Prepare yourself, though: Whereas you're just a "handle" on many online services, any action you take at Club Caribe can be seen by everyone in the room!

Attractions on the island include shops and pubs, special event areas, an arcade, beaches, teleporters, automatic teller machines (for your tokens), and more. A map of the island is included with the software and, until you get familiar with the club's layout, you'll be

referring to it often. As in Q-Link's People Connection, there are help areas and "guides" to assist you through your first few outings.

Although Club Caribe is not the Habitat (see the sidebar) promised over three years ago, it is a unique and fun alternative to chatting by simply typing text on your monitor. However, there are a few minor irritations associated with using the service.

KEEP IN MIND. . .

First, you should have a 1200-baud modem (a Commodore 1670 can be had for about \$60). I didn't even try using 300 baud, because 1200 was difficult enough.

Second, there's a lot of time spent waiting for the disk drive. The drive must load each new area you enter, and while the length of individual loads may be tolerable, when you have to pass through several areas to get to your destination, the minutes add up. The pennies add up too, since Club Caribe is a "plus time" (extra cost) service. At

eight cents a minute, I could see my money flying out the window each time I waited for a disk load.

Third, things can slow down to a crawl when several guests are all doing their thing in the same room. Unfortunately, the C-64 is not a multitasking machine, so while one guest moves across the room, the others are frozen in place. With a lot of people in action, you may be lucky just to get a move in edgewise.

Even after several hours at Club Caribe, there are some attractions I haven't yet visited. There's lots to do and see, especially on Friday and Saturday nights when things are positively hopping! Disk loads notwithstanding, Club Caribe offers a lot of play for the penny. So, if you'll excuse me, I'm off to the beach. Just why *are* whales so big, anyway? ■

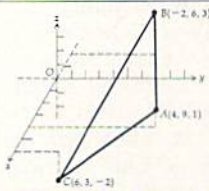
John Ryan, one of RUN's contributing editors, is also an air traffic control instructor. Maybe someday he can really fly to Caribbean beaches.

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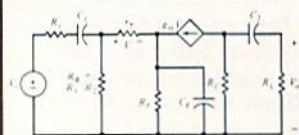


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Build a Better Basic

*Add a host of structured commands
to your C-64's built-in Basic.*



By SCOTT WEISGARBER

The C-64 is a great machine, but the built-in Basic 2.0 lacks some useful commands that exist in more recent versions of the language. Enhanced Basic (hereafter called EB) updates Basic 2.0 by adding If/Then/Else and Case commands, labeled Gotos and Gosubs, and While and Repeat loops. Type in Listings 1 and 2 and save them to disk. Then load and run Listing 2, creating EB on disk. To use, run Listing 1.

IF/THEN/ELSE

A Basic 2.0 If statement can be followed by one and only one Then condition; multiple statements and Else conditions aren't possible. EB remedies this lack with an If/Then/Else sequence. The format for the sequence is as follows:

```
10 IF A=1 THEN
20 PRINT:PRINT "YOU SELECTED 1"
30 PRINT "GOOD CHOICE!"
40 ELSE
50 PRINT "YOU DIDN'T SELECT 1"
60 PRINT "PLEASE SELECT
  ANOTHER"
70 ENDIF
```

If you want to do this with Basic 2.0, you must say:

```
10 IF A=1 THEN PRINT:GOTO 50
20 PRINT "YOU DIDN'T SELECT 1"
30 PRINT "PLEASE SELECT
  ANOTHER"
40 GOTO 70
50 PRINT "YOU SELECTED 1"
60 PRINT "GOOD CHOICE!"
70 (Continue with the program)
```

Clearly, the EB code is easier to understand. You can have as many statements as you want following the Then and Else statements. You can also have a Then without an Else. When you're finished with the sequence, close it with an Endif.

There may be times when you prefer an old-fashioned If—for example, when you want to execute only one statement and you don't want to worry about an Endif. That's no problem; just put the statement to be executed right after the Then statement in the line, as shown below:

```
IF A=1 THEN PRINT "YOU
SELECTED 1"
(Continue with the program)
```

The regular Basic 2.0 If appears to EB as a completely different command than the special EB If. The rule is: When there's something after the Then statement in the same line, it's a regular If; when there's nothing after it, it's treated as an EB If.

CASES OF . . .

The next set of commands is the Cases Of/Case/EndCase/Otherwise/EndCases group. It provides a shorter way to use the If/Then structure when there are many possible values of the checking variable. For example, let's say you were checking user input at a menu. In Basic 2.0, the code might look like this:

```
10 INPUT A
20 IF A=1 OR A=2 THEN GOSUB
  100:GOTO 60
30 IF A=3 OR A=4 THEN GOSUB
  200:GOTO 60
40 IF A=5 THEN GOSUB 300:GOTO 60
50 PRINT "I DON'T UNDERSTAND
  YOUR CHOICE"
60 B=B+1
70 GOTO 10
```

With EB, you can do the same thing using the Case statement:

```
10 INPUT A
20 CASES OF A
30 CASE 1,2:GOSUB 100:ENDCASE
40 CASE 3,4:GOSUB 200:ENDCASE
```

```
50 CASE 5:GOSUB 300:ENDCASE
60 OTHERWISE
70 PRINT "I DON'T UNDERSTAND
  YOUR CHOICE"
80 ENDCASES:GOTO 10
```

Once again, the EB version is easier to understand. You start with a simple Cases Of, followed by the variable you wish to check. Then, after finishing with each Case, you close it with an EndCase. If none of the cases holds true, the Otherwise, if present, is executed. When you're completely finished checking the variable, close the sequence with an EndCases.

The variable may be of any type. If it's named incorrectly, you won't get an error message until it's activated by the first Case statement. For example, in

```
10 CASES OF 1A
20 CASE 1:PRINT:ENDCASE
```

variable 1A is invalid, but you won't get an error message until line 20. Any time you try to compare two different types of data, such as a string and a numeric value, you'll also get the error message at the Case statement.

LOOPING

Until now you had to use a series of If/Thens and Gotos to build a loop, as shown below:

```
10 PRINT "ALMOST DONE"
20 B=B+1
30 IF B<>5 THEN 10
```

EB makes looping easier with the While/Wend and Repeat/Until commands. Here's how they look:

```
WHILE B<>5
  PRINT "ALMOST DONE"
  B=B+1
WEND
```

or

RUN it right: C-64

```
REPEAT
  PRINT "ALMOST DONE"
  B = B + 1
UNTIL B = 5
```

While/Wend and Repeat/Until differ in where the condition is tested. In While/Wend, it's tested at the beginning of the loop; if the condition is false, execution skips to Wend. If the condition is false the first time through the loop, the statements inside the loop will never be executed. Repeat/Until is the opposite. The condition is tested at the end of the loop, so the loop is always executed at least once. Notice that the operators for the two sequences are opposite: While $A < > 5$, Until $A = 5$. Keep this in mind.

GOTO AND GOSUB

The most obscure commands in Basic have got to be Goto and Gosub, because all they contain are meaningless numbers. For instance, in

```
GOTO 100
GOSUB 3000
```

what's in line 100? What does line 3000 do? What happens if you change the line numbers, making line 100 become line 130? This lack of clarity can lead to problems—problems that EB solves by letting you use meaningful labels enclosed in quotes as targets:

```
"MAIN LOOP"
PRINT "*****"
INPUT A
IF A = 1 THEN GOTO "MAIN LOOP"
```

or

```
GOSUB "DO TWICE"
```

```
.
```

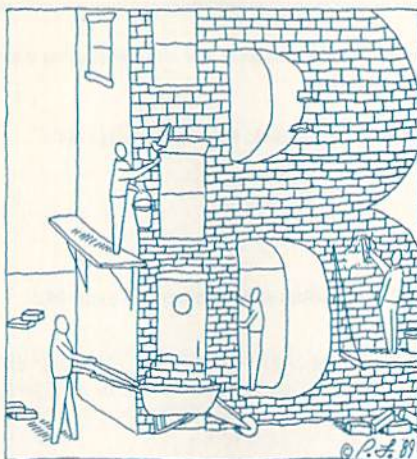
```
"DO TWICE":F = F + 2:RETURN
```

Just remember to put the targets in quotes. Also, notice how the If in the Goto example uses the regular If format.

Of course, what good are labels if you can't use them with the On command? Well, you can, as this example illustrates:

```
INPUT A
ON A GOSUB "ONE","TWO",
"THREE","FOUR"
```

You can do the same with Goto. What



if you want to use regular line numbers as targets? Once again, I anticipated your needs, giving you the option of using either. Both of the formats below are acceptable in EB:

```
GOTO 100
GOSUB "HELLO"
ON A GOSUB 300,500
ON A GOTO "UNO","DOS"
```

INDENTATION

In addition to fancy commands, most Basic interpreters use indentation to make programming easier. Following that lead, I've provided an automatic indenter. It not only works by itself, but it helps you find errors.

Let me explain what I mean by indenting. In the above examples, you may have noticed that statements following special key words are indented. These key words, which I call "indent" words, include If, Cases Of, Case, While and Repeat. Whenever EB hits one of them, it indents all words that follow until an "end" word appears. With the end words—EndCase, EndCases, EndIf, Until and Wend—the indentation ceases. For instance,

```
WHILE A < 1
  (Indented lines)
WEND
```

ERROR-AVOIDING RULES

It's important to adhere to the following rules, or your program won't work properly:

While, Wend, Repeat, Until and Cases Of must be on lines by themselves.

Never put a comma inside the testing part of a Case statement, or you'll get an error.

Make sure that the variable name in a Cases Of statement is no more than nine characters long. If it's longer, it

will cause a syntax error.

You can have only one Cases Of statement active at once. Do not try to nest them.

When using labels with the On command, put nothing after the last label. For example, don't write

```
ON A GOSUB "ONE","TWO":PRINT
"THIS WILL CAUSE AN ERROR"
```

When using an On command, don't switch between EB and Basic 2.0 forms. For instance,

```
ON GOTO 100, "INIT","START",200
```

would cause an error.

Every indent word must have a matching end word. This is where listing the program comes in handy. If the lister comes across an end word without a previous indent word, it highlights the end word and stops the listing. For example, listing

```
WHILE A < 1
  A = A + 1
WEND
ENDIF
PRINT "CONTINUE"
```

would produce the following:

```
WHILE A < 1
  A = A + 1
WEND
ENDIF
```

An easy way to see if you have too many indent words is to list the last line of the program. If it's indented, you have an unpaired indent word.

You can have no more than ten While/Wend and ten Repeat/Until loops going at the same time. That gives you the possibility of 20 nested loops—more than you should ever need. But, just in case, I have provided a few self-explanatory error messages.

PROGRAM NOTE

Enhanced Basic occupies memory from 49152 to 51148 and uses 51149–51221 for miscellaneous data tables. Keep other programs away from both areas. **R** ▶

Scott Weisgarber, a sophomore in high school when he wrote EB, is also familiar with machine language and Pascal and is learning Cobol and Fortran.

B E T T E R B A S I C

Running Instructions: Type in Listings 1 and 2 and save them to disk. Load and run Listing 2 to create "Enhanced Basic" on disk. To use the program, just load and run Listing 1, the loader program.

Listing 1. Enhanced Basic loader program. (Available on ReRun disk. See card at page 44.)

```
10 IF A=0 THEN A=1:LOAD"ENHANCE
   D BASIC",8,1      :REM*187
20 SYS 49152        :REM*186
```

Listing 2. Enhanced Basic creator program. (Available on ReRun disk. See card at page 44.)

```
0 REM THIS LISTING CREATES (AND      48D42A0A9C68D      :REM*58
  SHOULD NOT BE CALLED) ENHANC    104 DATA 43A0A9AC8DEBA6A9C58D*E
  ED BASIC                          :REM*114
5 OPEN 8,8,8,"ENHANCED BASIC,P,   0A99320D2FFA9      :REM*9
  W"                                :REM*50
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ A$:IF A$="-1" THEN CLOS    214A000C8D0FD      :REM*144
   E8:PRINT:PRINT"ALL DONE!":EN   106 DATA CAD0FAAECD7E8E01BD0*D
   D                                :REM*129
12 PRINT"{HOME}READING LINE "+S   205BD0FC89D04      :REM*146
   TR$(CT):CT=CT+1                :REM*141
15 IF LEN(A$)<62 THEN 55          :REM*254
                                   :REM*163
20 B$=MID$(A$,1,20)+MID$(A$,22,   108 DATA 02F079C922D00EC8B900*0
   20)+MID$(A$,43,20)             :REM*242
25 FOR I=1 TO 30                  :REM*181
30 C$=MID$(B$, (I*2)-1,2):H$=LEF  109 DATA 8BF007C98F003C8D0D3*D
   T$(C$,1):L$=RIGHT$(C$,1)      :REM*209
                                   :REM*166
35 H=VAL(H$):IF H$>"9" THEN H=A   110 DATA ADD0C7C9D7D0BBACDC7*C
   SC(H$)-55                       :REM*85
40 L=VAL(L$):IF L$>"9" THEN L=A   84CC4C0BDFDC6F0EB9*0002F0D
   SC(L$)-55                       :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);   :REM*67
                                   :REM*115
50 NEXT:GOTO 10                   :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT   070      :REM*184
   O 70
60 IF LEN(A$)<42 THEN B$=LEFT$(A  113 DATA B90002F008ACD0C7A98B*9
   A$,20)+RIGHT$(A$, (LEN(A$)-2   90002A005B9FB01F004*C8D0F8A
   )):GOTO 70                      :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,2   114 DATA C7AD0F003065ADCDC7C9*C
   0)+RIGHT$(A$, LEN(A$)-42)      :REM*140
                                   :REM*90
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$, (I*2)-1,2):H$=LEF  115 DATA 03C8D0F8C8CAD0F4B9FD*C
   T$(C$,1):L$=RIGHT$(C$,1)      :REM*140
                                   :REM*241
80 H=VAL(H$):IF H$>"9" THEN H=A   116 DATA D2FFACCEC7AECDC7A914*2
   SC(H$)-55                       :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A   84CF3A6A94520D2FFA9*4E20D2F
   SC(L$)-55                       :REM*84
90 BY=H*16+L:PRINT#8,CHR$(BY);   :REM*177
                                   :REM*160
95 NEXT:GOTO 10                   :REM*160
100 REM ENHANCED BASIC DATA STA  117 DATA 4CAAC1A94920D2FFA946*2
   TEMENTS                          :REM*104
101 DATA 00C0A9008D0BC8A2208C*F  07900C9D2D003CE0AC8*2073004
   B00A9A08DFC00B1FB91*FBC8D0F   CE7A7AD0EC8F0      :REM*38
   9EEFC00CAD0F3                  :REM*36
102 DATA AD0BC8D07EA205BD0403*9  84C0FC2207300C9A90*48C9D7B
   D0FC8BDA0C09D0403CA*10F1A9A   044C9D1F0A1C9      :REM*98
   38D1EA0A9C38D                  :REM*183
103 DATA 1FA0A9B88D26A0A9C38D*2  121 DATA CBF052C9D2F055C9FF0*6
   7A0A9758D2EA0A9C48D*2FA0A95   4C9D5D0034C1BC3C9D0*D0034C3
   CC3C9CCD0034C                  :REM*20
122 DATA BFC4C9D3D0034CA1C5C9*C  123 DATA 4CA6C5C922D00C207300*F
   ED0034C7CC5C9CDD003*4CEBC4C   07C922D0F720730020*79004CE
   9D6D0034C62C3                  :REM*76
   7A720CEC6C9D2                  :REM*240
124 DATA D0F9AD0AC8F009CE0AC8*2  073004CE7A7A9024CAB*C6ACD1C
   7C00AB04A980A                  :REM*195
125 DATA A8207300AD7A0099E2C7*A  D7B0099E3C7209EADAD*6100F00
   9EED1C7207900                  :REM*146
126 DATA 4CE7A7A9008D0DC82073*0  0C9D5D011AD0DC8F006*CE0DC84
   CF4C22073004C                  :REM*84
127 DATA E7A7C9CFD0E4EE0DC84C*F  4C2A9004CABC6ADD1C7*F017CED
   1C7ADD1C70AA8                  :REM*241
128 DATA B9E2C78D7A00B9E3C78D*7  B004CDEC2A9014CABC6*ADD2C7C
   90AB01A0AA820                  :REM*79
129 DATA 7300AD7A0099F6C7AD7B*0  099F7C7EED2C7207900*4CE7A7A
   9004CABC62073                  :REM*221
130 DATA 00ADD2C7D005A9044CAB*C  6209EADAD6100F01320*7900F00
   5207300D0FBCE                  :REM*236
131 DATA D2C7207004CE7A7ACD2*C  788980AA8B9F6C78D7A*00B9F7
   78D7B00207900                  :REM*223
132 DATA 4CE7A7EA207900C922D0*0  720ECC34CA3A80602079*004CA0A
   8EA207900C922                  :REM*230
133 DATA D02620ECC3A90320FBA3*2  07300D0FBAD7B0048AD*7A0048A
   D3A0048AD3900                  :REM*246
134 DATA 48A98D4820A3A84CAEA7*2  079004C83A8AD2C008D*FC00AD2
   B001869028DFB                  :REM*116
135 DATA 009003EEFC00AD7B008D*F  E00AD7A0038E9028DFD*00B003C
   EFE00A002B1FB                  :REM*130
136 DATA C922F023B1FBF003C8D0*F  9C8C8B1FBD005A2114C*8BE3C89
   8186DFB008DFB                  :REM*167
137 DATA 009003EEFC004C14C4C8*B  1FDF012C922F00EC93A*F00AC92
   CF006D1FBD0C8                  :REM*171
138 DATA F0E9B1FBF007C922F003*4  C23C4A000B1FB8D1400*8D6500C
   8B1FB8D15008D                  :REM*61
139 DATA 640060EA209EB748AD7A*0  08DCDC7AD7B008DCEC7*20CEC6C
   922D01DCAF00F                  :REM*8
140 DATA 207300F025C92CD0F7CA*D
```

BETTER BASIC

141	DATA 7A00ADCEC78D7B00684C*4 EA9A20E4C8BE3A00AD*4C7F00 5A9034CABC620 :REM*183	150	DATA A004ADDFC78DE0C7B15F*F 065AD0F003050B15FC9*CC904EC 9D2B00DEEE0C7 :REM*60	159	DATA 284C71A8207300C900D0*2 4A003B17A8D3900C8B1*7A8D3A0 0AD7A00186905 :REM*120
142	DATA 7300F00899D5C7C8C00A*D 0F3A9018DD4C7A9008D*D3C799D 5C72079004CE7 :REM*253	151	DATA C9CED03F8D0CC84C1DC6*C 9D7B035ADE0C7F016CE*E0C7B15 FC9D3D027AD0C :REM*100	160	DATA 8D7A008D3D009003EE7B*0 0AD7B008D3E00207900*6045C5 3450043415345 :REM*70
143	DATA A7A000ADD4C7F070B9D5*C 7990002F003C8D0F5A9*B299000 2C8207300F009 :REM*120	152	DATA C8F022A90008D0CC84CE8*C 5A000ADE1C7F03FA002*8CC700B 15F8D1400C8B1 :REM*18	161	DATA 53204F46004341534500*4 F544845525749534500*5748494 C450052455045 :REM*115
144	DATA C92CF005990002D0F1A9*0 0990002AD7A008DCDC7*AD7B008 DCEC7A9008D7A :REM*209	153	DATA 5F8D15004C2DC6C84CC4*C 5C981F0B2C982F0BFC8*4CC4C5A DE1C7F017ADDF :REM*156	162	DATA 41540008B000808B008043*4 1534553008043415345*0057800 0554E54494C00 :REM*8
145	DATA 00A9028D7B00209EADAD*C DC78D7A00ADCEC78D7B*00AD610 0D027207900F0 :REM*39	154	DATA C7CDE0C790006ADE0C78D*D FC7ACDFC7EED30088D0*FAADE0C 78DDFC768A868 :REM*44	163	DATA 544F4F204D414E59204C*4 F4F50D357454E442057*4954484 F55420574849 :REM*25
146	DATA 09C92CD005A00004CF2C4*2 0CEC6C9D4F007C9D3D0*F54CA1C 52073004CE7A7 :REM*51	155	DATA 286060206BA9A9008DDF*C 78DE1C7AD2B008D5F00*AD2C008 D6000A001B15F :REM*181	164	DATA 4CC5454E444946205749*5 4484F55542049C6324E*4420434 1534553204FC6 :REM*46
147	DATA A9054CABC6207900F005*2 07300D0FBA9018DD3C7*2079004 CE7A7ADD4C7D0 :REM*157	156	DATA F030C8C8AD1500D15F90*2 8F00388D00AAD140088*D15F901 BF01920B8C588 :REM*71	165	DATA 554E54494C2057495448*4 F554205245504541D4*4E4F205 0524556494F55 :REM*162
148	DATA 05A9054CABC6ADD3C7D0*0 62073004CE7A720CEC6*C9D3D0F 94CA1C5207300 :REM*64	157	DATA B15F8DCDC788B15F8D5F*0 0ADCDC78D60004C6CC6*18A9018 DE1C74CAA60A :REM*43	166	DATA 53204341534553204FC6*4 2C750C762C772C77EC7*92C72D4 3495341422044 :REM*181
149	DATA 4CE7A7A9008DD4C72073*0 04CE7A720CDBD48AD8D*022902D	158	DATA AABDA6C78D2200BDA7C7*8 D23004C47A4EA0848A0*40A9009 9CCC788D0FA68 :REM*252	167	DATA 45434E41484E452D2020*2 0202020202020202 :REM*211
				168	DATA -1 :REM*26

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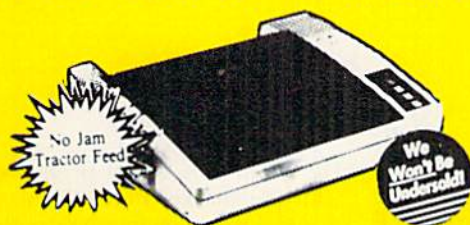
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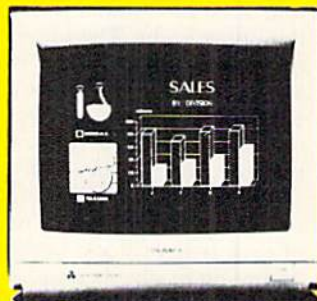
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Volatility is the name of the game in this entertaining stock market simulation.



By MICHAEL BALLARD

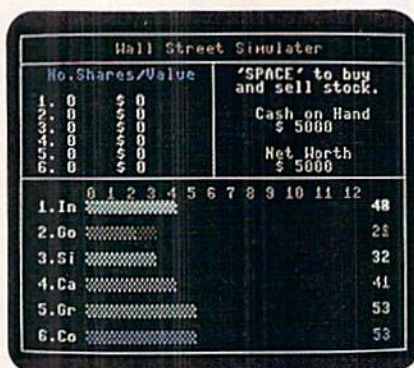
Have you ever wished you could invest in an active stock market without worrying about losing money? Well, now's your chance. In the Wall Street game, you receive \$5000 to invest in any of six stock categories, and the stocks make or lose money for you, depending on the wisdom of your investments.

Wall Street is set in a future time, when many of the stock market regulations have been removed. Because of this, the market is extremely volatile; a stock worth \$100 one day may be worth only \$30 the next, or, in reverse, a stock may suddenly jump from next to nothing to \$30. All this means that you must keep a close eye on the screen activity.

The program, Listing 1, is written entirely in Basic 7.0. Type it in using RUN's Checksum program to detect any typing errors, save a copy to disk and then run it.

First you'll see the trading board itself, with your initial \$5000 shown in the upper right. The upper left shows how many shares of each type of stock you hold, along with their current values. The net worth figure, back in the upper right, reflects your cash on hand plus the value of the stocks you own.

The large area at the bottom of the screen shows the current market value of each type of stock, both graphically and numerically. As soon as the screen is drawn, these figures will start to



Greed can make you lose control—and your fortune—if you're not careful.

change randomly. The most the value of any stock will change per unit time is \$10, with two exceptions: Any stock under \$10 in value may suddenly jump to \$30, and any stock over \$100 may suddenly drop to one-third its value.

So why not buy all cheap stocks and sell the expensive ones? Because any stock under \$10 may also drop to zero, at which point any shares of it you own are removed as worthless. Also, any stock over \$100 may start paying dividends, figured on the number of shares owned.

One last obstacle to profit-making is, of course, taxes. Once a year Uncle Sam subtracts your previous net worth from your current net worth and levies a 25 percent tax on the difference, if positive.

He doesn't tax actual profit, because, with the market deregulated, people would have too many chances to cheat.

Note that losses aren't tax deductible, and if you lose for more than three years in a row, the government will close down your investment activities. Also, if you lose in the market, yet earn dividends, you must pay 25 percent on the dividends. This may leave you with negative cash on hand, but the only consequence is that you can't buy more stock without liquidating some of what you have.

To start buying and selling and making your first million, press the space bar to go to the Activity menu. The options are Buy Stock, Sell Stock, Instructions, Quit and Return to Market. If you opt to buy or sell, you can choose from Industrials, Gold, Silver, Cattle, Grain and Computers.

All price changes are on hold while you're in Activity mode, and you may enter the mode whenever you wish. If it takes a second for the space bar to respond, it's just that the computer is filing the current price changes first.

The game ends when your net worth falls below \$100. Have fun, and remember: Buy low and sell high! ☐

Michael Ballard, who runs a BBS on one of his two C-128s, is attending school part time with the aim of becoming a full-time programmer.

Running Instructions: Type in Listing 1, save it to disk, then run it.

Listing 1. Wall Street program. (Available on ReRun disk. See card at page 44.)

```
10 REM STOCK MARKET SIMULATION          50 PRINTCHR$(14)"(SHFT CLR)":PO      T S)IMULATOR"                :REM*5
   FOR THE C-128                          :REM*82      KE53280,0:POKE53281,0:REM*21  80 PRINT"(CRSR DN)"SPC(7)"FOR T
20 REM BY MIKE BALLARD :REM*230          60 PRINT"(CTRL 2){7 CRSR DN}"S    HE (CTRL 3){SHFT C)-128 (CTR
30 REM DES MOINES, IA 50315              :REM*106      PC(14)"(SHFT W)ALL (SHFT S)T   L 2){SHFT H)OME (SHFT C)OMPU
   :REM*183                                REET"                :REM*53      TER":SLEEP3                    :REM*185
40 REM                                    70 PRINT"(CRSR DN)"SPC(15)"(SHF  90 P$="." :SP$=" " :DD$="$":GS$="
```

RUN it right: C-128 (in 40-Column mode)



```

{COMD +}":CH=5000:AK$="@":SH
$="SHARES":PW=CH :REM*40
100 FORX=1TO6:READS$(X):NEXT
:REM*154
110 FORX=1TO6:SV(X)=50:NEXT
:REM*89
120 GOSUB950:DA=0:YR=0:WO=5000
:REM*198
130 GETN$:IFN$=""THENGOSUB1870:
GOSUB750:GOSUB660:UP=1:GOSU
B990:GOSUB440:GOSUB530
:REM*242
140 DA=DA+1:IFDA=1000THENGOSUB18
0:DA=0:GOSUB1130:GOSUB1910
:REM*186
150 IFTA=1THENTA=0:GOTO90
:REM*61
160 IFN$=CHR$(32)THENGOSUB1170
:REM*65
170 GOTO130 :REM*236
180 REM :REM*66
190 REM TAX TIME :REM*190
200 REM :REM*86
210 GRAPHIC0:PRINTCHR$(19)+CHR$
(19)+"(SHFT CLR)":REM*23
220 YR=YR+1:PRINT"(CTRL 4){2 CR
SR DNs}{3 CRSR RTs}{SHFT Y}
EAR"YR"IS OVER." :REM*216
230 PRINT"(CRSR DN){5 CRSR RTs}
{CTRL 9}{CTRL 3}{SHFT U}{CT
RL 2}N(CTRL 7)C(CTRL 2)L(CT
RL 3)E(CTRL 2){CTRL 7}{SHF
T S}{CTRL 3}A(CTRL 2)M(CTRL
0){CTRL 4}WANTS HIS SHARE
OF THE(6 SPACES)PROFITS.
:REM*47
235 SLEEP3 :REM*154
240 PRINT"(CRSR DN){CTRL 4}{S
HFT Y}OUR NET WORTH AT THE
BEGINNING OF(5 SPACES)THIS
YEAR WAS";:PRINTUSING"###,###,###.###,
###,###.###";PW;:PRINT"."
:REM*220
245 SLEEP3:PRINT"(CRSR DN){SHFT
Y}OUR CURRENT NET WORTH IS
";:PRINTUSING"###,###,###.###,
###";NW :REM*116
250 DF=NW-PW:IFDF=0THENSLEEP3:P
RINT"(CRSR DN){3 SPACES}{CO
MD 7}{SHFT N}O GAIN, NO LOS
S.(2 SPACES){SHFT Y}OU ARE
FREE TO(4 SPACES)CONTINUE."
:SLEEP3:PW=NW:GRAPHIC1:RETU
RN :REM*158
251 IFDF<0THENBEGIN:LY=LY+1:DF=
DF*(-1):PRINT"(3 SPACES){CR
SR DN}{SHFT S}INCE LAST YEA
R YOU HAVE MANAGED TO(4 SPA
CES)LOSE";:PRINTUSING"###,###,
###,###.###";DF;:PRINT"!":SL
EEP3 :REM*180
252 IFDT>0THENBEGIN:LY=0:PRINT"
(3 SPACES){CRSR DN}{SHFT Y}
OU DID HOWEVER EARN";:PRINT
USING"###,###,###.###";DT;:
PRINT"{4 SPACES}IN DIVIDEND
S.":SLEEP3 :REM*34
253 PRINT"{2 SPACES}{CRSR DN}{
CTRL 3}{SHFT U}NCLE {COMD 7
}{SHFT S}AM {CTRL 2}WILL NO
W TAKE HIS 25% CUT(3 SPACES
)OF THAT.":TX=INT(DT/4):DT=
0:NW=NW-TX:PW=NW:CH=CH-TX:C
H$=DD$+STR$(CH):SLEEP3:GOTO
280:BEND :REM*16
254 PRINT"{3 SPACES}{CRSR DN}{C
TRL 3}{SHFT T}HIS IS"+STR$(
LY)+" YEAR(S) OF LOSS.":IFL
Y>3THENGOTO370:ELSEPRINT"(2
SPACES){SHFT L}OSSES FOR M
ORE THAN 3 YEARS AND {CTRL
2}{SHFT U}NCLE {COMD 7}{SHF
T S}AM {CTRL 3}WILL CLOSE Y
OU UP!":PW=NW:SLEEP6:REM*46
255 GRAPHIC1:RETURN:BEND
:REM*230
260 SLEEP3:PRINT"(CRSR DN){3 SP
ACES){SHFT Y}OU HAVE INCREA
SED YOUR NET WORTH BY";:PRI
NTUSING"###,###,###.###";DF
;:PRINT"." :LY=0:SLEEP3
:REM*8
270 PRINT"{2 SPACES}{CRSR DN}{
CTRL 3}{SHFT U}NCLE {COMD 7
}{SHFT S}AM {CTRL 2}WILL NO
W TAKE HIS 25% CUT(3 SPACES
)OF THAT.":TX=INT(DF/4):DT=
0:SLEEP3 :REM*34
280 PRINT"(CRSR DN){3 SPACES}{S
HFT Y}OUR TAX BILL IS";:PRI
NTUSING"###,###,###.###";TX
;:PRINT"." :NW=NW-TX:CH=CH-T
X:CH$=DD$+STR$(CH):PW=NW
:REM*43
290 PRINT"(2 CRSR DNs){CTRL 2}{
9 SPACES}{CTRL 9}{SHFT P}{S
HFT R}{SHFT E}{2 SHFT Ss}{S
HFT SPACE}{SHFT A}{SHFT N}{
SHFT Y}{SHFT SPACE}{SHFT K}
{SHFT E}{SHFT Y}{SHFT SPACE
}{SHFT T}{SHFT O}{SHFT SPAC
E}{SHFT C}{SHFT O}{SHFT N}{
SHFT T}{SHFT I}{SHFT N}{SHF
T U}{SHFT E}{CTRL 0}":POKE2
08,0:GETKEYCOS:GRAPHIC1:RET
URN :REM*31
340 REM :REM*226
350 REM THREE YEARS OF LOSS
:REM*63
360 REM :REM*246
370 PRINT"(3 CRSR DNs){3 CRSR R
Ts}{SHFT Y}OU'VE LOST MONEY
FOR MORE THAN THREE YEARS.
:REM*33
380 PRINT"(CRSR DN){2 CRSR RTs}
{SHFT U}NCLE {SHFT S}AM DOE
SN'T LIKE THAT." :REM*128
390 PRINT"(11 CRSR RTs){SHFT Y}
OU'RE THROUGH!!!" :REM*26
400 SLEEP3:PRINT"(2 CRSR DNs){6
CRSR RTs}{SHFT A}RE YOU BR
OKE?" :REM*23
410 PRINT"(SHFT W)ELL LET {SHFT
U}NCLE {SHFT S}AM HELP!"
:REM*215
420 PRINT"(CRSR DN){SHFT H}ERE'
S $5000 TO TRY AGAIN!"
:REM*65
430 SLEEP2:TA=1:RETURN :REM*115
440 REM :REM*69
450 REM PENNY STOCK OPTION
:REM*232
460 REM :REM*89
470 FORP=1TO6:IFSV(P)<10THENX=P
:P=6:GOTO500 :REM*106
480 NEXT :REM*96
490 RETURN :REM*122
500 CR=INT(RND(0)*20+1):IFCR=5T
HENSOUND1,4000,60,1,2000,20
00:GOTO520 :REM*48
510 RETURN :REM*142
520 SV(X)=30:GOSUB810:RETURN
:REM*205
530 REM :REM*163
540 REM DIVIDENDS :REM*114
550 REM :REM*183
560 FORP=1TO6:IFSV(P)>100THENX=
P:P=6:GOTO590 :REM*154
570 NEXT :REM*190
580 RETURN :REM*208
590 DV=INT(RND(0)*10+1):IFDV=5T

```

W A L L S T R E E T

HENDV=INT(RND(Ø)*1Ø+1Ø):DC=	92Ø SG=28-LEN(GL\$):IFSG=ØTHENRE	1	:REM*7
DV*NS(X):CH=CH+DC:GOTO61Ø	TURN	118Ø PRINT"{CTRL 4}{2 CRSR DNs}	
:REM*16Ø	93Ø FORQ=1TOSG:GL\$=GL\$+SP\$:NEXT	{3 CRSR RTs}1. {SHFT B}UY	
6ØØ RETURN	:REM*228	{SHFT S}TOCK":PRINT"{CRSR	
61Ø GRAPHICØ:PRINTCHR\$(19)+CHR\$(	94Ø RETURN	DN){3 CRSR RTs}2. {SHFT S}	
19)+"{SHFT CLR}{CTRL 2}{6	95Ø REM	ELL {SHFT S}TOCK":PRINT"{C	
CRSR DNs}"SPC(2)"{SHFT A} D	96Ø REM TRADING BOARD DISPLAY	RSR DN){3 CRSR RTs}3. {SHF	
IVIDEND OF"DD\$DV" IS BEING	:REM*51	T I}NSTRUCTIONS":PRINT"{CR	
PAID ON:"	97Ø REM	SR DN){3 CRSR RTs}4. {SHFT	
:REM*172	98Ø COLOR1,2:GRAPHIC1,1:BOX1,2,	Q}UIT":PRINT"{CRSR DN}{3	
62Ø PRINTSPC(2Ø-(LEN(S\$(X))/2))	2,317,197:COLOR1,3:CHAR1,1Ø	CRSR RTs}5. {SHFT R}ETURN	
S\$(X)	,1,"{CTRL N}{SHFT W}ALL {SH	TO {SHFT M}ARKET" :REM*111	
:REM*22	FT S}TREET {SHFT S}IMULATER	119Ø PRINT"{2 CRSR DNs}{3 CRSR	
63Ø IFNS(X)=ØTHENPRINT"{2 CRSR	":COLOR1,2:DRAW1,2,2ØTO317,	RTs){CTRL 9}{COMD 1}{SHFT	
DNs}"SPC(7)"{SHFT T}OO BAD	2Ø:DRAW1,2,9ØTO317,9Ø:DRAW1	E}{SHFT N}{SHFT T}{SHFT E}	
YOU DON'T OWN ANY!":ELSEPRI	,158,2ØTO158,9Ø :REM*12Ø	{SHFT R}{SHFT SPACE}{SHFT	
NT"{2 CRSR DNs}"SPC(12)"{SH	99Ø FORX=1TO6:NS\$(X)=STR\$(NS(X)	N){SHFT U}{SHFT M}{SHFT B}	
FT Y}OU EARNED "DD\$DC!":	):CM(X)=SV(X)*NS(X):CM\$(X)=	{SHFT E}{SHFT R}{SHFT SPAC	
:REM*24Ø	STR\$(CM(X)):CS\$(X)=STR\$(X)+	E}{SHFT T}{SHFT O}{SHFT SP	
64Ø PRINT"{2 CRSR DNs}"SPC(9)"{	P\$+NS\$(X) :REM*63	Ace}{SHFT C}{SHFT H}{2 SHF	
SHFT P}RESS A KEY TO CONTIN	1ØØØ IFCM(X)=VA(X)THEN1Ø3Ø:ELSE	T Os){SHFT S}{SHFT E}{CTRL	
UE"	VA(X)=CM(X) :REM*166	Ø}"	
:REM*131	1Ø1Ø IFLEN(CS\$(X))<9THENCS\$(X)=	12ØØ GETKEYM\$:M=VAL(M\$):IFM<1ØR	
65Ø GETKEYG\$:GRAPHIC1:GOSUB113Ø	CS\$(X)+SP\$:GOTO1Ø1Ø	M>5THEN12ØØ:ELSEIFM=5THENG	
:RETURN	:REM*253	RAPHIC1:GOSUB113Ø:UP=1:GOS	
:REM*98	1Ø2Ø IFLEN(CM\$(X))<7THENCM\$(X)=	UB99Ø:RETURN :REM*217	
66Ø REM	CM\$(X)+SP\$:GOTO1Ø2Ø	121Ø ONMGOSUB126Ø,144Ø,159Ø,176	
67Ø REM STOCK MARKET CRASH	:REM*149	Ø :REM*226	
:REM*143	1Ø3Ø NEXT	122Ø GOTO117Ø	
68Ø REM	:REM*61	:REM*6	
:REM*52	1Ø4Ø COLOR1,7:CHAR1,3,3,"{CTRL	123Ø BLOCKS FREE. :REM*2Ø3	
69Ø FORP=1TO6:IFSV(P)>1ØØTHENX=	N){SHFT N}O.{SHFT S}HAES/	124Ø REM BUY OPTION :REM*54	
P:P=6:GOTO72Ø	{SHFT V}ALUE" :REM*16	125Ø REM :REM*116	
:REM*137	1Ø5Ø IFTT=1THENTT=Ø:CHAR1,1,T+4	126Ø RV=Ø :REM*2ØØ	
7ØØ NEXT	,"{17 SPACES}" :REM*159	127Ø WINDOW6,4,35,2Ø,1 :REM*166	
:REM*87	1Ø6Ø COLOR1,8:FORX=5TO1Ø:CHAR1,	128Ø PRINT"{HOME}{CTRL 4}" :FOR	
71Ø RETURN	1,X,CS\$(X-4):CHAR1,1Ø,X,DD	X=1TO6:X\$=STR\$(X):IFX=RVTH	
:REM*61	\$+CM\$(X-4):NEXT:IFUP=1THEN	ENPRINT"{CTRL 9}";:REM*187	
72Ø CR=INT(RND(Ø)*2Ø+1):IFCR=3T	UP=Ø:RETURN :REM*81	129Ø PRINT"{3 CRSR RTs}"+X\$+P\$+	
HENSOUND3,5ØØØ,1ØØ,2,5ØØ,1Ø	1Ø7Ø FORX=1TO6:X\$=STR\$(X):SS\$(X	S\$(X)+" :PRINTTAB(2Ø)+DD	
ØØ,3:GOTO74Ø	)=X\$+P\$+LEFT\$(S\$(X),3)+SP\$	\$+SV\$(X)+"{CTRL Ø}":NEXT	
:REM*96	:NEXT :REM*77	:REM*1Ø7	
73Ø RETURN	1Ø8Ø FORX=13TO23STEP2:CHAR1,1,X	13ØØ IFRT=1THENRT=Ø:PRINT"{5 CR	
:REM*1Ø7	,SS\$(((X-1)/2)-5):NEXT	SR DNs)":RETURN :REM*113	
74Ø SV(X)=INT(SV(X)/3):GOSUB81Ø	:REM*126	131Ø PRINT"{CRSR DN}{4 CRSR RTs	
:RETURN	1Ø9Ø COLOR1,3:CHAR1,7,12,"Ø 1 2	}{SHFT C}ASH ON HAND: "+CH	
:REM*213	3 4 5 6 7 8 9 1Ø 11 12"	\$:REM*213	
75Ø REM	:REM*126	132Ø PRINT"{CRSR DN}{CTRL 9}{CO	
:REM*126	11ØØ FORX=1TO6:SV\$(X)=STR\$(SV(X)	MD 1){SHFT E}{SHFT N}{SHFT	
76Ø REM MARKET CHANGES	):NEXT :REM*162	T}{SHFT E}{SHFT R}{SHFT S	
:REM*81	111Ø FORX=13TO23STEP2:COLOR1,((	PACE){SHFT N}{SHFT U}{SHFT	
77Ø REM	(X-1)/2)-4):CHAR1,7,X,"{11	M}{SHFT B}{SHFT E}{SHFT R	
:REM*146	COMD +s)":CHAR1,35,X,SV\$(	){SHFT SPACE}{SHFT T}{SHFT	
78Ø X=INT(RND(Ø)*6+1):Y=INT(RND	((X-1)/2)-5):NEXT :REM*181	O}{SHFT SPACE}{SHFT P}{SH	
(Ø)*1Ø+1)	112Ø COLOR1,8:CHAR1,22,3,"{CTRL	FT U}{SHFT R}{SHFT C}{SHFT	
:REM*146	N}'{SHFT S}{SHFT P}{SHFT	H}{SHFT A}{SHFT S}{SHFT E	
79Ø Z=INT(RND(Ø)*2+1):IFZ=2THEN	A}{SHFT C}{SHFT E}' TO BUY	){SHFT SPACE}{SHFT S}{SHFT	
Y=Ø-Y	":CHAR1,22,4,"{CTRL N}AND	T}{SHFT O}{SHFT C}{SHFT K	
:REM*Ø	SELL STOCK." :REM*238	}" :REM*221	
8ØØ SV(X)=SV(X)+Y	113Ø COLOR1,6:CHAR1,24,6,"{CTRL	133Ø PRINT"{CRSR DN}{CTRL 9}{SH	
:REM*223	N){SHFT C}ASH ON {SHFT H}	FT E}NTER 'Ø' FOR NO PURCH	
81Ø GOSUB84Ø:GOSUB87Ø:IFSK(X)=1	AND":CM\$=STR\$(CH):CHAR1,26	ASE" :REM*234	
THENRETURN:ELSE:SV\$(X)=STR\$(	,7,"{1Ø SPACES}":{2 SPACES	134Ø GETKEYN\$:N=VAL(N\$):IFN<ØOR	
SV(X))	}CH\$=DD\$+CM\$:CHAR1,26,7,CH	N>6THEN134Ø:ELSEIFN=ØTHENP	
:REM*8Ø	\$:RETURN :REM*119	RINTCHR\$(19)CHR\$(19):RETUR	
82Ø W=((X+5)*2)+1):COLOR1,X+1:	114Ø REM :REM*6	N :REM*92	
CHAR1,7,(((X+5)*2)+1),"{32	115Ø REM BUY SELL MENU :REM*126	135Ø RV=N:RT=1:GOSUB128Ø:REM*23	
SPACES}":CHAR1,7,(((X+5)*2)	116Ø REM :REM*18	136Ø PRINT"{CRSR DN}{2 CRSR RTs	
+1),GL\$+SV\$(X):IFSV(X)=12ØØ	117Ø PRINT"{SHFT CLR}":GRAPHICØ	){SHFT H}OW MANY SHARES";	
RSV(X)=1THENSK(X)=1:REM*215	:COLORØ,1:WINDOW7,4,35,2Ø,	:REM*253	
:REM*215			
83Ø SLEEP1:RETURN			
:REM*155			
84Ø IFSV(X)<=ØTHENSV(X)=Ø			
:REM*166			
85Ø IFSV(X)>12ØTHENSV(X)=12Ø			
:REM*167			
86Ø RETURN			
:REM*233			
87Ø GL\$="" : IFSV(X)=12ØTHENGL\$=G			
S\$+GS\$			
:REM*85			
88Ø IFSV(X)<12ØANDSV(X)>1THENSK			
(X)=Ø			
:REM*38			
89Ø IFSV(X)=ØTHENGL\$="" : SG=28:G			
OSUB2Ø1Ø:NS(X)=Ø:NS\$(X)=STR			
\$(NS(X))			
:REM*38			
9ØØ GL\$=GL\$+GS\$:SG=INT(SV(X)/1Ø			
):IFSG<1THENGOTO92Ø			
:REM*7			
91Ø FORQ=1TOSG:GL\$=GL\$+GS\$:GS\$:			
NEXT			
:REM*81			

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1370	INPUTHS\$:HS=VAL(HS\$):IFHS=<0THENGOTO1260 :REM*37	1580	GOTO1440 :REM*122	Y EXCEPTION TO THE \$10(2 SPACES)GAIN LIMIT) AS CHEAP (PENNY) STOCKS(5 SPACES)SOMETIMES DO." :REM*121
1380	AM=HS*SV(N):IFAM>CHTHENPRINT"(CRSR DN){CTRL 3}{CTRL 9}{CRSR RT}{SHFT Y}OU DON'T HAVE ENOUGH MONEY!":SLEEP2:GOTO1260 :REM*15	1590	REM :REM*195	1710 PRINT"{CTRL 1}{2 CRSR Dns}"SPC(8)"(SHFT P)RESS ANY KEY TO CONTINUE":GETKEYQ\$:REM*203
1390	CH=CH-AM:CH\$=DD\$+STR\$(CH) :REM*68	1600	REM INSTRUCTIONS :REM*134	1711 PRINT"{SHFT CLR}{CTRL 3}{2 CRSR Dns}{3 SPACES}{SHFT Y}OU ARE TAXED AT A RATE OF 25% EACH(2 SPACES)YEAR.(2 SPACES){SHFT J}UST AS THE MARKET REGULATIONS(3 SPACES)HAVE CHANGED, {SHFT U}NCLE {SHFT S}AM HAS CORRECTED(3 SPACES)SHORTCOMINGS IN THE "; :REM*211
1400	NS(N)=NS(N)+HS:NS\$(N)=STR\$(NS(N)):GOTO1230 :REM*107	1610	REM :REM*223	1712 PRINT"TAX LAWS AS WELL.(3 SPACES){SHFT B}ECAUSE OF THESE YOUR TAXES ARE GUARANTEED TO BE PRETTY STEEP." :REM*39
1410	REM :REM*23	1620	PRINT"{SHFT CLR}{CTRL 3}":COLOR0,15:PRINTCHR\$(19)+CHR\$(19) :REM*153	1713 PRINT"{CRSR DN}{3 SPACES}{SHFT T}HE TAXES ARE FIGURED NOT ON PROFITS BUT ON INCREASED NET WORTH AND WHAT EVER DIVIDENDS YOU HAVE EARNED THROUGH THE(3 SPACES)YEAR. "; :REM*115
1420	REM SELL OPTION :REM*254	1630	PRINTSPC(15)"{SHFT I}{SHFT N}{SHFT S}{SHFT T}{SHFT R}{SHFT U}{SHFT C}{SHFT T}{SHFT I}{SHFT O}{SHFT N}{SHFT S}" :REM*160	1714 PRINT"{SHFT L}OSSES HOWEVER ARE NOT DEDUCTIBLE. {SHFT A}LSO EVEN IF YOU HAVE A LOSS YOU STILL MUST PAY TAXES ON EARNED DIVIDENDS." :REM*54
1430	REM :REM*35	1631	PRINT"{CRSR DN}{2 SPACES}{SHFT T}HIS STOCK MARKET GAME IS SET AT A(4 SPACES)FUTURE TIME WHEN THE MARKET HAS BEEN(4 SPACES)GREATLY DEREGULATED.(2 SPACES){SHFT B}ECAUSE OF THIS(3 SPACES)THE MARKET HAS BECOME"; :REM*61	1715 PRINT"{5 SPACES}{SHFT S}INCE TAXES ARE FIGURED ON NET WORTH BUT TAKEN FROM YOUR CASH ON HAND THIS COULD LEAVE YOU WITH A MINUS FIGURE IN YOUR(2 SPACES)CASH ON HAND."; :REM*213
1440	WINDOW1,4,39,20,1:RT=0:RV=0 :REM*110	1640	PRINT:PRINT"(2 SPACES){SHFT T}HE MAIN IDEA IS TO BUY LOW AND SELL(2 SPACES)HIGH TO TURN A PROFIT. {SHFT T}HE BOARD CHANGES A MAXIMUM OF 10 POINTS AT A TIME." ; :REM*125	1716 PRINT"{2 SPACES}{SHFT T}HIS IS NO REAL PROBLEM(2 SPACES)BUT DOES REQUIRE YOU TO SELL STOCK(6 SPACES)BEFORE BEING ABLE TO BUY ANY MORE.(2 SPACES)" :REM*45
1450	FORX=1TO6:X\$=STR\$(X):IFRV=XTHENPRINT"{CTRL 9}"; :REM*206	1650	PRINT"{SHFT T}HE(3 SPACES)PRICE CHANGES AND AMOUNTS ARE CHOSEN(4 SPACES)RANDOMLY. {SHFT T}HERE ARE ONLY 4 EXCEPTIONS(3 SPACES)TO THE BASIC RULES." :REM*154	1717 PRINT"{CTRL 1}{2 CRSR Dns}"SPC(8)"(SHFT P)RESS ANY KEY TO CONTINUE":GETKEYQ\$:REM*93
1460	PRINT"{CTRL 4}"X\$P\$S\$(X);:PRINTTAB(14)NS\$(X);:PRINTTAB(30)DD\$V\$(X)"(CTRL 0)":NEXT:IFRT=1THENRT=0:RETURN :REM*187	1660	PRINT"{CTRL 1}{5 CRSR Dns}"SPC(8)"(SHFT P)RESS ANY KEY TO CONTINUE":GETKEYQ\$:REM*93	1720 PRINT"{SHFT CLR}{CTRL 3}{3 CRSR Dns}{SHFT I}F YOUR NET WORTH DROPS BELOW \$100 THEN YOU ARE TOO POOR TO BE ALLOWED TO STAY ON THE TRADING FLOOR AND THE GAME ENDS." :REM*16
1470	PRINT"{CRSR DN}{9 CRSR RTs}{CTRL 9}{COMD 1}{SHFT S}{SHFT E}{2 SHFT Ls}{SHFT SPACE}{SHFT W}{SHFT H}{SHFT I}{SHFT C}{SHFT H}{SHFT SPACE}{SHFT S}{SHFT T}{SHFT O}{SHFT C}{SHFT K}?" :REM*215	1670	PRINT"{CTRL 3}{SHFT CLR}{CRSR DN}1. {SHFT A}NY STOCK OVER \$100 MAY CRASH. {SHFT I}F IT CRASHES A SOUND WILL BE HEARD AND THE(3 SPACES)STOCK WILL DROP TO 1/3 OF IT'S CURRENT(2 SPACES)VALUE." :REM*19	1722 PRINT"{SHFT CLR}{CTRL 3}{3 CRSR Dns}{SHFT I}F YOUR NET WORTH DROPS BELOW \$100 THEN YOU ARE TOO POOR TO BE ALLOWED TO STAY ON THE TRADING FLOOR AND THE GAME ENDS." :REM*16
1480	PRINT"{CRSR DN}{6 CRSR RTs}{CTRL 9}{SHFT E}{SHFT N}{SHFT T}{SHFT E}{SHFT R}'0'{SHFT SPACE}{SHFT T}{SHFT O}{SHFT SPACE}{SHFT S}{SHFT T E}{2 SHFT Ls}{SHFT SPACE}{SHFT N}{SHFT O}{SHFT N}{SHFT E}." :REM*206	1680	PRINT"{CRSR DN}2. {SHFT A}NY STOCK OVER \$100 MAY ALSO PAY A(3 SPACES)DIVIDEND OF \$10 TO \$19 PER SHARE. {SHFT Y}OU(3 SPACES)WILL BE INFORMED AND THE MONEY ADDED TO YOUR CASH ON HAND." :REM*240	1723 PRINT"{CRSR DN}{2 SPACES}{SHFT G}OOD LUCK." :REM*93
1490	GETKEYNS:N=VAL(N\$):IFN<0ORN>6THEN1490 :REM*64	1690	PRINT"{CRSR DN}3. {SHFT A}NY STOCK \$10 AND UNDER MAY DROP TO(2 SPACES)\$0. {SHFT I}F SO ANY STOCK YOU OWN WILL BECOME WORTHLESS AND WILL BE REMOVED EVEN IF THE STOCK RECOVERS FROM \$0." :REM*166	1724 PRINT"{CTRL 1}{2 CRSR Dns}"SPC(8)"(SHFT P)RESS ANY KEY TO CONTINUE":GETKEYQ\$:REM*233
1500	IFN=0THENPRINTCHR\$(19)CHR\$(19)"(SHFT CLR)":RETURN :REM*6	1700	PRINT"{CRSR DN}4. {SHFT A}NY STOCK UNDER \$10 MAY JUMP SUDDENLY TO \$30 (THE ONL	1750 RETURN :REM*99
1510	IFNS(N)<1THENPRINT"(CRSR DN){2 CRSR RTs}{CTRL 9}{CTRL 3}{SHFT Y}OU DON'T OWN ANY OF THAT STOCK.":SLEEP2:GOTO1440 :REM*79	1710	PRINT"{CRSR DN}4. {SHFT A}NY STOCK UNDER \$10 MAY JUMP SUDDENLY TO \$30 (THE ONL	1760 REM :REM*104
1520	RV=N:RT=1:PRINT"{HOME}";:GOSUB1450:RV=0:PRINT"{5 CRSR Dns}" :REM*3	1720	PRINT"{CRSR DN}4. {SHFT A}NY STOCK UNDER \$10 MAY JUMP SUDDENLY TO \$30 (THE ONL	1770 REM QUIT :REM*233
1530	PRINT"{CRSR DN}{4 CRSR RTs}{CTRL 9}{SHFT S}ELL HOW MANY SHARES "; :REM*169			
1540	INPUTHS\$:HS=VAL(HS\$):IFHS<0THEN1440 :REM*64			
1550	IFHS>NS(N)THENPRINT"(CRSR DN){4 CRSR RTs}{CTRL 3}{CTRL 9}{SHFT Y}OU DON'T OWN THAT MANY!":SLEEP2:GOTO1440 :REM*176			
1560	NS(N)=NS(N)-HS:CH=CH+(HS*SV(N)):CH\$=STR\$(CH):NS\$(N)=STR\$(NS(N)) :REM*2			
1570	IFNS(N)=0THENT=N:TT=1 :REM*73			

W A L L S T R E E T

<p>1780 REM :REM*132</p> <p>1790 PRINT"(SHFT CLR){CTRL 1}"+ CHR\$(19)+CHR\$(19):COLOR0,4 :PRINT"(7 CRSR DNs)"SPC(12)"(SHFT A)RE YOU SURE? {SH FT Y)}/{SHFT N}" :REM*89</p> <p>1800 GETKEYQ\$:IFQ\$="N"THENRETUR N :REM*143</p> <p>1810 IFQ\$="Y"THEN1830 :REM*175</p> <p>1820 GOTO1800 :REM*85</p> <p>1830 PRINT"(SHFT CLR){6 CRSR DN s}"SPC(9)"(SHFT Y)OUR FINA L NET WORTH WAS" :REM*214</p> <p>1840 PRINT"(CRSR DN)"SPC(20-(LE N(NW\$)/2))DD\$NW\$:REM*156</p> <p>1850 END :REM*189</p> <p>1860 DATA"{CTRL N}{SHFT I}NDUST RIALS","{CTRL N}{SHFT G}OL D","{CTRL N}{SHFT S}ILVER" ,"{CTRL N}{SHFT C}ATTLE" , "{CTRL N}{SHFT G}RAIN" , "{CTRL N}{SHFT C}OMPUTERS" :REM*127</p> <p>1870 REM :REM*218</p> <p>1880 REM NET WORTH :REM*128</p> <p>1890 REM :REM*246</p> <p>1900 NW=0:FORX=1TO6:NW=NW+CM(X)</p>	<p>1910 NW\$=STR\$(NW):COLOR1,9:CHAR 1,25,9,"{CTRL N}{SHFT N}ET {SHFT W}ORTH":CHAR1,26,10 ,DD\$+NW\$+SP\$+SP\$+SP\$:REM*132</p> <p>1920 IFNW<100THENSLEEP1:GOTO194 0 :REM*152</p> <p>1930 RETURN :REM*16</p> <p>1940 GRAPHIC0:COLOR0,2:PRINT"(S HFT CLR){5 CRSR DNs}{3 CRS R RTs}(SHFT Y)OUR NET WORT H HAS FALLEN UNDER \$100. :REM*124</p> <p>1950 PRINT"(3 CRSR RTs){SHFT Y} OU HAVE BEEN REQUESTED TO LEAVE {SHFT W}ALL {SHFT S} TREET." :REM*60</p> <p>1960 PRINT"(3 CRSR RTs){SHFT I} F YOU WISH {SHFT I} WILL L OAN YOU \$5,000 TO TRY AGAI N." :REM*63</p> <p>1970 PRINT"(2 CRSR DNs)"SPC(18) "{SHFT Y)}/{SHFT N}" :REM*98</p> <p>1980 GETKEYAN\$:IFAN\$="Y"THENRUN :REM*103</p> <p>1990 IFAN\$="N"THENEND :REM*184</p>	<p>2000 GOTO1980 :REM*61</p> <p>2010 REM :REM*97</p> <p>2020 REM LOSE STOCK :REM*132</p> <p>2030 REM :REM*117</p> <p>2040 IFNS(X)=0THENRETURN:REM*48</p> <p>2050 GRAPHIC0:PRINTCHR\$(19)+CHR \$(19) :REM*230</p> <p>2060 PRINT"(SHFT CLR){CTRL 2}{4 CRSR DNs)"SPC(20-(8+(LEN(S\$(X)/2)))S\$(X))" HAS GONE BROKE!" :REM*124</p> <p>2070 PRINT"(CRSR DN){2 CRSR RTs {SHFT A}LL SHARES OF THIS ITEM HAVE BEEN " :REM*10</p> <p>2080 PRINT"(2 SPACES)REMOVED FR OM YOUR PORTFOLIO." :PRINT" {CRSR DN}{2 SPACES}{SHFT A } NEW COMPANY WILL BE CHOS EN TO" :REM*48</p> <p>2090 PRINT"(2 SPACES)REPRESENT IT ON THE MARKET BOARD." :REM*61</p> <p>2100 PRINT"(2 CRSR DNs)"SPC(9)" {SHFT P}RESS A KEY TO CONT INUE" :REM*82</p> <p>2110 GETKEYN\$:GRAPHIC1:RETURN :REM*220</p>
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VIDEO BYTE II the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first FULL COLOR! video digitizer for the Commodore C-64, 64-C, C-128 & 128-D computer. VIDEO BYTE can give you digitized video from you V.C.R., LASER DISK, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full RE-DISPLAY with MULTI CAPTURE MODE, MENU SELECT PRINTING, EXPANDED COLORIZING FEATURES, SAVE TO DISK feature and much more!

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(OKIDATA 10/20's (print larger 6" by 9") USER SLIDE SHOW program w/auto or manual display is standard with VIDEO BYTE program. And can be backed up!)

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Deep C-64 World

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By KEN HUEBNER

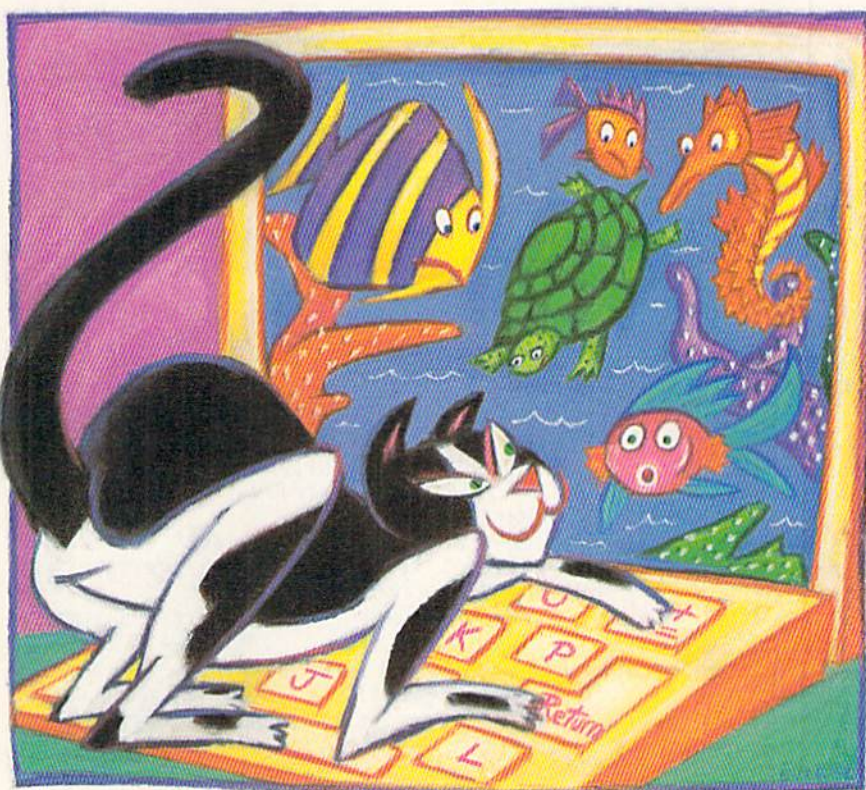
How many times have you found your favorite fish floating in your aquarium—stiff as a board? Well, have I got a treat for you! This program will turn your monitor into a colorful tropical aquarium, filled with animated seahorses, angelfish, turtles and a myriad other aquatic delights. You'll never have to look at a lifeless fish again; electronic creatures cannot be overfed, underfed, over- or underheated.

Just type in the program in Listing 1, using *RUN's* Checksum program to make sure you catch any typing errors, save a copy to disk and run it. Then sit back, relax and watch your underwater world unfold.

I created the Aquarium's multitude of creatures from a few sprite images, varying their color, width, height and sprite/screen priority. The animated plants are built from Commodore graphics characters.

Warning: Before running Aquarium, make sure your cat is in the other room and the stopper is in your monitor! ☒

Ken Huebner is a software designer who runs his own business, called Softrek.



Running Instructions: Type in Listing 1, save it to disk and run it.

Listing 1. Aquarium program. (Available on ReRun disk. See card at page 44.)

```
10 REM AQUARIUM - K.HUEBNER :REM*252 190 DATA 23,2,23,6,23,10,23,14 :REM*254
   :REM*156 130 SF$="{39 SPACES}" :REM*156 200 DATA 29,4,29,8,29,12,29,16 :REM*254
60 : :REM*118 140 DIM PX(30):DIM PY(30) 210 DATA 4,5,15,10,26,3,32,5 :REM*118
80 UO=14336:FI=16384 :REM*34 :REM*146 210 DATA 4,5,15,10,26,3,32,5 :REM*118
90 FX=FI+8:FY=FX+8:FW=FY+8:FH=F 150 : :REM*208 210 DATA 4,5,15,10,26,3,32,5 :REM*118
   W+8 :REM*2 160 FORP=1 TO 20:READX,Y:PX(P)=X :REM*217
   :REM*217
100 FS=FH+8:XFD=FS+8:YFD=XFD+8 160 FORP=1 TO 20:READX,Y:PX(P)=X :REM*217
   :REM*29 170 PY(P)=Y:NEXTP :REM*83 220 : :REM*23
110 FA=YFD+8:FF=FA+8:FP=FF+8 :REM*189 240 Y=UO:READ A$ :REM*23
   :REM*203 180 DATA 1,4,1,7,1,10,1,13,1,16 :REM*189 250 B$=MID$(A$,1,20)+MID$(A$,22
   :REM*203 180 DATA 12,9,12,12,12,15 :REM*189 250 B$=MID$(A$,1,20)+MID$(A$,22
120 WI=FP+8:WC=WI+8:WT=WC+8 :REM*228 260 FOR X=1 TO 59 STEP 2 :REM*8
```

RUN it right: C-64

D E E P C - 6 4 W O R L D

```

270 CS=MID$(B$,X,2):H$=LEFT$(C$
,1):L$=RIGHT$(C$,1):REM*151 710 X=INT(RND(0)*160):Y=210 1050 IFY>15THENRETURN :REM*18
280 H=VAL(H$):IFH$>"9"THEN H=AS :REM*222 1060 PRINTTAB(X)"{4 CRSR RTs}{S
C(H$)-55 :REM*111 720 : :REM*9 1070 RETURN :REM*184
290 L=VAL(L$):IFL$>"9"THEN L=AS :REM*169 1080 IFP>20THEN1130 :REM*177
C(L$)-55 :REM*129 1090 C$=CHR$(INT(RND(0)*7)+149)
300 POKEY,H*16+L :REM*3 740 POKEYFD+I,XD:POKEYFD+I,YD :REM*159
310 Y=Y+1:NEXTX:READA$ :REM*11 750 POKEFW+I,XE:POKEFH+I,YE :REM*34 1100 PRINTTAB(X)C$+"{COMD *}{CT
320 IFAS<>" THEN 250 :REM*197 760 POKEFS+I,S:POKEFA+I,A 1110 PRINTTAB(X)"{CRSR RT}{CTRL
330 : :REM*133 770 POKEFF+I,F:POKEFP+I,P 1120 RETURN :REM*234
350 GOSUB810:POKE53276,255 :REM*38 780 POKE53287+I,C :REM*250 1130 X=INT(RND(0)*34):Y=INT(RND
:REM*25 790 POKEFI+I,T:RETURN :REM*88 1140 C$="{CTRL 7}":IFRND(0)>.5
380 : :REM*183 800 : :REM*89 1150 THEN C$="{CTRL 4}":REM*183
390 I=-1:IFRND(0)>.9 THEN RETUR :REM*118 820 POKE53280,0:POKE53281,6 1160 PRINTTAB(X)C$+"{CTRL 0}{5
N :REM*45 830 PRINT"{SHFT CLR}{COMD 2}":Y :REM*201 1160 COMD @s}" :REM*75
400 I=I+1:IFI>7THEN RETURN :REM*127 840 FOR X=1TO3:PRINT"{CTRL 9}"+ :REM*19 1170 RETURN :REM*200
410 IFPEEK(FI+I)>0THEN400 :REM*139 850 FOR D=1TO20 :REM*233 1180 PRINT"{HOME}";:IFY=0THENRE :REM*108
420 T=INT(RND(0)*6)+1 :REM*139 860 X=INT(RND(0)*37):Y=INT(RND( :REM*69 1190 FORZ=1TOY:PRINT:NEXTZ
430 YD=0:XD=255:IFRND(0)>.5THEN :REM*115 870 GOSUB1180:PRINTTAB(X)"{CTRL :REM*70
XD=1 :REM*127 880 FORP=1TO25:GOSUB 920:NEXTP: :REM*59
440 X=0:IFXD=255THENX=170 :REM*247 890 : :REM*183 1200 RETURN :REM*240
450 Y=INT(RND(0)*145)+45 :REM*243 900 REM AQUA :REM*41 1210 : :REM*240
460 XE=INT(RND(0)*2):YE=INT(RND :REM*117 910 P=INT(RND(0)*30)+1 :REM*160 1220 DATA 78203139A007A9009900
(0)*2) :REM*115 920 X=PX(P):Y=PY(P):GOSUB 1180 :REM*89 1230 DATA 038D7138A92E8D1403A9
470 S=INT(RND(0)*100)+48 :REM*133 930 IFP>16THEN1080 :REM*88 1240 DATA B92040C9012E7540B950
800 :REM*119 940 C$="{CTRL 6}":IFP>12THENC$= :REM*120 1250 DATA 8D1DD0AD75408D17D0AD
480 A=2(UP ARROW)(INT(ABS(S-120 :REM*64 950 PRINTC$:IFRND(0)>.5 THEN 10 :REM*228 1260 DATA F10102040810204080BE
)/32)+2) :REM*117 960 PRINTTAB(X)" :REM*170 1270 DATA F002690C99F807B96040
490 F=0:IFXD=255THEN F=1 :REM*120 970 PRINTTAB(X)"{CTRL 9}{SHFT L :REM*154 1280 DATA 3840791040C905903999
500 P=INT(RND(0)*2) :REM*78 980 PRINTTAB(X)"{SHFT LB.}{2 SP :REM*189 1290 DATA 9004C9BF901E99084098
510 C=INT(RND(0)*16):IFC=6THENC :REM*213 990 GOTO1030 :REM*18 1300 DATA 0AAAB90840A9D00D0B9 79384
=8 :REM*119 1000 PRINTTAB(X)"{CTRL 9}{SHFT +}{CTRL :REM*139 1310 DATA 79388D1D0060A9009900
520 : :REM*64 1010 PRINTTAB(X)"{COMD *}{SHFT LB.}{2 CRSR :REM*226 1320 DATA 4060BE6040F02FE8B938 40300
530 IFT=3THENA=(A*2)+A :REM*123 1020 PRINTTAB(X)"{4 CRSR RTs}{S :REM*26 1330 DATA 1ED96840901CBE5840A9
540 IFT=4THENA=0:S=INT(S/2):YD= :REM*104 1030 PRINTTAB(X)"{COMD *}{CTRL :REM*131 1340 DATA 009D00409D10408A0AAA 9D01D
255 :REM*157 1040 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1350 DATA 018B9384049FF69 :REM*131
550 IFT=5THEN S=S+50 :REM*23 1050 PRINTTAB(X)"{4 CRSR RTs}{S :REM*186 1360 DATA 0199384060A9C085FCA9
560 IF T>3 THEN 690 :REM*213 1060 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1370 DATA 3985FDA9C085FEA93C85 FFA90
570 Z=I :REM*215 1070 PRINTTAB(X)"{4 CRSR RTs}{S :REM*186 1380 DATA A5FC694085FC9002E6FD
580 Z=Z+1:IFZ>7THEN 690 :REM*23 1080 PRINTTAB(X)" {2 CRSR RTs}{ :REM*144 1390 DATA 8239C8C891FE88B1FC20
590 IFPEEK(FI+Z)>0THEN580 :REM*104 1090 GOTO1030 :REM*18 1400 PRINTTAB(X)"{4 CRSR RTs}{S :REM*21
600 POKEWI+I,Z:POKE WT+I,40:POK :REM*160 1100 PRINTTAB(X)" {2 CRSR RTs}{ :REM*133
E WC+I,1 :REM*95 1110 PRINTTAB(X)"{CTRL 9}{COMD *}{COMD :REM*176 1410 DATA 823991FEC8B1FC208239 88889
610 ZO=RND(0)*70 :REM*134 1120 PRINTTAB(X)"{CTRL 9}{COMD *}{SHFT :REM*64 1420 DATA 1FE8888810E018 :REM*62
620 Y=60+ZO:YD=255:GOSUB 730 :REM*104 1130 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1430 DATA A5FC694085FC9002E6FD
:REM*178 1140 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1440 DATA 18A5FE694085FE9002E6 FFC6F
630 : :REM*178 1150 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1450 DATA BD0C46085FAA208 :REM*21
640 Y=6+ZO:IFYE=1THENY=Y+12 :REM*207 1160 PRINTTAB(X)"{4 CRSR RTs}{S :REM*186 1460 DATA 46FA2A488A4A900E6848
650 I=Z:S=255:A=8:X=125:C=1 :REM*160 1170 PRINTTAB(X)" {2 CRSR RTs}{ :REM*133 1470 DATA 2903F008C903F0046849 03486
:REM*160 1180 PRINTTAB(X)" {2 CRSR RTs}{ :REM*133 1480 DATA 8239C8C891FE88B1FC20
660 IFXD=1THENX=X-73:IFXE=1THEN :REM*125 1190 GOTO1030 :REM*18 1490 PRINTTAB(X)"{4 CRSR RTs}{S :REM*21
X=X+8 :REM*125 1200 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1500 DATA 18A5FE694085FE9002E6 FFC6F
670 T=7:XD=0:YD=1:XE=0:YE=0 :REM*80 1210 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1510 DATA BD0C46085FAA208 :REM*21
:REM*80 1220 PRINTTAB(X)"{4 CRSR RTs}{S :REM*176 1520 DATA 46FA2A488A4A900E6848
680 : :REM*224 1230 PRINTTAB(X)"{4 CRSR RTs}{S :REM*186 1530 DATA 2903F008C903F0046849 03486
690 IFT<>6 THEN 730 :REM*145 1240 PRINTTAB(X)"{4 CRSR RTs}{S :REM*186 1540 DATA 8239C8C891FE88B1FC20
700 A=0:S=100:YD=254:XD=0:C=0 :REM*145 1250 PRINTTAB(X)"{4 CRSR RTs}{S :REM*186 1550 DATA 18A5FE694085FE9002E6 FFC6F

```


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GAMES GALLERY

Vroom! And you're off on the road to car and motorcycle racing fun and excitement!

By LONNIE BROWN

RACING SIMULATIONS HAVE improved greatly since the early days of Commodore products. One need only run *Motor Mania* to see an example of a primitive race game. Copyrighted in 1982, that program gives an overhead view of a race-car sprite threading its way through Commodore graphic characters.

"Seemed pretty advanced at the time," said a friend of mine who recently booted up the game. *Motor Mania*, along with Richard Petty's Talladega and Shirley Muldowney's Top Fuel Challenge, comes packaged under the Cosmi title, Triple Crown Challenge.

The back of the box sports this comment about Talladega: "The only things missing here are the smell of gas and the feel of grit blowing in your face." Well, seven years ago when that quote was published in a review, yes. Today, the simplicity of these racing simulations will probably only appeal to new Commodore computer owners or to youngsters.

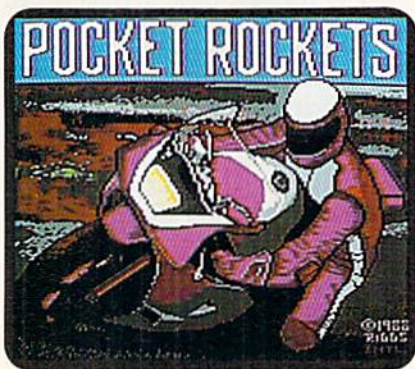
The *real* grit-in-your-face motoring action can be found in releases from the past year or so. You'll encounter varying degrees of realism, from care-free arcade fun to games so life-like that you'll want to make sure there's a spare tire in the trunk. Today's programs literally put you in the driver's seat, complete with rearview mirrors and radar detectors.

You can travel hundreds of miles, break several land-speed records and wreck thousands of dollars in expensive vehicles. All it takes is the right software and, in the case of crack-ups, some sloppy joystick work.

The packages are all relatively inexpensive; most cost less than a Ferrari hubcap or Honda handle grips.

POCKET ROCKETS

Pocket Rockets is Capcom's motorcycle racing game. It pits one player against the stopwatch for a quarter-mile run or a lap around a serpentine track. You can hop aboard one of four motorcycles—Suzuki Katana, Kawasaki Ninja, Yamaha FZR or Honda Hurricane.



Lean into those turns on one of four *Pocket Rockets'* motorcycles.

Timing lights get you going. Hit the firebutton too soon, and you're flagged for a false start. Rev the engine too high before popping the clutch, and your on-screen persona falls on the asphalt as the raging cycle takes off. The program tracks and records your fastest time for the session.

I've been less than impressed with previous Capcom offerings, but *Pocket Rockets* is a definite improvement. I even found myself leaning into the turns while watching (the view is from behind the motorcycle) my on-screen driver race on the lap track.

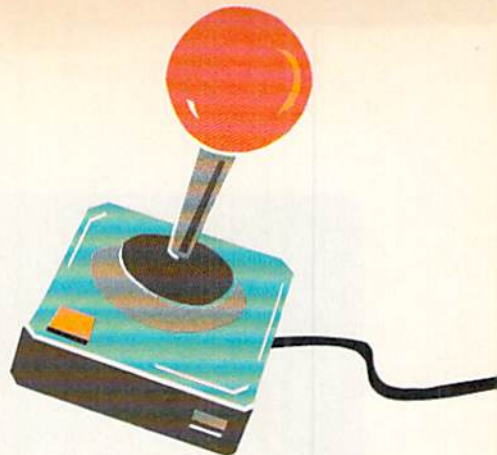
OUT RUN; ACTION FIGHTER

Sega's *Out Run* is pure driving fun. Converted from the arcade, this race-against-the-stopwatch game begins with a bird's-eye view of a map, which illustrates the way to five possible destinations across three intervening levels.

Quickness counts here, because if you reach the finish of one level before time runs out, the leftover is added to the next route.

The view is from behind the car, so you can not only watch the crashes, but also watch the passenger knock the driver over the head for running into a tree.

Two radio stations provide pace-setting tunes. Like the radio, the gear shift offers only two choices: the firebutton



toggles between high and low.

The scenery changes from level to level. It whizzes by smoothly and provides enough variation so you don't feel as if you're running around in circles.

Out Run keeps track of high scores, but doesn't record them to disk, so each start is a fresh start.



Sega's *Action Fighter* takes you on an arcade ride that tests your driving and shooting skills.

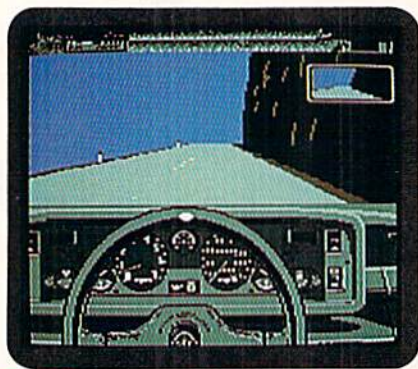
Action Fighter is another Sega arcade ride. An overhead view shows "the incredible, transformable combat vehicle." It starts out as a motorcycle, but if you drive well enough, it transforms into a sports car. The metamorphosis is complete when two turbojets turn the car into an airborne ranger.

Picking up capsules along the way advances you to higher levels. Every so often, an equipment truck pulls up, swallows the current vehicle and returns it, with additional firepower, to the streets.

Any similarity between *Action Fighter* and a driving simulation is purely coincidental. But the game does a good job of blending speed and arcade shoot-'em-up.

TEST DRIVE; THE DUEL

Moving down the road to realism, *Accolade's Test Drive* and its sequel, *The Duel*, bring nearly everything but the new-car smell to the computer. These two products come very close to ▶



Test Drive puts you behind the wheel of a Ferrari, Lamborghini, Lotus, Porsche or Corvette.

replacing Commodore's 8-bit chip with a V-8 engine!

The first complaint users had with Test Drive was that they could only drive one car at a time. That's why Accolade introduced Test Drive II: The Duel in which users could race a Ferrari F40 or a Porsche 959 against the clock or each other. So what have they found to complain about next? The fact that there are only *two* dream vehicles to race!

Accolade must have anticipated that one. The Supercars is an accessory disk that adds five high-powered hot rods to the master disk. And, for those drivers who think the scenery is beginning to get monotonous, you can try California Challenge.

Still complaining? The Muscle Cars should be available by the time you read this, as well as a second scenery disk called European Challenge.

Although the original disks are heavily copy protected, they include a fea-



Improved road graphics and more responsive cars make Test Drive II: The Duel a worthwhile sequel to Test Drive.

ture that lets you make a play disk for your favorite cars and driving terrains, which considerably cuts down on disk swapping.

Both Test Drives put you in the driv-

er's seat, where you can look at the rearview mirror, gear shift, radar, steering wheel, instrument cluster, trip meter and clock. The joystick controls the gas pedal and brake, and the firebutton replaces the gearshift.

Here's an illustration of attention to programming details: On the European-made cars, the Test Drive speedometer measures in kilometers per hour.

Test Drive is a stickler for statistics, showing the best time, average speed and total points for each leg of the race, as well as overall performance.

Test Drive didn't need much refinement when it was introduced, and The Duel continues the tradition. The cars in the sequel do respond better, however, and there's the big advantage of extra car and scenery disks.

GRAND PRIX CIRCUIT

If the open road and oncoming traffic aren't ideal racing conditions for you, there's another game in our software



In Grand Prix Circuit, you must qualify for races in one of these countries.

garage: Grand Prix Circuit from Accolade. If, as the software lawyers say, it has the "look and feel" of Test Drive, that's because both were designed by the same company, Distinctive Software, Inc.

Grand Prix Circuit has plenty of options—three cars (Ferrari, Williams and McLaren) with different racing characteristics and eight tracks on the racing circuit. With nine drivers, the roadway is more crowded than in Test Drive, but at least everyone's going in the same direction. The competitors have varying ability levels and different styles of racing (the latter being especially noticeable when your car approaches and attempts to pass).

Cars sustain damage, but going to the pits to change two or four tires reduces or eliminates that problem. After the

race, which can be between one and 99 laps, a screen shows your ranking, overall stats and best lap.

4 x 4 OFF-ROAD RACING

Let's assume you're the type who just can't seem to hold it in the road, no matter what you do. Maybe you should try a game designed with you in mind: Epyx' 4 x 4 Off-Road Racing.



Four-wheeling fanatics will find a feeling of fun and fascination with Epyx' 4 x 4 Off-Road Racing.

The "roadways" on the game's four circuits—the Georgia Mud Fest, the Michigan Winter Wreck-off, the Death Valley Trek and the Baja Challenge—cut through treacherous country. Each roadway is only slightly less grueling than the countryside it cuts through. You can easily see the road; it's the section of land covered with old tires, limbs, rocks and the skeletons of other drivers.

There are four four-wheelers from which to choose for running these gauntlets. Each has seven sets of characteristics, including gas mileage, ease of repair and payload. The Auto Mart offers a whole raft of goodies, including maps, oil, coolant, spare tires and a mechanic.

During the race, the dashboard at the bottom of the screen reports speed, rpms and the status of various engine components. If a part breaks, and you have the right tools (the six-pack from the Auto Mart is not one of them), you can fix it. If the right parts aren't aboard, the game has a Sledgehammer option for makeshift repairs.

MORE TO COME!

Still not raced out? Electronic Arts will be distributing a high-priced racing machine—the Ferrari F1/86—in its Ferrari Formula One game. No price had been announced at press time, although it's expected to be less than the

GAMES GALLERY

\$350,000 window sticker of the F1/86.

Like other racing games, this one offers a driver's perspective of the road, along with 16 different tracks and seven opponents. Players modify their cars and test the performance in the Wind Tunnel or on the Dynamometer.

The Amiga version of this game has been out for some time, but for the C-64, EA has some catching up to do. They're trying to offset their late entry by promoting Formula One's strategy

aspects of engine repairs, critical pit-stop decisions, realistic car modeling and a complete racing season.

Accolade will be adding *The Cycles*, an international Grand Prix racing game that looks to be a two-wheel take-off on its Grand Prix Circuit disk.

Joining the ranks of computer motorcycle racing will be Data East's *Super Hang On*. Converted from the arcade, bikers will be able to rev it up to 160 mph while traversing different continents.

Well, there's the checkered flag. We've come to the finish line. You go over there to the winner's circle and tell them how you won the race.

Me? I'm going to Driver Improvement School. ■

Lonnie Brown, computer columnist for The Ledger (Lakeland, Florida) and frequent contributor to RUN, won the 1988 Software Publisher's Association award for best reporting of computer news.

Table 1. Racing hints and tips.

Pocket Rockets

—Watch the speedometer in the quarter-mile event to get an idea of when to shift. If your motorcycle isn't climbing steadily, or its climb is slowing noticeably, it's time for another gear.

—Watch the background—particularly the bridge—on the lap track. It gives you an idea of where you are and which direction the track turns.

Out Run

—Try running with the radio off. Listening to the engine is a quick way to tell which gear you should be in.

—Rather than pulling back on the joystick when entering turns, try dropping into low gear; you won't lose as much speed.

Test Drive; The Duel**

—Begin at a slow pace. Driving the roads at 25 or 30 miles per hour might not be what you came here for, but it's the best way to learn control of the car, note landmarks,

spot curves in the road and practice passing. Use auto-shift until you've thoroughly mastered the throttle, speed and steering.

—Better stop for the police officer, unless you're on a fairly straight stretch of road and can drive like a demon. You won't outrun him unless you can go very, very fast.

—In two-player games, follow your opponent. Hang back, watch his mistakes and learn. Pass him only when you have a feel for the road.

—Stay as close as possible to the center line. You'll be able to move faster out into the left lane when oncoming traffic clears.

—Although there is some randomness involved, oncoming traffic usually has a pattern and likely appears on the same sections of road.

—An oncoming vehicle is seldom followed by another—at least on the lower levels. It's almost always a good time to pass after a car goes by.

Grand Prix Circuit

—Some Test Drive tips apply here.

Start off slow with the Ferrari on practice laps.

—Use the rearview mirrors on either side of the car to find out where a competitor might pass. Edge to that side of the road to cut him off.

—Practice going into the turns fast, but find out where the last possible place is to hit the brakes. If you can hold off the brake pedal, you have a better chance of passing another driver. Auto races are won and lost in the turns—the race is not always to the swift, but the cagey.

4x4 Off-Road Racing

—Preparation is important. Time spent wisely in the Auto Mart can pay big dividends later.

—Watch the dashboard clock. The race begins at eight AM and lasts well into the afternoon.

—Speed isn't everything; extracting yourself from the mud bog is.

**Hints and tips for these games were provided by Emory Wong, programmer for Distinctive Software.*

Table 2. Retail prices and manufacturers' addresses.

Triple Crown Challenge

\$24.95
Cosmi
415 N. Figueroa
Wilmington, CA 90744

Pocket Rockets

\$29.95
Capcom
3303 Scott Blvd.
Santa Clara, CA 95054

Out Run; Action Fighter

\$34.95; \$24.95
Sega; distributed by Mindscape
3444 Dundee Rd.
Northbrook, IL 60062

Test Drive; The Duel; Grand Prix Circuit

\$29.95 each
The Supercars; California Challenge
\$14.95 each
Accolade
550 S. Winchester Blvd., Suite 200
San Jose, CA 95128

4x4 Off-Road Racing

\$39.95
Epyx
600 Galveston Dr.
Redwood City, CA 94063

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THE 1750 CLONE

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You can't find them. That's right. These RAM units are almost impossible to buy. We've always specialized in finding solutions to Commodore related problems - here's what we came up with.

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IMPORTANT NOTES - READ CAREFULLY

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* If you ALREADY own a 1764 RAM cartridge, we can upgrade it for you. Your unit MUST be in perfect working order for us to upgrade it. The turnaround time on upgrades is approx. 2 weeks. It will NOT be necessary for you to purchase a new power supply - the one that came with your 1764 will still work fine.

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DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

COMMODORE CLINIC

Making color printouts from RUN Paint; finding longer RUN programs for downloading; and switching commercial programs to 3½-inch format.

By LOU WALLACE

Q *I'm currently writing a program and need help to solve a thorny problem with Basic. In this program, I'm trying to send data to the printer. The problem is that if the printer is not on, or is offline, then the program stops with a Device Not Present Error when data is sent. Is there any way for the program to check for the presence of a printer before sending any data?*

—JIM HUTTO
SHREVEPORT, LA

A You can have Basic check for any and all devices daisy-chained on the serial port with just a few lines of Basic code. The secret is to open a channel to the device with any secondary address, then close it and check the status variable, (ST). If the variable is a negative number, then the device is not available. Here's an example.

```
10 OPEN 4,4,7
20 CLOSE 4
30 S=ST
40 IF S<0 THEN PRINT "PRINTER
   NOT AVAILABLE":GOTO 60
50 PRINT "PRINTER ONLINE!"
60 END
```

This will work with disk drives as well as printers, so you could check for the presence of extra drives if you need them. One thing that might cause problems is the printer interface in use. Some printer interfaces may not return the proper status value if the printer is unavailable.

Q *I purchased the RUN Works applications disk, and so far I'm very happy with it, except for one thing. RUN Paint doesn't support a color printer like the Okimate 20; instead it has only black-and-white printer support. Are there any printer drivers that will print RUN Paint screens on my Okimate 20?*

—STEVE BAKER
LOUISVILLE, KY

A I don't know of any, but if you need to print screens in color, there is a solution. RUN Paint saves its screens in either Doodle! (for High Res-

olution mode) or Koala (for multicolor Medium Resolution mode) formats. If you have a program for your Okimate 20 color printer that supports these formats (and they are the most popular picture formats for the C-64), then just load your RUN Paint pictures into that program and print them there.

Q *I'm having a problem with the character colors on my C-64. Every character comes up in a different color, on both a television and my 1702 screen. Any ideas as to what I can do about it?*

—TONY MACK
KALAMAZOO, MI

A It sounds as though you have a bad VIC-II graphic chip. Take the computer to an authorized Commodore service center and have them check it out. If the VIC-II is the source of the problem, it can be solved in minutes by just replacing the chip.

Q *Are the programs listed in RUN available for downloading from your bulletin board system? It would save me a lot of typing if they were, especially with programs like RUN Paint!*

—CHRISTOPHER BOGS
FLAGSTAFF, AZ

A No. All the programs available for downloading on the BBS are in the public domain. However, our listings are for sale on our ReRUN disks. We also maintain a special library of RUN programs on QuantumLink in the RUN area. Many can be downloaded free of charge (plus Plus Time). Some of the bigger programs like RUN Paint are in the RUN Online Library (the Surcharge Library) where they can be downloaded for only \$1.50 extra. Considering the time it takes to type in RUN Paint and all the graphic power it offers, that's got to be the bargain of the year!

Q *Since 3½-inch disks are more convenient (they are faster and hold a great*

deal more data), I want to switch all my unprotected commercial programs to that format. How can I tell which disks are protected before I try to copy them?

—S. LAWSON
LAGUNA NIGUEL, CA

A If the software's documentation states that you can make copies, then the program is probably unprotected. If it has custom fast-loaders, makes the drive heads bang or make other noises, then it may well be a copy-protected disk.

The best test, of course, is just to copy the files from the disk onto the 1581 drive. Since you can't simply use a disk-copy program because of the differences between the disk formats, use a file-copy utility to copy all the files on the source 5¼-inch disk to the 3½-inch format; then run the program. If it works, great; but sometimes even unprotected software won't work on the 1581. This is because it's expecting the directory tracks to be at track and sector 18,0, whereas these are at 40,0 on the 1581.

Q *Is it possible to operate a 9600-baud modem on a C-64 or C-128, and if so, is there software available for this?*

—JOHN TRAN
BROOKLYN, NY

A Neither computer is capable of handling telecommunication speeds that high. I've seen the C-128 (in 80-Column Fast mode) work at 2400-baud, and the results were quite acceptable. My best bet is that 2400-baud is the fastest speed you're going to get and still be accurate. ■

Do you have a problem or question about your Commodore computer system, software or programming? Just send your questions to Commodore Clinic, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Queries are answered only through this column, and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.

ALL NEW

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- An all new Advanced Sector Editor with 100% ML coding for blazing speed and superior performance! Full featured - allows editing in ASCII, HEX, and even disassembly modes! Even includes comprehensive on-line help screens!
- And for GEOS™ 2.0 owners with 1581 drives: Maverick v3's GEOS Toolkit has a new utility that allows you to transfer the incredible GEOS v2.0 over to your high speed, high capacity 1581 drive! This transfers *everything* - which means you can run the 64 or the 128 version from the 1581 alone. WITHOUT using the 5 1/4" disks at all! And the 800K 1581 disk leaves you plenty of room to transfer all your GEOS applications over to the same disk! This is a MUST FOR SERIOUS GEOS users who want to unleash the true power of Berkeley Softworks revolutionary operating environment.
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- Enhanced RAMBOard™ Support: Beginning with parameter Module #3, we gave you the ability to copy the Pocket 2.0 series of productivity software. Then Module #4 gave you parameters for 6 V-Max!™ protected titles - parameters that left the competition stunned, because OUR parameters did NOT require physical drive speed modifications to work. Now Module #5, included with Maverick v3, will forever separate us from the imitators trying in vain to keep up with us. There are over TWENTY new RAMBOard support parameters that are without equal, plus a large number of special parameters that don't require the use of RAMBOard at all! And our new V-MAX! parameters utilize proprietary read-write verification routines that not only eliminate the need to alter drive speeds, but also save you from having to "copy till it boots", a sure sign of an inferior product.

All of these new features are in addition to the amazing array of utilities that have always been found in Maverick. If there's a better value on the market today, we'd like to see it.

One more thing: the next time you think about buying a program, remember that you're also buying a bit of the company that makes that program. Will they be there for you in the future? You know we will. Because you've made us the most successful Commodore mail order house in the country. *See our review in INFO's July/Aug '89 Issue!

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DEALERS — WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

GEOWATCH

Benefit from this GEOS user's experience and design your own fantastic fonts with geoFont.

By STEVE VANDER ARK

A FEW YEARS AGO, while setting out to transform my ordinary C-64 character set into a visual feast, I eagerly typed in a font editor that I had found in a computer magazine. After several attempts, with mixed results, I realized that font design is more than just randomly adding serifs. Individually, each letter that I designed looked great, but when used with the others, my creations were a jumble.

So, my interest waned—that is, until the advent of GEOS. Suddenly, fonts leaped off the screen and poured out of my printer in styles and variations I would never have imagined. I discovered the joy of word processing with professional-looking output, and my interest in font design was quickly rekindled. GEOS uses real fonts, proportionally spaced and detailed in all point sizes.

Wanting to invent my own, I picked up a copy of FontPack Plus, which includes the editor, geoFont, and 53 exciting fonts. But with all those, as well as some 20 on RUN's GEOS Power Pak, what more was there to create? Surely I had more fonts than I could possibly use—picture fonts like Ashbury, body fonts like Wheeler and Haste, display fonts like The Vatican, Fog and America, and unexpected designs like Braille and Spook!

I decided to design my own alphabet. Unfortunately, the results were quite a hodgepodge once again, with lots of shapes and flourishes that didn't seem to gel into a cohesive whole. Before I let frustration ruin my grand ideas, I resolved to learn more about what I was trying to do. I found an excellent book on computer fonts and graphics—*Desktop Publishing Text and Graphics*, by Deke McClelland and Craig Danuloff.

This book contains an abundance of fonts and typefaces, along with examples of the various styles that can be created by software or that exist as separate fonts. The more unusual variations, such as screened, skewed, rotated and reflected, gave me ideas for editing existing fonts. The information on de-

sign and layout taught me a lot about how a workable font is put together. Using this newfound knowledge, I created a few nice-looking fonts that finally seemed to work the way I wanted. I hope this column will enlighten other frustrated font designers.

TERM TALK

Fonts are measured in points, with one point on the printed page equal to $\frac{1}{72}$ of an inch. So, 12-point University, for example, stands $\frac{1}{6}$ ($\frac{1}{6}$) of an inch tall. But $\frac{1}{6}$ of an inch from where to where? The letter "f" is a lot taller than "o," and some letters have descenders, which add even more to the overall size. The rule is that a font's point size is measured from the bottom of its descenders to the top of its ascenders—from the bottom of a "q," for example, to the top of a "d." Two 12-point fonts might have different proportions and even appear to be of different sizes when printed out, but their top-to-bottom measurements will be the same— $\frac{1}{6}$ of an inch.

On a GEOS screen, one point translates into one pixel, which makes font editing fairly straightforward: If you want a 12-point font, your edit area will be 12 pixels tall. A character also has width, of course, which can vary enormously for a GEOS font between, let's say, a "w" and an "l." This proportional spacing is one of GEOS's strong points, resulting in professional-looking output.

However, the width of a letter or symbol must also include a bit of space to separate it from the character next to it. So, as you create your own fonts, you must add in this space, keeping in mind that various letters require different amounts. The computer automatically handles the vertical spacing, or leading, between lines, so there's no need to leave space at the top or bottom of your fonts.

SETTING THE STAGE

Before creating a new font, you must establish some guidelines for the design, some rules for spacing and proportion

that you'll follow with each character. Uniformity is essential if you want your letters to look "right" when strung together in words.

First decide where to place the baseline. Each font has a baseline (established in geoFont with an arrow on the side of the edit window) upon which all the characters perch. You must be careful in placing the baseline, because you need enough room above it to create the bulk of each character and enough room below for the descenders. Another consideration is that the Underline function in GEOS applications draws *on* the baseline, so your characters must sit one pixel above it to avoid being partially overwritten.

When choosing your baseline, consider whether you want to create a tall font with small descenders, a more evenly spaced set, with a baseline just below the mid-point of the characters, or perhaps a bottom-heavy style, with negligible ascenders.

Next, you must make a few decisions about the style of your characters. Will they have serifs (caps on the tops and bottoms)? How rounded will your curves be? Will your "g" have a curved tail or a circle, or something in between? Sketch a few examples.

If you're copying a font you've found elsewhere, examine it closely. Now is the time to plan the details because you want consistency—every ascender the same, every rounded letter following the same curve and matching angles on the "A" and "v."

Finally, look at the number of pixels left between the baseline and the top of the font to decide the x-height, which is the height for the lowercase characters. In geoFont, there's no convenient indicator for this so-called waistline, so make a note of the lowercase letters' height (in pixels) above the baseline. For my own 12-point font, I placed the baseline three pixels from the bottom of geoFont's grid, with letters starting on the next pixel row up. Counting that point, I used an x-height of six. The ascenders and capital letters reach the

top of the grid. I leave a single pixel open on the left of each character and none on the right, which results in a one-pixel space between each letter.

A BARE-BONES EDITOR

When you begin using geoFont to design characters, you'll find that the creator of this utility certainly didn't have convenience in mind. There's no facility for placing guidelines to help locate the waistline or spacings. The blank character set that appears at the start of geoFont consists of a set of thin lines. You must erase each line and resize the area before each letter or symbol can be drawn. In addition, the cursor sometimes sticks while drawing or erasing, which results in a smear of filled pixels across the screen.

Also unfortunate is the fact that there's no way to copy your pattern from one character to another—a technique that would allow for easy matching of curves, angles and entire letters. For example, "b" and "d" could be mirror images of each other if there were a horizontal mirror function, and "b" and "p" could be mirror images if vertical flipping were possible.

Despite these lacks, the editor does work; with a little time and effort, you'll have a brand new font. Remember that you'll also have to define all the punctuation symbols and numbers, as well as the space, which you can vary in size depending on the appearance you're seeking to achieve.

It would be unrealistic to expect that all your design work would mesh perfectly without a little tweak here and there. So, move your new font from the deskTop to where it's one of the first seven fonts on your geoWrite disk; then create a file called Test. Next, switch to your font, type a paragraph or two, and give it a long, hard look. If you like what you see, test it in boldface, italic and outline. (Do not, however, use these styles as a determining factor in any decisions regarding your font, because many perfectly respectable fonts can suffer drastically from these special effects. Some fonts adapt better than others to certain styles.)

Print out and examine what you've written. Are all your lowercase letters the same height? Is there an undesirable gap between a particular letter and its neighbor? Do the spaces, parentheses and brackets have enough room? If you find discrepancies, re-enter geoFont for touchups. Take your time and

polish your font until you're satisfied.

FUN WITH SPACES

By leaving one or more pixels open on the left side of each letter, there's a space between the printed characters. However, some letters look better when you *don't* leave a space. For example, the uppercase "A" has an angled design that gives the illusion of space between it and its neighbors. The same is true for "V" and "W". On the other hand, the "l" and "i" can get a bit lost amid

their huskier neighbors, so an extra space on the right might be in order. Again, let your examination of the printout be your guide.

It is possible to force the computer to give your font extra leading between lines. The trick is to leave one or more pixel rows open above the characters you create. To keep the result to a certain point size, you'll have to choose a larger size as far as the editor and geoWrite are concerned. For instance, I use this technique to create a 17-point ▶

Figure 1. Samples of fonts created by the author.



Paris, 12-point
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
!"#\$%&'()*+,-*!;:;,./[]=←→?_""↓}✓

SOMERSET, 10-POINT
ABCDEFGHIJKLMNPOQRSTUVWXYZ
ABCDEFGHIJKLMNPOQRSTUVWXYZ
1234567890
!"#\$%&'()*+,-*!;:;,./[]=←→?_""↑{}✓

Art Deco, 18-point
ABCDEFGHIJKLMNPOQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
!"#\$%&'()*+,-*!;:;,./[]=←→?_""↓}✓

GEOWATCH

font that I call Art Deco, which is, as far as GEOS knows, an 18-point font. The extra space between lines gives it the airy grace I was looking for in this thin, slightly geometric style. Art Deco also has a two-pixel gap between letters, which isn't excessive for an 18-point font and keeps it from appearing too tight. This example gives you an idea of how little touches, arrived at by editing and re-editing, make for a cohesive and expressive typeface.

OTHER IDEAS

If you feel apprehensive about creating an entire font from scratch, but still want to have the fun of seeing your creation on-screen or in documents, try editing a *copy* of a font you already have. This can be as simple as reworking the serif to make Wheeler more flowery, or as extensive as adding shadow lines around the right edges of Boalt. Once you've created your own version, use the file menu on the geoFont screen to change its ID number, and rename the font when you're back on the deskTop.

A large number of the FontPack Plus fonts need some editing to get them into usable condition. Wheeler, for instance, is flawed in two common ways: Its number "1" is too wide, and the top line of pixels has been chopped off on some characters.

While you're making repairs, you might want to add your own designs to a font. There are a few characters—such

as the accent mark or the reverse slash—that you'll seldom use in GEOS. These might be redefined into more usable patterns, like a check mark or bullet.

An upgraded version of a font can retain the same ID, because you'll probably never use the old one again. It should, however, be marked in a way that will indicate it as the newer version. To rename a reworked font, I add a "+" to its name.

FONT MANAGEMENT

The more fonts you collect, the more difficult it is to keep them straight, and the more housekeeping you must do to keep them accessible. While you might own many fonts, only a few will actually be used for most projects. In fact, it's relatively easy to choose, and to keep on your geoWrite work disks, eight or nine fonts that will look well in a large body of text. You might find the field a

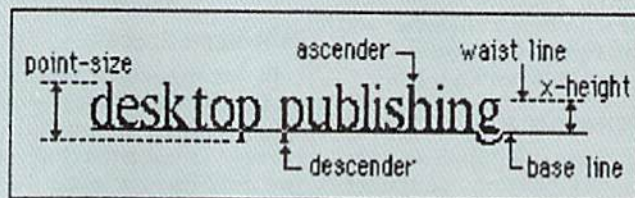
bit more difficult to narrow down for geoPaint or geoPublish, because each project will require different font styles. You can usually keep a few general-purpose fonts on your work disks all the time and load display fonts as needed for the situation.

Perhaps the best way to effectively use your collection is to take the time to familiarize yourself with the look of each font so you can choose intelligently when you're planning a project. Once you've got 100 or so fonts to choose from, it would be a shame if you didn't use the right design to get your message across with pizzazz!

Fonts are one of GEOS's strengths. Make them work for you! ■

Steve Vander Ark is a college student working toward a degree in elementary education. He uses GEOS 64 for writing and desktop publishing.

Figure 2. Terms used in the font design process.



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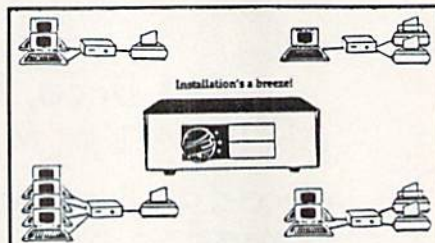


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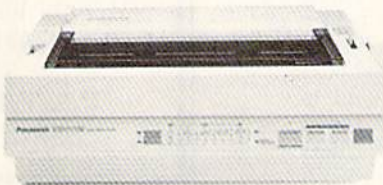
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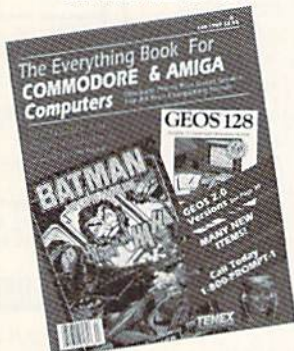


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TYPE-IN TROUBLES?

Troubleshooting tips for entering listings.

YOU HAVE TYPED IN A *RUN* PROGRAM and are having some problems getting it to run. After a while, you feel like calling for help, but since we're not next door, it's expensive to call us. But we can share our experiences with you. Having heard from many users over the years about their difficulties with typing in listings, we've identified a few recurring problems that plague many people but are easy to fix. So read on and see if your problem is one of these. If so, perhaps the answers will help you find and correct the difficulty.

● You get an Out of Data in Line xxx message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems. One might be with the line that reads the data, usually a For . . . Next loop. Make sure you have the proper values for the loop, because if the listing has a loop of 0 to 150 and you've typed 0 to 160, you'll get the "Out of Data" message. If the loop is correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. More likely, you may have skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing.

● You get an Illegal Quantity Error in Line xxx. That means that you've read a number from a Data statement and tried to Poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. Just look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).

● You get a Syntax Error in Line xxx. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.

● You get an Error in Data message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if all the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully, correct the mistake(s), save the new version and try again.

Finally, we urge everyone who intends to type in one of our listings to use *RUN's* Checksum program, which is printed in each issue. This nifty little program will help you avoid every mistake we mentioned above, except that it won't detect the omission of a line. ■

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RUN'S CHECKSUM

TYPE IN *RUN'S CHECKSUM*, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN'S CHECKSUM*. The screen will display a SYS number that deactivates and reactivates the Checksum. Always disable *RUN'S CHECKSUM* before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

With this new version, when you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line is correct. If the number that appears *doesn't* match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN'S CHECKSUM*, using the SYS number. Save the finished program.

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

- {22 SPACES}—press the space bar 22 times
- {SHIFT CLR}—hold down the shift key and press the clr-home key
- {2 CRSR DNs}—press the cursor-down key twice
- {CTRL 1}—hold down the control key and press the 1 key
- {COMD T}—hold down the Commodore logo key and press the T key
- {FUNCT 1}—press the F1 key
- {5 LB.s}—press the British pound key (*not* #) five times [R]

Listing 1. *RUN'S CHECKSUM* program. This program is available on *RUN'S* BBS for users to download.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(40960)THEN MO=64:SA=49152
30 FOR I=0TO169:READB:CK=CK+B:POKE SA+I,B:NEXT
40 IFCK<>20651 THENPRINT"DATA ERROR!":END
50 POKESA+110,240:POKESA+111,38:POKESA+140,234
60 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
70 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 100
80 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+26,165
90 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+124,189
100 POKESA+4,INT(SA/256):SYS SA:NEW
110 DATA 120,162,24,160,13,173,4,3,201,24,208,4,162,13,160,67,142,4,3,140
120 DATA 5,3,88,96,32,13,67,152,72,169,0,141,0,255,133,176,133,180,166,22
130 DATA 164,23,134,167,132,168,170,189,0,2,240,58,201,48,144,7,201,58,176
140 DATA 3,232,208,240,189,0,2,240,42,201,32,208,4,164,180,240,31,201,34
150 DATA 208,6,165,180,73,1,133,180,230,176,164,176,165,167,24,125,0,2,133
160 DATA 167,165,168,105,0,133,168,136,208,239,232,208,209,169,42,32,210
170 DATA 255,165,167,69,168,170,169,0,32,50,142,169,32,32,210,255,32,210
180 DATA 255,169,13,32,210,255,104,168,96,104,170,24,32,240,255,104,168
190 DATA 96,56,32,240,255,138,72,152,72,24,162,0,160,0,32,240,255,169
200 DATA 42,208,198
```

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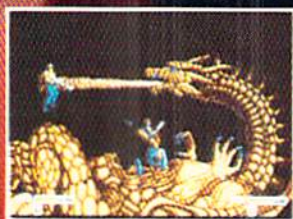
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