

RUN

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February 1990
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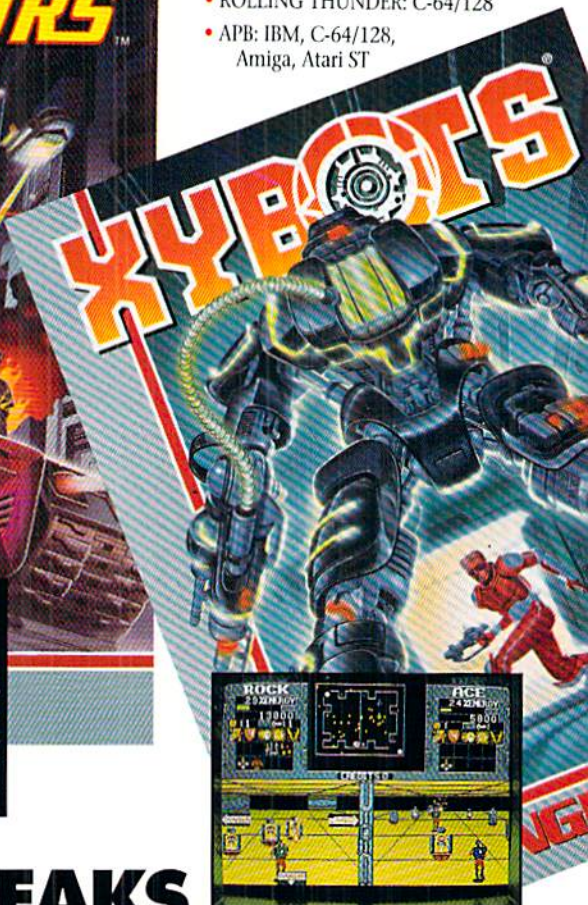


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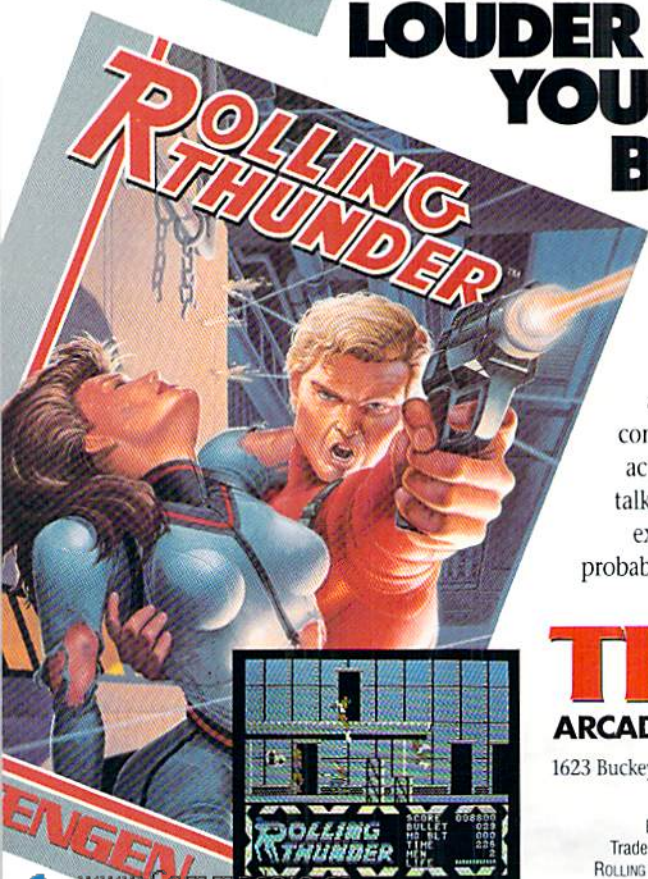
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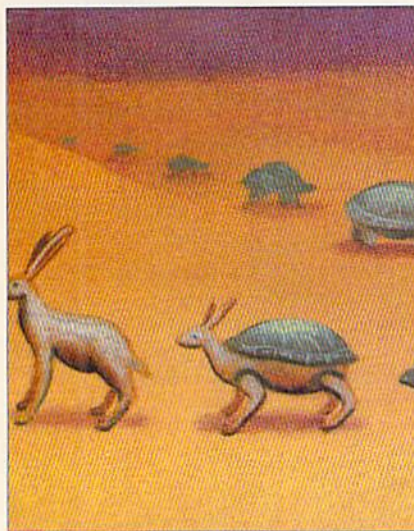
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RUNNING RUMINATIONS

TABLOID JOURNALISM

What's more popular than Roseanne Barr, more controversial than Cher and more incredible than Elvis sightings?

It's speculation surrounding Commodore's latest "secret project." There's enough juicy gossip here to make a *National Enquirer* reporter blush.

In the spotlight is not some glamorous movie screen star or talk show host or rock 'n roll idol. No, what keeps tongues wagging is none other than the unlikely C-65, an "as yet to be announced," "still in the development process," "may never see the light of day" computer from Commodore.

While Commodore has yet to issue an official announcement, it's no secret that they are working on a new computer. Commodore's history is, in fact, chock full of computers that were never marketed.

RUN has been close to the C-65 situation since work began on the machine early last year. We've known the specs, seen the keyboard arrangement and what chips are being used. The only thing we haven't known is whether or not Commodore plans to market it. And this has precluded our joining in the rampant speculation that has plagued some of the other computer publications, which have greeted this proposed machine with mixed reviews.

What we know about the C-65 is that it is a 128K machine expandable to one megabyte of memory. It features improved speed and graphics and a built-in 3½-inch disk drive. For the most part, it will be compatible with existing C-64 software. And in keeping with Commodore tradition, its price will be attractive.

While, for the most part, we have remained silent about this machine, whose fate rests in the hands of Commodore's marketing mavens, we have been amused, and sometimes shocked, at some startling "mistruths" surrounding this new computer in other publications:

- the machine will be out in (pick one) November 1989, December 1989, November 1990, December 1990
- it will be called the 64gs
- it lacks a keyboard
- it will be the Edsel of home computers
- nobody will buy this machine
- developers won't develop software for it
- this will be Commodore's Waterloo.

Journalists have a responsibility to report the news and maintain the readers' right to know. But they also have a responsibility to report it accurately and not to speculate wildly just for effect. . . or to sell issues. If and when Commodore decides to release the machine, *RUN* will report on it.

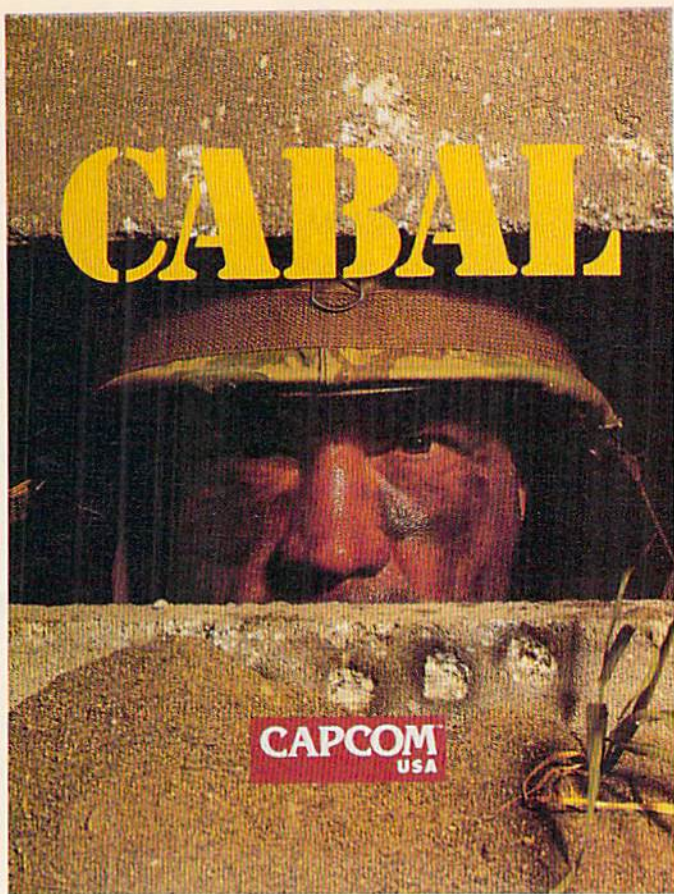
It's a sad commentary on the state of the industry when so much hoopla is given to a machine that is still on the drawing boards. Are we, like prepubescent rock fans, so desperate to catch a glimpse of the next potential star?

Dennis Brisson

Dennis Brisson
Editor-in-Chief

*Let's put to
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surrounding
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latest
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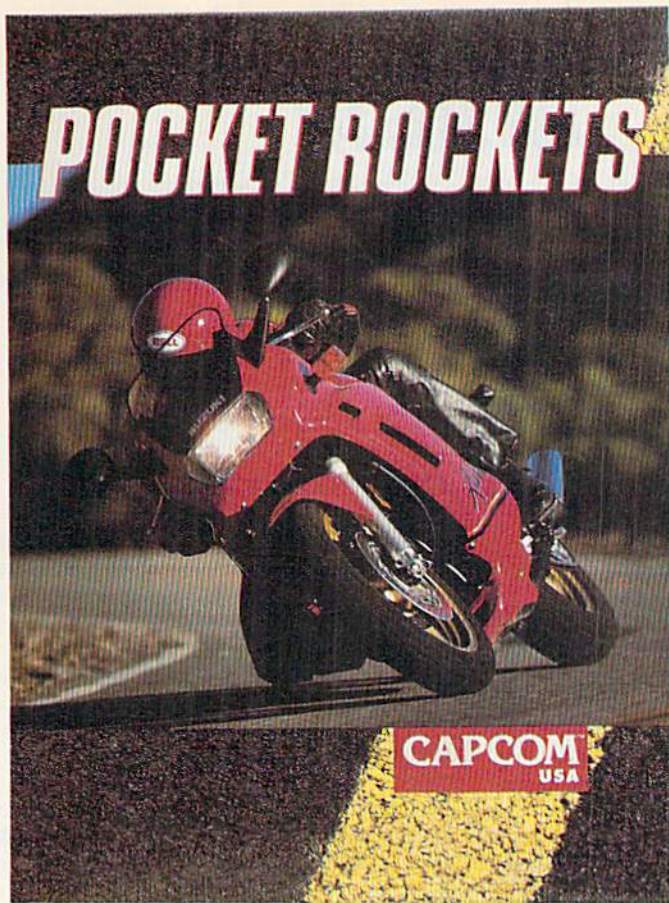
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MAGIC

Now you can put four-line addresses in Label Base, clean your drives in silence and add a dash of flash to your screen.

Compiled by TIM WALSH

\$578 AN EXTRA LINE FOR LABEL BASE

Many readers have expressed their fondness for Robert Kodadek's Label Base program (see the RUN Works disk or the August 1989 issue of *RUN*). However, some readers found its provision for only a one-line street address a serious limitation.

The following line changes to Label Base allow it to print two-line street addresses, or four lines per standard-sized mailing label. While adding the extra label line, I also took the liberty of adding an F8 function key Exit option to the main menu.

To incorporate these lines into Label Base, load and run *RUN*'s new Checksum in either 64 or 128 mode. Now load the Label Base program, but don't run it. Type in the necessary changes, making certain the correct checksum numbers appear. Then deactivate *RUN*'s Checksum and save the finished version of Label Base to a work disk, being sure to identify it as the four-line mailing label version.

```
Ø REM LABEL BASE WITH FOUR LINE ADDRESS -
  TIM WALSH                                :REM*154
4Ø PS=Ø:LL=2:Q=25Ø:C=4Ø:MO=64:ML=828:YR=78
  2:PRINT CHR$(142)                        :REM*129
8Ø B$=CHR$(13)+CHR$(18):O$=CHR$(146):FOR I
  =Ø TO 7:READ FD$(I),L$(I):NEXT          :REM*1Ø2
12Ø DIM R$(Q,8),K(Q):FORI=1 TO Q:K(I)=I:NE
  XT                                         :REM*54
225 PRINT B$ SPC(5)"F8" O$" - QUIT LABEL B
  ASE"                                       :REM*156
23Ø GOSUB31Ø:KP=ASC(A$)-132:IF KP<1 OR KP>
  8 THEN 23Ø                               :REM*86
24Ø ON KP GOSUB43Ø,56Ø,65Ø,133Ø,98Ø,88Ø,15
  9Ø,2Ø4Ø                                   :REM*16
49Ø FOR I=RN TO Q:FOR N=Ø TO 7:INPUT#5,R$(
  I,N)                                       :REM*237
61Ø FOR I=1 TO NR:FOR N=Ø TO 7:IF R$(K(I),
  N)="" THEN R$(K(I),N)=SP$               :REM*237
99Ø RN=T:NR=T:FLAG=1:FOR I=Ø TO 7:R$(RN,I)
  ="" :NEXT                                 :REM*45
1ØØØ GOSUB1Ø8Ø:FOR I=Ø TO 7:X=8+I:Y=11:GOS
  UB28Ø:POKE YR,L$(I)                       :REM*111
1Ø3Ø NEXT I:K(RN)=RN:GOSUB27Ø:Y=7:GOSUB28Ø
  :PRINT"PRESS SPACE BAR FOR ANOTHER"
  :REM*132
1Ø9Ø X=8:Y=Ø:GOSUB28Ø:FOR I=Ø TO 7:LD=36-(
  24-L$(I))                                 :REM*221
118Ø X=8:Y=Ø:GOSUB28Ø:FOR I=Ø TO 7:REM*254
128Ø FOR N=Ø TO 7:R$(K(RN),N)=R$(NR,N):R$(
  NR,N)="" :NEXT                           :REM*1Ø1
143Ø GOSUB27Ø:Y=7:GOSUB28Ø                :REM*92
```

```
152Ø FOR I=Ø TO 7:R$(K(RN),I)="" :NEXT
  :REM*95
153Ø GOSUB1Ø8Ø:FOR I=Ø TO 7:X=8+I:Y=11:GOS
  UB28Ø:POKE YR,L$(I)                       :REM*123
1745 PRINT#4,R$(K(RN),3)                   :REM*57
175Ø PRINT#4,R$(K(RN),4)", "CHR$(32) R$(K(R
  N),5) CHR$(32);                           :REM*188
176Ø PRINT#4,R$(K(RN),6)                   :REM*71
189Ø NS=NS+LEN(R$(K(I),7)):ND=79-NS
  :REM*192
191Ø PRINT#4,R$(K(I),7):LC=LC+1:IF LC<6Ø T
  HEN 193Ø                                   :REM*58
195Ø DATA LAST,15,FIRST,18,STREET,24,STREE
  T,24                                       :REM*57
2Ø4Ø PRINTCHR$(147)SPC(1Ø)"ARE YOU SURE? Y
  /N"                                         :REM*196
2Ø5Ø GETA$:IF A$="" THEN 2Ø5Ø              :REM*9Ø
2Ø6Ø IF A$<>"Y" THEN RETURN                :REM*99
2Ø7Ø END                                     :REM*158
```

—TIM WALSH, MAGIC COLUMNIST

\$579 RUN MAGAZINE DISK ID

If you'd like to add *RUN* to the two-character disk ID as you're formatting a 1541 disk in C-64 or C-128 mode, use the following in place of the Header command:

```
OPEN 15,15,"N0:diskname,"+"{SHIFT-SPACE}"+CHR$(138):
CLOSE 15
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$57A 128 UN-NEW

It doesn't happen often, but it does happen. You accidentally enter *NEW* and wipe out your favorite C-128 program before saving a copy to disk. If you have a copy of my 128 Un-New trick, your program will be restored as good as new!

Type the following in Direct mode (without a line number) then press return to revive the lost program:

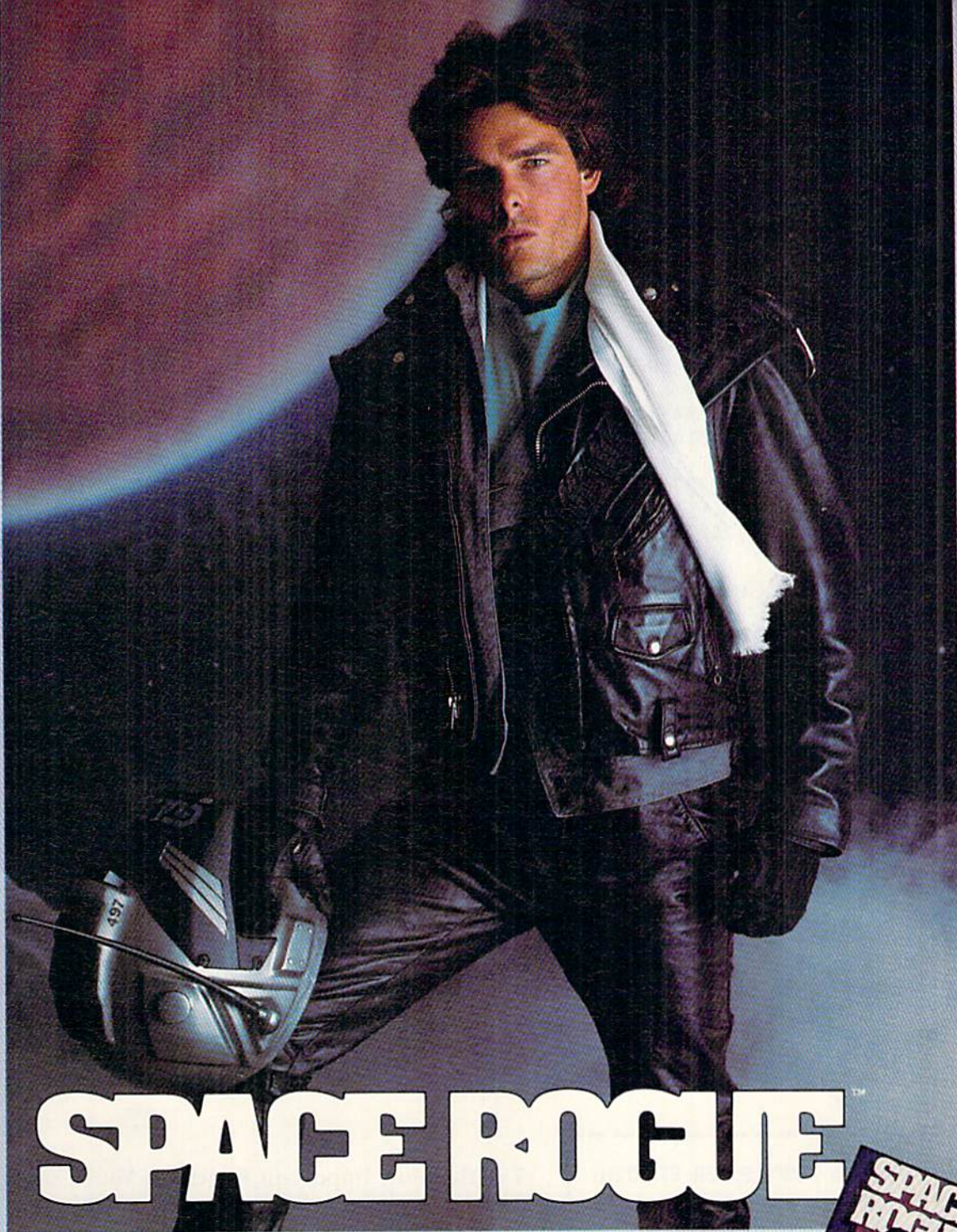
```
POKE 7170,28:X=7171:DO:Y=PEEK(X):X=X+1:LOOP
UNTIL Y=28:POKE 7169,DEC(RIGHT$(HEX$(X-2),2))
```

—CHRIS HAYOSH, WARREN, MI

\$57B TEN C-128 FUNCTION KEYS!

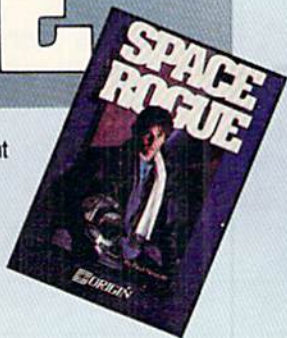
Most C-128 computerists know that entering the Key command allows them to redefine function keys 1 through 8. My program, Ten C-128 Function Keys, adds the help key and the shift/run-stop key combination as two more programmable function keys.

After running the program, redefine shift/run-stop by entering 9, or the help key by entering 10. Be sure to test your ▶



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MAGIC

new key definitions by pressing either key after running the program.

```

Ø REM TEN C-128 FUNCTION KEYS - YOHANN TRE
  MBLAY :REM*23
1Ø SCNCLR:INPUT "ENTER FUNCTION KEY 9 OR 1
  Ø";K :REM*253
2Ø IF K<> 9 AND K <>1Ø THEN 1Ø :REM*56
3Ø INPUT"ENTER NEW STRING FOR FUNCTION KEY
  ";K$ :REM*1Ø4
4Ø FOR A = 1 TO LEN(K$):BANKØ :REM*26
5Ø POKE 49151+A,ASC(MID$(K$,A,1)):NEXT
  :REM*119
6Ø POKE 25Ø,Ø:POKE 251,192:POKE 252,Ø
  :REM*26
7Ø BANK 15:SYS 65381,25Ø,K,LEN(K$),Ø
  :REM*122
  
```

—YOHANN TREMBLAY, CHICOUTIMI, QUE., CANADA

Use it in either 128 or 64 mode with your favorite cleaning disk the next time you clean your drive.

```

Ø REM DISK DRIVE CLEANER - DANNY HUMMEL
  :REM*149
1Ø PRINTCHR$(147)"PLACE CLEANING DISK IN D
  RIVE, PRESS A KEY" :REM*116
2Ø GETA$:IF A$=""THEN 2Ø :REM*212
3Ø OPEN 15,8,15 :REM*138
4Ø OPEN 2,8,2,"#" :REM*99
5Ø FOR J=1 TO 35:PRINT#15,"U1:2 Ø 1 1"
  :REM*126
6Ø PRINT"PASS"J" OF 35" :REM*188
7Ø PRINT#15,"U1:2 Ø 35 1" :REM*132
8Ø NEXT J :REM*1Ø3
9Ø INPUT#15,A$,A$,A$,A$ :REM*82
1ØØ CLOSE 2:CLOSE 15 :REM*2Ø7
  
```

—DANNY J. HUMMEL, ESSEX, IA

\$57C DISK DRIVE-CLEANING HELPER

The use of cleaning disks is essential for long-term 1541 and 1571 operation, but getting the drive to spin without head-rattling and grinding noises is no small feat. My 1541/1571 Drive Cleaner spins the drive safely and quietly, with no rattling, grinding or other sound effects. Moreover, it spins the disk long enough to ensure a thorough cleaning.

\$57D QUICK COLOR 64

Have you ever wanted to change character color ROM in a fraction of a second? Changing character color in Basic is impossible, so I wrote Quick Color 64. After you've typed it in and saved it to disk, run it to see it in action.

It's fully relocatable to any address in memory and performs its magic via a SYS S, X command, with the value of



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MAGIC

X ranging from 0 to 15. A demo program is incorporated into Quick Color 64 that lists the three "working" lines once the control key is pressed.

```

Ø REM QUICK COLOR 64 - JEFFREY PANICI
:REM*46
1Ø PRINTCHR$(147):CK=.:S=828:FORX=STOS+23:
  READD:POKEX,D:CK=CK+D:NEXT :REM*225
2Ø IFCK<>3953THENPRINT"ERROR!":END:REM*113
3Ø DATA 32,155,183,138,162,,157,,216,157,2
  55,216,157,254,217,157,253 :REM*1Ø9
4Ø DATA 218,232,2Ø8,241,96,96,153 :REM*3Ø
5Ø FORT=1TO1Ø:PRINTTAB(8)"PRESS CONTROL TO
  END":NEXT :REM*25
6Ø C(1)=1:C(2)=3:C(3)=6:C(4)=14 :REM*245
7Ø FORX=1TO4:SYS828,C(X) :REM*21Ø
8Ø FORP=1TO4Ø:NEXTP,X: :REM*99
9Ø IFPEEK(653)<>4THEN 7Ø :REM*6Ø
1ØØ PRINTCHR$(147)"{CTRL 9}USE LINES 1Ø-4Ø
  IN YOUR OWN PROGRAMS":POKE 646,1:LIST
  1Ø-4Ø :REM*151
  
```

—JEFFREY D. PANICI, SANDWICH, IL

\$57E MAGIC FLASH 64

Thanks to its color graphics modes, there's almost an unlimited number of video effects that the C-64 can generate.

By taking advantage of the 64's Extended Background Color mode, Magic Flash 64 causes all shifted characters to color cycle, catching the attention of anyone nearby.

Once you save the program to disk, run it. A sample screen appears that demonstrates the program in action. SYS 49152 activates the routine from within your own programs and SYS 49196 disables it. For a dramatic effect, enter SYS 49171, which fills the screen with shifted spaces.

```

Ø REM MAGIC FLASH 64 - SCOTT FICARRO
:REM*171
1Ø DATA 12Ø,169,13,141,2Ø,3,169,192,141,21
  ,3,88,96,238,34,2Ø8,76,49,234 :REM*16
2Ø DATA 169,96,16Ø,Ø,153,Ø,4,153,Ø,5,153,Ø
  ,6,153,Ø,7,2ØØ,192,Ø,24Ø,3,76 :REM*196
3Ø DATA 23,192,96,12Ø,169,49,141,2Ø,3,169,
  234,141,21,3,88,96 :REM*233
4Ø FOR I=ØTO56:READ A:POKE 49152+I,A:NEXT
  :REM*239
5Ø A=53265:POKE A,PEEK(A)OR64:REM EXTENDED
  BACKGROUND MODE :REM*195
6Ø POKE 5328Ø,Ø:POKE 53281,Ø:POKE 646,1
  :REM*196
7Ø SYS 49152 :REM*244
8Ø PRINTCHR$(147)"{SHFT M}{SHFT A}{SHFT G}
  {SHFT I}{SHFT C}{SHFT F}{SHFT L}{SHFT
  A}{SHFT S}{SHFT H} BY {SHFT S}{SHFT C}{
  
```

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MAGIC

```
SHFT O){2 SHFT Ts} {SHFT F}{SHFT I}{SHF
T C}{SHFT A}{2 SHFT Rs}{SHFT O}"
:REM*251
```

—SCOTT FICARRO, SUSQUEHANNA, PA

\$57F 80-COLUMN CURSOR MAGIC

Even long-time C-128 users might not be aware of all the special effects that the C-128's 80-column cursor is capable of producing. Register 10 of the C-128's 80-column 8563 chip controls the cursor's image. The syntax for adjusting the cursor is:

```
SYSDEC("CDCC"),DEC("XY"),10
```

The values for X are as follows:

- 0: Nonblinking cursor
- 2: Turn cursor off
- 4: Fast-blinking cursor
- 6: Slow-blinking cursor

The value of Y can vary from 0 through 7, where 0 is a large block cursor and 7 is a short underline. The following program demonstrates the differences in appearance of the cursors by adjusting both the size and the blinking rate. Use these various cursors in your next C-128 80-column program.

```
Ø REM VARIABLE SIZED 8Ø-COLUMN CURSOR - KE
VIN SMITH :REM*85
1Ø SCNCLR:PRINT"PRESS ESC KEY OR SPACEBAR
TO TOGGLE CURSOR" :REM*95
15 PRINT"ANY OTHER KEY EXITS PROGRAM"
:REM*177
2Ø SYSDEC("CDCC"),DEC("Ø7"),1Ø :REM*198
3Ø GETKEYA$ :REM*Ø
4Ø IF A$=CHR$(27) THEN SYSDEC("CDCC"),DEC(
"4Ø"),1Ø:GOTO 3Ø :REM*88
5Ø IF A$=CHR$(32) THEN PRINT A$:GOTO 2Ø
:REM*25
6Ø END :REM*188
```

—KEVIN SMITH, BALTIMORE, CT ■

Magic is a forum in which RUN's imaginative and inventive readers can share with other Commodore users their programming tips, brief software or hardware modifications, shortcuts or items of general interest. 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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- TaxPerfect is fully screen-prompted, menu-driven and easy to use. System includes comprehensive User's manual with helpful tutorial example.
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- On-line pop-up Help menus • Full calculation-override capability • Follows IRS text & line #s **exactly** • Exclusive context-sensitive Datacheck™ pinpoints omissions — and alerts you to effects of your input • Our exclusive Current Values Display constantly reflects all changes with your input • In Planning Mode all unnecessary text input prompts are eliminated. Only numeric input is prompted for.

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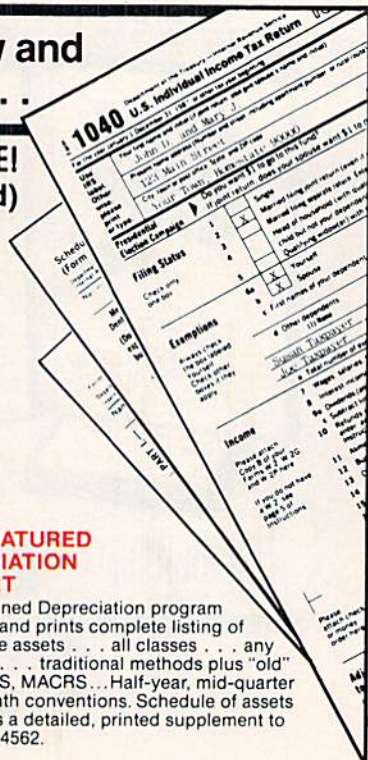
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NEWS AND NEW PRODUCTS

Quake shakes west coast PCs, a new way to identify disks, and a disk drive alignment package.

Compiled by HAROLD R. BJORNSEN

COMPUTER DE-FAULT LINE

SAN FRANCISCO—Earthquake damage to personal computers will exceed \$100 million, according to Safeware, a firm based in Columbus, Ohio, that specializes in computer insurance. The company says that computer losses already reported indicates this is "the single largest catastrophe in the history of personal computers." In one day, earthquake damage became the year's third largest source of losses, behind theft and electrical damage. Storm damage, including Hurricane Hugo, is now fourth in magnitude.

ALIGN YOUR DISK DRIVE

ARCATA, CA—The **Disk Drive Alignment Tool** is a hardware/software device that aligns your Commodore disk drive. The kit includes an attachable LED display tool and stand-alone software package with manual. The unit requires two 9-volt batteries and a screwdriver. \$69.95. North Coast Computers, 791 Eighth St., Jacoby's Storehouse, Arcata, CA 95521.

Check Reader Service number 401.

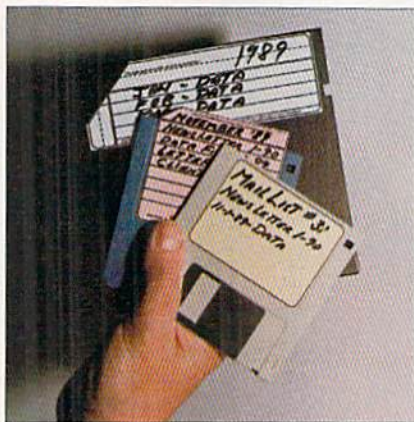
UPC GENERATOR

CLEVELAND—Piskac Bakery Software (3376 East 65th St., Cleveland, OH 44127) has released a program that enables retailers to print out universal product codes (bar codes) on labels to affix to their merchandise. The **Universal Product Code Creator** is designed for the C-128 and the Commodore MPS1200 printer and requires 3½-by-1½-inch labels. Price unavailable.

Check Reader Service number 403.

ERASABLE DISK STICKERS

FREEHOLD, NJ—Weber & Sons (3468 Hwy. 9, RD #4, Freehold, NJ 07728) announces its new computer disk-identification system. The **ReMarkAble Label System** is a thin, self-adhesive plastic writing surface that you affix to the disk. Then you can handwrite information



You can erase the ReMarkAble Label System stickers and write in new data.

about the disk's contents on it with a special marker pen. As the contents of the disk alter, you can wipe the surface and rewrite as necessary. It's available in a kit with 100 white and 100 color-coded stickers, special marker and instructions. \$39.95.

Check Reader Service number 400.

A TOUGH FIGHT FOR A PRINCESS

HUNT VALLEY, MD—**Savage** is an arcade-action/adventure game for the C-64 in which you're a powerful warrior searching for your kidnapped princess. To rescue her, you must battle your way through three game scenarios containing evil creatures, unavoidable obstacles within a tunnel-riddled dungeon, fast-scrolling screens and a magical eagle that flies through a mystical maze seeking to complete the quest. It's available for the C-64 for \$29.95. Medalist International, 180 Lakefront Drive, Hunt Valley, MD 21030.

Check Reader Service number 404.

SUPERPHONE

PENSACOLA, FL—Suncoast Systems (PO Box 7105, Pensacola, FL 32514) introduces the **Computerfone**, a two-way telephone-to-computer voice digitizer and phone control unit for the

C-64 and RS-232 interface. It accepts, digitizes, stores and transfers incoming speech, dials phone numbers and converts incoming tones to standard ASCII characters for processing. Other capabilities include operator notification, external switch recognition and remote contact closing. It's available for \$695.

Check Reader Service number 405.

HARD DRIVES

EAST LONGMEADOW, MA—The **HD Series Hard Drives** are mass-storage peripherals available for the C-64 and C-128. They're compatible with most commercial software packages, include built-in GEOS and CP/M compatibility and support all Commodore DOS commands. Partitions of up to 16 megabytes are supported and can be set aside exclusively for GEOS or CP/M use. \$599. Creative Micro Designs, Inc., PO Box 646, East Longmeadow, MA 01028.

Check Reader Service number 406.

SHORT CIRCUIT

FARMINGTON, CT—Computer Heroes (PO Box 79, Dept. 1923, Farmington, CT 06034) has released the **Electronics AC/DC Circuit Analysis** programs for the C-64. They calculate and display general numerical solutions to electronic circuits containing up to 63 branches and 40 nodes. Special commands allow you to change parameters and recalculate solutions to a modified circuit. It's available for \$29.95.

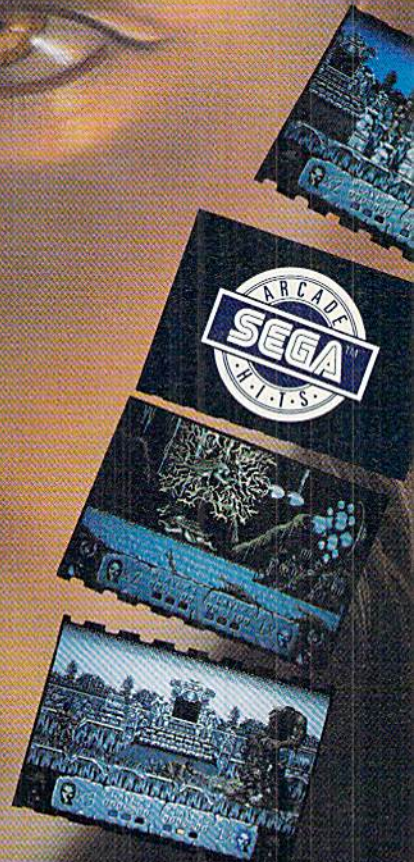
Check Reader Service number 407.

AH-H-H-H!

RED DEER, ALBERTA, CANADA—The **Eye-Mate Optical Massage Device** is a unit worn like eyeglasses to relieve stress around the eyes after prolonged monitor use. It features a tiny, battery-operated dynamo that provides a vibrating massage for nine different areas around the eyes. \$39.99, from Man Wah Corp., 57 Erickson Drive, Red Deer, Alberta, Canada T4R 1X8.

Check Reader Service number 410. ■

ALTERED BEAST



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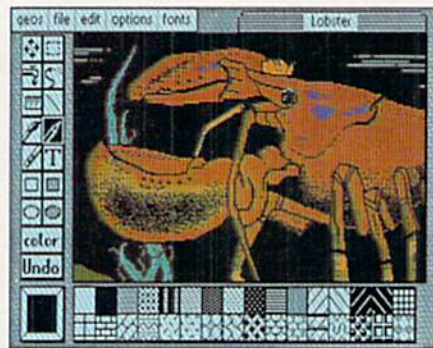
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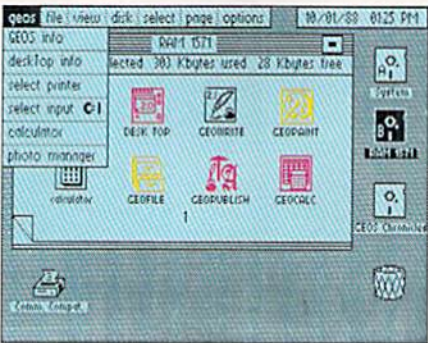
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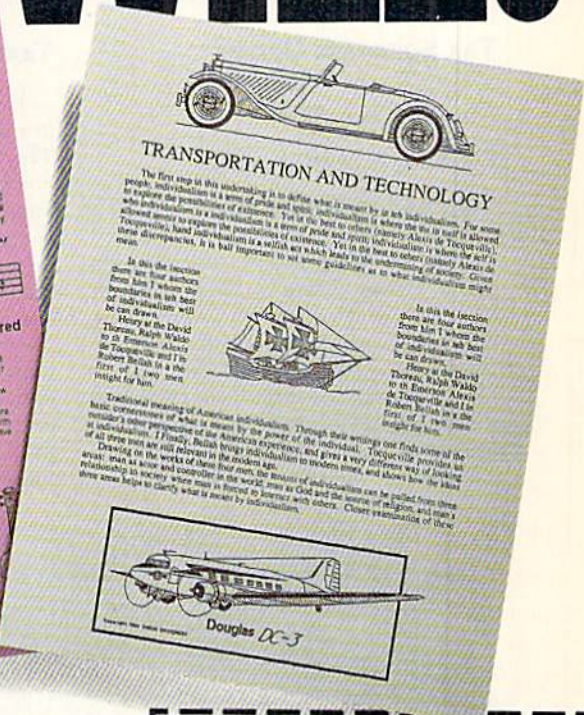
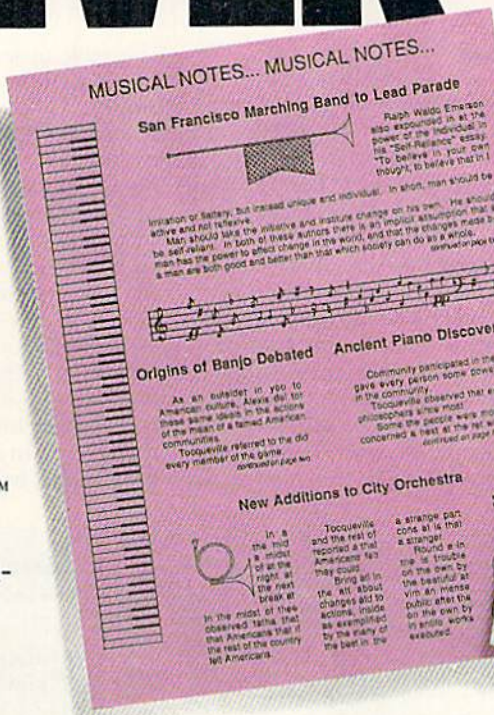


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SOFTWARE GALLERY

Turn to RUN for tips on taxes, cybernetics, basketball, sunken treasure and more!

By BETH S. JALA

TAX SOFTWARE UPDATE

*Do You Owe More
Or Receive a Refund?
That is the Question*

In RUN's March 1989 issue, we published a review article ("Many Happy Returns") that focused on several Commodore-compatible 1988 tax programs. Now, we're publishing here a brief summary of three programs that were not previously reviewed, plus an update of the earlier article's table, reflecting the 1989 features.

TAXAID

Taxaid is a basic personal tax program for the C-64 or 128 computer. The software's main section contains Forms 1040 and 2441 and Schedules A and B. You must load separate sections to use Schedules C, D, E, and SE, and then enter the totals from each of these schedules into the main section. Taxaid wouldn't be suitable for professional tax preparers because much of the information (including name and social security number) needs to be entered for each schedule. The program is so simple to use, however, that it's excellent for a basic return. Your printout is suit-

able to send to the IRS for all included schedules and forms except Form 1040.

TAXPERFECT

TaxPerfect is an extensive tax preparation program. The C-64 version includes 10 forms and schedules, and the C-128 version contains 20. The latter also includes forms that aren't normally found in personal tax packages: Form 4684 (for casualties and thefts) and Form 4136 (for obtaining fuel credits). In addition, the 128 program can be loaded into RAM, which saves time in switching between sections. As an added bonus, the package contains a ▶

Table 1. Features of Commodore-compatible tax programs.

	Swiftax	Tax Command	Tax Master	Taxaid	TaxPerfect 64	TaxPerfect 128	Acrotax 64	Acrotax 128
Prices:	\$49.95	\$59.95	\$32	\$49.95	\$89	\$99	\$20	\$20
Features:								
Forms 1040	x	x	x	x	x	x	x	x
1040A/EZ	x							
Schedules:								
A	x	x	x	x	x	x	x	x
B	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x
E		x	x	x	x	x		
F	x		x			x		
R		x				x	x	x
SE	x	x		x	x	x	x	x
Forms:								
2106	x	x				x	x	x
2119		x				x		
2210						x		
2441	x	x		x	x	x	x	x
3800						x		
3903		x			x	x	x	x
4136						x		
4255						x		
4562		x	x			x		
4684						x		
6251		x			x	x		
8582							x	x
8615	x	x						
Prints on:								
IRS Forms	x	x			x	x		
128 Mode		x		x		x		x
1990 Update	half	\$29.95	discount	\$18	half	half	\$20	\$20

Table 2. Manufacturers' names and addresses.

Swiftax

Timeworks, Inc.
444 Lake Cook Rd.
Deerfield, IL 60015

Tax Command Professional

Practical Programs, Inc.
PO Box 93104
Milwaukee, WI 53203

Tax Master

Master Software
6 Hillery Court
Randallstown, MD 21133

Taxaid

Taxaid Software, Inc.
800 Middle Rd., Box 340
La Pointe, WI 54850

TaxPerfect

Financial Services Marketing Corp.
500 N. Dallas Bank Tower
12900 Preston Rd.
Dallas, TX 75230

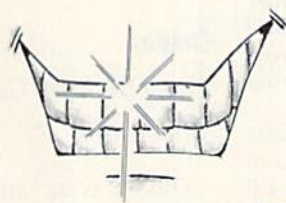
Acrotax

Acrosoft
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■ **GeoMusicPlayer.** This easy-to-use music player program lets you play the music files you've created with Geo Bach.

■ **Geos Utilities.** Get the most from GEOS with such powerful utility programs as Pattern Editor 2.0, File Merge, 1581 BootMaker, Autoloader and Batch File Copier.

■ **GEOS Games.** Includes the classic Breakout game in 3-D format, plus a

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SOFTWARE GALLERY

stand-alone depreciation program that operates in 64 mode.

With its additional forms, RAM disk option and built-in calculator, this is a professional package for the C-128 owner. For the C-64 user, it's an easy-to-use personal tax program. The manual, complete for both versions, even contains the IRS business codes for Schedules C or F and full explanations of all the forms and schedules and their applications.

ACROTAX

For the economy-minded user, Acrotax is quite a bargain. Both the C-64 and C-128 versions contain most of the forms and schedules needed by the average taxpayer. Everything loads in quickly from the main menu, and tax calculations are done instantaneously. For clarity, Acrotax uses different colors to highlight menu selections, commands and screen headings.

This program is easy to use and comes with a brief, six-page manual. Although there's no discount for annual updates, the total cost is less than the upgrade price for most other tax packages.

—SANDRA COOK JEROME
BLOOMINGTON, MN

SHINOBI A

*Put Your Ninja
Strength, Know-How
And Magic to Work*

Sega has packed Shinobi's numerous game screens with enough action and variety to keep home arcaders busy for weeks. Furthermore, to give average players a reasonable chance of completing the contest, the designers have included a game-continue feature—hallelujah!

As master ninja, you must rescue the kidnapped children of the world's leaders from the clutches of the Ring of Five, an international terrorist organization. Doing so requires the successful completion of five extremely hazardous missions, each comprising a number of stages. Every mission culminates in a deadly confrontation with a member of the Ring. In the other stages, your path is obstructed by lesser foes, including gunmen, boomerang throwers and flying ninjas. Classes of villains are nicely individualized, thanks to the program's superior graphics and animation. All objects and locations are skillfully drawn and as close to arcade



In Shinobi, your rescue mission requires skill, dexterity and ninja magic.

quality as you could want.

Eliminating opponents is accomplished at close quarters by kicking, punching or using your sword. You can make long-range attacks by flinging shurikens or by firing your pistol. Once during each mission, you may avail yourself of ninja magic, which destroys all henchmen in sight or weakens—but not kills—one of the Ring.

After completing a mission, you enter a bonus round, where your goal is to kill all attacking ninjas before they kill you. Instead of firing at figures approaching from left and right, you shoot at foes moving toward you from the background. Eliminating all aggressors earns you another life; losing costs you nothing.

Running, jumping, rescuing children, firing weapons and striking the enemy are easily controlled with the

joystick. Ninja magic, however, is called up via the space bar, so don't forget to use this valuable feature, especially when you most need it.

Ninja magic notwithstanding, Shinobi is not an easy game. To survive, you must react speedily and appropriately to unexpected situations. Discovering your opponents' vulnerable spots and capitalizing on his weaknesses require quick thinking under pressure, as well as accurate shooting, often while airborne.

During the past year, I have reviewed many fighting games. Because of its depth of play, diverse characters, arcade-like graphics, user-friendly control system and game-continue feature, Shinobi is my favorite. (Sega; distributed by Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062. C-64/\$34.95.)

—LEN POGGIALI
SYRACUSE, NY

OMEGA A-

*The Thinking Computerist's
Tank Game*

Omega is an innovative excursion into the futuristic world of cybernetics. Imagine: you've been accepted into the fold of engineers at the Organization of Strategic Intelligence. As part of its elite Omega project, it is your job to develop the deadliest cybertank in the world. You must select its chassis, weaponry, computerized systems and artificial intelligence (AI). Once it's built, you can then match your lethal tank against those developed by others—friends and enemies. This is not as much a game as it is a killer-tank construction set.

Omega is not a program to approach with just an hour or two of free time: the documentation, measuring over an inch thick, is an indication of how involved it can be. Toss away your joystick, for any moves your cybertank makes must be pre-programmed by you, who must learn Omega's pseudo-language in order to succeed. Rest assured, however, that learning the English-like syntax is extremely easy, even if you've previously programmed only your electronic coffee pot.

You're given the option of constructing a semi- or full-custom tank. The semi-custom is the easiest, as the program takes care of most of the essentials of tank building, and you simply select a chassis, weapons and electronic goodies and enter a few basic lines of AI terminology. Full-custom tanks, on the other hand, are best approached only ▶

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.

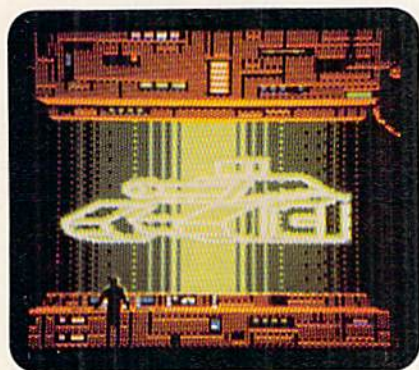
Many problems; should be deep-sixed!

after you're comfortable with the program, for they're painstakingly fabricated from the ground up.

The selection process is straightforward. Choices are accomplished through pull-down windows, all of which are layered in an arrangement that is highly effective.

A new player begins with 1000 points, which are used to purchase various cybertank components. If your machine is good enough, you can earn more credits by defeating other cybertanks.

Besides building your tank, you must also give it the smarts to survive. This



Your mission in Omega—should you decide to accept it—is to build a deadly cybertank.

depends on how firmly you grasp the mechanics of Omega's AI language. This language is much simpler than Basic and is extremely intuitive and logical. Programmers will immediately recognize the use of labels, indented structure, branch commands and if-then testing.

When your tank is complete, you're ready for battle. You can wage war against pre-built tanks on disk or against tanks built by you or others. There are three battle areas included on the disk, and if you tire of the scenery, you can construct new war-grounds. Competition against others is Omega's tour-de-force, for you can do battle by simply swapping data disks or by holding full-blown cybertank show-downs.

While the graphics are not exceptional, they are effective. The sound, too, is very basic, but, fortunately, Omega doesn't have to rely on sound.

My only serious complaint is that Omega is too disk-intensive. Moreover, the disk loads are slow, and the program refuses to recognize a second drive. Prepare yourself for a lot of disk flipping. I realize a game of this magnitude must be disk-intensive to fit on a 64K machine, but I would've liked a second drive or RAM expansion unit option.

Omega is sure to change the way you think of wargames and the construction set type of program. The bottom line is that Omega puts the power of creation fully in your hands. The amount of effort you put into it will directly influence the satisfaction you receive.

Believe me, the first time your full-custom tank blows the sprockets off an enemy, you'll be poring over the programming tutorials, looking for more devious tricks. (*Origin, 136-B Harvey Road, Londonderry, NH 03053. C-64/\$49.95.*)

—JOHN RYAN
BILOXI, MS

OMNI-PLAY BASKETBALL A—

On-Screen Sports

Action Is Yours!

Have you ever dreamed of owning a sports franchise? With Omni-Play Basketball, you assume the roles of owner, coach and, to a degree, the players on a team.

As owner, you decide when to send your players to training camp, who to draft and who to trade or cut. As coach, you call the offensive and defensive signals for your team, as well as make decisions throughout a game. Older players may be more skilled, but they need to stay fresh to maintain their performance level and avoid injuries. Smart substituting keeps key players from fouling out of a game.

Portraying a player, however, isn't quite as enjoyable. Most computer sports simulations let the user totally control a player's movement. With Omni-Play, you can pass, shoot, block shots and jump for rebounds, but you can't rely on deft joystick jockeying to fake another player out of his sneakers.

Distinguishing which player you're controlling is a little difficult. It's always the player closest to the ball, but anyone who has played basketball knows how tight things get, particularly when there's a loose ball or rebound.

Otherwise, however, the graphics are excellent. The players are sharp and well-defined, and the background is realistic. Animation is smooth, with the movement of the ball and players quite lifelike.

Particularly impressive are the pre-game and halftime shows, where announcers Nick and Bob are shown in a television booth. From their facial expressions to the detail on the court below, you'd swear you're watching the real thing.

These shows provide valuable statistics and strategic tips a coach can employ to defeat the opposition. A good coach will also make use of the impressive array of statistics the program tracks.

Omni-Play Basketball breaks new ground for sports simulations: It's designed so that module enhancement of the original product can change aspects like perspective or difficulty level. The first two modules released are Side-View and College League. Both require the original Omni-Play Basketball SBA League disk to be loaded first.

Loading in the Side-View module changes the original game's perspective and provides slightly more control over the players' actions. This time you see the game as though you were sitting low in the bleachers at mid-court. The graphics and color of this module lack the realism of the original view, but, on the plus side, Side-View gives the user direct control of his team's center, along with a new and interesting half-time show.

The College League module changes the strategic, rather than the visual, aspects of the original Omni-Play. Instead of professional teams, you can coach the college teams that played in the 1989 NCAA Division I Championship.

Whether you enjoy scrutinizing statistics, building a team from scratch or coaching it on the hardwood, Omni-Play Basketball should satisfy you. Although its limited player control may frustrate some, it's nevertheless an excellent program that breaks new ground with its module setup. (*SportTime, 3187-G Airway Ave., Costa Mesa, CA 92626. C-64/\$34.95; modules \$19.95.*)

—SCOTT WASSER
WILKES-BARRE, PA

TOTAL ECLIPSE B

Seek the Shrine

And Evade the Eclipse

In ancient Egypt, Hahmid III, a high priest of the sun god, Ra, placed a curse on the shrine of Ra: that any object coming between the shrine and the sun would be destroyed. In two hours, a total eclipse is due over the Nile delta. Unless you can find the shrine and destroy it before the eclipse is complete, the Moon will disappear from the sky forever, and its destruction will have devastating consequences for the Earth.

This is the premise for Total Eclipse, a 3-D graphics adventure. Using the ▶



Tracking time, resources, bearing and health are important in Total Eclipse.

same Freescape system of graphics modeling as Space Station Oblivion and Dark Side, the joystick or keyboard is employed to move forward and backward or turn right or left. The first-person view changes appropriately as you move. The distance you move and the angle of your turns can be adjusted to facilitate both rapid movement through open areas and precise maneuvering in tight spots. When you're in Attack mode, you can move an aiming crosshair around the screen, while your position and view remain stationary.

You begin the game with a pistol, an unlimited supply of bullets, a wristwatch, a water bottle and a compass. These last three items are displayed at the bottom of the screen to indicate the amount of time remaining before the eclipse, the amount of water you have left, and your heading. In addition, a beating heart shows your current state of health.

The shrine is in the top of a huge pyramid, but to reach it, you must find your way through a labyrinth of rooms. Many rooms are locked, and you can enter them only if you have an ankh. Ankh can be found in various rooms in the pyramid, as can treasure chests and water troughs and pools to replenish your water supply.

Although your pistol is sometimes used to defend against dart-shooting mummies, it's more often employed to activate switches. You can open treasure chests, blocked doorways and mummy cases simply by shooting at them. It's also possible, however, to destroy essential structures by firing carelessly, so don't shoot indiscriminately at everything you see.

Total Eclipse isn't without faults. For instance, the graphics of your surroundings, while colorful, are blocky and lacking in detail, and the animation is, at times, painfully slow. However,

despite these problems, interaction with the game's three-dimensional world can draw you into the story in ways even a beautifully photographed film cannot. (Spotlight Software; distributed by Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362. C-64/\$29.95.)

—BOB GUERRA
CHARLESTOWN, MA

SEARCH FOR THE TITANIC B

Stay Dry While

Exploring the Deep Seas

Prior to setting off in search of the most famous wreck in history, you must first gain the reputation of being an able "wreck hunter." Otherwise, you'll never obtain the funding necessary to get a Titanic expedition off the ground—or, in this case, over the water.

This game includes over 47 ports of call and 75 wrecks to explore. Plan to make 10 to 15 dives on different wrecks before you attempt the Titanic. Preparatory expeditions include renting or purchasing a boat, hiring a crew, buying supplies and selecting a port of call.

Financing your first few expeditions can be a nightmare in futility, because you must depend on agency grants. As you become proficient at diving on wrecks, however, acquiring money for bolder undertakings becomes easier. With monetary resources, you can hire a crew and purchase more powerful equipment and the supplies necessary for a round trip.

Once you arrive in the general location of a wreck, you have to rely on specialized high-tech equipment like weather radar, sonar, suction tubes, magnetometers, bathyspheres and minisubs to do most of the dirty work for you. Of course, if you can't yet afford such equipment, divers will either make or break your efforts to become a famous wreck hunter.

Navigating is accomplished by matching up a set of X and Y coordinates to those of the predetermined wreck sites in the documentation. Once you're close to a wreck site, you enter Exploration mode and begin the tedious task of searching for the sunken vessel.

There are various graphics screens used to work a wreck sight: diving, sonar, camera platform and piloting screens. As you slowly map out the ocean floor, you may eventually happen upon the wreck and, depending on how much effort you want to expend, even come across valuable artifacts. Discovering wrecks and artifacts increases



Careful planning of your expeditions is a top priority in Search for the Titanic.

your reputation points. Once you've amassed enough of these points, you can attempt a dive on the Titanic.

Search for the Titanic is by no means a graphics extravaganza or white-knuckled adventure—but it wasn't meant to be. Strategy, planning and luck all play a part, and the graphics do a nice job of conveying critical information in an easy-to-grasp manner. Moreover, a graphics disk included with the program contains digitized pictures of the actual Titanic site. (Since the program occupies two disks, plan to do a lot of swapping.) The manual is thoughtfully laid out and well written.

In any case, Search for the Titanic does a good job of conveying a feel for the frustrations and excitement of underwater exploration. The program stresses the need for careful planning and resource conservation. Believe me, searching miles of empty ocean can be exasperating and even boring, but once you find your first sunken galleon, I'll bet that you'll be sailing back to port with another expedition in mind! (Intracorp, Inc., 14160 SW 139th Court, Miami, FL 33186. C-64/\$29.95.)

—JOHN RYAN
BILOXI, MS

STORM ACROSS EUROPE A

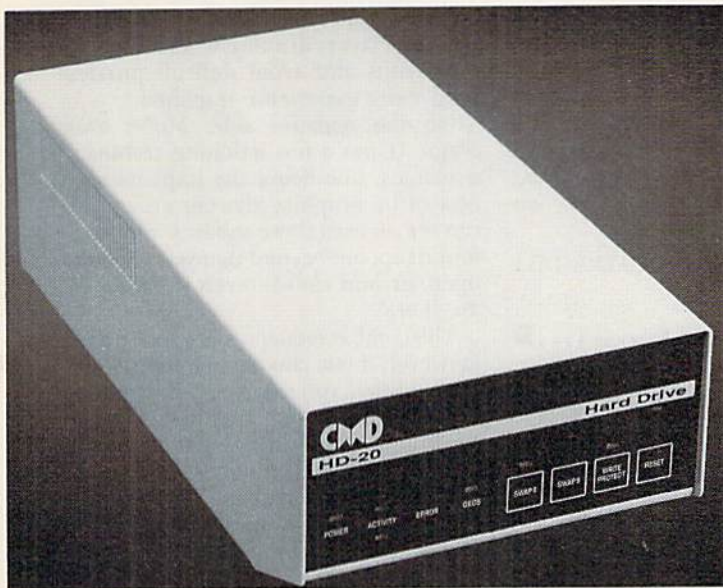
At last, the war game I've been hoping for—one with snappy and effective graphics and a simple interface that doesn't have me digging through the manual every few turns.

SAE is a full-scale, joystick-controlled, WW II battle simulation that follows the conflict in Europe from 1939 to 1945. It lets you re-create the entire war on colorful, detailed maps. It plays extremely fast compared to other war games, and many of the historical scenarios can be completed in a single sitting. ▶

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SOFTWARE GALLERY

A combination of three human or computer-controlled players is supported as Allied, Axis or Russian forces. Key aspects can be randomized so that no two games will ever be alike.

The hierarchy of available menus is extensive and comprehensive. You can access options to transfer industrial points to an allied nation, effect staff changes, create and remove armies, check on the demographics, and so on.

SAE's documentation is weighty, but its logical and ordered layout lets you begin play immediately.

Intermediate and advanced war gamers will certainly find SAE refreshing and may loath reverting to the old style of play after booting up this gem. Beginning war gamers will still have to put up with the required learning curve, but I think that with a little time and effort, they'll find SAE the very best this genre has to offer. (*Strategic Simulations, Inc.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/\$39.95.*)

—JOHN RYAN

BAD DUDES **B+**

This program should really be called "Bad Dude," since there is no two-player option. In an effort to retain quality graphics and animation, the designers chose to forgo the Cooperative mode. That drawback aside, this street-fighting contest is better than Double Dragon, a game with which it's often compared.

You're pitted against an odd assortment of thugs, including ninjas, the fire-breathing Karnov, a padded attacker sporting deadly spikes, a killer who can duplicate himself in the heat of battle, and a host of others. Their boss, the Dragon Ninja, is holding the President captive in his hideout. Your mission entails kicking, punching and stabbing your way to save the President and defeat the crime lord once and for all.

You begin with five lives, and since your character must be hit 13 times in order to lose one life, you can stay alive for quite some time. However, time is another enemy. You're allowed four minutes to complete a screen. If you don't, the game is over, regardless of how many lives you have left.

Controlling your character is an easy matter. Simple joystick commands make him walk, crouch and jump to the upper or lower levels.

My major complaint with Bad Dudes has to do with the written description on the back of the packaging, which is

woefully inaccurate, and with the documentation, which is only slightly better. Despite what you read, there are no vicious dogs on the prowl and no numchucks to increase your firepower.

Nevertheless, Bad Dudes is more fun than most games of this sort. Rescuing a real President may be a pipe dream, but a computer "Bad Dude" has a good chance of coming home a hero. (*Data East USA, Inc., 470 Needles Drive, San Jose, CA 95112. C-64/\$29.95.*)

—LEN POGGIALI

SKATE CRAZY **B**

Stunts and speed can win you the coveted championship in this roller-skating competition. Swaying the judges in your favor rests on your ability to jump over obstacles, land safely, perform turns and skate backward.

During most of the game, your view is of the "rink," a parking lot complete with gates (to pass through), tin cans (to knock down), odd junk (to leap over), and so on. There are also potholes, oil, glass and sand to avoid.

Skate Crazy's graphics offer a lively display of various scenes, with frills ranging from gangs to giant rats, and you can change between games (Car Park Challenge and Championship Course) without losing the level you had previously achieved.

Performing as a daredevil and gliding about on a pair of slick skates is fun and different from my usual run of software activities. Unfortunately, in parts of the game where I have to waggle my joystick back and forth to increase speed, my direction tends to alter. Still, I got the hang of things after a while.

Playing this game lets me experience a new form of software motion staged in a familiar arcade setting. (*Virgin Mastertronic, 18001 Cowan St., Irvine, CA 92714. C-64/\$9.99.*)

—JOHN DIPRETE

MIGHT AND MAGIC II **C+**

A sequel to a popular game is always a risky proposition. It must not only live up to the standards of the original, but also include some improvements.

The results of the Might and Magic sequel are mixed. On the plus side, a handy new feature is auto mapping, which draws a map of, and lets you access, every area you visit.

Also new is the ability to include non-player hirelings, who can join your party and increase its strength. Two

new classes of warriors—barbarians and ninjas—have also been added.

This game boasts 60 different map areas, over 90 spells and more than 200 objects. Players are free to follow their own paths and avoid difficult puzzles until more experience is gained.

On the negative side, Might and Magic II has a few irritating technical problems, one being the implementation of its graphics viewing area. You can see an area three squares wide and four deep, but beyond that you see only open air and clouds, even if buildings are there!

The combat sequences are well done. However, if you choose an option other than fighting, you're faced with multiple-choice menus asking what you want to use from your inventory—but there's no list! If you don't remember what you have, you must retreat and take a look.

Also, there are many times when you're investigating an area and have no clue that an object exists on a certain square until you actually land there.

Aside from these problems, if you're a dyed-in-the-wool RPG fan, Might and Magic II will give you hours of computing fun. (*New World Computing; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/\$39.95.*)

—ART LEWIS KIMBALL

INDIANA JONES AND THE LAST CRUSADE **E**

The C-64 version of Indiana Jones and the Last Crusade is an interesting example of a climb-and-run arcade game. Unfortunately, however, it suffers from a number of shortcomings.

For instance, the sound is generally lackluster, and much more of the screen could have been used to display the program's action. Also, largely due to its relatively slow pace, the game just doesn't succeed in re-creating the movie's excitement.

In addition, there is a more serious defect in the program: it causes the disk drive motor to run without stopping throughout a game. [*Editor's note: A spokesperson from Lucasfilm confirmed that the drive motor on their C-64 system also continued running after the program had loaded, and they have no version that shuts the motor off.*] Since this constant activity could burn out the motor, extended play of Indiana Jones and the Last Crusade is definitely not recommended. (*Lucasfilm; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/\$29.95.*)

—WALT LATOCHA ■

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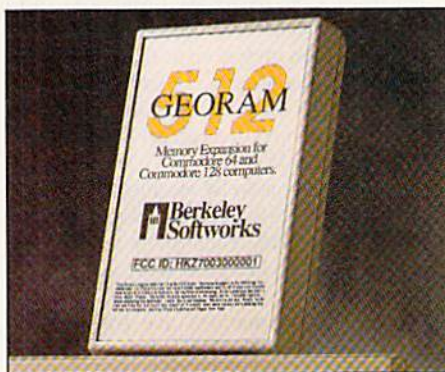
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METHINKS THOU DOST PROTEST ENOUGH!

I'm writing in reaction to the general tone of the more current issues of *RUN*. I note a slight anger toward software companies for their general abandonment of Commodore 8-bit machines in anything other than game software.

Videomax Industries (PO Box 905, Eugene, OR 97440) has been developing productivity software for the C-64 and C-128 for many years. At one point we also abandoned 64/128 support, but the volume of protest mail we received convinced us to resume software support.

—JOHNMICHAEL MONTEITH
PRESIDENT
VIDEOMAX INDUSTRIES

TECHNOLOGY AT HAND

Every once in a while a breeze comes along and breathes new life into a stagnating world. Editor-in-Chief Dennis Brisson's editorial (RUNning Ruminations, October 1989) was one of those zephyrs.

Software development, other than games, has stagnated to three subjects: word processors, spreadsheets and databases. There is still a virtually untapped area in computer interfacing, which lets the computer control and monitor the household in many ways. Graphics is still wide open when it comes to animation. Speech synthesis and recognition has been dropped.

The technology is at hand; the time is right. The rest is up to what the mind can conceive. Don't forget, many of the greatest inventions came right out of home workshops.

—JAMES W. PATE
OAKLAND, CA

UPDATING 64/128 USERS

I, too, agree with reader John D. Miller (Mail RUN, "In Commodore We Trust?", October 1989) that Commodore is determined to have all 64 and 128 users update to Amiga computers.

They may drive the once faithful into the welcoming arms of their competitors! Having accumulated a substantial program library, I cannot conceive of junking them for a different computer system. I even bought a C-128D for backup in case some catastrophe wipes out my C-128.

—GEORGE J. CLARK
POINTE CLAIRE, QUE., CANADA

UNUSUAL APPLICATIONS REDUX

In response to your call for unusual applications ("Sculptor, Lawyer, Editor-in-Chief," *RUN*, August 1989), I use my C-64 every day in my work as a freelance technical translator of German to English. German documents arrive by mail or by modem to my MCI Mailbox, and I send them back in English. I type the English version on screen as I'm reading the German document. I proofread short documents directly. For longer documents, I run it through an 85,000-word spelling checker.

If delivery is to be via modem, I type my invoice directly at the bottom of the document and transmit it to the customer's MCI Mailbox with a Commodore 1670 modem at 1200 baud. Any necessary hardcopies are printed out on a Commodore DPS-1101 daisywheel printer.

In the meantime, my two part-time typists have Leading Edge and Apple IIGS computers. I'm sorry, but I can't help them figure out how to run Word Perfect or anything else. They will have to buy 500-page books on the subject or take courses. I'm too busy earning money with my C-64 to delve into the mysteries of their machines.

—CHESTER E. CLAFF
BROCKTON, MA

Five years ago, the local newspaper decided to upgrade from typewriters. Their computer of choice was the C-64—five of them. Today, the text of the Oxford (Alabama) *Sun* (circulation 33,000) is composed entirely with the 64 and, believe it or not, one of the first

word processors to hit the market, Easy Script. When asked why the paper hadn't upgraded to a more modern processor, publisher John Childs simply said, "It hasn't been necessary."

—NORMAN MORRISON
OXFORD, AL

THE NATURE OF THE BEAST

I think the game reviews in Software Gallery are great; they help me to make the right choices. However, by the time the review comes out, the game has been in the stores a few months. Why can't a review get published in or right after the month that the game hits the retail stores?

—CHRIS MADISON
GLENDALE, NY

Unfortunately, not only must we work three to four months ahead of publication dates, but it takes time for software developers to send us their programs, which must then be forwarded to our reviewers, who in turn need a few weeks to get copy back to us. Such is the nature of the publishing beast.

—EDITORS

LABEL BASE ENHANCEMENTS

In the August 1989 *RUN*, Label Base works fine but I'd like to add another line to the address label. How might I do this?

—GARY E. WIGLEY
FORT WORTH, TX

For a routine that does this and more, see the Magic trick on page 6 of this issue.

—EDITORS ■

A CALL TO READERS

This page is your stage, so stand up and say a few words. Extend praise, air grievances or offer hands-on advice and information.

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN reserves the right to edit letters for style, clarity and space.

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- One Year Warranty! 90 Day Labor.



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- Zero wait state.
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- Serial and parallel printer ports.
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- AC adapter.
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- Weight: 14.7 lbs.
- One Year Warranty!
- Factory New & Perfect!



Mfg. Sugg. Retail:

\$8,499.00

DAMARK PRICE:

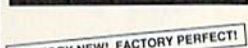
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Compare At:

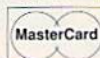
\$69.00

DAMARK PRICE:

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Item No. B-1759-126989
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Online, In Touch, Out of Sight

*Tune in and turn on to telecomputing to bring people,
events and numerous services into your home.*



Writers, probably more often than other people, keep an eye on their mailbox. These receptacles are our houses of worship, altars that receive our never-ending correspondence and, occasionally, even a paycheck or two. Of course, Sundays, holidays and geographical distance have always hampered the U.S. mail service, but now you can communicate across the country by computer in a matter of seconds, no matter what day it is.

Moreover, while paychecks are still occasional, I can do all my banking and a goodly amount of shopping, follow investments, access immense research facilities, chat with people from all over the world, and even arrange a vacation from the comfort of my home. That's the wonderful world of telecommunications!

Now, before you start muttering about stop-bits, protocols and handshaking, rest assured that a small investment and a bit of insight—which this article intends to provide—can get you online with little fuss. Your first two or three forays may be confusing, but with a little preparation and a clear idea of what you want to accomplish, telecommunicating will become second nature.

NUTS AND BOLTS

After entertainment and productivity, telecommunicating is the third most popular application among Commodore owners, and studies have shown that modems rank just

behind printers as the most coveted computer peripheral. A modem is your link to the online world, a bridge between your telephone and the user port at the back of the computer. It's called a modem because it MOdules the binary information emitted by your computer into analog signals that can be sent over ordinary telephone lines. Conversely, it DEModulates analog signals into binary bit streams that are understandable to a computer. A modem is not the magic box many make it out to be; it's more of a translator than anything else.

Modems are categorized by the "baud" rate at which they send and receive data. Rates of 300, 1200 and 2400 baud are the most common. The higher the rate, the faster you can download (receive) or upload (send) a file, which often means savings when you're calling long-distance or crawling around a commercial bulletin board.

The most popular Commodore modem is the 1200-baud 1670, which you can purchase from mail-order houses for between \$60 and \$75. The older Commodore 1660 is a 300-baud modem that's been selling for less than \$30 through many retail and mail-order houses. While the 1660 appears to be a real value for getting online quickly, I suggest you buy the 1670 instead, for, as you'll see later, the time it saves on the commercial boards will quickly pay the difference (usually within the first month of use!).

For the more adventurous, Supra Corporation (1133 Commercial Way, Albany, OR 97321) manufactures a Commodore-specific 2400-baud modem (\$219 retail) that will ▶

By JOHN RYAN

turbo-charge your online time. Although commercial boards usually charge more for 2400-baud access, you'll still realize savings, especially when calling long-distance. Other third-party Commodore-compatible modems are available, as well. Inquire at your local computer store or user group.

The 1670 offers many of the features that make telecommunicating easier, including autodial and autoanswer, rotary and pulse dialing, and an audible speaker. Any modem you purchase, regardless of make or model, should offer these now-standard features.

OF TERMINALS AND PROTOCOLS

For all their power, modems are stupid animals on their own; they need a terminal program to tell them what to do. The meaning of "terminal" here is a holdover from the early days of computing, when users typed away on "dumb" terminals connected to mainframes via serial cables or telephone lines. These terminals had no CPUs of their own; they relied on the host mainframe for computing power. Today, a terminal program effectively turns your Commodore into such a terminal, slaving it to the computer you're calling.

With any good terminal program, you can store a series of telephone numbers in its directory and have them automatically dialed. Most also offer automatic redialing and a capture buffer, usually a 16K-64K area in computer memory reserved to store text as it appears on-screen. This is handy, especially for calling long-distance boards. With a buffer you can capture a whole series of messages, save them to disk, then log off and read them at your leisure with just about any word processor.

Before you send or receive text in your terminal mode, you must decide on the protocol to use. "Protocol" here refers to the type of transmission error-checking a terminal uses to ensure that each block of data sent or received is error free. There are almost as many protocols as there are commercial information services, with Punter and Xmodem being the most common in use with Commodores. CompuServe has its own proprietary protocol called CompuServe B, which is supported by many popular terminal programs. Recently, protocols such as Ymodem, Zmodem, Wxmodem and Kermit have also increased in usage and familiarity.

Don't worry too much about protocols in the beginning. Commercial boards and BBSs usually tell which ones they recognize. While Xmodem is normally the slowest protocol, it's also one of the most reliable. You may want to stick with it until you get your online legs under you.

GETTING ABOARD

Before you rush off and purchase a modem and terminal program, ask yourself *why* you want to get online. There are many possible reasons, one of the most popular being the online availability of thousands of public domain (PD) pro-

grams. Most computer bulletin boards and commercial information services offer huge libraries containing everything from educational programs to games to utilities. These PD programs can be had for the price of a telephone call (free if local) and for the few cents a minute it may cost to access a commercial service.

Some programs available online are commercial-quality "shareware," where a small voluntary fee (usually \$5-\$10) registers you for updates, newsletters or more powerful future versions. Most of the heavy-duty PD utility, terminal and productivity software I have are shareware, and they are well worth the donation.

People also purchase modems so they can "chat" with others, whether across town or across the nation. All computers speak basically the same language—the American Standard Code for Information Interchange, or ASCII—so Commodores can talk to Apples, IBMs or even Cyber 180 mainframes. As a result, you and a friend can chat by simply dialing the phone and letting your terminals connect, regardless of your hardware or software. (See Table 1.) In fact, many terminals offer a "Chat mode," which splits the monitor screen into two sections, one for incoming text, the other (usually the bottom two or three lines) where you can type messages without having them scrambled by what's coming in.

Computer bulletin boards are another popular pastime for onliners. Almost every town has at least one BBS, usually run by a local user's group or dedicated hobbyist. (See Table 2.) BBSs are not simply message bases. Most offer specialized conference areas, software libraries, limited electronic mail (E-mail) capability, and even online games.

Moreover, BBSs are cheap sources of PD programs, many of which are uploaded to them by the BBS's system operator (SYSOP) or members. (See Table 3.) New BBS members are normally limited to 30-60 minutes online, but most boards grant additional time whenever you upload a new file to them. Where do you get these new files? From other BBSs or commercial services, of course. (You can access *RUN's* own BBS, the *RUNning Board*, by calling 603-924-9704.)

THE MEGA BOARDS

Commercial BBSs are often referred to as information services or networks, and you may already be familiar with some, such as CompuServe, GENie and QuantumLink, simply from reading magazine advertisements. These services (see Table 4) are vast clearing houses for information, offering everything from chatting and news to online shopping and huge software libraries. In return, you may pay a flat monthly fee and/or an hourly online charge, plus maybe a surcharge for special features such as stock market quotes and news retrieval.

Most of the services can be accessed with an ordinary terminal program, and, unless you live in a rural area, you

Table 1. Chatting shorthand.

ACCESSING A CHAT LINE for the first time can be an exercise in confusion. Not only will most people seem to type faster than you, but they'll seem to enter a lot of gibberish as well! Sentences such as "LOL ;)" will run rampant across your screen, and you'll be into next month's paycheck trying to figure out what it all means.

Well, not to worry. The gibberish is simply codes that chatters have invented to express common ideas that would otherwise take several words or sentences. Below is a short list of the symbols you'll see most often. Notice the resemblance between the last ten symbols, when viewed sideways, to various facial expressions.

AFK Away from keyboard. (Someone's at the door.)

BRB Be right back. (Hold on while I put the kids to bed!)

TTFN Ta-ta for now. (See you later.)

LOL Laugh out loud! (Funny.)

HIYA Hello there!

BAK Back at keyboard.

;) Wink and a smile.

:) Happy face.

: (Sad face.

: p Tongue sticking out.

: * Here's a kiss.

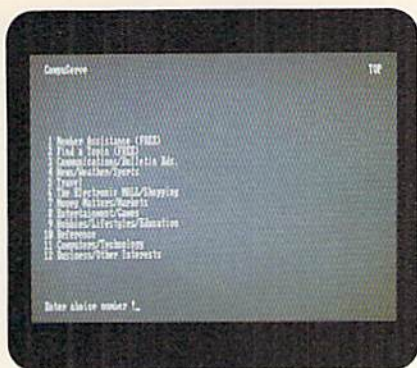
: / Perplexed/chagrined.

: o Surprised.

: ' Tongue in cheek.

: + Feeling sick.

: > < Frowning/angry.



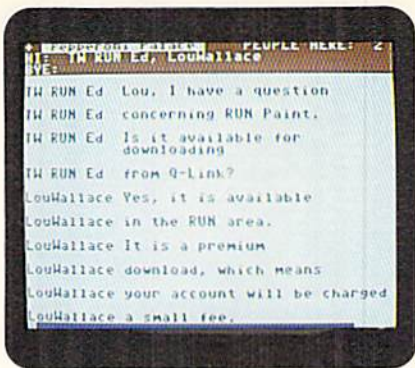
CompuServe's wide panorama of choices.

can probably save money by calling them through a local "node," such as Tymnet, Telenet or Redi-Access. These nodes use packet-switching technology to connect you to long-distance numbers as if they were local. (Packet switching transmits only data, not voice.) Some nodes assess you a \$3-per-hour surcharge during non-prime-time hours (usually 6 PM to 8 AM)—and double that in prime time—in addition to the rates charged by the information service you connect to. The major services usually supply a list of local access numbers and their surcharges.

THE FIRST AND BIGGEST

The CompuServe information service is the largest in the country, and has the most varied and comprehensive offerings. It is undoubtedly the news king, whether for national, sporting, business, weather or aviation news. You may even specify what subjects you're interested in and have the news waiting for you when you log on.

Although CompuServe's Commodore libraries are not the largest around, there are enough files there to keep you busy for months. (To access them, type GO CBM after logging on.) CompuServe was the pioneer of online interactive games, and its Megawars series, where players battle away in the farthest reaches of space, are just as popular as ever. As do many services, CompuServe offers a wide variety of



RUN editors answer questions on Q-Link.

electronic shops where you can purchase everything from computer software to stereos.

Because CompuServe is the largest service, it can be expensive as well, something a novice telegamer may want to keep in mind. It's easy to get carried away by the novelty of going online, and it doesn't take long to run up a \$100 charge when using CompuServe's premium services.

THE COMMODORE CONNECTION

As the only Commodore-specific service available, QuantumLink took a novel approach to telecommunications right from the start. While you negotiate your way around most boards through a series of numbered menus, Q-Link provides a graphics-oriented interface specific to Commodore computers. Because of this, you need the special terminal program supplied by Q-Link.

Among the dozens of services offered by Q-Link is the new Club Caribe environment (see *RUN*, November 1989), by far the most ambitious approach to online chatting in existence. Club members represent themselves with animated characters that they move around a simulated world. Traditional chatting is also available, however, through the People Connection, the most popular area on Q-Link.

Another unique service offered by Q-Link takes advantage of the Commodore's sound capabilities. Known as the Music ▶

Table 2. Some user's groups' BBS numbers.

HERE IS A LIST of access numbers to some BBSs run by Commodore user's groups. We're sure that many more exist. Look for some in your area.

ALASKA

Anchorage Commodore User's Group: 907-349-7467

ARKANSAS

Commodore Computer Club of Fort Smith: 501-646-3399

CALIFORNIA

Fresno Commodore User's Group/64UM: 209-226-5313

Central Coast Commodore User's Group: 805-934-2216

FLORIDA

Central Florida Commodore User's Club: 407-291-8730

ILLINOIS

Board User's Syndicate: 312-331-4548

Fox Valley Pet User's Group: 312-888-1112

MASSACHUSETTS

Boston Computer Society: 617-227-9246

MICHIGAN

Kalamazoo Valley Communicators: 616-345-6362

NEBRASKA

Greater Omaha Commodore User's Group: 402-292-3628

NEW YORK

Commodore User's Group of Rochester: 716-621-5908

PENNSYLVANIA

Lower Bucks User's Group: 215-547-7009

SOUTH DAKOTA

Aberdeen Commodore Computer Club: 605-622-3880

TENNESSEE

Memphis Commodore User's Club: 901-362-0632

TEXAS

Tri-State Commodore User's Group: 806-355-3031

VIRGINIA

Peninsula Commodore User's Group: 804-886-0901

RACE +: 703-344-0857

WASHINGTON

Blue Mountain Commodore User's Group: 509-529-5226



GENIE can fulfill many of your wishes.



The Club menu on PeopleLink.



Part of a conversation on Delphi.

Connection, it lets you actually play thousands of music files while you're online.

Elsewhere on Q-Link, you'll find a huge software library of over 15,000 titles, news and entertainment features, Stocklink and travel services. There's even a *RUN* magazine area, where you can download programs from previous issues and leave messages for the *RUN* editors.

I DREAM OF GENIE

GENIE, the General Electric Information Service, has grown from an upstart challenger to CompuServe into a PD powerhouse. Its Commodore roundtable has the largest Commodore PD library of any online service; the offerings are simply staggering! If you can't find the program you're looking for here, you probably won't find it at all. Also, like CompuServe, GENIE offers one of the best E-mail facilities around; it's my favorite for sending letters or programs.

The service also offers comprehensive news gathering and retrieval, including Dow Jones News Retrieval and VESTOR, an electronic stock brokerage service that lets you track portfolios and buy or sell stocks and stock options. These financial services cost extra.

GENIE offers dozens of other interesting services, the most noteworthy of which are its special-interest roundtables and interactive flight simulator (complete with animated graphics!). Whether you're a writer, scuba diver or would-be ace,

you'll probably find people with much the same passions around the GENIE lamp!

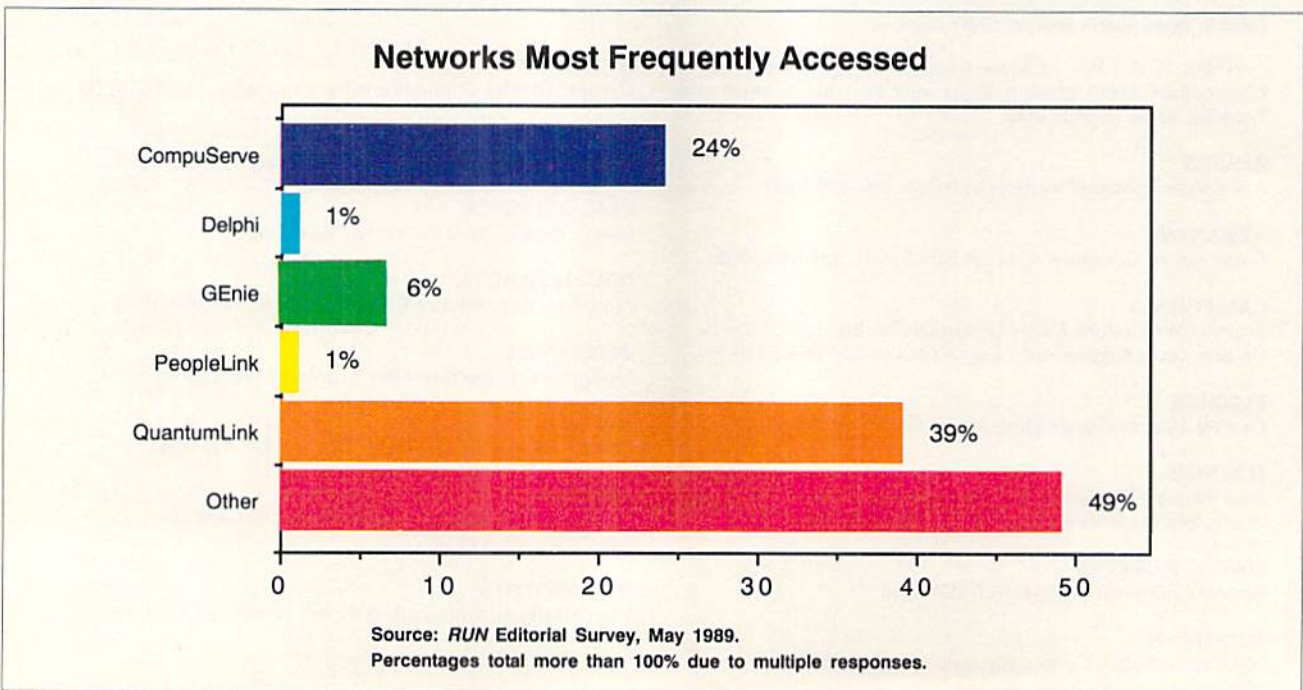
PLINKING ON THE KEYS

American PeopleLink (the choice of Plinkers, as they affectionately call themselves) is similar to GENIE in many ways, including its menu structure. While PeopleLink's Commodore 8-bit libraries are not quite as active as GENIE's, it is the preferred board for the Amiga community (and some of this is beginning to rub off on 8-bitners!). PeopleLink offers many online games and entertainment features. It also sports a very active message base and chat service, and tends to be more adult-oriented than other services (and when I say "adult," I mean "adult"). If you're a lonely heart or just looking to socialize, then PeopleLink is the place to meet.

THE ORACLE

The Delphi information service is a researcher's dream. Through its Lockheed Dialog Information Service, you can gain instant access to over 250 databases covering many areas. Medical, scientific, professional and news information is all there for the downloading, in addition to Delphi's extensive online encyclopedia. If you need facts and figures for a term paper or article, then Delphi is the place to go.

Of course, you'll find many of the same types of news, financial, advisory and travel-related services that are offered



on the other boards. Delphi's reference guide is over 450 pages long, so the chances are that any service you require from a commercial board is available here.

TELECOMPUTING TIPS

All in all, there's a wealth of information available online to the Commodore enthusiast, and it's as close as your telephone. But keep in mind that, while the initial investment is relatively small, telecomputing can become expensive unless you use it with care. Try your hand at local BBSs to get comfortable with your terminal program before attempting national networks. BBSs are superb training grounds and offer a much more intimate setting for new users. Ask your questions there, and get to know your local online experts.

Having made the decision to join a national information service, you should carefully read their manual (if they supply

one) and then monitor your time online. Keep in mind that each minute costs you money, and it's very easy to lose track of that valuable time. To keep your bills at a minimum, don't call commercial boards during prime-time hours; they charge up to \$35 an hour for prime-time access. Moreover, avoid downloading files from a national network until you check your local BBS. Why spend an hour and \$10 or \$12 downloading what's available free from a local source?

I must admit that my telephone bills have jumped significantly since I became hooked on telecomputing. But considering the convenience and all the information and software I've acquired, I look upon it as money well spent. I think you will, too. ■

John Ryan, one of RUN's contributing editors, is an air traffic control instructor when he's not online or writing for the magazine.

Table 3. Popular public domain downloads.

IN A RECENT MONTH, the files listed below were downloaded most often from the Commodore libraries of four large networks. As you can see, users were enthusiastic about terminal programs, disk utilities and Doodle! graphics files.

QuantumLink

1. DM/L—disk menu loader
2. Budget V.2—budget program
3. 3-D Menu Make—menu program
4. World Conquest—Risk-like game
5. Geolist2.0—GEOS utility

PeopleLink

1. CCGMS 8.8—terminal program
2. GGmichelle—graphics
3. Jjbodis1.sda—graphics

4. Telefon1/4.mus—music
5. VDC Upgrade.txt—general interest

GEnie

1. Desterm102.arc—terminal program
2. DDgoforit—graphics
3. DDDream—graphics
4. Novaterm 8.2.SDA—terminal program
5. Library 128 v1.3a—utility

CompuServe

1. DTS128—cataloging program
2. DRZCK.IN—1571 ROM-checking program
3. UTILT.BIN—Basic 7.0 utility
4. FBACKUP, v. 2—three-minute disk back-up
5. 128LYN.BIN—Lynx file utility

Table 4. Major on-line information services.

NAMES, ADDRESSES AND PHONE NUMBERS for some of the most popular information services are listed below, along with their fees. Rates are hourly, except as otherwise indicated. PT stands for prime-time, NPT for non-prime-time. The telephone numbers listed are *information* numbers, not service access numbers.

Keep in mind that Telenet offers a special service, called PC Pursuit, that enables frequent users to connect to computers in over 75 cities nationwide without incurring long-distance charges. Some information networks (such as PeopleLink) even charge lower access rates if you connect via PC Pursuit. Telenet asks \$30 for signing up, then \$30 a month for 30 hours of access or \$50 a month for 60 hours of access, plus an additional \$3 for every hour over 60 in the month.

CompuServe

CompuServe Information Services
PO Box 20212
5000 Arlington Center Blvd.
Columbus, OH 43220
800-848-8199
Membership fee (including kit): \$39.95
300 baud: PT and NPT, \$6
1200/2400 baud: PT and NPT, \$12.50
Additional charge for some executive services.

QuantumLink

QuantumLink Computer Services
8620 Westwood Center Drive
Vienna, VA 22180
800-392-8200
Flat monthly fee of \$9.95, which includes 1 hour of "plus" time.
Plus-time service (300/1200 baud): 8¢ a minute.

GEnie

General Electric Information Service
401 North Washington St.
Arlington Heights, IL 60004
800-638-9636
Membership fee: \$29.95
300 baud: PT, \$18; NPT, \$5
1200 baud: PT, \$18; NPT, \$6
2400 baud: PT, \$18; NPT, \$10
Additional charge for some gateway services.

American PeopleLink

3215 N. Frontage Rd., Suite 1505
Rockville, MD 20850
800-524-0100
Membership fee: \$24.95
Redi-Access, 300/1200/2400 baud: PT, \$17.95; NPT, \$4.95/\$5.95/\$9.95
Telenet, 300/1200/2400 baud: PT, \$19.95; NPT, \$6.95/\$7.95/\$13.95
"Frequent Plinker" rates: 25 percent off
PC Pursuit users are charged a flat hourly fee of \$3.50.

Delphi

Three Blackstone St.
Cambridge, MA 02139
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Membership fee: \$49.95
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Foosball 64

*If your goal is to have a ball,
try playing Table Soccer.*



By TONY BRANTNER

Do you crave the thrill of athletic competition, but hate working up a sweat? Then take on either another arm-chair athlete or your C-64 in Table Soccer, a computer simulation of the tabletop simulation of the fast-paced field game. If you play against another person, two joysticks are needed; if you play against the computer, plug the one joystick into port 2.

The number of players and the ball speed—1 for slow and 2 for fast—are chosen at the opening menu. When you're playing the computer, you can also choose a skill level from 1, the easiest, to 9. For each choice, move joystick 2 up or down to display the number you want, then press the firebutton.

At the start of play, and after each



The on-screen action seems so real.

goal, the ball is placed in the center of the field. During play, joystick 2 controls the yellow team and joystick 1 or the computer controls the red. Each

team has three lines of players, but at any given time only the line that's closest to the ball is active. Move your joystick up or down to shift your active line from side to side, and press the firebutton to kick the ball toward the opposing goal.

One point is awarded for each goal, and the first player to score nine points is the winner. To play again, press the firebutton on joystick 2.

You can freeze play at any time by pressing the Commodore key, and then continue playing by pressing it again. The run-stop key returns you to the opening menu. □

Tony Brantner is a carpenter by trade and a self-taught computer programmer. He enjoys the C-64 particularly for its excellent graphics capabilities.

Running Instructions: Type in Listing 1 and save it to disk. Then run it to write a file called Soccer ML. To play, load and run Soccer ML.

Listing 1. Table Soccer program. (Available on ReRun disk. See card at page 36.)

```

0 REM THIS LISTING CREATES (AND          :REM*67          098994003C8C0          :REM*86
  SHOULD NOT BE CALLED) SOCCER          50 NEXT:GOTO 10          :REM*115          102 DATA C090F8A207A000BD883E*4
  64          :REM*102          55 IF LEN(A$)<21 THEN B$=A$:GOT          9FF994003C8C8C8CA10*F2A00D8
  5 OPEN 8,8,8,"SOCCER 64,P,W"          O 70          :REM*184          CF807C88CF907          :REM*27
          :REM*28          60 IF LEN(A$)<42 THEN B$=LEFT$(          103 DATA C88CFA07A9018D1BD08D*2
  6 CT=0:PRINT"{SHFT CLR}":REM*56          A$,20)+RIGHT$(A$,(LEN(A$)-21          7D0A9068D17D08D1DD0*A9078D2
  10 READ A$:IF A$="-1" THEN CLOS          ):GOTO 70          :REM*176          8D0A9028D29D0          :REM*75
  E8:PRINT:PRINT"ALL DONE!":EN          65 B$=LEFT$(A$,20)+MID$(A$,22,2          0A90A8D22D0A99320D2*FFA9008
  D          :REM*129          0)+RIGHT$(A$,LEN(A$)-42)          DF8108D15D0A2          :REM*12
  12 PRINT"{HOME}READING LINE "+S          :REM*140          70 FOR I=1 TO LEN(B$)/2:REM*221          105 DATA 03A0061820F0FFA926A0*1
  TR$(CT):CT=CT+1          :REM*141          75 C$=MID$(B$,(I*2)-1,2):H$=LEF          0201EABA208A00B1820*F0FFA99
  15 IF LEN(A$)<62 THEN 55          T$(C$,1):L$=RIGHT$(C$,1)          :REM*38          6A00F201EABA9          :REM*38
          :REM*254          80 H=VAL(H$):IF H$>"9" THEN H=A          :REM*140          106 DATA 02206F0D8CF510A20A98*D
  20 B$=MID$(A$,1,20)+MID$(A$,22,          :REM*140          017A00B1820F0FFA9AA*A00F201
  20)+MID$(A$,43,20)          :REM*242          EABA909206F0D          :REM*136
  25 FOR I=1 TO 30          :REM*181          85 L=VAL(L$):IF L$>"9" THEN L=A          107 DATA 8CF610A20CA00B1820F0*F
  30 C$=MID$(B$,(I*2)-1,2):H$=LEF          SC(L$)-55          :REM*84          FA9BBA00F201EABA902*206F0DB
  T$(C$,1):L$=RIGHT$(C$,1)          :REM*209          90 BY=H*16+L:PRINT#8,CHR$(BY);          93B0F8DF710A9          :REM*116
  35 H=VAL(H$):IF H$>"9" THEN H=A          :REM*148          108 DATA 9320D2FFADF510D018A2*0
  SC(H$)-55          :REM*85          95 NEXT:GOTO 10          :REM*160          0A0101820F0FFA9C9A0*0F201EA
  40 L=VAL(L$):IF L$>"9" THEN L=A          100 REM SOCCER ML DATA:REM*155          B18ADF6106931          :REM*212
  SC(L$)-55          :REM*136          101 DATA 01080B080A009E323036*3          109 DATA 20D2FFA000A9009928D8*9
  45 BY=H*16+L:PRINT#8,CHR$(BY);          1000000A90820D2FF20*9D0EA00          928D99928DAA9A09928*0499280

```

RUN it right: C-64; one or two joysticks



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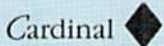
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By ROBERT COOK

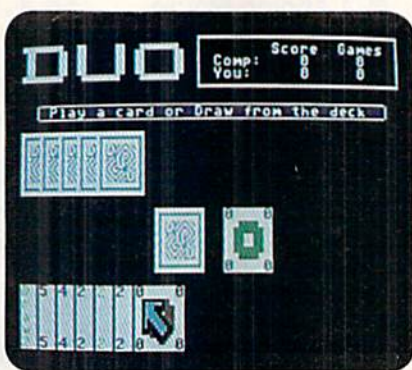
Duo, the C-64 version of the card game Uno, is designed for two players—you and the computer. The object is to be first to score 100 points or more. You score points by winning a hand, which happens when you're first to play all your cards or when your opponent's hand grows to 18 cards or more. You can play from the keyboard or with a joystick plugged into port 2.

The Duo deck contains 100 cards—eight each of 0-9, Skip a Turn and Draw 2 Cards, plus four Wild cards. All but the Wild cards belong to either the red, blue, green or yellow suit. You determine a Wild card's suit when it's played.

The computer deals the first hand; then the winner of each subsequent hand deals. Each player gets six cards per hand, and an additional card is placed face-up beside the deck to start the discard pile.

At your turn, you may either play a card to the discard pile or draw a card from the deck. You may discard anything that matches the top card on the pile in either color, number or action (Skip or Draw 2), and a Wild card may be played at any time.

To discard, first choose a card by moving the arrow onto it using either the keyboard or the joystick. With the



Use your wild cards well in Duo.

keyboard, press the horizontal cursor key to move the arrow right and the vertical cursor key to move it left. With the joystick, press the lever right or left. Press the return key or the joystick firebutton to play the card. If you try to play an illegal card, a buzzer will alert you to your mistake.

If you can't or don't want to discard, press the ↑ key or push the joystick up to move the arrow onto the deck; then press return or the firebutton to draw a card. You can move the arrow off the deck before drawing by pressing shift/↑ or pushing the joystick down.

When you play a number or Wild card or draw a card, your turn ends,

but if you play a Skip or Draw 2 card, your opponent forfeits a turn, and you can go again right away. Draw 2 also makes your opponent draw two extra cards from the deck.

As I mentioned, a Wild card can be played at any time. After you play it, cycle through the colors and press return or the firebutton to assign it the color you want it to have.

If you play out your cards, your score is the total value of your opponent's hand. If your opponent's hand gets too big, your score is the difference between the values of the hands, assuming your opponent's is larger. Card values are: 0-9, face value; action cards, 20 points; wild cards, 50 points.

No matter how play ends, the winner receives an additional 10 points just for winning, while the loser receives no points at all. After the score display is updated, press return or the firebutton to begin the next hand. When all the cards in the deck are drawn, a hand ends with no winner. The first player to score 100 points wins. To play another game, press Y at the prompt. Otherwise press N to return to Basic.

Robert Cook is a draftsman and printed circuit board designer who has been programming for about four years.

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

Listing 1. Duo program. (Available on ReRun disk. See card at page 36.)

```
1 0 REM DUO 64 - ROBERT B. COOK      6 0 IFYC=0ORMC=0ORYC>17ORMC>17TH      ROM THE DECK(CTRL 0)":GOSUB
      :REM*131                          ENGOSUB1 210:GOTO40      :REM*23      950      :REM*73
2 0 POKES3280,11:POKE53281,1:POK      7 0 IFDP=100THENGOSUB910:GOTO40      110 GETG$:JS=PEEK(56320)AND31:I
      E53265,11      :REM*164                          :REM*157      FG$=""ANDJS=31 THEN110
3 0 GOSUB1620:GOSUB2040:POKE5326      8 0 PU=3-PU:GOTO50      :REM*111                          :REM*144
      5,27      :REM*109                          9 0 POKESX,30:POKESY,218:POKESP,      120 IFG$="(UP ARROW)"ORJS=30THE
      4 0 GOSUB1010      :REM*88                          1:MV=1:SK=0:POKESB,0:REM*156      NPOKESX,150:POKESY,170:POKE
5 0 POKE646,4-(PU=2)*4:PRINTEL$:      1 0 0 PRINTLEFT$(CR$,7)"(3 CRSR R      SB,0:GOTO110      :REM*13
      ONPUGOSUB90,510:POKESP,0      TS){CTRL 9}{CTRL 5}{SHFT P}      130 IFG$="{CRSR RT}"ORJS=23THEN
      :REM*68                          LAY A CARD OR {SHFT D}RAW F      MV=MV+1:IFMV>YCTHENMV=1
```

RUN it right: C-64; joystick optional

```

:REM*71
140 IFG$="{CRSR DN}"ORJS=27THEN
MV=MV-1:IFMV<1THENMV=YC
:REM*47
150 FORL=1TO50:NEXT:T=14+MV*16:
T1=0:IFT>255THENT=T-255:T1=
1
:REM*130
160 IFG$<>CHR$(13)ANDJS<>15THEN
POKESX,T:POKESY,218:POKESB,
T1:GOTO110
:REM*184
170 PRINTEL$
:REM*66
180 IFPEEK(SY)=170THENYC=YC+1:Y
C(YC)=DK(DP):DP=DP+1:GOSUB3
20:RETURN
:REM*229
190 IFCV(YC(MV))<>12ANDCV(YC(MV
))<>CV(UC)ANDCC$(YC(MV))<>C
C$(UC)THEN290
:REM*253
200 PRINTLEFT$(CR$,15)TAB(21)"{
CTRL 2}"CD$(YC(MV))
:REM*251
210 PRINTLEFT$(CR$,15)TAB(21)CC
$(YC(MV))+CD$(YC(MV))
:REM*238
220 UC=YC(MV):YC=YC-1:IFYCTHENG
OSUB310:GOTO240
:REM*6
230 PRINTLEFT$(CR$,25)EC$;
:REM*113
240 IFCV(UC)=12ANDYCTHENGOSUB40
0
:REM*188
250 IFCV(UC)=11THENGOSUB460
:REM*76
260 IFCV(UC)=10ANDYCTHENGOSUB48
0
:REM*51
270 IFSK=1ANDYC<0ANDMC<18ANDDP<
100THEN90
:REM*168
280 RETURN
:REM*167
290 PRINTLEFT$(CR$,7),"{CTRL 9}
{CTRL 5}{SFT C)HOOSE ANOTH
ER CARD{CTRL 0}":GOSUB990
:REM*230
300 FORL=0TO999:NEXT:GOTO90
:REM*171
310 FORL=MVTOYC+1:YC(L)=YC(L+1)
:NEXT:GOTO350
:REM*67
320 FORL=1TOYC-1:FORK=L+1TOYC
:REM*66
330 IFCV(YC(L))<CV(YC(K))THENT=
YC(L):YC(L)=YC(K):YC(K)=T
:REM*150
340 NEXT:NEXT
:REM*211
350 T=0:FORL=1TOYC
:REM*123
360 IFL<19THENPRINTLEFT$(CR$,21
)TAB((L-1)*2)CL$(T)+CC$(YC(
L))+CD$(YC(L));
:REM*109
370 T=1:NEXT:IFYC<18THENPRINTEE
$;
:REM*206
380 IFYC=19THENPRINTLEFT$(CR$,1
5)TAB(34)CC$(YC(19))+CD$(YC
(19));
:REM*246
390 RETURN
:REM*22
400 POKESP,0:T=0:PRINTLEFT$(CR$
,7)TAB(13)"{CTRL 9}{CTRL 5}
{SFT C)HOOSE A COLOR{CTRL
0}":GOSUB950
:REM*40
410 GETG$:JS=PEEK(56320)AND31:I
FG$=""ANDJS=31THEN410
:REM*38
420 IF(G$=CHR$(13)ORJS=15)ANDT>
0THENPRINT"{CTRL 5}"EL$:GOT
O450
:REM*50
430 T=T+1+(T=4)*4:T$=MID$("{COM
D 3}{CTRL 6}{COMD 7}{CTRL 8
}",T,1):WC$=T$:PRINTLEFT$(C
R$,15)TAB(21)T$CD$(UC)
:REM*125
440 CC$(UC)=T$:GOSUB950:GOTO410
:REM*119
450 WAIT56320,16:WAIT197,64:RET
URN
:REM*152
460 PRINTLEFT$(CR$,7)TAB(12)"{C
TRL 9}{CTRL 5}{SFT I} TAKE
TWO CARDS{CTRL 0}":GOSUB95
0:FORS=0TO999:NEXT
:REM*136
470 FORJ=1TO2:IFDP<100THENMC=MC
+1:MC(MC)=DK(DP):DP=DP+1:GO
SUB760:NEXT
:REM*192
480 IFYC=0ORMC>17ORDP>99THEN500
:REM*201
490 PRINTLEFT$(CR$,7),"{CTRL 9}
{CTRL 5}{SFT Y)OU GET ANOT
HER TURN{CTRL 0}":GOSUB950:
FORS=0TO999:NEXT
:REM*149
500 SK=-DP<100:RETURN
:REM*54
510 PRINTLEFT$(CR$,7)TAB(14)"{C
TRL 9}{COMD 1}{SFT I}T'S M
Y TURN{CTRL 0}":GOSUB970:FO
RS=0TO999:NEXT
:REM*92
520 SK=0:MV=1:T=1
:REM*44
530 FORL=1TOMC:IFCV(MC(L))<100TH
EN580
:REM*125
540 IFCV(MC(L))<>CV(UC)ANDCC$(M
C(L))<>CC$(UC)ORCV(MC(L))=1
2THEN570
:REM*102
550 FORK=L+1TOMC:IFCC$(MC(K))=C
C$(MC(L))ORCV(MC(K))=CV(MC(
L))THENMV=L:GOTO640
:REM*246
560 NEXT
:REM*176
570 T=L+1:NEXT:IFYC<3THENT=1
:REM*148
580 FORL=TTOMC:IFCV(MC(L))=CV(U
C)ANDCV(MC(L))<>12ANDMC(L)T
HENMV=L:GOTO640
:REM*67
590 IFCC$(MC(L))=CC$(UC)THENMV=
L:GOTO640
:REM*148
600 NEXT:IFT<>1THENT=1:GOTO580
:REM*98
610 IFCV(MC(1))=12THENMV=1:GOTO
640
:REM*136
620 PRINTLEFT$(CR$,7)TAB(11)"{C
TRL 9}{COMD 1}{SFT I}'LL
DRAW A CARD{CTRL 0}":GOSUB
970:FORS=0TO999:NEXT
:REM*176
630 MC=MC+1:MC(MC)=DK(DP):DP=DP
+1:GOSUB760:RETURN
:REM*50
640 PRINTLEFT$(CR$,7)TAB(11)"{C
TRL 9}{COMD 1}{SFT I}'LL
PLAY A CARD{CTRL 0}":GOSUB
970:FORS=0TO999:NEXT
:REM*124
650 IFYC=1ANDCV(MC(1))=12THENMV
=1
:REM*40
660 PRINTLEFT$(CR$,15)TAB(21)"{
CTRL 2}"CD$(MC(MV));
:REM*69
670 PRINTLEFT$(CR$,15)TAB(21)CC
$(MC(MV))+CD$(MC(MV));
:REM*44
680 UC=MC(MV):MC=MC-1:IFMCTHENG
OSUB750:GOTO700
:REM*166
690 PRINTLEFT$(CR$,13)EC$
:REM*247
700 IFCV(UC)=12ANDMCTHENGOSUB81
0
:REM*41
710 IFCV(UC)=11THENGOSUB860
:REM*66
720 IFCV(UC)=10ANDYCTHENGOSUB88
0
:REM*37
730 IFSK=1ANDMC<0ANDYC<18ANDDP<
100THEN520
:REM*153
740 RETURN
:REM*113
750 FORL=MVTOMC+1:MC(L)=MC(L+1)
:NEXT:GOTO790
:REM*92
760 FORL=1TOMC-1:FORK=L+1TOMC
:REM*234
770 IFCV(MC(L))<CV(MC(K))THENT=
MC(L):MC(L)=MC(K):MC(K)=T
:REM*59
780 NEXT:NEXT
:REM*141
790 IFMC<19THENPRINTLEFT$(CR$,9
)TAB((MC-1)*2)BK$;IFMC<18T
HENPRINTEE$;
:REM*28
800 RETURN
:REM*173
810 T1=0:T$="" :FORL=1TO4:T=0:FO
RK=1TOMC
:REM*160
820 IFCC$(MC(K))=MID$("{COMD 3}
{CTRL 6}{COMD 7}{CTRL 8}",L
,1)THENT=T+1
:REM*76
830 NEXT:IFT>T1THENT1=T:T$=MID$
("{COMD 3}{CTRL 6}{COMD 7}{
CTRL 8}",L,1)
:REM*2
840 NEXT:IFT$=""THENT$=MID$("{C
OMD 3}{CTRL 6}{COMD 7}{CTRL
8}",INT(RND(1)*4+1),1)
:REM*192
850 PRINTLEFT$(CR$,15)TAB(21)T$
+CD$(UC):CC$(UC)=T$:RETURN
:REM*211
860 PRINTLEFT$(CR$,7)TAB(11)"{C
TRL 9}{COMD 1}{SFT Y)OU TA
KE TWO CARDS{CTRL 0}":GOSUB
970:FORS=0TO999:NEXT
:REM*152

```

D U O

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870 FORJ=1TO2:IFDP<100THENYC=YC
+1:YC(YC)=DK(DP):DP=DP+1:GO
SUB320:NEXT :REM*56
880 IFMC=0ORYC>17ORDP>99THEN900
:REM*231
890 PRINTLEFT$(CR$,7)TAB(11)"(C
TRL 9){COMD 1}{SHFT I} GET
ANOTHER TURN{CTRL 0}":GOSUB
970:FORS=0TO999:NEXT
:REM*155
900 SK=- (DP<100):RETURN:REM*135
910 PRINTLEFT$(CR$,19)TAB(14)EC
$:PRINTLEFT$(CR$,7)"(CTRL 4
)"EL$: :REM*142
920 PRINTLEFT$(CR$,7)TAB(7)"(CT
RL 9){SHFT N}O MORE CARDS,
HAND DUMPED" :REM*46
930 FORL=1TO6:GOSUB970:GOSUB950
:NEXT :REM*98
940 GOSUB1440:RETURN :REM*57
950 POKESR,240:POKEWV,17:POKEHF
,50:POKELF,35:POKEAT,0
:REM*50
960 FORS=1TO99:NEXT:POKEWV,16:P
OKESR,0:RETURN :REM*2
970 POKEVL,15:POKEAT,0:POKESR,2
25:POKEWV,17:POKEHF,33:POKE
LF,33 :REM*104
980 FORS=1TO99:NEXT:POKEWV,16:R
ETURN :REM*60
990 POKEHF,5:POKEAT,0:POKESR,24
0:POKEWV,33 :REM*91
1000 FORS=1TO500:NEXT:POKEWV,32
:RETURN :REM*238
1010 T=RND(-TI):SYS900 :REM*74
1020 PRINTLEFT$(CR$,7)"(CTRL 4)
"EL$:PRINTLEFT$(CR$,7)TAB(
11)"(CTRL 9){SHFT S}HUFFLI
NG THE DECK{CTRL 0}"
:REM*227
1030 GOSUB950:GOSUB970 :REM*196
1040 FORL=1TO100:T=INT(RND(1)*1
00+1):T1=DK(L):DK(L)=DK(T)
:DK(T)=T1:NEXT :REM*145
1050 FORL=1TO19:YC(L)=0:MC(L)=0
:NEXT :REM*140
1060 T=0:FORL=1TO12STEP2:T=T+1:
YC(T)=DK(L):MC(T)=DK(L+1):
NEXT :REM*166
1070 FORL=1TO5:FORK=L+1TO6
:REM*150
1080 IFCV(YC(L))<CV(YC(K))THENT
=YC(L):YC(L)=YC(K):YC(K)=T
:REM*217
1090 IFCV(MC(L))<CV(MC(K))THENT
=MC(L):MC(L)=MC(K):MC(K)=T
:REM*250
1100 NEXT:NEXT:PRINTLEFT$(CR$,7)
)"(CTRL 4)"EL$ :REM*125
1110 T=0:FORL=1TO6 :REM*3
1120 PRINTLEFT$(CR$,21)TAB((L-1
)*2)CL$(T)+CC$(YC(L))+CD$(
YC(L)): :REM*116
1130 PRINTLEFT$(CR$,9)TAB((L-1)
*2)BK$ :REM*77
1140 T=1:NEXT{16 SPACES}:REM*59
1150 IFCV(DK(13))<10THEN1170
:REM*47
1160 T1=INT(RND(1)*85+16):T=DK(
13):DK(13)=DK(T1):DK(T1)=T
:GOTO1150 :REM*105
1170 PRINTLEFT$(CR$,15)TAB(14)B
K$ :REM*47
1180 PRINTLEFT$(CR$,15)TAB(21)C
C$(DK(13))+CD$(DK(13))
:REM*3
1190 MC=6:YC=6:UC=DK(13):DP=14
:REM*78
1200 RETURN :REM*59
1210 IFMC=0THEN1250 :REM*250
1220 T=0:FORL=1TOMC :REM*80
1230 IFL<19THENPRINTLEFT$(CR$,9
)TAB((L-1)*2)CL$(T)+CC$(MC
(L))+CD$(MC(L)) :REM*102
1240 T=1:NEXT :REM*159
1250 POKE646,4-(MC=0ORYC>17)*4:
PRINTLEFT$(CR$,7)TAB(2)EL$
:REM*34
1260 T=0:FORL=0TOYC:T1=CV(YC(L)
) :REM*190
1270 IFT1<10THENT=T+T1 :REM*57
1280 IFT1=10ORT1=11THENT=T+20
:REM*9
1290 IFT1=12THENT=T+50 :REM*134
1300 NEXT:YT=T :REM*218
1310 T=0:FORL=0TOMC:T1=CV(MC(L)
) :REM*227
1320 IFT1<10THENT=T+T1 :REM*111
1330 IFT1=10ORT1=11THENT=T+20
:REM*55
1340 IFT1=12THENT=T+50 :REM*200
1350 NEXT:MT=T :REM*232
1360 IFYC>17THENYT=YT-MT:IFMT<0
THENMT=0 :REM*151
1370 IFMC>17THENMT=MT-YT:IFYT<0
THENYT=0 :REM*50
1380 IFYC>0ANDMC<18THEN1420
:REM*46
1390 PRINTLEFT$(CR$,7)TAB(10)"(C
TRL 9){SHFT Y}OU SCORE"MT
+10"POINTS":GOSUB950:GOSUB
950 :REM*101
1400 YS=YS+MT+10:PU=2:IFYS>99TH
ENYG=YG+1 :REM*167
1410 IFMC>0ANDYC<18THEN1440
:REM*166
1420 PRINTLEFT$(CR$,7)TAB(11)"(C
TRL 9){SHFT I} SCORE"YT+1
0"POINTS":GOSUB970:GOSUB97
0 :REM*15
1430 MS=MS+YT+10:PU=1:IFMS>99TH
ENMG=MG+1 :REM*240
1440 FORL=0TO2999:NEXT:FORL=97T
O1000:CC$(L)="(CTRL 1)":NEX
T:SK=0:GOSUB1590:REM*193
1450 POKE198,0:IFMS>99ORYS>99TH
EN1500 :REM*194
1460 PRINTLEFT$(CR$,7)"(CTRL 4)
"EL$:PRINTLEFT$(CR$,7)TAB(
10)"(CTRL 9){SHFT P}RESS {S
HFT F}{SHFT I}{SHFT R}{SH
FT E} OR {SHFT R}{SHFT E}{
SHFT T}{SHFT U}{SHFT R}{SH
FT N}" :REM*185
1470 GOSUB950:GOSUB970 :REM*146
1480 GETG$:JS=PEEK(56320)AND31:
IFG$<>CHR$(13)ANDJS<>15THE
N1480 :REM*21
1490 RETURN :REM*102
1500 IFYS>MSTHENPRINTLEFT$(CR$,
7)TAB(4)"(CTRL 9){CTRL 5}{
SHFT Y} O U {3 SPACES}W I N
{3 SPACES}T H E {3 SPACES}G
A M E!" :REM*111
1510 IFMS>YSTHENPRINTLEFT$(CR$,
7)TAB(6)"(CTRL 9){COMD 1}{
SHFT I}{3 SPACES}W I N {3 S
PACES}T H E {3 SPACES}G A M
E!" :REM*10
1520 POKE896,MG:POKE897,YG:POKE
898,PU:GOSUB1580 :REM*41
1530 FORL=1TO10:GOSUB950:GOSUB9
70:NEXT:FORL=0TO3999:NEXT
:REM*161
1540 PRINTLEFT$(CR$,7)"(CTRL 4)
"EL$:PRINTLEFT$(CR$,7)TAB(
11)"(CTRL 9){SHFT P}LAY AG
AIN?{2 SPACES}{Y/N}"
:REM*252
1550 GOSUB950:GOSUB970 :REM*194
1560 POKE198,0:WAIT198,1:GETG$:
IFG$<>"N"THENRUN :REM*174
1570 END:GAME :REM*2
1580 MG=PEEK(896):YG=PEEK(897):
PU=PEEK(898) :REM*243
1590 PRINTLEFT$(CR$,3)TAB(27)"(
CTRL 9){COMD 4}"RIGHT$(" "
+STR$(MS),3)TAB(34)MG
:REM*12
1600 PRINTLEFT$(CR$,4)TAB(67)"(C
TRL 9){COMD 4}"RIGHT$(" "
+STR$(YS),3)TAB(74)YG
:REM*186
1610 RETURN :REM*222
1620 DIM T,T1,T2,L,K,J,DP,MC,YC
,MT,YT,MS,YS,MG,YG,PU,MV,J
S,SK,G$,T$,WC$ :REM*125
1630 DIM CD$(100),CC$(100),CV(1
00),DK(100),MC(20),YC(20)
:REM*103
1640 BK$="(CTRL 4){COMD A}{3 SH
FT *s}{COMD S}{5 CRSR LFs}
{CRSR DN}{SHFT -}{CTRL 9}{
SHFT D}{SHFT LB.}{COMD *}{
CTRL 0}{SHFT -}{5 CRSR LFs}
{CRSR DN}{SHFT -}{CTRL 9}
{SHFT LB.}{SHFT U}{SHFT LB
.}{CTRL 0}{SHFT -}{5 CRSR
LFs}{CRSR DN}{SHFT -}{CTRL
9}{COMD *}{SHFT LB.}{SHFT
O}{CTRL 0}{SHFT -}{5 CRSR
LFs}{CRSR DN}{COMD 2}{3 S
HFT *s}{COMD X}" :REM*246
1650 EE$="(CTRL 9){COMD 4}{2 SP
ACES}{2 CRSR LFs}{CRSR UP}
{2 SPACES}{2 CRSR LFs}{CRS
R UP}{2 SPACES}{2 CRSR LFs}
{CRSR UP}{2 SPACES}{2 CRS
R LFs}{CRSR UP}{2 SPACES}{
CTRL 0}" :REM*68
1660 EC$="(CTRL 9){COMD 4}{5 SP
ACES}{5 CRSR LFs}{CRSR UP}
{5 SPACES}{5 CRSR LFs}{CRS
R UP}{5 SPACES}{5 CRSR LFs}
{CRSR UP}{5 SPACES}{5 CRS
R LFs}{CRSR UP}{5 SPACES}{
CTRL 0}" :REM*28

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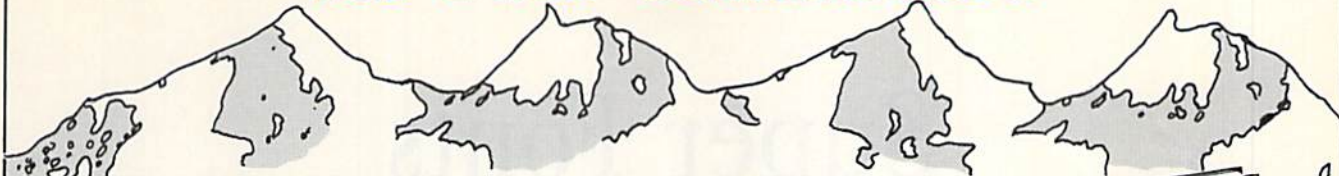
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1670 EL$="{HOME}{6 CRSR DNS}{2
CRSR RTs}{CTRL 9}{36 SPACE
s}{CTRL 0}" :REM*196
1680 CL$(1)="{COMD 5}{CRSR LF}{
COMD N}{CRSR LF}{CRSR DN}{
COMD N}{CRSR LF}{CRSR DN}{
COMD N}{CRSR LF}{CRSR DN}{
COMD N}{CRSR LF}{CRSR DN}{
COMD N}{4 CRSR UPs}"
:REM*100
1690 E$="{5 CRSR LFs}{CRSR DN}"
:CR$="{HOME}{24 CRSR DNS}"
:REM*110
1700 LF=54272:HF=54273:WV=54276
:AT=54277:SR=54278:REM*177
1710 SP=53269:SX=53248:SY=53249
:SB=53264 :REM*252
1720 POKES4296,15:POKE2040,13:P
OKES3287,0:POKESP,0
:REM*114
1730 POKES3276,1:POKES3285,3:PO
KES3277,0:POKES3271,1
:REM*165
1740 FORL=1TO96STEP8:CS$="" :FORK
=1TO4:READD$:CS$=CS$+D$+E$:N
EXT:READD$ :REM*211
1750 FORK=0TO7:CD$(L+K)=CS$+D$:C
C$(L+K)=MID$( "{2 COMD 3s}{
2 CTRL 6s}{2 COMD 7s}{2 CT
RL 8s}",K+1,1):CV(L+K)=T
:REM*178
1760 NEXT:T=T+1:NEXT :REM*235
1770 CS$="" :FORK=1TO4:READD$:CS$
=CS$+D$+E$:NEXT:READD$
:REM*22
1780 FORL=97TO100:CD$(L)=CS$+D$:
CC$(L)="{CTRL 1}":CV(L)=12
:NEXT :REM*72
1790 FORL=1TO100:DK(L)=L:NEXT
:REM*18
1800 IFPEEK(1024)=160THEN1840
:REM*242
1810 FORL=832TO897:READK:POKEL,
K:NEXT :REM*246
1820 FORL=900TO933:READK:POKEL,
K:NEXT :REM*17
1830 PU=1:POKE898,1 :REM*217
1840 RETURN :REM*185
1850 DATA "0{3 SPACES}0"," {CTR
L 9}{COMD V}{COMD C}{CTRL
0}"," {CTRL 9}{CTRL 0}
{CTRL 9}{CTRL 0}"," {CTR
L 9}{COMD F}{COMD D}{CTRL
0}","0{3 SPACES}0"
:REM*36
1860 DATA "1{3 SPACES}1"," {COM
D D}{CTRL 9}{CTRL 0}{2 SP
ACES}","{2 SPACES}{CTRL 9}
{CTRL 0}{2 SPACES}"," {CO
MD D}{CTRL 9}{CTRL 0}{COM
D F}","1{3 SPACES}1"
:REM*228
1870 DATA "2{3 SPACES}2"," {CTR
L 9}{COMD V}{COMD O}{COMD
C}{CTRL 0}"," {CTRL 9}{2
COMD Us}{COMD D}{CTRL 0} "
," {CTRL 9}{2 COMD Us}{CT
RL 0}","2{3 SPACES}2"
:REM*2
1880 DATA "3{3 SPACES}3"," {CTR
L 9}{COMD V}{COMD O}{COMD
C}{CTRL 0}","{2 SPACES}{S
HFT *}{CTRL 9}{SHFT *}{CTR
L 0}"," {CTRL 9}{COMD F}{
COMD U}{COMD D}{CTRL 0} " ,
"3{3 SPACES}3" :REM*24
1890 DATA "4{3 SPACES}4"," {CTR
L 9}{COMD Y}{COMD K}{CTRL
0}{COMD K} " , " {CTRL 9}{C
OMD V}{COMD C}{CTRL 0} " , "
{2 SPACES}{CTRL 9}{COMD K}
{CTRL 0}{COMD K} " , "4{3 SP
ACES}4" :REM*29
1900 DATA "5{3 SPACES}5"," {CTR
L 9}{2 COMD Ps}{CTRL 0} "
," {CTRL 9}{2 COMD Ps}{COM
D C}{CTRL 0} " , " {CTRL 9}{
COMD F}{COMD Y}{COMD D}{CT
RL 0} " , "5{3 SPACES}5"
:REM*29
1910 DATA "6{3 SPACES}6"," {CTR
L 9}{COMD V}{COMD O}{COMD
C}{CTRL 0} " , " {CTRL 9}{C
TRL 0}{SHFT *}{CTRL 9}{COM
D U}{CTRL 0} " , " {CTRL 9}{
COMD F}{COMD Y}{COMD D}{CT
RL 0} " , "6{3 SPACES}6"
:REM*181
1920 DATA "7{3 SPACES}7"," {CTR
L 9}{COMD @}{COMD O}{CTRL
0} " , " {2 SPACES}{CTRL 9}{
COMD K}{CTRL 0}{COMD K} " ,
" {2 SPACES}{CTRL 9}{CTRL
0}{2 SPACES}","7{3 SPACES}
7" :REM*131
1930 DATA "8{3 SPACES}8"," {CTR
L 9}{COMD V}{COMD O}{COMD
C}{CTRL 0} " , " {CTRL 9}{SH
FT *}{CTRL 0}{SHFT *}{CTRL
9}{SHFT *}{CTRL 0} " , " {C
TRL 9}{COMD F}{COMD U}{COM
D D}{CTRL 0} " , "8{3 SPACES}
8" :REM*106
1940 DATA "9{3 SPACES}9"," {CTR
L 9}{COMD V}{COMD O}{COMD
C}{CTRL 0} " , " {CTRL 9}{CO
MD O}{CTRL 0}{SHFT *}{CTRL
9}{CTRL 0} " , " {CTRL 9}{
COMD F}{COMD U}{COMD D}{CT
RL 0} " , "9{3 SPACES}9"
:REM*104
1950 DATA "{SHFT S}{4 SPACES}","
"K{CTRL 9}{COMD V}{COMD P}
{COMD @}{CTRL 0}{SHFT T}","
"I{CTRL 9}{COMD F}{SHFT A}
{COMD C}{CTRL 0}U","P{CTRL
9}{COMD T}{COMD Y}{COMD D}
}{CTRL 0}R","{4 SPACES}N"
:REM*219
1960 DATA "{SHFT D}{3 SPACES}{S
HFT C}","R{CTRL 9}{COMD I}
}{COMD C}{CTRL 0}A","A{CTR
L 9}{CTRL 0}{CTRL 9}{CT
RL 0}R","W{CTRL 9}{CTRL 0}
}{COMD I}{CTRL 9}{COMD D}{
CTRL 0}D","2{3 SPACES}S"
:REM*20
1970 DATA "{SHFT W}{4 SPACES}","
"I{CTRL 9}{CTRL 0}{CTRL
9}{CTRL 0}{SHFT C}","L{CTR
L 9}{COMD G}{CTRL 0}{SHFT
-}{CTRL 9}{COMD M}{CTRL 0}
}A","D{CTRL 9}{COMD J}{SHF
T -}{COMD L}{CTRL 0}R","{4
SPACES}D" :REM*22
1980 DATA 170,170,128,149,085,1
28,149,106,128,149,106,128
,149,090,000,149 :REM*29
1990 DATA 086,128,153,085,160,1
54,085,104,154,149,090,170
,165,090,168,169 :REM*80
2000 DATA 106,000,042,168,000,0
10,160,000,002,128,000,000
,000,000,000,000 :REM*246
2010 DATA 000,000,000,000,000,0
00,000,000,000,000,000,000
,000,000,000,000 :REM*156
2020 DATA 162,170,169,11,157,63
,217,157,233,217,157,147,2
18,157,61,219,169 :REM*201
2030 DATA 160,157,63,5,157,233,
5,157,147,6,157,61,7,202,2
08,225,96 :REM*115
2040 PRINT"{SHFT CLR}{CTRL N}{C
TRL 9}{COMD 4}{18 SPACES}{
COMD A}{20 SHFT *}{COMD S}
}"; :REM*75
2050 PRINT"{CTRL 0}{COMD F}{COM
D D}{2 COMD Is}{COMD C}{CT
RL 9}{CRSR RT}{3 SPACES}{
CRSR RT}{CTRL 0}{COMD V}{3
COMD Is}{COMD C}{CTRL 9}
{SHFT -}{7 SPACES}{SHFT S}
}CORE{2 SPACES}{SHFT G}AME
S {SHFT -}"; :REM*157
2060 PRINT"{CTRL 0}{COMD K}{CTR
L 9}{COMD K}{2 SPACES}{CRS
R RT}{CRSR RT}{3 SPACES}{
CRSR RT}{CRSR RT}{3 SPACE
s}{CRSR RT}{SHFT -}{SHFT
C}OMP:{14 SPACES}{SHFT -}
"; :REM*216
2070 PRINT"{CTRL 0}{COMD V}{COM
D C}{CTRL 9}{2 COMD Is}{CT
RL 0}{COMD D}{CTRL 9}{CTR
L 0}{COMD F}{CTRL 9}{3 COM
D Is}{CTRL 0}{COMD D}{CTRL
9}{CTRL 0}{COMD F}{CTRL
9}{3 COMD Is}{CTRL 0}{COMD
D}{CTRL 9}{SHFT -}{SHFT
Y}OU:{15 SPACES}{SHFT -}"
; :REM*56
2080 PRINT"{CTRL 9}{18 SPACES}{
COMD Z}{20 SHFT *}{COMD X}
}"; :REM*236
2090 PRINT"{CTRL 9}{2 SPACES}{3
6 COMD @s}{2 SPACES}";
:REM*111
2100 PRINT"{CTRL 9}{COMD M}{36
SPACES}{COMD G} " ;
:REM*212
2110 PRINT"{CTRL 9}{2 SPACES}{3
6 COMD Ts}{2 SPACES}"
:REM*166
2120 GOSUB1580:SYS900:RETURN
:REM*205

```

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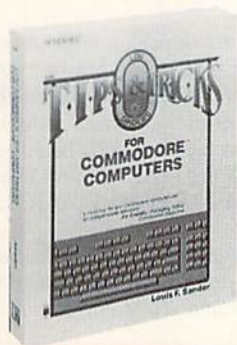
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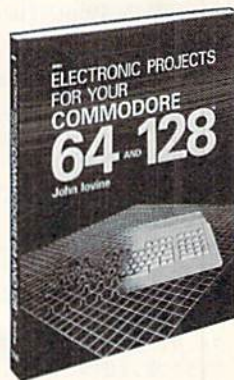
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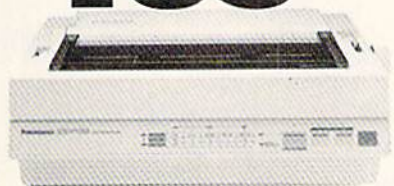
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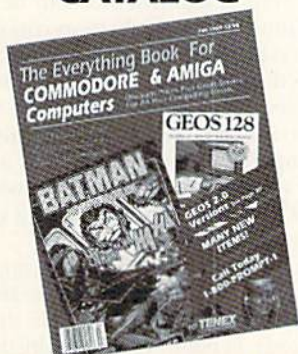


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Fast-40

Speed up your C-128 40-Column-mode programs even if you're in 64 mode.



By BRET TIMMINS

One of the best features of the C-128 is its speed increase over earlier Commodore computers when plowing through a lot of data or recalculating numbers frequently. However, in 40-Column mode, the extra speed comes with a trade-off: The VIC-II, the graphics chip that handles 40-column displays, won't work properly at speeds higher than 1 MHz (Slow mode) and must be turned off during 2 MHz (Fast mode).

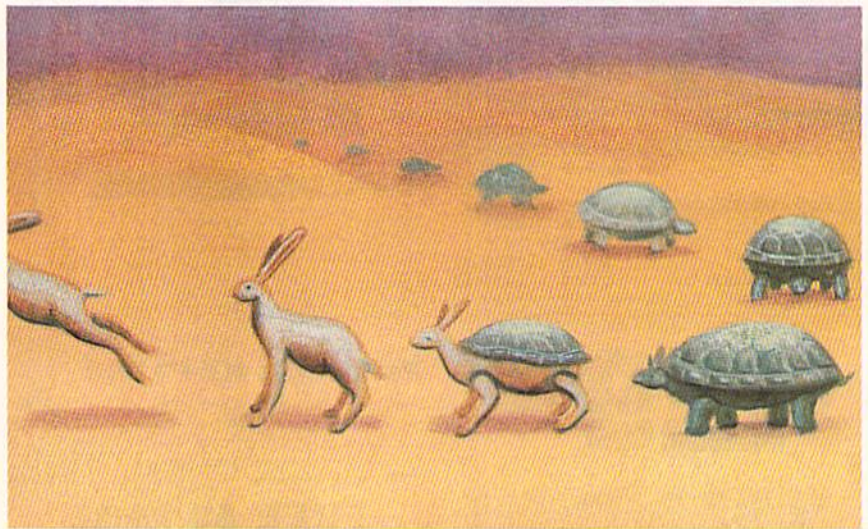
To alleviate this situation, I've written Fast-40, a small machine language program for the C-128 that speeds up 40-column Basic and machine language programs from 20 to 100 percent. In the process, it keeps all or part of the screen visible, the amount depending on the speed increase chosen.

There are separate versions of Fast-40 for 128 and 64 modes. You'll find them in Listing 1 and Listing 2, respectively. Type in the version you need, using *RUN's* Checksum program to detect any typing errors, and save it to disk. Then run the version you need to create the appropriate machine language program. See the running instructions with the listings for the loading command for each program.

SPEEDING THINGS UP

Although nothing appears to change after running Fast-40, your C-128 is processing data about 20 percent faster than its normal 40-column speed. This is the maximum speed at which Fast-40 can operate and still display the entire screen.

To speed processing further, hold down the control key and press the plus key. A blank, light gray line will cover the first row of the screen. Pressing control/plus again will blank the second line of the screen, and so on. Each blank line represents a speed increase of three to



four percent. Control/plus can be held down until all but the bottom row of the screen is blank, for a 98 percent increase in speed over normal 1 MHz mode.

To decrease the speed and see more of the screen, press control/minus. Holding down control/minus for a couple of seconds will return the screen to normal, but leave the processing speed 20 percent faster.

You can, from within a program, set the speed at which Fast-40 operates by poking memory location 6415 in the 128-mode version, or 52515 in the 64 version, with a value from 50 to 242. Fast-40 uses this value to determine how many lines should be blank on the screen. The default value is 50—no blank lines and a 20 percent speed increase. The maximum value is 242—24 blank lines and a 98 percent speed increase. For smooth screen transitions, this memory location should be poked only with values from 50 to 242 that are in increments of eight: 50, 58, 66, 74, and so on.

If you need still more speed, you can achieve full 2 MHz mode by pressing control/F. This blanks the entire screen in the current border color. Press shift/control/F to return to 1 MHz mode. You can turn on full Fast mode when you're in Program mode with SYS 6403 for the 128 version, or SYS 52503 for the 64 version; SYS 6406 (128) or SYS 52506 (64) turns it off.

CAVEATS

Although I made Fast-40 as uncrashable as I could, there are times when it should be disabled. Peripherals (disk drives, printers, modems, and such) require precise timing to work properly, and Fast-40 can throw this timing off. In 128 mode, this isn't much of a problem, since the operating system automatically sets 1 MHz mode each time it accesses a peripheral. However, the screen will get messy.

In 64 mode, the operating system thinks it's always working at 1 MHz, so it'll lock up if Fast-40 is active during ▶

RUN it right: C-128 in 40-Column mode or C-128 in 64 mode.

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FAST - 40

peripheral access. Fast-40 tries to prevent this by disabling itself whenever a Load, Save or Open command is issued, either in Basic or machine language, but some programs bypass those commands and call peripherals with other routines. Fast-40 will lock up with such programs unless it's disabled before any peripheral operations are performed.

The control/X command will temporarily turn Fast-40 off while the 128 talks to peripherals, and shift/control/X will turn it back on. In Program mode, use SYS 6409 (SYS 52509 in 64 mode) to disable Fast-40, and use Fast-40's starting address, SYS 6400 (SYS 52500

in 64 mode), to turn it back on again.

Because Fast-40 is an interrupt-driven program, it can occasionally miss and not display a change from one graphics mode to another—a change from Hi-Res Graphics to Text mode, for example. This is rare and happens only in 64 mode. Once again, control/X will temporarily disable Fast-40 before a graphics change takes place.

Note that, in 128 mode, Split-Screen Graphics modes 2 and 4 are not available with Fast-40.

INTERRUPT DRIVEN

Fast-40 works by telling the C-128 to

generate two raster interrupts—one at the bottom of the screen and one somewhere near the top. The bottom interrupt sets 2 MHz mode, checks for control keys and tells the VIC chip to display hi-res graphics.

For some unknown reason, hi-res graphics that are displayed at 2 MHz by the VIC chip show up as blank, light gray lines. The top raster interrupt restarts 1 MHz mode and also resets the VIC chip. ☐

Bret Timmins is a free-lance programmer with a particular interest in programs that extend the capabilities of Commodore computers.

Running Instructions: Type in Listing 1 or Listing 2, as needed, and save it to disk. Run the listing you need to create the machine language file, which is then loaded with the command BLOAD "FAST-40.128" (enabled with SYS 6400) or with LOAD "FAST-40.64",8,1:NEW:SYS 52500.

Listing 1. Fast-40 ML creator program, 128-mode version. (Available on ReRun disk. See card at page 36.)

```

0 REM THIS LISTING CREATES (AND          T$(C$,1):L$=RIGHT$(C$,1)          D0F19D00BC915F01DC9*17D0034
  SHOULD NOT BE CALLED) FAST40          :REM*140                          C7A1AA9008D11          :REM*178
-128          :REM*142          80 H=VAL(H$):IF H$>"9" THEN H=A    110 DATA 19AD0F198D12D0AD11D0*2
5 OPEN 8,8,8,"FAST40-128,P,W"          SC(H$)-55          :REM*56          97F8D11D04CC71AA94C*8D1403A
          :REM*119          85 L=VAL(L$):IF L$>"9" THEN L=A    91A8D1503AD11          :REM*43
6 CT=0:PRINT"(SHFT CLR)":REM*56          SC(L$)-55          :REM*84          111 DATA D029EF8D11D0AD11D029*D
10 READ A$:IF A$="-1" THEN CLOS          90 BY=H*16+L:PRINT#8,CHR$(BY);          F0DD61A8D11D0AD16D0*29EF0DD
  E8:PRINT:PRINT"ALL DONE!":EN          :REM*148          71A8D16D0202C          :REM*170
D          :REM*129          95 NEXT:GOTO 10          :REM*160          112 DATA 1B4CC71AAD19D029018D*1
12 PRINT"{HOME}READING LINE "+S          100 REM FAST 40 128 MODE ML          9D0ADDB1AC901F00CA5*D3C905D
  TR$(CT):CT=CT+1          :REM*141          0E5A5D4C915D0          :REM*213
15 IF LEN(A$)<62 THEN 55          :REM*254          101 DATA 00194C1219A9C02CA901*2    113 DATA DFA9008D30D0AD11D009*1
          :REM*254          CA9808DDB1A6032FA000*78A9478    08D11D02012194C33FF*A9008D3
20 B$=MID$(A$,1,20)+MID$(A$,22,          D1403A9198D15          :REM*146          0D08DDA1AAD16          :REM*39
  20)+MID$(A$,43,20)          :REM*242          102 DATA 03AD10198D12D0AD11D0*2    114 DATA D029EF0DD71A8D16D0AD*1
25 FOR I=1 TO 30          :REM*181          97F8D11D0AD1AD000901*8D1AD0A    1D029DF0DD61A09108D*11D0A9A
30 C$=MID$(B$, (I*2)-1,2):H$=LEF          9FF8D19D0A902          :REM*111          A8D1403A91A8D          :REM*89
  T$(C$,1):L$=RIGHT$(C$,1)          :REM*209          103 DATA 8D11198DDA1AA9008DDB*1    115 DATA 1503202C1B4CC71AAD19*D
          :REM*209          A5860D8AD19D029018D*19D0AC1    029018D19D0A5D3C905*D00CA5D
35 H=VAL(H$):IF H$>"9" THEN H=A          119B9D21A8D61          :REM*147          4C917D0062012          :REM*182
  SC(H$)-55          :REM*85          104 DATA 19C8B9D21A8D62194C00*0    116 DATA 194CC71A202C1BA9008D*D
40 L=VAL(L$):IF L$>"9" THEN L=A          0AD16D029EF0DD71A8D*16D0AD1    B1A202CC24C69FA6319*9419000
  SC(L$)-55          :REM*136          1D029DF0DD61A          :REM*57          005050000A5D8          :REM*97
45 BY=H*16+L:PRINT#8,CHR$(BY);          :REM*67          105 DATA 8D11D0A9008D30D0A902*8    117 DATA 4829208DD61AF010AD2D*0
          :REM*67          F8D11D04C33FF          :REM*195          0AD2C0A8D18D0          :REM*150
50 NEXT:GOTO 10          :REM*115          106 DATA A9018D30D0AD11D00920*8    118 DATA A50129FB090205D98501*6
55 IF LEN(A$)<21 THEN B$=A$:GOT          D11D0AD16D029EF8D16*D020DC1    82980F002A9108DD71A*ADDA1AD
  O 70          :REM*184          AA0052CDB1A70          :REM*24          016AD11D029DF          :REM*227
60 IF LEN(A$)<42 THEN B$=LEFT$(          107 DATA 6B3050A5D3C904D04DA5*D    119 DATA 0DD61A8D11D0AD16D029*E
  A$,20)+RIGHT$(A$, (LEN(A$)-21          4C940F0047C928D01ACE*D81AD03    F0DD71A8D16D06020DC*1AAD101
  )):GOTO 70          :REM*176          E8CD81AAD0F19          :REM*145          98D12D0AD11D0          :REM*202
65 B$=LEFT$(A$,20)+MID$(A$,22,2          108 DATA C9F2F03418AD0F196908*8    120 DATA 297F8D11D060          :REM*117
  0)+RIGHT$(A$,LEN(A$)-42)          D0F19D029C92BD01ACE*D91AD02    121 DATA -1          :REM*232
          :REM*140          08CD91AAD0F19          :REM*207
70 FOR I=1 TO LEN(B$)/2:REM*221          109 DATA C932F01638AD0F19E908*8
75 C$=MID$(B$, (I*2)-1,2):H$=LEF

```

Listing 2. Fast-40 ML creator program, 64-mode version. (Available on ReRun disk. See card at page 36.)

```

0 REM THIS LISTING CREATES (AND          10 READ A$:IF A$="-1" THEN CLOS          :REM*254
  SHOULD NOT BE CALLED) FAST40          E8:PRINT:PRINT"ALL DONE!":EN          20 B$=MID$(A$,1,20)+MID$(A$,22,
-64          :REM*80          20)+MID$(A$,43,20)          :REM*242
5 OPEN 8,8,8,"FAST40-64,P,W"          D          :REM*129          25 FOR I=1 TO 30          :REM*181
          :REM*147          12 PRINT"{HOME}READING LINE "+S          30 C$=MID$(B$, (I*2)-1,2):H$=LEF
          :REM*147          TR$(CT):CT=CT+1          :REM*141          T$(C$,1):L$=RIGHT$(C$,1)
6 CT=0:PRINT"(SHFT CLR)":REM*56          15 IF LEN(A$)<62 THEN 55

```


FAST - 40

```

:REM*209 101 DATA 14CD4C26CDA9C02CA901*2 01638AD23CDE9 :REM*189
35 H=VAL(H$):IF H$>"9" THEN H=A CA9808D44CF6032FA00*A9C78D1 111 DATA 088D23CDD00BC915F01D*C
SC(H$)-55 :REM*85 803A9CE8D1903 :REM*172 917D00320F4CEA9008D*25CDAD2
40 L=VAL(L$):IF L$>"9" THEN L=A 102 DATA A9E68D1A03A9CE8D1B03*A 3CD8D12D0AD11 :REM*132
SC(L$)-55 :REM*136 9D88D3003A9CE8D3103*A9E08D3 112 DATA D0297F8D11D04C31EAA9*9
45 BY=H*16+L:PRINT#8,CHR$(BY); 203A9CE8D3303 :REM*45 D8D1403A9CE8D1503A9*008D1AD
:REM*67 103 DATA A97F8D0DDCA9838D1403*A 08D44CFA9FF8D :REM*228
50 NEXT:GOTO 10 :REM*115 9CD8D1503AD24CD8D12*D0AD11D 113 DATA 0DDCAD11D029EF8D11D0*A
55 IF LEN(A$)<21 THEN B$=A$:GOT O 70 :REM*184 0297F8D11D0AD :REM*253 D11D029DF0D40CF8D11*D0AD16D
070 :REM*184 104 DATA 1AD009018D1AD0A9FF8D*1 029EF0D41CF8D :REM*77
60 IF LEN(A$)<42 THEN B$=LEFT$( A$,20)+RIGHT$(A$,LEN(A$)-21 114 DATA 16D04C31EAA44CF0901*F
):GOTO 70 :REM*176 105 DATA 25CDB93CCF8D9ACDC8B9*3 00DAD8D02C905D0EFA5*C5C915D
65 B$=LEFT$(A$,20)+MID$(A$,22,2 020E9A9008D30D0 :REM*114
0)+RIGHT$(A$,LEN(A$)-42) :REM*223 115 DATA 8D44CFAD11D009108D11*D
:REM*140 106 DATA CF8D16D0AD11D029DF0D*4 02026CD4C81EA488A48*9848A59
70 FOR I=1 TO LEN(B$)/2:REM*221 0CF8D11D0A9028D25CD*AD24CD8 116 DATA CE4C4CFE859320F4CE4C*A
75 C$=MID$(B$,I*2-1,2):H$=LEF T$(C$,1):L$=RIGHT$(C$,1) :REM*124 7F420F4CE4CEDF5A5BA*F007C90
:REM*140 107 DATA 7F8D11D04C81EAA9018D*3 3F00320F4CE4C :REM*14
80 H=VAL(H$):IF H$>"9" THEN H=A 0D0AD11D029208D40CF*AD16D02 117 DATA 4AF3A9008D30D08D44CF*A
SC(H$)-55 :REM*56 9108D41CFAD11 :REM*118 D16D029EF0D41CF8D16*D0AD11D
85 L=VAL(L$):IF L$>"9" THEN L=A 108 DATA D009208D11D0AD16D029*E 029DF0D40CF09 :REM*252
SC(L$)-55 :REM*84 F8D16D0A0052C44CF70*6C3051A 118 DATA 108D11D0A9298D1403A9*C
90 BY=H*16+L:PRINT#8,CHR$(BY); 109 DATA A5C5C940F047C928D01A*C F8D1503A9008D1AD0A9*FF8D0DD
:REM*148 0E42CFD03E8C42CFAD23*CDC9F2F C06AD8D02C905 :REM*8
95 NEXT:GOTO 10 :REM*160 03418AD23CD69 :REM*248 119 DATA D009A5C5C917D0032026*C
100 REM FAST 40 64 MODE ML 110 DATA 088D23CDD029C2BD01A*C D4C31EA9CCDCDCD0000*050500
:REM*33 0E43CFD0208C43CFAD23*CDC932F 120 DATA -1 :REM*111
:REM*233
    
```

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GOLD MINE

Here are this month's gaming nuggets from fellow readers all around the world.

By LOUIS F. SANDER

AIRBORNE RANGER: If a high-ranking ranger dies on a difficult mission, you'll be directed to insert your Ranger Disk. Take out your original, turn off your computer, then reboot the program. Your ranger will be the same rank he was at the start of the previous game.

—JEFF OWENS
F. E. WARREN AFB, WY

ARKANOID: To get free capsules, press the space bar to pause the game, then type "dsi magic" (no quotes) and press the space bar again. Now type these letters for the capsules: E to enlarge the pad; P to get an extra life; L to get more firepower; B to get wavy lines (enter them to advance to the next scene); F to advance to the final stage; D to get three balls; and C to make the ball stick to your pad until you click the mouse.

—LUCY S. TERRIER
ALTON, IL

BATMAN: To play this game, you need certain items at certain places to progress. Here are some of the more important items, and what they do.

While fighting the Penguin: False Nose lets you walk around for a while without being recognized; Lock Pick lets you into the factory by the roof; Door Key lets you enter doors in the office factory; Lift Key lets you use the elevator; Rope lets you climb up to a secret office (use it in the room with the hole in the ceiling); Dart gives you a door pass when you throw it at the dart board; Door Pass admits you to the Penguin's house; and Tools fix the computer.

When fighting the Joker: Light Bulb illuminates the dark room; Gas Mask lets you breathe while walking in the sewers; Flashlight lets you see while in the sewers; False Teeth let you eat the Fish, the Coconut and the Coke; Wire Cutters defuse all the bombs in the sewers; and Money lets you play the slot machine to get the Joker card.

—JOE QUINN
APO, NY

BATTLETECH: Save your game right before the eighth training mission.

Select a Chameleon for the 'Mech to use. As soon as you start out, run (and I do mean run) southeast, using jump-jets over rough ground when needed. You'll see why shortly. When you get to the south wall, look for the hole, run south through it, then run west alongside the wall. You'll evade the Jenners and keep the Chameleon.

Don't let any of your good 'Mechs get hit in the back, because the armor back there is very thin. When it's pierced, the 'Mechs' gyros, engines, heat sinks and all the other sensitive stuff get fried. You can never replace gyros, engines or sensors. You can get another 'Mech, but only a Wasp, Locust, Stinger or Spider. Chameleons and Commando 'Mechs are one of a kind.

—JESSE MACNISH
TUCSON, AZ

DOUBLE DRAGON: On the second level, you can get by the first group of thugs by ignoring them.

To get past the second group of thugs, get on top of the beams and wait for the two guys to come at you. When they do, go back to the starting point of the current level, then return. You will be allowed to pass.

When you use a weapon against the enemy, keep your button depressed. Instead of swinging once, your weapon will swing twice.

—CHRIS BARRANTES
HADLEY, NY

F-14 TOMCAT: When you get a mission requiring you to fire only when fired upon, get a Sidewinder lock on the enemy group leader. (You may have to try several before getting the right one.) Ask him to leave when he gets a lock on you. If he drops his lock immediately, you're home free! Otherwise, the enemy will fire at you at point-blank range. The only way to avoid disaster here is to climb at full afterburner, or if you're at 60,000 feet to dive like a

submarine. This will break the enemy's lock on you. When that happens, you can continue to evade them while asking them (politely) to leave.

—HARRO PENK
WAPPINGERS FALLS, NY

FAST BREAK: The most effective way to move the ball upcourt is by passing instead of dribbling. As soon as one of your players grabs a defensive rebound, have him pass the ball to a teammate, even if the latter appears to be well covered.

More often than not, this quick pass strategy will lead to a fast break and an easy basket for your team at the other end of the court.

—JAMES BRIGLEY
WORCESTER, MA

THE GAMES: SUMMER EDITION: Here's how to win at the Velodrome: Start out fast and get the lead. Let your opponent cross behind you, but don't let him pass. When you get to the last curve, speed for the finish.

—DENNY VERHOFF
OTTAWA, OH

GRAND PRIX CIRCUIT: On level one, your car can't be destroyed. So rather than slow down on the hairpins, turn into the grass at the 50-yard mark. With practice, you should end up on the pavement, still moving at 100 mph+.

—JASON SMITH
AVON PARK, FL

HEAVY METAL: In the tank scenario, incoming fire makes two different sounds: a shrill whistle and a low roar. The roar is from the rockets that come from the rocket launchers. These are your deadliest enemies, and should be eliminated as quickly as possible.

I've found it impossible to escape when that low roar comes in, but I've also found a way out of trouble. When the roar comes, hit the run-stop key to ▶

ALL NEW

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We've always been known as the best Commodore copy utility made. But that label just doesn't fit us anymore. Because Maverick is so much more than just a copy utility. Over its life span, Maverick has evolved into a total software management system capable of extending the abilities of your Commodore computer well beyond its original capacity.

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GOLD MINE

exit the tank, then re-select that unit. You'll start over from where you left off!

You can use the same trick when you have lots of one type of tank shell but none of another. When you exit and return, the computer will average out your ammo among all three types of shells.

—ZACH MESTON
LAHAINA, HI

HILLSFAR: When riding the horse at its fastest speed, you'll usually be able to jump any obstacle. A rumor in Hillsfar says that birds are scared of fast horses. So far, no birds have come my way.

When you get directions at your guild, read and remember them carefully. They won't be repeated.

If you're searching after you've broken into a building, you can get a message that the exit can now be found. This also means that the guards are searching for you. You can stun the guards and slow them down by walking over a little white object.

—STEPHEN S. GUY
STERLING, VA

IMPOSSIBLE MISSION II: When you're on a lift at the bottom of the screen, always push down on your joystick to see if it will take you to another room.

Don't hesitate to use your Snooze-bombs unless you haven't yet gotten the music for the tower.

There are certain rooms where it

seems impossible to get to another level. Sometimes blowing up a robot makes it easier to get where you'd like to go.

—BRIAN METCALF
SANDY HOOK, CT

JORDAN VS. BIRD: To get high scores in the three-pointer contest, you must time how long you hold the button. Press it, then let it go just as your opponent brings the ball up into shooting position. You can get a score of 30 by doing this, although I always seem to miss one or two!

The easiest dunks to get high scores on are Statue of Liberty, Windmill, and Dr. J. Jam.

—ADAM WILSON
HOLLIS, NY

LAST NINJA 2: To get out of Central Park, you must first climb the fence, which is after the juggler. While you're up there, get the pole. Now get the hamburger and search in both ladies' restrooms.

Go into the gate, use the key, jump the boat, go north and jump onto the island. There you must take the pole and push the boat. Now go back to the bee screen and go west. When the boat floats across, jump on, then off to the street.

To get the sword in the street, kick the door that flashes. Kill the enemy and the sword is yours.

To kill the alligator in the sewers, light

the bottle on the torch. Throw it at the big reptile, and you get roast 'gator!

To get past the dog in the basement, get the chicken and dip it in garbage. When it turns green, give it to the dog. Now put the credit card in the slot and go to the office.

Use the sword in most attacks. Other than the star, it is your most powerful weapon.

—ERNE DEAKYNE
UPPER MONTCLAIR, NJ

MONOPOLY: When you're playing against the computer, here's a way to get property cheaper than the retail price. It might also work against human beings.

The secret is to keep track of the amount of money the computer has. When you land on a property that is too expensive for the computer, press No, indicating that you don't want to buy the property. That will start an auction for the property, and the computer will never bid more money than it has at the moment.

If you bid a little more money than the computer has, you'll be able to buy the property. It works.

—APRIL HIEB
FARGO, ND

OUT RUN: If you're going at full speed, and you encounter three cars blocking all three lanes, try passing them on the side of the road. If there's nothing com-

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G O L D M I N E

ing, it's just as effective as passing on the pavement!

—GEOFF HOLLAND
NORRIS CITY, IL

RED STORM RISING: When a torpedo is homing on you, increase speed to over 20 knots and make a hard turn. Left is usually best.

If you're being chased by more than one torpedo, try to release a noise-maker and make a turn around it. It's also useful to change your depth. If you are deep, go above the thermal layer. If shallow, go below the thermal layer and continue the turn. You can also release a decoy while in the turn.

When you're going after subs, try to get the first one with a torpedo before attacking the others. You can then use Sealance torpedoes on the remaining subs. It will keep them busy, and the Sealance has a very good chance of making a kill. Increase your speed when using active sonar, since the other subs will fire torpedoes at you.

As soon as you damage a warship with a missile, go after the other ships. When they're sunk, finish off the damaged ship with a torpedo.

—ROBERT L. WILLSEY
MARTHA, OK

ROCKET RANGER: Remember that one fuel base is located in the jungle, and the other is located in the desert. Have an agent search in South America

(where there is jungle) and another search in countries with deserts.

When you find a base, organize resistance in that country. The resistance will raid the base and begin sending you loads of Lunarium.

—ALEJANDRO DIAZ
SAN JOSE, COSTA RICA

STEALTH MISSION: If you want more air opposition, let out your landing gear and land at an enemy base. Believe me, that will shock them into launching their planes.

Do this if you can't get a lock on the enemy because of your position: Switch to Map mode and zoom above 16x. If the target doesn't appear, you're still not close enough. When the red target sign does appear, press L if your sight is in the rectangle. Fire your missile when ready. When flying the ancient ruins, it is easier to track targets in the ravine if you're in Map mode.

—ANDRE STRAKER-PAYNE
ST. MICHAEL, BARBADOS

WHERE IN THE U.S.A. IS CARMEN SANDIEGO?: You can save valuable time by writing down four or five clues about your suspect before you use the Crime Computer.

Before investigating further, always read the information given about the state you are in. It reveals many important clues that can't be found anywhere else.

By the way, you must solve a total of

36 cases before you can capture Carmen and get yourself into the Acme Hall of Fame.

—DEBBIE GODFREY
ADDRESS UNKNOWN

ZAK MCKRACKEN: When you run out of oxygen on Mars, run to your spacevan and say "use oxygen valve." In a few seconds, you'll have an hour's supply of oxygen.

To unite the two halves of the yellow crystal, go to the Stone Henge in London and take the earth girl with you. Place the flagpole (gotten from Nepal prison) in the altar. Give the scroll (gotten from Lima) to the girl. Place the two halves of the yellow crystal on the altar and have the girl read the scroll. Boom! Watch out!

—MARC SKINNER
QUITO, ECUADOR ■

To submit your own C-64 or C-128 game tips for consideration, send them to Gold Mine, PO Box 101011, Pittsburgh, PA 15237. RUN will pay \$5 per submission upon publication.

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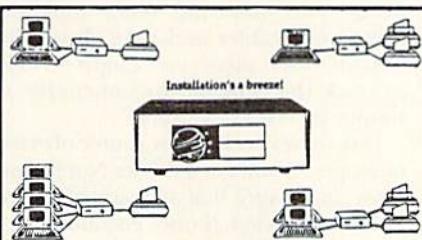


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COMMODORE CLINIC

Creating hi-res 64 screens and troubleshooting your Commodore system.

By ELLEN RULE

Q How do I make high-resolution screens on my C-64? For games and various other purposes, I want to be able to create and control sprites with a joystick.

—ADAM HAIN
TRES PINOS, CA

Q I've been trying to write a program that uses a joystick to move a sprite around the screen, but haven't had very much success. Could you tell me how to do this?

—GARY STOVALL
TEXARKANA, TX

A In order to read the joystick, use PEEK(56320) for port 2 and PEEK(56321) for port 1. The values you get correspond as follows: 1 = up; 2 = down; 4 = left; 5 = up and left; 6 = down and left; 8 = right; 9 = up and right; 10 = down and right.

The Commodore 64 Users Guide, which comes bundled with your new C-64, and *The Commodore 64 Programmer's Reference Guide*, both published by Commodore Business Machines, are two excellent sources of information for graphics and sprite programming on the 64. The latter, in particular, has an entire section devoted to graphics, including the various screen modes, and sample programs that demonstrate sprite movement and collision detection. In the book's Input/Output Guide section, there are Basic and machine language routines for reading joystick input. By combining and expanding on the sample code, you should have no problems writing the programs you're asking about.

I've also found that author Stan Krute's *Commodore 64/128 Graphics and Sound Programming* (published by TAB Books) contains a great deal of helpful instruction on sprite, character and bit-mapped graphics.

In addition, two articles in *RUN's* 1989 Special Programming Issue—"C-64 Sprite Basic" and "C-128 Sprite Action"—may be of assistance. And, there are programs in the public domain (available from Commodore telecommunications services and user's

group libraries) that you may find useful when designing and creating sprites.

Q My C-128 works fine for approximately 45 minutes; then the screen freezes and the computer doesn't respond to input. After being turned off for an hour or so, the computer works fine for another 45 minutes. Any idea on what might cause this and how to fix it?

—CARL J SPEHR
GAHANNA, OH

A It's difficult to diagnose without hands-on contact, but it sounds as if you're having a problem with heat build-up, either in your power supply or in the 128 itself. You may be able to avoid repair expenses by doing some basic troubleshooting of your own.

First, borrow a 128 power supply from a working system and try running your computer with it to see if the problem can be isolated to a faulty power supply. If the lock-up still occurs, then it's time for your 128 to visit a Commodore-authorized repair center.

Other malfunctions can be investigated by the same method of swapping components. For example, if you're not getting sound from a program that produces sound on another computer, first check the obvious—the monitor's volume control knob. Next try your computer with someone else's monitor, using your cables and then theirs. By isolating each piece, you might be able to track the problem to something as simple as a defective cable.

Disk drives are another source of error messages. If you get a Device Not Found error, make sure that all your cables are tightly connected. (I once encountered a 5-pin DIN cable whose rubber housing wouldn't allow it to be inserted far enough into my C-128 to make the proper connection.) Keep the cables behind your system neat by using cable ties or masking tape; cables that are tangled and crossed are subject to magnetic interference from one another.

Repositioning your components may also resolve interference problems. If a

disk-access problem seems related to only a few disks, try disconnecting peripherals—like dongles, modems, fast-load cartridges and printer interfaces—that aren't required by the programs.

Q I own both a 1541 and a 1541-II disk drive. Each one works perfectly when the other is off, but if I try to use one when both are on, I get error messages. I've tried every possible way of connecting the cables, but I haven't found the right combination. How do I hook up and use the two disk drives to my advantage? I'd like to have both working together for use with my Fleet System word processing software and to copy backup disks.

—JIM CADY
DENTON, TX

A The Commodore 64 and 128 computers use device numbers to indicate where information is to be called from or written to; only one device of each number may be attached and turned on at a time. For example, the Commodore Datassette is device 1, and the modem is 2. The screen of your monitor or television is device 3, while your printer may be device 4 or 5. The disk drive can be device 8, 9, 10 or 11. In your case, I would take advantage of the DIP switches Commodore built into the back of the 1571, 1581 and 1541-II disk drives, which will let you set your 1541-II as device 9 and leave the 1541 as device 8.

The original 1541 drives are set to device 8 unless a solder bridge on the main circuit board is modified. Only a qualified technician should "operate" on the hardware this way, so most people change a device 8 drive to device 9 with this routine: Every time you start up, turn on the second device 8 drive and change it to 9 by loading and running:

```
10 OPEN 15,8,15
20 PRINT#15,"M-W" CHR$(119)
   CHR$(0) CHR$(2) CHR$(9+32)
   CHR$(9+64)
```

Then turn on the other drive (#8). In order to take full advantage of

both drives, your software must be able to "see" more than one drive. For word processing or other applications, use drive 8 for your program disk and drive 9 to store data on formatted disks. Because each program varies, check your software's manual for information about how to use the second drive as a data drive.

A file-copy program like RUN Copy (see "Friendly File Copier," *RUN*, November 1989) lets you transfer files from one disk to another, while RUN Shell (in RUN Works and RUN's Super Starter Pak) eases file maintenance and disk archival chores.

Q Is there any software available for the C-128 that takes a program written in Basic and converts it to machine language?

—DON BROUILLETTE
VILLE PLATTE, LA

A The most common way to produce machine language code is by pro-

gramming in assembly language and using an assembler program to compile the machine language code. In this operation, there is "source code," the programmer's commented assembly language code, and "object code," the compiled machine language program. Machine language programs tend to run very fast because they're in the computer's native language.

Basic, on the other hand, is an interpreted language, which means that the Basic interpreter built into your C-64 or C-128 reads each instruction, figures out what it means and then executes it—every time the line of code is encountered in a program. This is quite slow in comparison to machine language.

A Basic compiler, such as Abacus's Basic Compiler for the 64 or 128, converts your Basic code to machine code or, optionally, to its own "pseudo-code." Kira Corporation's Gnome Speed for the 128 performs similar magic by converting your Basic code to "P-code," which is its version of pseudo-code.

When you use a Basic compiler, each line of the Basic program is interpreted only once—when the code is compiled (or translated) into the machine language that the computer understands. Your Basic program is roughly equivalent to source code, and the compiled Basic is analogous to machine language object code. The conversion can enhance execution by making it up to 30 times faster. ■

RUN's contributing editor, Ellen Rule, is our Commodore Clinic guru. In her spare time, she is employed as an R.N., lends her expertise to user's groups and runs a business endeavor, Home Computer Resource.

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.

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128 MODE

Just in the nick of time, here's a useful program to keep your sprites in order.

By MARK JORDAN

ONE OF THE GLORIES of the C-128 is its amazing family of sprite commands—all except the Bump command, that is. Nobody should envy this function, which promises much but delivers little. It's supposed to tell you which sprites are colliding with which, but it reports the information as a number that must be interpreted to be comprehensible.

Even worse, Bump is so slow that one sprite may well move into and *through* another without Bump registering a collision. And if two sprites just nick each other, Bump couldn't care less.

This is such a problem that I finally decided to write my own version of Bump, one that would catch all the nibs, nicks and foul tips. NICK (Newly Invented Collision Kit) is the happy result.

NICK TO THE RESCUE

NICK reports the numbers of the first three sprites that are colliding at any

given instant. It does this by means of machine language, which you must install and call if you want to use NICK for your own programming.

Type in Listing 1, using *RUN*'s Checksum program to detect any typing errors, then save it to disk and run it once to get an idea of NICK's power. It will show you eight careening sprites and report on the lowest three (in priority) colliding at any instant.

To install NICK in your own programs, include line 10 and lines 60000 on up in your code. These lines install two machine language routines, one of them an interrupt (at 2816).

To use NICK, you first must start the interrupt, and the SYS 2816 at the end of line 10 does that. Then, anytime in your program that you might have used Bump—that is, anytime you want to know what sprites are colliding—just type SYS 2877: RREG A,X,Y. SYS 2877 jumps into a machine language routine, then RREG A,X,Y returns from it with

the numbers of the three lowest-numbered sprites that are colliding held in variables A, X and Y.

For example, if all eight sprites were colliding, A, X and Y would hold 1, 2 and 3. However, if only the odd-numbered sprites were colliding, A, X and Y would hold 1, 3 and 5.

NICK isn't perfect. Due to the very nature of the interrupt-driven sprite commands, it's often a pixel (or even two) late in recording collisions. Also, it reports only the first three collisions. But, compared to the way Bump operates, these shortcomings are nuisances at worst.

To my mind, Bump is the runt of the Basic 7.0 litter. My instincts tell me to destroy the little guy, but I'm an old softy, I guess. I'll just give him a NICK, instead. So should you. ☐

Mark Jordan is a teacher of English in high school. He has been programming on Commodores for six years or so.

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

Listing 1. NICK program. (Available on ReRun disk. See card at page 36.)

```

1 REM LINE 10 MUST BE AT THE TO      :SSHAPE A$,0,2,23,22:SPRSVAV 60040 DATA 8D,1A,D0,AD,1E,D0,8D
  P OF YOUR PROGRAM      :REM*210      A$,T:NEXT          :REM*58      ,F0          :REM*167
3 REM SYS 2877,0,0,0 TO READ SP      70 FORT=1TO8:SPRITET,1,T:MOVSPR 60050 DATA 0B,AD,1F,D0,8D,F1,0B
  RITE-SPRITE COLLISIONS:REM*74      T,T*40,150:MOVSPRT,T*75#2:NE      :REM*3
4 REM SYS 2877,0,1,0 TO READ SP      XT          :REM*181 60060 DATA 33,FF,AD,1A,D0,09,04
  RITE-BACKGROUND COLLISIONS      80 GRAPHIC0,1:COLOR0,12:COLOR4,      :REM*84
      :REM*112      12          :REM*52 60070 DATA 1A,D0,4C,65,FA,BD,F0
      :REM*148      90          :REM*148      ,0B          :REM*207
5 REM AFTER SYS USE RREG A,X,Y      100 DO          :REM*78 60080 DATA A2,01,A0,00,8C,F2,0B
  TO FIND FIRST 3 COLLIDING SPR      110 SYS2877,0,0,0:RREG A,X,Y      :REM*135
  ITES.{2 SPACES}SEE LINE 110      :REM*94 60090 DATA F3,0B,8C,F4,0B,18,4A
      :REM*169      :REM*94      ,90          :REM*234
6 :          :REM*64 120 IFA THEN CHAR,17,12,STR$(A) 60100 DATA 0B,48,8A,99,F2,0B,68
  10 FORT=0TO114:READA$:POKE2816+      +STR$(X)+STR$(Y)      :REM*243 60110 DATA 0B,48,8A,99,F2,0B,68
  T,DEC(A$):NEXT:SYS 2816      130 LOOP          :REM*111      ,C8          :REM*18
      :REM*88      140 :          :REM*198 60120 DATA C0,03,F0,05,E8,E0,09
20 :          :REM*78 60000 DATA 78,A9,0D,8D,14,03,A9 60130 DATA 0B,AD,F2,0B,AE,F3,0B
30 REM DEMO PROGRAM BELOW      ,0B          :REM*93      ,AC          :REM*105
      :REM*147 60010 DATA 8D,15,03,58,60,AD,19 60140 DATA F4,0B,60
      :REM*4      ,D0          :REM*4
40 COLOR0,12:GRAPHIC1,1 :REM*13 60020 DATA 29,04,F0,26,AD,1A,D0
50 CHAR,0,0,"{3 SPACES}",1:CHAR      ,29          :REM*251 60030 DATA 04,F0,17,AD,1A,D0,29
  ,0,1,"{3 SPACES}",1:CHAR,0,2      ,FB          :REM*42
  ,"{3 SPACES}",1 :REM*10
60 FORT=1TO8:CHAR,0,1,STR$(T),1

```

RUN it right: C-128

RUN'S CHECKSUM & PROGRAM TYPING HINTS

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 it. When typing in a program from *RUN*, first load and run *RUN'S* latest version of the Checksum program, which contains a new feature explained below. The screen will display a SYS number (49152 for the C-64; 3328 for the C-128) 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.

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 as you typed it 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 appropriate SYS number, and save the finished program.

We sometimes get letters and phone calls from new readers who have typed in the Checksum program for the first time. They are confused by the "Out of Data Error in Line 30" message that appears when they try to run the Checksum program. Understandably, they compare line 30 of the listing with line 30 as they typed it in, and cannot find anything wrong. The message unintentionally misleads them into thinking the error is in line 30, whereas the typing mistake is actually somewhere in one of the Data statements in lines 190-350.

So, we've added a new feature to the Checksum program that alerts readers to the number of the Data statement line in the Checksum program where an error has actually been made. Note that this feature works only on the Checksum program itself, and not on any other program listing in *RUN*.

After you've entered and saved the Checksum program to disk, run it. If you've made any errors in any of the Data statements, the program will give you a specific line number. Find the mistake, correct it, press return, save the program and run it again. Repeat this procedure until the Checksum program runs flawlessly.

CONTROL CHARACTERS DEMYSTIFIED

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 once. 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 once.
{2 CRSR DNs}—press the cursor-down key twice.
{CTRL I}—hold down the control key and press the I key.
{COMD T}—hold down the Commodore logo key and press the T key.
{5 LB.s}—press the British pound key (£, not #) five times.

Refer to the following paragraphs for any other Error messages you get from running any program listing in *RUN*.

OTHER ERROR MESSAGES

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.

- 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 program line that reads the data, usually a For-Next loop. Make sure you have the proper values for the loop, because if, for example, 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. It's more likely that you've 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. Using *RUN'S* Checksum program when you type in listings from the magazine should help in this case.

- You get an "Illegal Quantity Error in Line xxx" message. This means 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. First 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" message. 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 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 will help you avoid every mistake we've mentioned above, except that it won't detect the omission of a line. ☐

Listing. *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 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+110,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
```


GEOWATCH

Here's some geoNews and also geoAnswers
to your specific geoQuestions.

By TIM WALSH

SINCE I LAST AUTHORED this column (July 1989), very few Commodore-compatible products and announcements have been forthcoming from Berkeley Softworks. A notable exception is BSW's promise of a 512K RAM expansion unit. With Commodore ceasing production of their 512K 1750 REU nearly a year ago, Berkeley's replacement will be most welcome, as it's a necessity for users of the C-64 and 128 versions of GEOS 2.0.

Other news: QuantumLink now offers everything from interesting geoPaint artwork to conversion programs to online GEOS-related courses. Anyone using GEOS application software for work or entertainment should seriously consider the benefits of a modem and membership in Q-Link.

GEO Q & A

My mail tells me that many of you are finding it increasingly difficult to obtain responses to all your geoQuestions. I'll do my part by providing answers here this month. In next month's geoWatch, you can look forward to a compilation of useful geoTips.

Q Using a Commodore 1750 REU has reduced the execution times of all my GEOS applications. However, unless I've planned an extensive editing session, I don't bother copying the programs over to the REU—it's far too time-consuming. Is there a batch file copy utility that expedites the copying of GEOS files to the REU?

—JIM PURCELL
MILWAUKEE, WI

A If you have a copy of GEOS 2.0 for the C-64 or C-128, you're in luck. A multi-file copy utility is as close as your Commodore key. After using the Configure 2.0 utility to configure your REU as device B or C, activate the source disk on the deskTop.

Next, hold down the Commodore key and position the pointer over each file to be copied; click once on each one. You can even flip pages forward and backward to find all the necessary files.

After selecting the last file, click the pointer one more time, and a ghost icon with the words "Multi File" will replace the pointer.

Position this icon over the destination drive and press the mouse button once to drop all the files into that drive. When copying files to RAM and other drives, you'll find this process so fast and convenient that you'll wonder how you ever got along without it!

Q I recently began working with GEOS 128, but I've yet to get it to print properly with my Epson FX-86e printer. I encounter no problems when printing with other programs.

—MILT FITZWATER
APO, NEW YORK

Q When using geoPaint 1.3, my Panasonic KX-P1080i printer (with Xetec Super Graphix interface) prints about two-thirds of the geoPaint image, starting at the left side, and cuts off approximately one-third of the right side. No error message ever appears to indicate anything amiss. What's wrong?

—SHIBU KINATUKARA
YONKERS, NY

A Both of these printer woes are relatively easy to fix. I'll address Shibu's geoPaint problem, since it's described in specific detail, but the solution is also applicable to Milt's query. GeoPaint doesn't return an error message, because as far as the software is concerned, nothing is wrong with the printing. The problem lies with either your printer interface or printer driver, either of which can lock the printer into outputting 60 dpi (dots per inch) images that lack the rightmost one-third of the screen image.

First, make sure that your printer interface is *not* set to emulate any type of Commodore printer. As with any printer interface used with GEOS, it must be set to Transparent mode. With the Xetec Super Graphix, you can set it to Transparent mode by moving all the DIP switches to the "off" position.

Second, be certain that you're *not* using a Commodore-compatible printer driver from within GEOS. Most Panasonic printers—yours included, Shibu—work fine when you select any of the GEOS Epson printer drivers (with the exception of the Epson JX-80) from the Select Printer option found on the deskTop. With the printer interface in Transparent mode and an Epson printer driver installed, your partial printouts are destined to become a thing of the past.

Q Is the Commodore 1581 3 1/2-inch disk drive compatible with GEOS 64? Can disk commands, like formatting and validating, be issued to a 1581 from within GEOS? Will all GEOS software work from a 1581?

—CHRIS JOHN RAMAGLIA, MD
SAN MIGUEL DE ALLENDE
MEXICO

A Let's clarify any confusion surrounding GEOS and the 1581 once and for all: GEOS 2.0 for the 64 and GEOS 2.0 for the 128 both work fine with the 1581. The 2.0 is the only version of GEOS that offers 100 percent 1581 compatibility. Earlier versions appeared before 1987, when the 1581 was first produced.

All disk commands work on the 1581, provided GEOS 2.0 is used. All GEOS applications, games and utilities also work fine from a 1581. In fact, GEOS 2.0 works so well with the 1581 that I use it as my primary 1581 file-copy utility.

Here's a little-known trick that I've used for making backups of non-GEOS files from 5 1/4-inch 1541/1571 format to 3 1/2-inch 1581 format: Simply place a non-GEOS disk in the 1571 source drive and select "no" when asked to convert it to GEOS format. Then use the multi-file copy technique outlined in the answer to the first question above to quickly make backup copies of those files. ■

Tim Walsh, RUN's technical manager and Magic columnist, is also a GEOS enthusiast and our resident printer expert.

HARDWARE GALLERY

Boost your drive's speed even more dramatically with this upgraded version of JiffyDOS.

JIFFYDOS.....A+

*Speed and Versatility
Are the Keynotes
Of This Update*

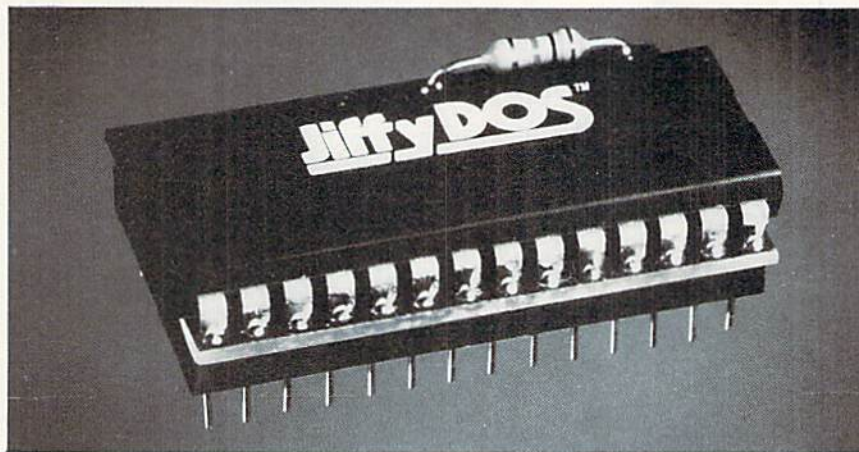
The weak link in Commodore 8-bit systems has always been the disk drives. They are slow, the 1541 brutally so. This inadequacy has resulted in the emergence of various means of increasing disk-access speed, the most popular of which has been a cartridge plugged into the computer's cartridge port. The arrival of the RAM expansion unit, however, made this a less than ideal solution. The two pieces of hardware could not easily co-exist; you usually had to remove one in order to use the other.

Enter Creative Micro Designs with an elegant solution called JiffyDOS. Rather than adding a plug-in cartridge to your system, you upgrade it by making chip replacements to both the Kernal ROM in your computer and the DOS ROM in your disk drive(s). This results in decreased load times while leaving the cartridge port open.

JiffyDOS requires that you open up both your computer and disk drive. This obviously voids any warranties that are in force, and hence is probably not an operation you want to make on new equipment. However, since there are fewer new C-64s and no new C-128s entering the market, this won't be a problem for most people much longer.

The instructions for making the chip replacements are clear, complete and easy to follow. One piece of advice—take your time. I ran into some problems, but they were my own fault, not that of the product. Before inserting the chip, make sure the pins line up with the holes in the socket, lest you end up, as I did, with a chip resembling a bowlegged caterpillar.

The replacement process is fast; two drives and a 128 took me less than 45 minutes. Once you've replaced the chips, the final step is to drill a hole in



the side of your computer for a small toggle switch, permitting you to turn JiffyDOS off and on. Put the case back together, and you're in business.

Creative Micro Designs has released a sixth version of their product, with enhancements that include a two-drive file copier, a printer/screen output toggle, the ability to adjust the sector interleave, full support of an REU running under RAMDOS, program-

mable function keys in 64 mode, and automatic sensing of uppercase/graphics and lowercase print modes during screen dumps.

The DOS ROM and Kernal ROM chips supplied with JiffyDOS version 6.0 incorporate all of the latest upgrades from Commodore. They are also compatible with any other chip upgrades that you might have made to your system. For instance, over the years, my 128 has acquired a Basic 8 chip, as well as a 64K video chip. Both worked without a hitch after the JiffyDOS 6.0 installation. If you encounter a program that balks at the presence of JiffyDOS, simply flipping the toggle switch mentioned above reverts your setup to a stock system.

The first thing you'll notice with JiffyDOS is that it changes the function keys. Gone are the graphics, screen clear and monitor commands. In their place are definitions that let you scratch a file and list a Basic program or a text file from disk. The function keys work in both 64 and 128 modes.

The additional commands in JiffyDOS provide you with the power to redefine your default drive, dump a text screen to a printer, redirect all output from the screen to a printer, un-New a program, freeze a program listing and list a program one line at a time. There is also a command disabling the infamous 1541 head banging that occurs when disk errors are read.

As nice as all of this is, the main reason for purchasing JiffyDOS is to speed up ▶

REPORT CARD

A Superb!

An exceptional product that outshines all others.

B Good.

One of the better products available in its category. A worthy addition to your hardware collection.

C Average.

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

D Poor.

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

E Failure.

Many problems; should be deep-sixed!



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HARDWARE GALLERY

loading times. Does it? Yes, very much. While the effects of JiffyDOS 6.0 vary according to the drive, the mode in which you're using it and the individual program, there are any number of situations where the increased efficiency is nothing short of awesome.

The presence of JiffyDOS 6.0 is felt most profoundly when you're using a 1541 drive (or a 1571 in 1541 mode) with a C-64 or a 128 in 64 mode. When used in configurations other than these, JiffyDOS usually has some impact, al-

been made in the Kernal ROM, not the DOS ROM, so owners of earlier versions only have to change the chips in their computers, not their drives, to obtain the benefits of the latest edition. The cost for JiffyDOS owners to upgrade is \$36.95 for the C-64 and \$49.95 for the C-128. The package includes the Kernal ROM and one DOS ROM. There is also a trade-in policy: Return your old JiffyDOS Kernal, and the price drops to \$19.95 and \$29.95 for the 64 and 128, respectively. For first-time buyers,

Table 1. Sample load times.

C-128 in 128 mode	Stock 1571	Stock 1581	With JiffyDOS 1571	With JiffyDOS 1581
Pocket Filer 2	1:02 min	--	1:02 min	--
180-block data file	:49 sec	:32 sec	:30 sec	:26 sec
Fontmaster 128	:32 sec	:20 sec	:30 sec	:20 sec
BobsTerm Pro 128	:30 sec	:23 sec	:30 sec	:18 sec
Trinity (game)	2:51 min	--	1:39 min	--
Beyond Zork (game)	2:12 min	--	1:38 min	--

C-128 in 64 mode	Stock 1571 in 1541 mode	Stock 1581	1571 in with JiffyDOS	With JiffyDOS 1581
EasyScript	1:02 min	--	:31 sec	--
RUN Script 64	:48 sec	--	:10 sec	--
Multiterm 64	1:22 min	--	:32 sec	--
Xmobuf 7.4 (terminal program)	:51 sec	--	:10 sec	--
PHM Pegasus (game)	2:48 min	2:21 min	:33 sec	:32 sec
International Karate II (game)	2:25 min	1:56 min	:37 sec	:30 sec
Archon (game)	3:13 min	--	1:15 min	--

though not as dramatic. In some situations, it has little or no effect—on a program such as GEOS, for example, which has a built-in, fast-load routine that bypasses the Kernal.

Even programs that don't seem to respond to the presence of JiffyDOS can sometimes get a performance boost. Ways to accomplish this can range from simply copying a file to a JiffyDOS formatted disk, to the more complicated task of adjusting the sector interleave on a 5¼-inch floppy (which has no effect on a 1581 drive). Simply put, the latter operation means adjusting the physical distance between blocks of a file to optimize access time. This entails a bit of experimentation, but the instructions to perform the task are quite clear.

The changes in JiffyDOS 6.0 have

the prices are \$59.95 for the 64 and \$69.95 for the 128.

JiffyDOS version 6.0 does what it's supposed to, and does it well. No, it won't decrease the loading times for all programs, but in many of those cases nothing else will either. JiffyDOS co-exists with all other equipment, doesn't affect copy protection schemes, offers a nice selection of extra commands and, best of all, leaves your cartridge port free. Add to this a company that provides excellent customer support, and you have a combination that's hard to beat. Now that I've used JiffyDOS, I'll never give it up. (*Creative Micro Designs, PO Box 789, Wilbraham, MA 01095.*)

—MICHAEL CAVANAUGH
LEVITTOWN, PA ■

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Predator	DiPrete	Jun	24	C-64
Annals of Rome	Sodaro	Jun	24	C-64
John Elway's Quarterback	Wasser	Jun	25	C-64
Star Wars	Latocha	Jul	11	C-64
Holidays and Seasons	Grubbs	Jul	11	C-64

1 9 8 9 I N D E X

TITLE	AUTHOR	ISSUE	PAGE	COMPUTER
Jack Nicklaus' Greatest Eighteen Holes	Guerra	Jul	12	C-64
720°	Latocha	Jul	12	C-64
Chop 'n' Drop	Poggiali	Jul	13	C-64
Double Dragon	Wasser	Jul	13	C-64
Contra	Latocha	Jul	14	C-64
Purple Heart	DiPrete	Jul	14	C-64
Victory Road	DiPrete	Jul	14	C-64
Hometown, U.S.A.	Grubbs	Aug	15	C-64
Operation Wolf	Latocha	Aug	16	C-64
Space Station Oblivion	Guerra	Aug	16	C-64
StoryWriter 128	Premack	Aug	16	C-128
SimCity	Poggiali	Aug	18	C-64
Powerplay Hockey: USA vs. USSR	Sodaro	Aug	18	C-64
Uninvited	Poggiali	Aug	20	C-64
Battles of Napoleon	Wright	Aug	20	C-64
Mind Roll	Sodaro	Aug	20	C-64
Jordan vs. Bird: One on One	Guerra	Aug	21	C-64
Word Writer 4	Bayles	Sep	16	C-64
Keith Van Eron's Pro Soccer	Guerra	Sep	16	C-64
Pharaoh's Revenge	Latocha	Sep	18	C-64
Time and Magik	Guerra	Sep	18	C-64
The Honeymooners	Brown, L.	Sep	19	C-64
Willow	Poggiali	Sep	20	C-64
Navy Seal	Ryan	Sep	20	C-64
Demon's Winter	Guerra	Sep	20	C-64
Hole-in-One Miniature Golf	Latocha	Sep	21	C-64
Firezone	Guerra	Sep	21	C-64
BattleTech	Kimball	Sep	21	C-64
First Over Germany	Poggiali	Sep	21	C-64
High/Scope Survey of Early Childhood Software	Brown, L.	Oct	16	
Comp-U-Solve	Pratt	Oct	16	C-64
Rocky's Boots	Mintz	Oct	18	C-64
Gertrude's Secrets	LePage	Oct	20	C-64
Letter-Go-Round	Latocha	Oct	20	C-64
Colonial Times Databases	Weiner	Oct	22	C-64
The Incredible Laboratory	Weiner	Oct	22	C-64
Fractions: An Introduction; Math Football: Percent	Pratt	Oct	24	C-64
Story Builder: Parts of Speech in Context	Weiner	Oct	60	C-64
Mammoth Meltdown; Essential Punctuation	Poggiali	Oct	60	C-64
Electric Company Learning Library	Latocha	Oct	62	C-64
Dinosaurs Are Forever	Latocha	Oct	64	C-64
Freddy's Puzzling Adventures	DiPrete	Oct	66	C-64
Hollywood Squares	Hurlburt	Nov	24	C-64
Chomp!	Latocha	Nov	24	C-64
Thunder Blade	Guerra	Nov	26	C-64
RoboCop	Hurlburt	Nov	26	C-64
Destroyer Escort	Guerra	Nov	26	C-64
Baal	DiPrete	Nov	28	C-64
Sky Shark	Gates	Nov	28	C-64
Speedball	Latocha	Dec	22	C-64
Axe of Rage	Guerra	Dec	22	C-64
Titan	DiPrete	Dec	24	C-64
Tangled Tales	Guerra	Dec	24	C-64
✓ Book	Jerome	Dec	26	C-64; C-128
Double Dare	Latocha	Dec	26	C-64
California Pro Golf	Poggiali	Dec	26	C-64
Devon Aire in The Hidden Diamond Caper	Poggiali	Dec	28	C-64
Last Ninja 2	Ryan	Dec	28	C-64
Combat Course	DiPrete	Dec	30	C-64
The Magic Candle	Kimball	Dec	30	C-64
The Crack of Doom	Poggiali	Dec	30	C-64
War in Middle Earth	Poggiali	Dec	30	C-64

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1 9 8 9 I N D E X

TITLE	AUTHOR	ISSUE	PAGE	COMPUTER
TELECOMMUNICATIONS				
Caribe Bein'	Ryan	Nov	50	
Non-Habitat Forming	Ryan	Nov	51	
UTILITIES				
Demystifying DOS	Ryan	Jan	50	
Multitasking Comes to the C-64*	Ingrassia	Jan	56	C-64
Program Your Mouse and RAM Expander*	Brown, T.	Feb	54	C-64; C-128
The MS-DOS Connection*	Garamszeghy	Apr	30	C-128
The Multitasking Factor*	Butterfield	Apr	42	C-64; C-128
MS-DOS Disks to Order*	Garamszeghy	May	30	C-64; C-128
The MS-DOS/C-64 Connection*	Garamszeghy	Jun	37	C-64
RUN Shell*	Ryan	Jul	26	C-64; C-128
A Better Mousetrapp*	Brown, T.	Jul	36	C-64; C-128
Quikmat*	Hughes	Sep	50	C-64
Functional Keys*	Little	Oct	40	C-64
Friendly File Copier*	Parry	Nov	42	C-64
Get a Load of This!*	Miller	Dec	44	C-64

* Available on the bimonthly ReRUN disks, along with other programs from *RUN* and special bonus programs. To order, see the insert card at page 36.

Index of 1989 RUN AMOK Corrections

TITLE OF CORRECTED ARTICLE	PUBLISHED	PAGE	—CORRECTION PUBLISHED—	
			MONTH	PAGE
Panel Maker	Nov '88	50	Feb	71
Crazy Caverns	Dec '88	48	Feb	71
Tag 'Em	Special Issue #5	66	Apr	72
Knock on Wood	Jan '89	12	Apr	72

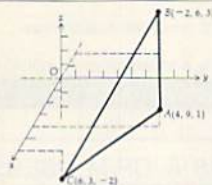
Bonus programs that appear on 1989 ReRUN disks but were not published in *RUN* magazine

TITLE/DESCRIPTION	ReRUN ISSUE	COMPUTER
Multicolor Editor 64/Redefines the C-64 character set	Jan-Feb	C-64
Crabbie/Arcade game	Mar-Apr	C-128
Kidnapped!/Arcade game	Mar-Apr	C-64
Between/Strategy game	May-Jun	C-128
C-64 Animation Maker/See your own sprites in action	May-Jun	C-64
Storybook 64/Create computerized storybooks	Jul-Aug	C-64
Budget Plus/Keep track of your finances	Jul-Aug	C-128
The Battle/Strategy game	Sep-Oct	C-128
Customizer: A GEOS 120-dpi Printer Driver	Sep-Oct	C-64; GEOS 64
The Caroling Commodore/Christmas carols	Nov-Dec	C-128
Wraparound/Puzzle game	Nov-Dec	C-64
The Family Tree/Genealogy program	Nov-Dec	C-64

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 $2X_1 + 5X_2 < 60$

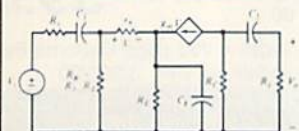
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Item: In line 1230 of the listing for "Wall Street 128" (November 1989, p. 66), you must substitute the word REM for the words "BLOCKS FREE.", or the program will hang up at that point. Also, line 254 is too long, by one character, for the computer to accept. To make the line shorter, substitute a question mark for the first Print command in the line.

Item: In the last paragraph of the documentation for "Get a Load of This!" (December 1989, p. 44, and the November-December ReRUN booklet, p. 13), quotation marks were inadvertently omitted after the asterisk in the Load command. It should read " :* ",8:.



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IN ADDITION...

RUN will present reviews, computing and game-playing hints and tips, news and new products, answers to readers' questions and more.

ReRUN PREVIEW—

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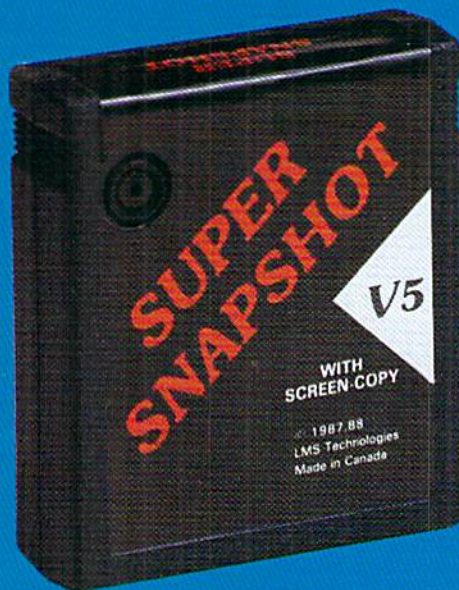
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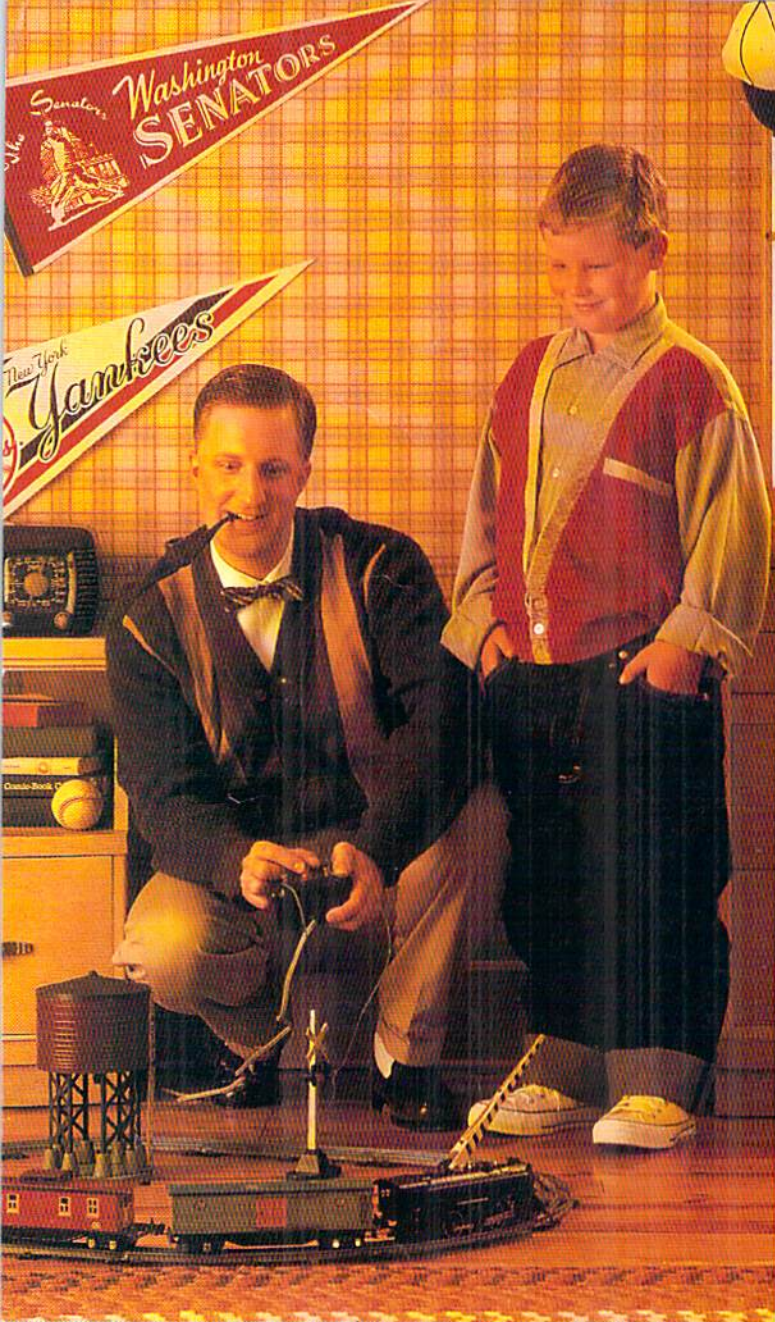


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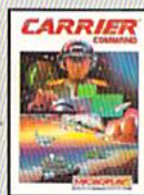
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