

January/February 1988 Edition

RE RUN

RUN Programs on Disk

For the C-64 and C-128



*Four Bonus Programs
Plus RUN's 1987 Index*

Introduction

January-February '88 ReRUN

HAPPY NEW YEAR, fellow ReRUN users! As always, the new year brings changes to our lives: small ones, such as having to remember to use 1988 on correspondence and checks; and bigger ones, like a new collection of ReRUN programs, which means another year's worth of excitement in the form of more applications, utilities, graphics and games. Our January and February programs reflect some of that excitement.

Our C-128 blockbuster terminal program, RUN Term 128, kicks off this first disk of the 1988 ReRUN series. Written by veteran programmer Tom Brown, it's certain to eliminate any program deprivation C-128 owners may be suffering by having to use telecommunication programs that run only in 64 mode. And, as every C-128 owner quickly discovers, most 64-mode programs do not take advantage of the 128's 80-column screen, 2 MHz operating speed and fast disk access.

In addition to taking full advantage of all the above-mentioned C-128 features, RUN Term 128's command format utilizes the little-used ALT key, located in the upper left-hand corner of the keyboard. One most significant feature is the program's huge 60K text buffer, which represents about 50 double-spaced typewritten pages of text. A few other niceties include 40- and 80-Column modes, 300- and 1200-baud transmission rates and Punter and X-Modem protocols. With this program, you get an unbeatable amount of telecommunicating power for your money.

Next, we offer a C-64 program called RUN Memo Book, which allows you to enter names and addresses alphabetically, much as you would enter them into a Rolodex. You can also use it for other applications, such as storing recipes, inventories and anything else that comes to mind. It allows you to scroll rapidly through the lists, print them out and save them to disk for future reference.

RUN's January 1988 issue—the first, incidentally, in our fifth year of publication—marked the introduction of our new checksum program. Naturally, you'll find RUN's Checksum on this disk, so you'll have it easily available if you have occasion to type in RUN

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Magic listings or any other programs from January 1988 on. Associate editor and long-time *RUN* contributor Bob Kodadek wrote this short program, which works in either 64 or 128 mode, with either a 40- or 80-column screen. It is a clear improvement over the Perfect Typist programs of years past, in that it possesses far greater accuracy in detecting typing errors.

Bob Kodadek also provided us with Calendar, our Easy Applications program for January. We've had an overwhelmingly positive response to our publication of Calendar in the magazine, so I'm sure it will also be a hit on this ReRUN disk.

Calendar operates in either 64 or 128 mode and includes some handy features. In printing out a month, for instance, you can enter a short memo for each date, with a few words to mark appointments, meetings, relatives' birthdays, and so on.

Wrapping up programs for January, we have that month's Mega-Magic, entitled Blank It 64. Leaving an unchanging image on the screen for extended periods of time increases the likelihood of causing permanent "screen-burn" damage to your video monitor. Blank It 64 automatically blanks out the video image if you haven't entered anything on the keyboard for a short span of time (predetermined by you).

February's lineup of programs begins with RUN Copy, a single-disk back-up system for your C-64 and 1541. RUN Copy also works with the C-128 (in 64 mode) and 1571 disk drive. In a relatively short time, you can make copies of all your non-copy-protected disks, such as data or even ReRUN disks. This program, however, is not designed to copy disks that utilize copy-protection schemes, so trying to back up your favorite Microprose or Epyx game with RUN Copy will only be a waste of time.

Nearly everyone who has used the 1351 proportional mouse with various application programs quickly develops an affection for it. Your Basic Mouse Editor, from our February issue, provides a 1351 proportional mouse editor for scrolling through your C-128 listings in both 40- and 80-column mode. Plug your 1351 into your C-128, activate Your Basic Mouse Editor, load a Basic program, and you can scroll through your listing by holding down the left button and moving your mouse.

Time Keeper 64, our Easy Applications program for February, is yet another achievement from our friend Bob Kodadek. An interrupt-driven clock with a built-in alarm, Time Keeper 64 keeps track of the date and time. Furthermore, for those of you more likely to

be hammering away on your C-64 at midnight on New Year's Eve than wearing a lampshade at a party, Time Keeper 64 keeps track of the year.

Our final February program is Blank It 128, Mega-Magic for that month, which does for the 128 what January's Blank It program does for the 64. Don't touch the keys for a few minutes, and off goes the screen image. Press any key, and your previous display reappears.

Now we come to our bonus programs. I took the liberty of turning to *RUN*'s fourth annual Special Issue and its accompanying 1988 calendar to get some fancy graphics programs written by our technical editor, Lou Wallace.

Heading the list is a 40-Column-mode C-128 program, simply entitled Spring. Just load and run it for a lively springtime scene.

Next we have some action-filled C-64 programs that were also taken from the same calendar. The first is called Summer, and, because of its extensive use of sprites, you first need to load and run the Sprite ML program (see the directory). The next C-64 bonus program is called Autumn. Like Summer, it also requires that you load and run the Sprite ML program beforehand.

Finally, I've placed the index of 1987 *RUN* articles and reviews on this disk in RUN Script format. Just boot up a copy of either RUN Script 64 or 128, whichever is appropriate, and read in the 1987 Index as a sequential file.

Well, that's all for this issue of ReRUN. I hope you're looking forward to seeing the next issue as much as I am!



*Technical Editor
RUN magazine*

How To Load

LOADING FROM MENU

To get started, C-64 users should type LOAD "MENU 64",8 and press the return key. When you get the Ready prompt, the menu is loaded and you should type RUN to see a list of the programs on your disk. C-128 users need only press the shift and run-stop keys. When all the programs are displayed on the screen, you can run the one you select by pressing a single key.

LOADING FROM KEYBOARD

If you do not wish to use the menu program, follow these instructions.

C-64: To load a C-64 program written in Basic, type: LOAD "DISK FILE-NAME",8 and then press the return key. The drive will whirl while the screen prints LOADING and then READY, with a flashing cursor beneath. Type RUN and press the return key. The program will then start running. To load a C-64 program written in machine language (ML), type: LOAD "DISK FILENAME",8,1

C-128: All C-64 programs can be run on the C-128 as long as your computer is in C-64 mode. All C-128 programs are clearly labeled on the directory page. Your C-128 *must* be in C-128 mode to run these programs. To load a C-128 mode program, press the F2 key, type the disk filename and then press the return key. When the program has loaded, type RUN.

MAKING COPIES OF RERUN DISKS

Many programs on your ReRUN disk have routines that require a separate disk onto which the program writes or saves subfiles. To use these programs, you must first make a copy of the original program onto another disk that has enough free space on it to hold these newly written subfiles.

It's simple to make a copy of a Basic program. Just load it into your computer as outlined above, and then save the program back onto a separate disk that has plenty of free space for extra files.

Copying an ML program is not so simple. You cannot simply load and save an ML program; you'll need to use a disk-backup utility program, such as the one on your Commodore Test Demo disk.

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Directory

PAGE	DOCUMENTATION	DISK FILENAME	FILE TYPE
2	*RUNTERM 128	*MENU 128 _____	BASIC
		MENU 64 _____	BASIC
		BOOT.RUNTERM128 _____	BASIC
		RUNTERM-HEX _____	BASIC
		RUNTERM-PUNT-HEX _____	BASIC
		RUNTERM XMOD-HEX _____	BASIC
		RUNTERM TBLS-HEX _____	BASIC
		RUNTERM128 _____	ML
		PUNTER128 _____	ML
		TABLES _____	ML
		WXMODEM128 _____	ML
8	RUN'S MEMO BOOK	RUN MEMO BOOK _____	ML
		RUN MEMO HEX _____	BASIC
12	RUN'S CHECKSUM		
	PROGRAM	NEW CKSUM 64/128 _____	BASIC
13	CALENDAR MAKER X	CALENDAR MAKER _____	BASIC
15	BLANK IT 64	BLANK IT 64 _____	BASIC
		BLANK-IT 64(890) _____	ML
15	RUN COPY 64	RUNCOPY _____	ML 1-1541
		RUN COPY-HEX _____	BASIC
17	*YOUR BASIC MOUSE		
	EDITOR	MOUSE 128 LOADER _____	BASIC
		MOUSE EDITOR _____	ML
19	TIME KEEPER 64 X	TIME KEEPER BOOT _____	BASIC
		OB.TK 64 _____	ML
		TIME KEEPER 64 _____	BASIC
21	*BLANK IT 128	BLANK IT 128 _____	BASIC
		BLANK-IT 128 ML _____	ML
22	£C-64 SPRITE ML		
	COMMANDS	SPRITE ML _____	BASIC
		£*SPRING _____	BASIC
		£%SUMMER _____	BASIC
		£%FALL _____	BASIC
		<u>£1987 INDEX</u> _____	SEQ
			(RUN Script)

*-C-128 mode only

£-Bonus program

%-Requires running Sprite ML Commands program first

Before you run a program, read the documentation that pertains to it.

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RUN it right: C-128; modem

RUN Term 128

By Tom Brown

RUN TERM 128 is a powerful telecommunications program offering features that rival those of commercial programs. It supports both 40- and 80-Column modes; 300 and 1200 baud; both the punter and Xmodem file-transfer protocols; a nine-number phone book; an autodialer that works with the Commodore 1650, 1660 and 1670, and with the Hayes modems; a 60K text buffer; and more!

RUN Term 128 is composed of five disk files. Load and run the Basic program called BOOT.RUNTERM128. When the program has been activated, the screen flickers momentarily and prompts for the time appear. Pressing the return key at the first prompt (am/pm) zeroes the clock and exits to Terminal mode.

At this point, the Status line (see below) appears at the top of the screen, accompanied by a brief help menu listing the main program commands. You can also bring up this menu by pressing the help key from Terminal mode.

Whenever the Status line (marked by the clock on the right side) appears on the screen, you're in Terminal mode, and the main ALT commands (see below) are active. When you select a program option, the Status line disappears and these commands are no longer available. Normally, this is because you're being asked for a menu selection, filename or other input.

When you return to Terminal mode, the screen is usually the same as you left it, except in Conference mode and during file transfers. Some ALT commands don't change the screen at any time during execution.

THE STATUS LINE

The top line of the screen is called the Status line and displays information on the program's internal settings. On the right end of the line is the clock. If your modem can detect a carrier, you'll see a lowercase c to the left of the time whenever a carrier is present. On the left end of the line is the baud rate—either 300 or 1200. To

the right of the baud rate is a set of single-letter flags: b e w j t d s. Their meanings are as follows:

b—the text buffer is open to receive characters from the modem for later retrieval.

e—the Echo function is on. Sometimes called half-duplex, Echo displays what you've typed if the service you're on doesn't echo characters back to your computer.

w—the Buffer Wrap function is on. When the text buffer fills up, buffer wrap makes it wrap around to continue to accept data. Otherwise, the buffer closes when it's full.

j—linefeeds from the modem will be printed to the screen. When this option isn't on, linefeeds are ignored. This feature works by changing the Input Translation table.

t—ASCII translation during Xmodem file transfers is activated.

d—DLE screening (used for PC Pursuit) during Xmodem file transfers is on.

s—padding will be stripped from the end of files downloaded using any Xmodem option. If an s isn't present, such padding is retained.

When any of the above letters don't appear in the Status line, those options are not in use.

THE TRANSLATION TABLE

All the keys behave in their default state, as they do in the VT100 program on the 1670 demo disk, and RUN Term 128 uses the same translation tables as VT100. However, RUN Term 128 isn't specifically designed for VT100 emulation, so some substitute keypresses are needed. I've used the ones that follow, with the Commodore substitute listed first.

Shifted + equals {
Shifted - (minus) equals }
Commodore / - equals |
Shifted ↑ equals ~
↑ equals ^
£ equals \
Shifted @ equals '

Note that escape sequences aren't supported by RUN Term 128, so the program may not operate properly on remote full-screen editors.

THE ALT COMMANDS

To view most of RUN Term 128's available commands, press the help key. Execute these commands by holding down the ALT key at the top of the keyboard as you press the desired command key. The following are the ALT key commands available in RUN Term 128:

A—Accesses Autodial mode. First you must specify your modem type, then the number of seconds you want to elapse between dial attempts. Finally, you can enter a number directly or use the Phonebook.

The Phonebook commands are a straightforward Load, Save and Edit. If you choose to Edit with nothing in memory, a new blank book is created for you.

You can enter nine numbers in a Phonebook. Each entry includes the name of the BBS, its phone number and three strings, which can be used to send a log-on sequence. If you're using the 1670/Hayes option, the first character of every phone number must be a letter p or t (note the lowercase) to indicate pulse or tone dialing. With the 1650 or 1660 dialing option, an asterisk in the phone number delays dialing for one second.

B—Toggles the Text Buffer open and closed. To find out where you are in the buffer, press the help key. Below the list of commands you'll see the present position of the buffer write pointer, with the maximum possible value of the pointer in parentheses.

C—Selects Conference mode, which makes a number of simultaneous connections possible. At the top of the screen, you'll see a row of 80 reverse-video spaces, where your characters appear as you type. There's no cursor in this mode. Press control/X to erase the whole line, or use the delete key to erase individual characters as usual. Your line of text won't be sent until you press the return key. Characters received from the modem are printed at the bottom of the screen. It's recommended that you instruct the on-line service *not* to echo your characters back while you're using this option.

The *only* way to exit Conference mode is with the stop key, because none of the ALT command keys are available. However, settings such as Buffer Open/Close, Echo and Baud Rate that are selected in regular Terminal mode are active in Conference mode. In other words, open the buffer *before* entering Conference mode!

D—Downloads (receives) a file from another computer. This option works only with drive 8. You have a choice of Punter protocol or one of three Xmodem protocols: Checksum, CRC or WXmodem.

Don't worry if you don't know which Xmodem protocol to use. Checksum is the standard, and the program automatically switches from WXmodem to CRC and from CRC to Checksum if it doesn't connect properly using the protocol you selected.

WXmodem, which stands for Windowed Xmodem, is relatively new to Commodore users. Available only on PeopleLink (PLink), it transfers four Xmodem blocks at a time, so it's faster than Checksum or CRC.

To abort Punter transfers, hold down the Commodore key. To abort Xmodem transfers, hold down the stop key.

Punter indicates a block has transferred correctly by printing a hyphen to the screen or incorrectly by printing a colon. Xmodem clearly lists the number of blocks and the number of errors in the transfer as ASCII digits.

During any Xmodem transfer (up- or download), the file is visible on the 40-column screen as it moves. If you're in 80-column and want to view a file as it passes through, you can switch to 40 columns by using the composite/RGB switch on your monitor.

Since Xmodem files must be transmitted in blocks of 128 bytes, you may have to add bytes to the last block to give it the full 128. This is called file padding and is done using either control/Zs or CHR\$(0)s (zero bytes).

The Xmodem standard requires the transmitting program to make sure the byte used for padding is *different from* the last byte of the file. A few Xmodem programs (including RUN's RUNning Board BBS) fail to do this, so downloads from them using the Pad Stripping option may be garbled. To remedy this, turn off the Pad Stripping option by using the appropriate option from the Default submenu (see *, below).

E—Toggles the Echo mode—sometimes referred to as *half-duplex*—on and off. When Echo mode is off, you're in *full-duplex*. If you can't see what you're typing when you're online, turn on Echo mode.

F—Sequential file reader. Use this command to send a file to the screen, printer or modem. See BOOT.RUNTERM128 for the printer device and secondary address number Pokes, which default to device 4 and secondary address 7. A file is translated to ASCII when sent to the modem.

H—A modem, like a phone, can be "off the hook" or "on the hook." This option works only with the 1650 and 1660 modems, and it's a toggle, because the pick-up command for the 1650 is the hang-up command for the 1660.

To hang up the 1670 and other Hayes-compatible modems, press the plus-sign key three times in rapid succession from Terminal mode, with a pause both before and after the trio of keypresses. The pause tells the modem you're sending a command, not just sending a line of plus signs to the remote terminal or BBS.

To pick up a 1670/Hayes modem, type in an uppercase ATD to access Originate mode (like dialing without a phone number) or an all-caps ATA to force your modem into Autodial mode.

J—Toggles linefeed printing. This option actually changes the Input Translation table. Some services always send CHR\$(10) (a linefeed) with each return, leaving you with double-spaced text. It's usually best to turn linefeeds off, unless you need them.

K—RUN Term 128 redefines only the help key and the shifted run-stop key, but, using Basic 7.0 commands in Direct mode, you can define a set of function keys for your own special use while online. This option lets you load and save these keys easily.

L—Loads a sequential file into the text buffer, starting at the buffer write-pointer position. When the load is finished, the write-pointer is updated, allowing you to append several other sequential files. To force the load into the start of the buffer, first zero the buffer (see Z below).

When you return to the Terminal mode, remember that the screen is preserved during operations such as loading the buffer. If you had the main menu on the screen before the buffer load, you'll find the buffer write-pointer unchanged when you return to Terminal mode. Press the help key again if you want to see the updated buffer write-pointer.

S—Saves your choice of the entire buffer area (60K) or the area from the start of the buffer to the buffer write-pointer. The first of these options is handy for use with the Buffer Wrap feature and the second for saving short pieces of data. The save is directed to your choice of three devices: to disk, as a standard sequential file; to the printer (see F above); or to the modem (with ASCII translation).

T—Sets the on-screen clock. By pressing return at the AM/PM prompt, you can instantly zero the clock.

U—Uploads (sends) a file via Punter or one of two Xmodem protocols: Checksum or CRC. Due to hardware limitations in the C-128, Wxmodem (see D above) isn't available for uploading files.

V—View the text buffer. Text is formatted on the screen, with a left arrow taking the place of a return. The following key commands are active in this option:

Cursor down: Scrolls the buffer forward (advances through the text).

Cursor up: Scrolls the buffer backward (toward the beginning of the text).

Plus sign: Scrolls forward 256 characters.

Minus sign: Scrolls backward 256 characters.

Home: Moves to the start of the buffer. Any other keypress exits to Terminal mode.

W—Toggles the Buffer Wrap function. Sometimes it's inconvenient to have a buffer close in the middle of a transmission. This option forces the buffer write-pointer back to the start of the buffer to continue writing, without the buffer closing. Note that the Buffer Wrap option works only when you're saving the entire 60K buffer (see S above). If this option is turned off, the buffer closes when it's full.

Z—Zeroes the buffer and fills the entire buffer with CHR\$(13)s (returns). When you press Z, the Terminal mode screen doesn't change, but the cursor vanishes, then shortly reappears.

@—Sends a disk command. When you're prompted for a command string, input is a dollar sign to Read the Directory. Pattern matching is possible here, as in the C-128's machine language monitor.

To read the disk drive's error channel, just press return without entering a command string.

Disk commands should be sent the same way as with the DOS Wedge, except you can omit the @ as the first character.

*****—Changes several system defaults. Select the proper menu options here to change the foreground and background colors; Punter protocol block size; and parity, stop bit, word length and delete key values.

Don't change the above parameters unless you know what you're doing! Also, changing the delete key value alters the Input and Output Translation tables. RUN Term 128's delete key value is CHR\$(20), while some computers you call may use CHR\$(127) or CHR\$(8).

You can also opt for three Xmodem features here. One is ASCII translation, which makes text files more readable if they were written on another computer using true ASCII.

The second is DLE screening. Long-distance services, such as PC Pursuit, use the same Xmodem commands for their own operation as you use for file transfers. If the other computer has DLE screening available, then turn this option on.

The third Xmodem option is to strip file padding at the end of Xmodem downloads. The default is on (indicated by a letter s on

the Status line). Turn this option off, and any bytes added to the end of the file during the transfer to your computer are left intact. Some programs won't work unless the extra padding is removed.

1—Toggles between 300 and 1200 baud. Don't select 1200 baud unless you have a 1200-baud modem! Also, don't change baud rates while online. Modems that support 1200 baud, such as the 1670, set their own baud rate when you type in the ATD command to dial, and they can't change that setting until you hang up.

1, 2, 3—Holding down the ALT key with number key 1, 2 or 3 sends one of the three Phonebook strings to the modem, with translation to ASCII. Note that you must have dialed with the Phonebook option and that the selected Phonebook must still be in memory, so don't load another while you're still online. These three keys are deliberately sent slowly, due to problems I've experienced at 1200 baud with some online computer services.

Escape—Pressing the escape key while holding down the ALT key returns you to Basic. Don't press run-stop/restore! To reactivate RUN Term 128, type in the following in Direct mode and press return:

```
BANK0:SYS22000
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ACKNOWLEDGMENTS

My thanks go to Kermit Woodall of PeopleLink (PLink) for not only turning my CRC Checksum routine into CRC Xmodem, but for going one step further and creating WXmodem, a protocol that was "physically impossible" for computers without a UART (Universal Asynchronous Receiver/Transmitter) chip! He has placed his work in the public domain, and for that we should *all* thank him.

RUN it right: C-64

RUN's Memo Book

By Barbara Mintz

IF YOU'D LIKE to set up a simple, versatile file system with a minimum of effort and a maximum of flexibility, then it's time to add *RUN's Memo Book* to your collection of C-64 application pro-

grams. Memo Book is an electronic "Rolodex" you can organize and format any way you want, then flip through the pages at will. And "flip" it is, for the machine language program is fast, and your data is held in memory, so no time is lost in disk access.

GETTING STARTED

Memo Book installs itself at the top of Basic memory, starting at address \$9400. Then it resets the top-of-Basic pointers to that address, so Basic programs won't interfere with Memo Book's operation. About 141 blocks are left free for a second program. Memo Book also inserts the address of its own machine code in Basic's error vector at \$300, to intercept the routine that prints Basic's error messages. This makes Memo Book's index page, instead of the usual Syntax Error message, appear each time you press * and return.

When initialization is complete, a subroutine clears the Basic program area, resets all the pointers and displays Memo Book's index page. You can go on to set up your Memo Book at this point, or, if it's already set up, you can leave the program by pressing Q and return, and load another program. Unless the program you load is unusually long or changes the Basic pointers (which many commercial programs do), you can continue to read and write memos until you turn off your computer.

If a crash forces a reset, you can probably reinitialize Memo Book with SYS 40486. Even if you can't, your entries should be safe, because they're stored out of the way under Basic's ROM. Nevertheless, when you've made a lot of entries, better safe than sorry—back up your data by saving it to disk.

When you use the program for the first time, you'll have to set up your memo book. To start this process, press F2. Then, at the question "Save This Book?", respond with N, since you don't yet have a book to save. Finally, press return, and the first empty page of your memo book will appear.

If you've already set up a book with data and saved it to disk, this is the time to load it into memory. Press F6 and, at the prompt, type the filename of the book and press return. When the index page appears, use the cursor keys to scroll to the page you want, then press return to display the page on the screen. You can also "flip" through the pages of your book by scrolling. Use the cursor keys to scroll rapidly, or F1 and F7 to scroll slowly. If the number of entries makes scrolling through the pages unwieldy, press return to go back to the index and pop to another page.

Memo Book has relatively few commands to remember, and I've kept those few as intuitive as possible. If you do need to refresh your memory, enter ? to see the Help screen. Also, if you ever issue the wrong command, you can abort it with a return. Commands that affect the entire book must be entered from the index page.

INPUTTING ENTRIES

The command for adding entries to your memo book is control/I (for insert). It works whenever the cursor points to an empty line, whether you're starting a new book or adding entries to one that's already established.

After you press control/I, the screen clears, and a red prompt message instructs you to input an entry. The entry can be up to six lines long and 38 columns wide, and you can format it any way you like, with whatever punctuation you find convenient. If one six-line entry isn't enough, continue right below with another. If you have trouble staying within the 38-column limit, the segmented guideline I've provided should help.

Press return at the end of each line, and signal completion of your entry by pressing return on an empty line. You'll find yourself back in the memo book, looking at the new entry. When you're adding a lot of new entries, it's wise to save your data frequently.

EDITING ENTRIES

To edit an entry, press control/E. Once again the screen will clear, but this time the entry you want to edit will appear, with a flashing cursor at its first character. Edit one line of the entry at a time, using all the normal keys to insert, delete and overwrite characters. When you finish a line, press return. In fact, you must press return for each line you want to retain, whether you change it or not. Conversely, if you want to eliminate a line, move the cursor to the next line without pressing return.

To insert a new line in an entry, move the cursor to an empty line, type in your data and press return. Then move the cursor back to edit the next line.

When you've finished editing your entry, press return on an empty line to put it back in the memo book.

DELETING ENTRIES

Control/D, as you might expect, deletes an entry. To prevent accidents, you must confirm—by pressing Y—that the entry,

which is now highlighted in red, really should be deleted.

SAVING A BOOK

Press F4 to save a book. When the program asks if you want to update a file, a yes response will scratch the old file, and the book you're currently using will be saved in its place. As I've mentioned, F2 starts a completely new book. Here, also, you have the option of saving the current book first.

A full book occupies about 35 blocks in memory locations \$A000-\$C000. However, only the portion that actually contains data is saved and reloaded, so no time and disk space is wasted on empty bytes.

PRINTING

To print out one entry, press control/P, then, at the prompts, choose to print the entire entry, omit the last line or omit the last two lines. If you keep phone numbers and comments on those lines, you'll want to eliminate them when you print addresses on envelopes or labels.

If you want to print a full page of entries, press F3. Again, you can choose to eliminate lines, and the page will be printed beginning at the cursor position. F5 prints the entire book, with the same options.

RETURNING TO BASIC

When you're done consulting your memo book, if you're on a memo page, press control/Q to quit and return to Basic. If you're on the index page, Q alone will do the same thing. You can jump back to Memo Book from Basic at any time by pressing * and return in Direct mode.

MULTIPLE APPLICATIONS

Because it's so unstructured, Memo Book can be used for a variety of purposes simultaneously. It's easy, for example, to add appointments and a list of "things to do" to the top of the first page, under A. If you don't scroll the index, the book will automatically open there, for a quick check of your schedule.

It's equally easy to set up and use several books for different purposes, because Memo Book lets you save one book and load another by just returning to the index and inputting F6. Because the load will obliterate the data you've been working on, the program will ask if you want to save the present book before loading the next

one. Responding Y gives you a save routine similar to the one I described earlier.

When that book has been taken care of, you'll be prompted for the name of the book you want to load, and the load will take place. It's a good idea to keep a list of your memo books somewhere in each book, so you don't have to consult the disk directory for the correct names.

RUN's Checksum Program

By Bob Kodadek

LOAD *RUN's* CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN's* Checksum. The screen will display the 64 or 128 version, whichever is appropriate, and a SYS number that deactivates the Checksum when typed in and followed by return. Always disable *RUN's* Checksum before attempting to run another program. The same SYS number will reactivate the Checksum.

Keep the following in mind: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

After you press return, a one-, two-, or three-digit number from 0 to 255 appears directly below the line just entered. If this number matches the checksum value in the program listing, the line is correct. You enter the next line by typing it in right over the previous line's checksum value. If the number that appears *doesn't* match the listing's checksum value, carefully compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN's* Checksum, using the SYS number. Save the finished program.

RUN it right: C-64; C-128
(in 40- or 80-Column mode); printer optional

Calendar Maker

By Bob Kodadek

LET'S START OFF the New Year with a seasonally appropriate application that most Commodore owners can enjoy—a C-64/C-128 calendar program. Calendar Maker employs a perpetual calendar to display and print out any month of any year you choose.

You can use it to create a 1988 calendar or to look into the future or the past to find out the day of the week of a particular event. Want to know if your birthday will fall on a weekend in the year 2001? Calendar Maker can promptly tell you.

The program can also help you organize your monthly schedule. For each day of the month you can enter up to six memos, each containing a maximum of ten characters. As the calendar is displayed on the screen, any date containing memos appears in reverse video, so you can easily select it to view, edit or delete the memos. All memos appear under the correct date when the calendar is printed.

CREATING A CALENDAR

To use Calendar Maker, just load and run the Basic program. It will request the month and year of the calendar you want displayed and check to make sure your responses are in the proper range. You must enter the year as a four-digit number—such as 1988.

When the calendar you requested appears, it'll be accompanied by a menu with the following choices:

- | | |
|---------------------|-----------------|
| 1. Edit a memo | 4. New calendar |
| 2. Cancel a memo | 5. Quit |
| 3. Print a calendar | |

Each time you elect to edit or cancel a memo, Calendar Maker will prompt you to enter the date of that memo and make sure your input is in the correct range. The range is displayed in the prompt. Note that, since 1988 is a leap year, the range for February is 1-29.

If you choose to edit a memo, a block representing the date and

containing six numbered lines will appear in reverse video, with any memos you've already input for that date displayed and the cursor poised on line 1. Enter or edit up to ten characters in line 1, remembering to enclose the text in quotes if it includes a comma or colon. (The quotation marks aren't counted in the ten characters.) When you're done with line 1, press the return key to advance to line 2. If you fail to press return, an error will occur.

You can enter text on each of the six lines, and the lines can constitute separate memos or all be part of one. Should you need fewer than six lines, just press return at each number to advance to the end of the list. When you press return on line 6, the program will redisplay the lines and ask if they're all right. If you need to make corrections, press N.

Once you press Y, the calendar will appear again with the memo date in reverse video, showing that a memo exists in that spot. Then you can move on to enter or edit memos for other dates or choose a different menu option.

To cancel all the memo lines for a day, select the Cancel option in the main menu.

PRINTING A CALENDAR

When you're ready to print your calendar, turn on your printer and adjust the paper so the print head is one or two lines down from the top. Then select the Print Calendar option from the menu. The print routine is fairly universal, so it'll probably work on your printer.

If you'd like to alter the appearance of the printout, you can make your own substitutions for the CHR\$(221) in line 60 or the CHR\$(45) in line 90, which create the vertical and horizontal lines.

It's also possible to alter the dimensions of the calendar by changing the number of lines printed per inch. If you have a Commodore 1526 or MPS-802 printer, try adding the following line to the Basic listing to change the line spacing:

```
455 OPEN 5,4,6:PRINT#5,CHR$(23):CLOSE 5
```

This change remains in effect until your printer is turned off or reset. If you don't have one of these printers, check your manual to see if and how you can make line-spacing modifications.

To erase the calendar in memory and create another, select the New Calendar option from the main menu. When you are ready to exit the program, choose the Quit option.

RUN it right: C-64

Blank-It 64

By Robert Davis

A MONITOR SCREEN at a computer-controlled radio station in my home town is permanently damaged by "screen burn," a condition caused by leaving unchanging data on the screen for long periods of time. So I wrote Blank-it, an extension of the normal C-64 interrupt request (IRQ) routine that blanks the screen about three minutes after the last keypress. Then, pressing any key brings back the display just as you left it.

The program has three small, machine language routines in the top 134 bytes of the cassette buffer. The first routine installs the program as part of the IRQ routine and is activated by the SYS 890 command. Next, a second routine counts the minutes and blanks the screen. A third routine deactivates Blank-it! with SYS 1009.

Load Blank-it! with "BLANK-IT 64(890)", 8,1 and run it with SYS 890. Once the program is activated, you may change the time between screen blanks by typing in POKE 948,X, where X may range from 1 (a four-second interval) to 43, the default value (about three minutes). Enter SYS 1009 to disable Blank-it.

RUN it right: C-64; 1541 disk drive

RUN Copy 64

By David Martin and Peter Patel

AS MANY COMMODORE owners know, copying disks with a 1541 disk drive and its accompanying backup program is a slow and frustrating process. In fact, it can take as long as 20 minutes. We

wrote RUN Copy to alleviate this problem. It lets you make a disk copy in three minutes or less—more than 500 percent faster.

Normal 1541 copying is slow because only one bit of data at a time is sent over the serial data line. RUN Copy achieves its speed by placing a special program in the drive's RAM and special input/output routines in the computer's RAM. These enable the drive to send or receive two bits of data at a time, one over the serial data line and one over the serial clock line.

Type in RUN Copy, using RUN's Checksum program, and then save it to disk. Before running it, shut off the computer, remove all cartridges and make sure every peripheral on the serial bus except the one 1541 is disconnected or turned off.

RUN Copy duplicates all the sectors on the source disk, regardless of their allocation status. Therefore, if you plan on backing up a disk that contains only a couple of short files, you'd save time by using a file copier instead.

MAKING COPIES

When you run the program, the title screen asks if you want to copy or quit. Assuming you want to copy, enter C; then, at the next prompt, place a write-protected source disk in the drive and press return to start the copying process. As the data moves, keep an eye on the 1541 picture on the screen; its drive light operates in sync with the real drive's light.

Soon the bell rings, and a prompt to insert a copy disk appears. Be sure your copy disk doesn't contain any programs or other files you need, because the data from the source disk will obliterate them.

Insert the copy disk and press return. After a short wait, a prompt to switch back to the source disk appears. It takes three of these source-disk-copy-disk sequences to complete the copy. When it's done, press return to go to the main prompt, then C to make another copy or Q to quit.

ERROR HANDLING

If an error is encountered during copying, RUN Copy tells you at the end of the current pass on which disk the error occurred. The duplication process isn't aborted, because RUN Copy is able to remove disk errors. It will repair data, however, only in sectors containing a #22 or #23 error. Other errors are removed so the program can proceed, but the restored data from the bad sectors will be unpredictable.

RUN it right: C-128; 1351 mouse

Your Basic Mouse Editor

By Loren Louhaug and John Kress

THE 1351 MOUSE is certainly a boon to the C-128, but support for it has so far been limited mostly to applications software. We spend a great deal of time writing and editing our own Basic programs and have often wished we could use a mouse for positioning the cursor in listings and scrolling through program lines. So, we set out to add mouse support to the C-128 for editing Basic code.

On the surface, this looks like a trivial exercise in reading the joystick/mouse ports and positioning the cursor accordingly. However, the situation is complicated by the facts that the cursor position must be updated very frequently and that the code to do this must fit in memory with the Basic interpreter and the C-128's wonderful, but complicated, screen editor.

Ordinarily, it's easy to create a C-128 program that runs "constantly" in the background by wedging into the IRQ interrupt-handling routine—that part of the operating system that's called on 60 times a second to perform mundane, but vital, tasks such as cursor-flashing, scanning all input devices, updating the system clock and handling various screen functions. Wedging into this routine is accomplished by altering its indirect vectors to point to the custom routine you want to invoke. After the computer executes your routine, it goes to the normal IRQ code to handle the jobs described above.

This scheme functions flawlessly in 40-Column mode, but there's a problem in 80-Column mode. The 8563 video display controller handles operations such as scrolling the screen through multiple-instruction sequences, and if you interrupt the flow of data, the computer performs erratically or even locks up. In fact, page 293 of the *C-128 Programmer's Reference Guide* states that "You should not, directly or indirectly, access the 8563 during interrupts. . ."

After months of seeking a way to avoid interrupting screen-editor activity, we contacted Fred Bowen, Commodore's C-128 expert, and

he devised a method that works. It involves checking the stack for a return address that points to the screen editor's delay loop, a bit of code where the screen editor idles when it's not performing normal housekeeping chores. When this address is on the stack, it's okay to proceed with the wedge mouse routines; when it's not, the normal interrupt routine is executed. If you're an assembly language programmer, you might want to study this routine with the C-128's built-in machine language monitor, beginning at address \$14CE (5326).

INSERTING THE WEDGE

To load the wedge into your computer, either before or during a programming session, enter BLOAD "MOUSE EDITOR", and activate it with SYS 4865. At the top of the screen, you'll see a message saying the mouse editor is active, along with the last line of any Basic program in memory. If there's no Basic program in memory, a message to that effect appears.

MOUSING AROUND

With the wedge activated, you position the cursor by holding down the left button on the mouse and rolling it in the direction you want the cursor to move. You're also free to use the keyboard, including all of the C-128's screen-editor functions.

If you position the cursor over the Basic line at the top of the screen, then hold the left button down and roll the mouse upward, your Basic listing will scroll backward. Similarly, you can scroll forward through a listing by placing the cursor on the bottom line of the program, pressing the left mouse button and rolling the mouse downward. In fact, you can start scrolling from any point in the program by entering a line number, *followed by a space*, at the top or bottom of the screen and then rolling the mouse up or down.

If there's no Basic line number on the screen, you can use the function keys to set flags to turn off the mouse and prevent scrolling beyond the listing. The F4 key, redefined as "SYS 5178" + CHR\$(13), turns off the wedge, and the F6 key, redefined as "SYS 4865" + CHR\$(13), reactivates it. To clear these flags, turn the wedge off and on.

Another handy feature of the mouse editor is fast access to Text Insert mode. Just press the right mouse button to toggle in and out. Also, because the mouse editor doesn't interfere with Basic and Screen Editor commands, you're free to use escape sequences and change Basic lines by retyping them and pressing return. You can

even use the wedge with the C-128's built-in machine language monitor and for positioning the cursor on memory dumps or disassemblies. However, the forward-and-reverse scroll feature works only with Basic programs.

Note that we deactivated the F8 key's normal MONITOR + CHR\$(13) function, because of the way the C-128 reads the mouse buttons. If we hadn't, the operating system might mistake the mouse button for F8 and activate the machine language monitor.

Be sure to disable the wedge before executing a Basic program, because the two programs might be incompatible. The same holds true when you're performing disk operations. Of course, altering the IRQ interrupt vector or poking data into the area between addresses \$1301 and \$1981 (4865 and 6529) renders the wedge useless.

RUN it right: C-64

Time-Keeper 64

By Bob Kodadek

MY TIME-KEEPER 64 clock-calendar continuously displays the time and the current month, day and year in the upper-right corner of your monitor as you use your computer. The program includes an automatic leap-year function and a built-in alarm that can be both heard and seen (an excellent aid for the programmer who forgets to go to bed!). The clock-calendar is updated once per second and the data is stored in easily accessible RAM locations. This information can then be used in one of your own custom applications.

Time-Keeper 64 contains two listings. The first, the Boot program, loads the object file and sets the date, the time and the alarm. Listing 2, Time-Keeper File Generator, creates the fast-loading object file (OB.TK 64) on work disks.

TIME TO USE TIME-KEEPER

When you want to use Time-Keeper 64, just load and run the Boot program. You'll be prompted to enter the correct time and date and

whether you wish to set the alarm. Time-Keeper's display begins with an asterisk, followed by the month, day, year, hours, minutes, seconds and the characters "al," for alarm. The asterisk prevents the Basic editor from replacing or deleting a Basic program line should you press return while the cursor is at the top of the screen.

When you set the alarm, the characters "al" will appear in reverse video. When the alarm goes off, they'll flash, and the SID chip will emit a bell-like chime for about 30 seconds. You may cancel the chime by pressing shift/control/C. However, the alarm will remain set for the time you originally designated.

Though the display is continuous, you may turn it off by pressing shift/control/F and back on again with shift/control/N. I used this combination of key presses so that Time-Keeper would not conflict with other programs.

I've tested Time-Keeper 64 with 64 Notepad, Shopping List and the DOS Wedge. You'll find that it works with almost any Basic program. In most instances, Time-Keeper should be the first program you load and run. One exception is 64 Notepad, which uses the same Time of Day clock. The Notepad program must be loaded and run first. Then disable the Notepad with run-stop/restore and load and run Time-Keeper 64. Finally, use the proper SYS command to restart the Notepad interrupt.

FOR PROGRAMMERS ONLY

The following RAM locations contain the data in the format indicated:

LOCATION	DATA	FORMAT
49710	tenths	BCD
49711	seconds	BCD
49712	minutes	BCD
49713	hours	BCD
49714	month	decimal
49715	day	decimal
49716	year	decimal

Binary Coded Decimal data (BCD) can be unpacked very easily by reading each byte as a high and low nibble (four bits). The high nibble is read by ANDing the byte with the value 240. To read the low nibble, just AND the byte with 15. To convert this information

into its decimal equivalent, divide the contents of the high nibble by 16, multiply the result by 10, and then add the contents of the low nibble. You can use the following routine to read and print the time from within one of your own programs:

```
100 FOR I=0 TO 2:B=PEEK(49713-I) AND 127
110 PRINT CHR$(240 AND B)/16+48) CHR$((15 AND B)+48);
120 IF I<2 THEN PRINT ":";
130 NEXT
```

Use the following routine to read and print the current date:

```
150 FOR I=0 TO 2:B=PEEK(49714+I)
160 PRINT MID$(STR$(B),2);
170 IF I<2 THEN PRINT"/";
180 NEXT
```

Now, wherever you happen to be computing, you can always know *when* you're there—to the second!

RUN it right: C-128 (80-Column mode)

Blank-It 128

By Gerald W. Elliott

THIS IS THE 128 version of Blank-it, which prevents screen burn from ruining your C-128's 80-column screen. If no key press is made within ten minutes, the 80-column screen automatically blanks itself. Once the screen is blanked, pressing any key restores the screen to its original display.

To activate Blank-it 128, use the Boot command if you're using a 1571 disk drive, or the Bload command if you're using a 1541 or clone to boot it. Use this syntax for a 1571 boot:

```
BOOT"BLANK-IT 128" <return>
```

The 1541 Bload command requires a little more typing:

```
BLOAD "BLANK-IT 128",B0,P3584 <return>
```


Then enter SYS 3584 to activate it.

When you're ready to disable the program, press run-stop/restore. Entering SYS 3584 will re-activate the program. The program is interrupt-driven and resides in memory locations 3584 to 3798. Programmers will find the program easily relocatable.

RUN it right: C-64

C-64 Sprite ML Commands

By Louis R. Wallace

HAVE YOU EVER tried to use sprites on your C-64, only to find that Basic's Peeks and Pokes were just too slow—or worse yet, too complex to understand? Here's a short machine language utility that will make the use of sprites in your programs easier, faster and more fun.

Once run, Sprite ML Maker adds to Basic several new commands to define, turn on and animate your sprites. The commands and their parameters are:

HIGH-RESOLUTION SPRITE DEFINE—SYS 49152,sp#,0,c1(0-15),xpand(0-1),ypand(0-1).

MULTICOLOR SPRITE DEFINE—SYS 49152,sp#,1,c1(0-15),c2(0-15),c3(0-15),xpand(0-1),ypand(0-1).

Sp# is the sprite (0-7) that you wish to define or use. C1, C2 and C3 are the various colors that you can use, 1 in hi-res, 3 in multicolor. Note that *all multicolor sprites share the same color 2 and color 3*. Xpand and ypand are the sprite-expansion flags. Use 0 for no expansion, 1 to expand.

SPRITE ON/OFF—SYS 49155,sprite#,(0-1). The Sprite on-and-off routine turns on (1) and off (0) a specified sprite.

SPRITE MOVE—SYS 49158,sprite#,pointer#,x,y.

Sprite Move will position a given sprite (0-7) at any x (0-512) or y (0-255). In addition, it has the sprite pointer value, which tells the

computer where the sprite is in memory. Pointers can be from 0-255, with each pointer equal to the address that corresponds to the pointer*64.

For examples of the use of these powerful sprite commands, run the *RUN* Special Issue Calendar programs called Summer Celebration and Fall Holidays. They not only employ the new commands, but they will not run unless this machine code program is in memory, so be sure and run this *before* running Summer or Fall! ■

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