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Numeric Keypad

Charles Kluepfel

Turn your keyboard into a "Numeric Keypad" for more efficient numeric input. The program lets you toggle to standard keyboard or numeric keypad. Written for the 64, we've added a version for the VIC.

You could type in numbers much faster and with fewer errors if the VIC-20 and Commodore 64 had a numeric keypad. This program offers this handy feature by redefining a set of keys to represent numbers instead of letters.

VIC Notes On Numeric Keypad

Kevin Martin, Editorial Programmer

The VIC version of "Numeric Keypad" operates the same way as the 64 version, but uses an entirely different technique.

Program 2 is a BASIC loader which POKes machine language to the top of BASIC and then executes a SYS to start the interrupt. There is one major operating difference from the 64 version: Instead of using CTRL-N to start, it uses CTRL-.

The 64 version POKes BASIC and the Kernal ROM into RAM and then modifies the Kernal. This luxury isn't available on the VIC, but there is a way around it. The hardware interrupt can be used to change the characters stored in the keyboard buffer to different values.

To use this program with another, first LOAD and RUN. Since it resets the top of BASIC pointers, be sure your program doesn't reset them. If it does, Numeric Keypad will not function correctly.

Technical Modifications

The more technically inclined might be interested in a few tricks used in the VIC version. The program uses the interrupt by pulling the A, X, and Y registers from the stack,

storing them in memory, and pushing them back.

Then, it pushes the high and low bytes of the new return from the interrupt address, the processor status byte, and the A, X, and Y registers to the stack. It then jumps to the normal interrupt routine. We push those bytes so that after it executes the RTI in the interrupt routine it will return to the interrupt instead of the main routine.

It then loads the keypress value in 197 to determine if the back arrow is being pressed. If it is, bit 2 of address 653 is checked to see if the CTRL key is being pressed. If it is, we jump to the routine to see if there is a value for any of the U, I, O, J, K, L, or M keys in the keyboard queue. If there is a value for any of these, they are changed to either a 4, 5, 6, 1, 2, 3, or 0, respectively. We then jump to the ending routine.

If either the back arrow or the CTRL key is not pressed, we jump to a routine to determine if the flag at 251 is set. If that flag is set, we go to the routine to change the characters in the keyboard queue. If the flag is not set, we jump to the ending routine, which pulls the A, X, and Y registers off the stack and executes an RTI to get back into the program.



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When you run "Numeric Keypad," your computer will behave normally until CTRL-N is pressed. The cursor will disappear until you press another key. Then the M, J, K, L, U, I, and O keys will be 0, 1, 2, 3, 4, 5, and 6. By using these along with the numeric keys 7, 8, and 9, you have a numeric keypad. Pressing CTRL-N again toggles the keyboard back into its normal mode (again causing the cursor to disappear until you press a key).

You can put press-apply transfer numbers on the affected keys to help you remember which number each key represents. You should use very small ones, so they won't interfere with the normal identification of the keys. (Transfer letters and numbers are available at art supply stores.)

Use Numeric Keypad In A Program

You also can activate and deactivate the numeric keypad from a program, in anticipation of numeric or nonnumeric input, by POKEing location 50216 with 255 or 0 respectively. The user can always override this with CTRL-N. (CTRL-N is never passed to the program, but serves only the toggle function.) Just don't POKE any value other than 0 or 255, as that would prevent you from toggling with CTRL-N.

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If you prefer that the keypad start out activated, change the next-to-last DATA item in line 520 from 0 to 255.

Redefining The Keys

To redefine the 64 keys, we transfer the Kernal from ROM into RAM, change it to intercept the M, J, K, L, U, I, and O keys, and convert the data to the appropriate numbers.

Lines 3 and 4 POKE the machine language into an unused area of memory from the DATA statements in lines 500-560.

Lines 10 and 20 transfer the BASIC interpreter and the Kernal from ROM to RAM with the same addresses, so we can modify them. The *Commodore 64 Programmer's Reference Guide*, page 261, states that turning off bit 1 in location 1 switches only the Kernal addresses to RAM; actually it affects both the Kernal and BASIC address ranges.

Line 25 merely signals that the transfer is complete (it takes about a minute).

The Intercept Routine

Line 30 sets up the routine which intercepts keyboard characters. It is put at the end of the routine that pulls a character from the keyboard buffer.

Finally, line 40 activates the modified Kernal

by turning off bit 1 of location 1 (changing the value in location 1 from 55 to 53). Once this is done, the change has been made, and pressing CTRL-N toggles between a numeric keypad and the normal usage of the M, J, K, L, U, I, and O keys.

A Color Memory Bonus

A couple of bonuses have been included in lines 31 and 32. Line 31 changes the portion of the Kernal on newer 64s that puts the background color into the color memory for screen locations being cleared. Instead of putting the background color there, it will now put 1 (for white), so that if addresses 1024 to 2023 (decimal) are POKEd, a character will appear. (See "Commodore 64 Video Update," COMPUTE!'s GAZETTE, July 1983, page 44.)

POKEing 1000 locations as suggested there takes a few seconds—not something to do for every PRINT of a screen clear.

Choose A Color

In the normal mode, printed characters will be light blue on a dark blue background, while POKEd characters will be white. Change the POKE to location 58587 in line 31 to some other number if you would like a color different from white for POKEd screen characters. Of course, if you have an older 64 which does not clear color

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memory to the background color, leave out this patch (line 31).

Line 32 eliminates the printing of a question mark and space in an INPUT statement prompt. This makes it possible to write:

100 INPUT "TITLE: "; TS

and have the resulting screen look like

TITLE: COMPUTE!'s GAZETTE

In any place where you really want the ? and the space, you can put them inside the quotes.

See program listings on page 143. ☐

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Quick Fix For Color RAM

A Fast And Easy Way To Avoid 'Invisible Characters' On The Commodore 64

David Gross

A previous article, "Commodore 64 Video Update" (July 1983), discussed an internal change by Commodore to the 64's operating system. Late-model 64s do not automatically fill color memory with white, so characters POKEd directly into screen memory merge with the background color and are "invisible." This article presents a quick, simple solution.

"Commodore 64 Video Update" in the premier issue of COMPUTE!'s GAZETTE mentions that, when the screen is cleared, late-model Commodore 64s fill color memory with the screen background color. This renders all characters that are POKEd (not PRINTed) onto the screen "invisible," because they are the same color as the screen. Early-model 64s filled color memory with a contrasting color (white) when the screen was cleared.

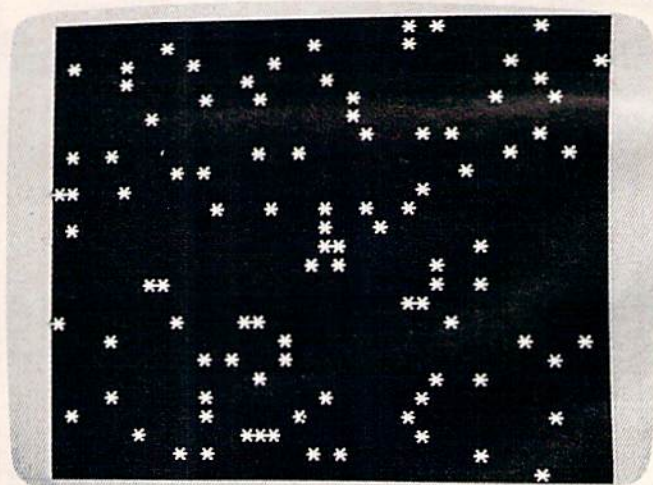
The earlier article suggested an easy one-line programming solution: a FOR-NEXT loop to POKE the appropriate color code (such as 1 for white) into color memory. The line looks like this:

```
FOR X=1 TO 1000: POKE 55295+X,1: NEXT
```

It works fine, but takes about ten seconds to execute. Luckily, there is an even easier and much faster way.

Let The 64 Fill Color RAM

First, simply set the screen to the color you want the characters to be by POKEing the color code



This starfield, POKEd directly into screen memory, will appear on both older- and late-model 64s because of a quick-fill method for color memory.

into memory address 53281. Next, print a CLR/HOME character or CHR\$(147). Last, reset the screen to the background color you want. *Do not clear the screen a second time!* Color memory will be set to give POKEd characters the *first* screen color that you used. That's because whenever you clear the screen, the new 64s automatically fill color memory with the color code found at 53281.

For example, suppose that you want to create a random starfield, white on black. The answer is the program below. It places 100 white stars at

Overview

- 0 — Using CodePro-64
- 1 — CBM-64 Keyboard Review

BASIC Tutorial

- 2 — Introduction to BASIC
- 3 — BASIC Commands
- 4 — BASIC Statements
- 5 — BASIC Functions

Graphics & Music

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- 8 — SPRITE Generator
- 9 — SPRITE Demonstrator
- A — Introduction to MUSIC
- B — MUSIC Generator
- C — MUSIC Demonstrator

Other Options

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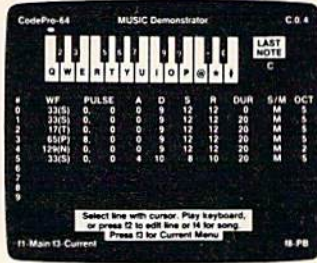
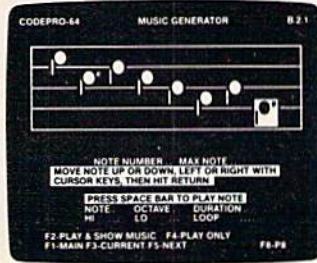
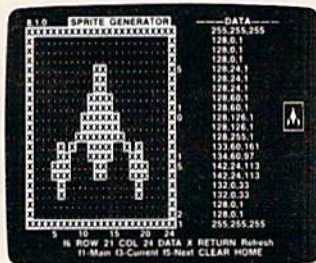
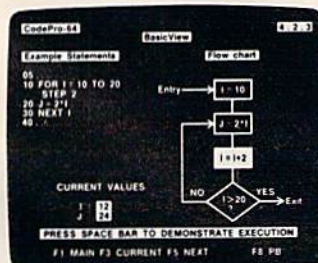
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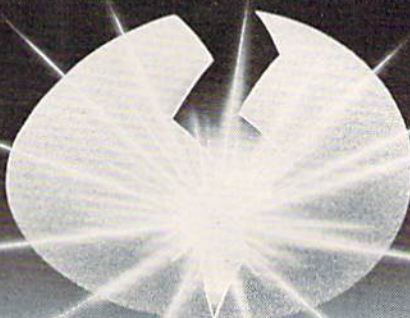
random locations on a black screen. The program runs in half the time it would take if each star's corresponding color memory location were set individually.

This technique can be very useful when converting Commodore PET programs that POKE to the screen. Simply change the screen memory addresses to fit the 64. Then, before any CLR/HOME is printed in the program, add a command to set the screen to the desired character color. Remember to set it back to the screen color immediately after the CLR/HOME is printed each time.

Quick Fix For Color RAM

```
10 POKE 53281,1:REM SET SCREEN COLOR TO D
   ESIED CHARACTER COLOR           :rem 232
20 PRINT CHR$(147):REM CLEAR SCREEN, SETT
   ING COLOR RAM TO WHITE           :rem 239
30 POKE 53281,0:REM SET SCREEN TO DESIRED
   BACKGROUND COLOR - BLACK         :rem 71
40 FOR C = 1 TO 100:REM PLACE 100 WHITE S
   TARS ON THE SCREEN               :rem 144
50 P = INT(1000*RND(1))+1024:REM SELECT R
   ANDOM SCREEN POSITION             :rem 69
60 POKE P,42:REM PLACE ASTERISK AT LOCATI
   ON P                             :rem 158
70 NEXT C:REM END COUNTER LOOP      :rem 56
80 GOTO 80:REM ENDLESS LOOP SO AS NOT TO
   {SPACE}DISTURB SCREEN            :rem 22
90 REM TO END PROGRAM, PRESS RUN/STOP
                                     :rem 2
```

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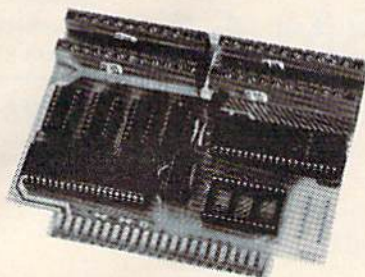
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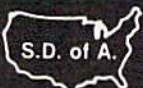
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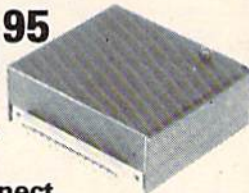
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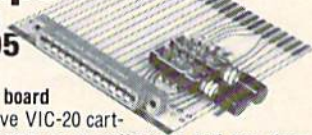
Includes Basic listing of Terminal Program.

Terminal Program available on tape, \$4.95 and cartridge, \$19.95. Specify VIC-20 or C-64.

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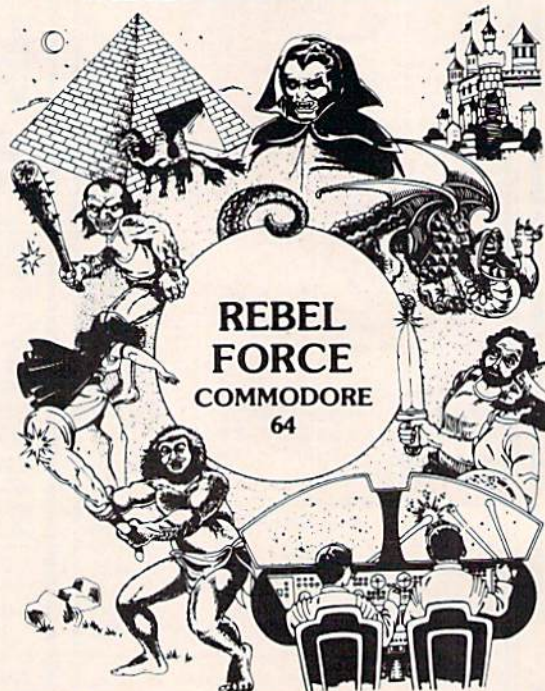
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NEWS & PRODUCTS

Interfaces, Light Pen, Keypad

Cardco, Inc., of Wichita, Kansas, has introduced new products for the VIC-20 and Commodore 64. Included are Printer Interface, a Centronics parallel printer interface with graphics for both the VIC and 64; the Card A and Card B Printer Interfaces, universal parallel printer interfaces for

both computers; the Cardboard 6 Expansion Interface and the Cardboard 3s Expansion Interface, both for the VIC-20; the Cardboard 5 Expansion Interface for the Commodore 64; the Cardram 16 16K Memory Expander for the VIC-20; the Cardette 1 Cassette Interface for both machines; the Cardkey 1 16-key Numeric Keypad for both computers; and the Cardriter 1 Light Pen for both the VIC and the 64.

The company also has available the *Write Now!* word processor for the VIC, the *Mail Now*

mailing list processor for the 64, and printer utility programs for both computers.

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NEWS&PRODUCTS

sizer for the Commodore 64, which is available on disk and on cassette for \$29.95. The package includes a machine language text-to-speech program, a similar program that incorporates the "Alien" face whose mouth moves in sync with the words, a spelling program that uses the talking face, and 30 prerecorded songs, with menus and written instructions to help you write and save new songs.

The Alien Group

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PILOT Language For Commodore 64

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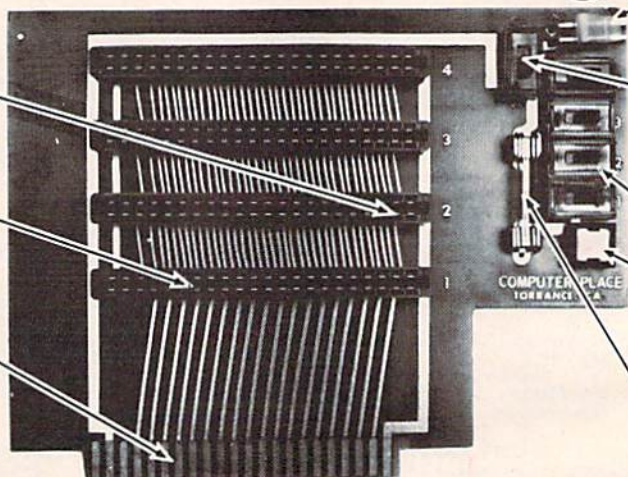
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Bug-Swatter:

Modifications And Corrections

• "Budget Planner" (December 1983) uses a Commodore Datasette to store data. The following modifications will allow you to use the program with a disk drive:

```
450 OPEN 1,8,0,F$ :rem 82
4050 OPEN 1,8,1,"@0:"+F$ :rem 156
7120 OPEN 1,8,0,F$ :rem 131
```

• The Commodore 64 version of "Tetracystals" (January) contains a slight error on line 13. To correct it, insert RN between G and BLU. C7\$ should be

"BLKWHTRED CYNPURGRNBLUYEL"

• The printer used to generate program listings has burped another pesky question mark. Line 120 of the VIC version of MLX (January and February) is the latest victim. Correct it by removing the ? between RIGHT and OFF.

• Readers who typed in the 64 version of "Canyon Cruiser" (January) may have encountered an ?ILLEGAL QUANTITY ERROR in line 1420 because it is not possible to POKE a number higher than 255 into a memory location. Change line 1420 to

POKE53287, (PEEK(53287) + 1) AND 255

• "SpeedScript" (January) works as listed, but there are some inconsistencies in the accompanying article. The cursor keys were incorrectly labeled on Figure 1: Keyboard Map, page 48. CRSR Left and CRSR Right will move the cursor left and right. CRSR Up moves to the previous sentence; CRSR Down moves to the next sentence. Table 1, page 52, is missing CTRL-= which returns the amount of free memory. Table 2 is missing the command for line spacing. SpeedScript defaults to double-spacing; if you want single-spaced documents, use CTRL-(English Pound)-S, followed by the number one (1).

Some readers, in trying to enter SpeedScript, discovered an ?UNDEF'D STATEMENT error in line 550 of MLX. If you don't use the POKes listed on page 39, MLX and SpeedScript will both try to use the same area of memory. The POKes fence off a section of BASIC for use by SpeedScript. It is necessary to follow the directions on page 39 before you LOAD MLX.

Also, next month look for "SpeedScript Revisited" in which Charles Brannon will answer a variety of questions from readers. ☐

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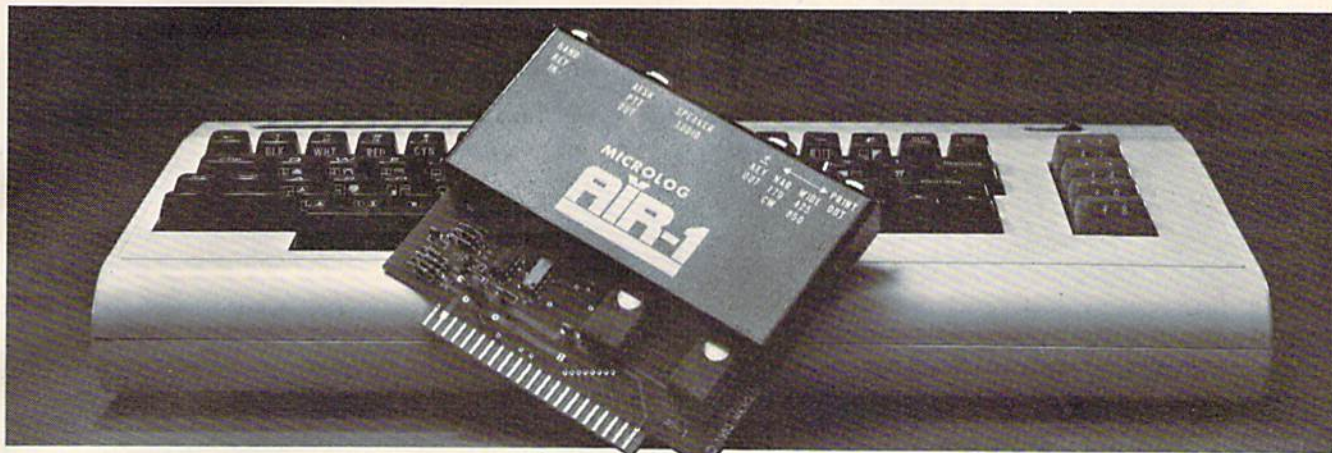
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A Beginner's Guide To Typing In Programs

What Is A Program?

A computer cannot perform any task by itself. Like a car without gas, a computer has *potential*, but without a program, it isn't going anywhere. Most of the programs published in *COMPUTE!'s GAZETTE* for Commodore are written in a computer language called BASIC. BASIC is easy to learn and is built into all VIC-20s and Commodore 64s.

BASIC Programs

Each month, *COMPUTE!'s GAZETTE* for Commodore publishes programs for both the VIC and 64. To start out, type in only programs written for your machine, e.g., "VIC Version" if you have a VIC-20. Later, when you gain experience with your computer's BASIC, you can try typing in and converting certain programs from another computer to yours.

Computers can be picky. Unlike the English language, which is full of ambiguities, BASIC usually has only one "right way" of stating something. Every letter, character, or number is significant. A common mistake is substituting a letter such as O for the numeral 0, a lowercase l for the numeral 1, or an uppercase B for the numeral 8. Also, you must enter all punctuation such as colons and commas just as they appear in the magazine. Spacing can be important. To be safe, type in the listings *exactly* as they appear.

Braces And Special Characters

The exception to this typing rule is when you see the braces, such as "{DOWN}". Anything within a set of braces is a special character or characters that cannot easily be listed on a printer. When you come across such a special statement, refer to "How To Type In *COMPUTE!'s GAZETTE* Programs."

About DATA Statements

Some programs contain a section or sections of DATA statements. These lines provide information needed by the program. Some DATA statements contain actual programs (called machine language); others contain graphics codes. These lines are especially sensitive to errors.

If a single number in any one DATA statement is mistyped, your machine could "lock up," or "crash." The keyboard and STOP key may seem "dead," and the screen may go blank. Don't panic — no damage is done. To regain control, you have

to turn off your computer, then turn it back on. This will erase whatever program was in memory, so *always SAVE a copy of your program before you RUN it*. If your computer crashes, you can LOAD the program and look for your mistake.

Sometimes a mistyped DATA statement will cause an error message when the program is RUN. The error message may refer to the program line that READs the data. *The error is still in the DATA statements, though.*

Get To Know Your Machine

You should familiarize yourself with your computer before attempting to type in a program. Learn the statements you use to store and retrieve programs from tape or disk. You'll want to save a copy of your program, so that you won't have to type it in every time you want to use it. Learn to use your machine's editing functions. How do you change a line if you made a mistake? You can always retype the line, but you at least need to know how to backspace. Do you know how to enter inverse video, lowercase, and control characters? It's all explained in your computer's manuals.

A Quick Review

1. Type in the program a line at a time, in order. Press RETURN at the end of each line. Use backspace or the back arrow to correct mistakes.
2. Check the line you've typed against the line in the magazine. You can check the entire program again if you get an error when you RUN the program.
3. Make sure you've entered statements in braces as the appropriate control key (see "How To Type *COMPUTE!'s GAZETTE* Programs" elsewhere in the magazine).

*We regret that we are not able to respond to individual inquiries about programs, products, or services appearing in *COMPUTE!'s GAZETTE* for Commodore due to increasing publication activity. On those infrequent occasions when a published program contains a typo, the correction will appear in the magazine, usually within eight weeks. If you have specific questions about items or programs which you've seen in *COMPUTE!'s GAZETTE* for Commodore, please send them to Gazette Feedback, P.O. Box 5406, Greensboro, NC 27403.*

How To Type In COMPUTE!'s GAZETTE Programs

Many of the programs which are listed in COMPUTE!'s GAZETTE contain special control characters (cursor control, color keys, inverse video, etc.). To make it easy to know exactly what to type when entering one of these programs into your computer, we have established the following listing conventions.

Generally, any VIC-20 or Commodore 64 program listings will contain words within braces which spell out any special characters: {DOWN} would mean to press the cursor down key. {5 SPACES} would mean to press the space bar five times.

To indicate that a key should be *shifted* (hold down the SHIFT key while pressing the other key), the key would be underlined in our listings. For example, S would mean to type the S key while holding the shift key. This would appear on your screen as a "heart" symbol. If you find an underlined key enclosed in braces (e.g., {10 N}), you should type the key as many times as indicated (in our example, you would enter ten shifted N's).

If a key is enclosed in special brackets, [k], you should hold down the *Commodore key* while pressing the key inside the special brackets. (The Commodore key is the key in the lower left corner of the keyboard.) Again, if the key is preceded by a number, you should press the key as many times as necessary.

Rarely, you'll see a solitary letter of the alphabet enclosed in braces. These characters can be entered on the Commodore 64 by holding down

the CTRL key while typing the letter in the braces. For example, {A} would indicate that you should press CTRL-A. You should never have to enter such a character on the VIC-20, but if you do, you would have to leave the quote mode (press RETURN and cursor back up to the position where the control character should go), press CTRL-9 (RVS ON), the letter in braces, and then CTRL-0 (RVS OFF).

About the *quote mode*: You know that you can move the cursor around the screen with the CRSR keys. Sometimes a programmer will want to move the cursor under program control. That's why you see all the {LEFT}'s, {HOME}'s, and {BLU}'s in our programs. The only way the computer can tell the difference between direct and programmed cursor control is the quote mode.

Once you press the quote (the double quote, SHIFT-2), you are in the quote mode. If you type something and then try to change it by moving the cursor left, you'll only get a bunch of reverse-video lines. These are the symbols for cursor left. The only editing key that isn't programmable is the DEL key; you can still use DEL to back up and edit the line. Once you type another quote, you are out of quote mode.

You also go into quote mode when you INSERT spaces into a line. In any case, the easiest way to get out of quote mode is to just press RETURN. You'll then be out of quote mode and you can cursor up to the mistyped line and fix it.

Use the following table when entering cursor and color control keys:

When You Read:	Press:	See:	When You Read:	Press:	See:	When You Read:	Press:	See:
{CLR}	SHIFT CLR/HOME		{CYN}	CTRL 4		{7}	CTRL 7	
{HOME}	SHIFT CLR/HOME		{PUR}	CTRL 5		{8}	CTRL 8	
{UP}	SHIFT CRSR ↑		{GRN}	CTRL 6		{F1}	SHIFT f1	
{DOWN}	SHIFT CRSR ↓		{BLU}	CTRL 7		{F2}	SHIFT f2	
{LEFT}	SHIFT CRSR ←		{YEL}	CTRL 8		{F3}	SHIFT f3	
{RIGHT}	SHIFT CRSR →		{1}	CTRL 1		{F4}	SHIFT f4	
{RVS}	CTRL 9		{2}	CTRL 2		{F5}	SHIFT f5	
{OFF}	CTRL 0		{3}	CTRL 3		{F6}	SHIFT f6	
{BLK}	CTRL 1		{4}	CTRL 4		{F7}	SHIFT f7	
{WHT}	CTRL 2		{5}	CTRL 5		{F8}	SHIFT f8	
{RED}	CTRL 3		{6}	CTRL 6				

The Automatic Proofreader

"The Automatic Proofreader" will help you type in program listings from COMPUTE!'s Gazette without typing mistakes. It is a short error-checking program that hides itself in memory. When activated, it lets you know immediately after typing a line from a program listing if you have made a mistake. Please read these instructions carefully before typing any programs in COMPUTE!'s Gazette.

Preparing The Proofreader

1. Using the listing below, type in the Proofreader. The same program works on both the VIC-20 and Commodore 64. Be very careful when entering the DATA statements — don't type an l instead of a 1, an O instead of a 0, extra commas, etc.
2. SAVE the Proofreader on tape or disk at least twice before running it for the first time. This is very important because the Proofreader erases this part of itself when you first type RUN.
3. After the Proofreader is SAVED, type RUN. It will check itself for typing errors in the DATA statements and warn you if there's a mistake. Correct any errors and SAVE the corrected version. Keep a copy in a safe place — you'll need it again and again, every time you enter a program from COMPUTE!'s Gazette.
4. When a correct version of the Proofreader is RUN, it activates itself. You are now ready to enter a program listing. If you press RUN/STOP-RESTORE, the Proofreader is disabled. To reactivate it, just type the command SYS 886 and press RETURN.

Using The Proofreader

All VIC and 64 listings in COMPUTE!'s Gazette now have a checksum number appended to the end of each line, for example "rem 123". Don't enter this statement when typing in a program. It is just for your information. The rem makes the number harmless if someone does type it in. It will, however, use up memory if you enter it, and it will confuse the Proofreader, even if you entered the rest of the line correctly.

When you type in a line from a program listing and press RETURN, the Proofreader displays a number at the top of your screen. This checksum number must match the checksum number in the printed listing. If it doesn't, it means you typed the line differently than the way it is listed. Immediately recheck your typing. Remember, don't type the rem statement with the checksum number; it is published only so you can check it against the number which appears on your screen.

The Proofreader is not picky with spaces. It will not notice extra spaces or missing ones. This is for your convenience, since spacing is generally not important. But occasionally proper spacing is important, so be extra careful with spaces, since the Proofreader will catch practically everything else that can go wrong.

There's another thing to watch out for: if you enter the line by using abbreviations for commands, the checksum will not match up. But there is a way to make the Proofreader check it. After entering the line, LIST it. This eliminates the abbreviations. Then move the cursor up to the line and press RETURN. It should now match the checksum. You can check whole groups of lines this way.

Special Tape SAVE Instructions

When you're done typing a listing, you must disable the Proofreader before SAVEing the program on tape. Disable COMPUTE!'s Gazette April 1984 139

the Proofreader by pressing RUN/STOP-RESTORE (hold down the RUN/STOP key and sharply hit the RESTORE key). This procedure is not necessary for disk SAVES, but you must disable the Proofreader this way before a tape SAVE.

SAVE to tape erases the Proofreader from memory, so you'll have to LOAD and RUN it again if you want to type another listing. SAVE to disk does not erase the Proofreader.

Replace Original Proofreader

If you typed in the original version of the Proofreader (October 1983 issue), you should replace it with the improved version below. We added a POKE to the original version to protect it from being erased when you LOAD another program from tape. The POKE does protect the Proofreader, and the Proofreader itself was not affected. However, a quirk in the VIC-20's operating system means that programs typed in with the Proofreader and SAVED on tape cannot be LOADED properly later. If you LOAD a program SAVED while the Proofreader was in memory, you see ?LOAD ERROR. This applies only to VIC tape SAVES (disk SAVES work OK, and the quirk was fixed in the Commodore 64).

If you have a program typed in with the original Proofreader and SAVED on tape, follow this special LOAD procedure:

1. Turn the power off, then on.
2. LOAD the program from tape (disregard the ?LOAD ERROR).
3. Enter: POKE 45,PEEK(174):POKE 46,PEEK(175):CLR
4. ReSAVE the program to tape.

The program will LOAD fine in the future. We strongly recommend that you type in the new version of the Proofreader and discard the old one.

Automatic Proofreader For VIC And 64

```
100 PRINT"[CLR]PLEASE WAIT...":FOR I=886 TO
1018:READ A:CK=CK+A:POKE I,A:NEXT
110 IF CK<>17539 THEN PRINT"[DOWN]YOU MADE
AN ERROR":PRINT"IN DATA STATEMENTS.
":END
120 SYS886:PRINT"[CLR]{2 DOWN}PROOFREADER
ACTIVATED.":NEW
886 DATA 173,036,003,201,150,208
892 DATA 001,096,141,151,003,173
898 DATA 037,003,141,152,003,169
904 DATA 150,141,036,003,169,003
910 DATA 141,037,003,169,000,133
916 DATA 254,096,032,087,241,133
922 DATA 251,134,252,132,253,008
928 DATA 201,013,240,017,201,032
934 DATA 240,005,024,101,254,133
940 DATA 254,165,251,166,252,164
946 DATA 253,040,096,169,013,032
952 DATA 210,255,165,214,141,251
958 DATA 003,206,251,003,169,000
964 DATA 133,216,169,019,032,210
970 DATA 255,169,018,032,210,255
976 DATA 169,058,032,210,255,166
982 DATA 254,169,000,133,254,172
988 DATA 151,003,192,087,208,006
994 DATA 032,205,189,076,235,003
1000 DATA 032,205,221,169,032,032
1006 DATA 210,255,032,210,255,173
1012 DATA 251,003,133,214,076,173
1018 DATA 003
```


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START USING YOUR COMPUTER FOR FUN and PROFIT!

The Beginner's Corner

(Article on page 86.)

BEFORE TYPING...

Before typing in programs, please refer to "How To Type COMPUTE!'s Gazette Programs," "A Beginner's Guide To Typing In Programs," and "The Automatic Proofreader" that appear before the Program Listings.

Program 1: Match-Em (VIC Version)

```
1 POKE 36879,27:PRINT "{CLR}{BLU}":DIM A(16),B(16),C(16),P(16) :rem 81
20 PRINT "{3 SPACES}** MATCH-EM **":PRINT "{2 DOWN}CHOOSE TWO LETTERS." :rem 64
40 PRINT "{DOWN}TRY TO MATCH SHAPES." :PRINT "{DOWN}THE BETTER YOU ARE, {3 SPACES}THE LOWER YOUR SCORE." :rem 110
70 PRINT "{DOWN}PRESS THE SPACE BAR {3 SPACES}TO CONTINUE." :rem 46
80 PRINT "{2 DOWN}PRESS 'Q' TO QUIT AND SEE ALL SHAPES." :rem 232
90 FOR I=1TO16:READ P(I),C(I):NEXT I :rem 211
100 DATA 7705,2,7709,6,7713,2,7717,6,7793,6,7797,2,7801,6,7805,2 :rem 141
120 DATA 7881,2,7885,6,7889,2,7893,6,7969,6,7973,2,7977,6,7981,2 :rem 192
140 CC=30720:A$="{RED}{RVS}{4 SPACES}":B$
```

```
="{BLU}{RVS}{4 SPACES}" :rem 244
150 POKE36878,15:F1=36876 :rem 99
170 PRINT "{3 DOWN}{GRN}PRESS F1 TO START ." :rem 29
180 GET E$:IF E$<>"{F1}" THEN 180 :rem 31
190 PRINT "{CLR}"; :rem 57
210 FOR I=1TO2:FOR J=1TO4 :rem 182
220 PRINT TAB(2);A$;B$;A$;B$:NEXT J :rem 192
230 FOR J=1TO4:PRINT TAB(2);B$;A$;B$;A$:NEXT J,I :rem 230
240 FOR I=1TO16:POKE P(I),I:NEXT I :rem 127
250 PRINT "{BLK}{2 SPACES}Q=QUIT":rem 201
260 FOR I=1TO8:B(I)=I:B(I+8)=I:NEXT I :rem 37
270 FOR I=1TO16 :rem 65
280 RC=INT(16*RND(0))+1:IF B(RC)=0 THEN 280 :rem 33
290 A(I)=B(RC):B(RC)=0:NEXT :rem 35
300 FOR I=1TO16:B(I)=A(I):NEXT :rem 226
310 FOR I=1TO8 :rem 13
320 F(I)=INT(8*RND(0)):IF F(I)=1 OR F(I)=2 OR F(I)=6 THEN 320 :rem 116
330 NEXT I:SC=0:S=0 :rem 85
340 FOR I=38879TO38882:POKE I,0:NEXT I :rem 78
350 PRINT "{DOWN}PRESS 2 LETTERS {2 SPACES}-{2 SPACES}-" :rem 182
360 SC=SC+1:SC$=STR$(SC) :rem 147
370 FOR I=1 TO LEN(SC$):POKE 8158+I,ASC(MID$(SC$,I,1)):NEXT I :rem 32
380 N1=38813:POKE F1,231 :rem 0
390 FOR D=1TO150:NEXT D:POKE F1,0:rem 103
400 POKE N1,1:POKE N1,0:GET K$:IF K$="TH EN 400 :rem 232
```



```

410 IF (K$<"A") OR (K$>"Q") THEN 400 :rem 156
420 R=ASC(K$)-64:POKE 8093,R:R1=R :rem 90
430 IF K$="Q" THEN 1110 :rem 89
440 N=P(R1):A1=A(R1):IF A(R1)<>0 THEN 470 :rem 151
450 POKE N,24:POKE N+1,24:POKE N+22,24:PO :rem 254
    KE N+23,24
470 ON A(R1) GOSUB 850,880,910,940,970,10 :rem 186
    00,1030,1060:GOSUB 780
480 N1=38815 :rem 97
490 POKE N1,1:POKE N1,0:GET K2$:IF K2$="" :rem 94
    THEN 490
500 IF (K2$<"A") OR (K2$>"Q") THEN 490 :rem 9
510 R=ASC(K2$)-64:POKE 8096,R:R2=R :rem 144
520 IF K2$="Q" THEN 1110 :rem 139
530 IF K2$=K$ THEN POKE 8096,45:GOTO 490 :rem 78
540 N=P(R2):A2=A(R2):IF A(R2)<>0 THEN 570 :rem 157
550 POKE N,24:POKE N+1,24:POKE N+22,24:PO :rem 255
    KE N+23,24
570 ON A(R2) GOSUB 850,880,910,940,970,10 :rem 188
    00,1030,1060:GOSUB 780
580 IF A1=0 THEN 600 :rem 208
590 IF A1=A2 THEN 650 :rem 25
600 POKE F1,159:FOR D=1TO100:NEXT:POKE F1 :rem 232
    ,135:FOR D=1TO100:NEXT:POKE F1,0:GOTO
    730
650 POKE F1,195:FOR D=1TO100:NEXT:POKE F1 :rem 177
    ,207:FOR D=1TO100:NEXT
660 POKE F1,215:FOR D=1TO100:NEXT:POKE F1 :rem 232
    ,225:FOR D=1TO200:NEXT:POKE F1,0
690 S=S+1:N=8140+S*2 :rem 74
700 ON A1 GOSUB 850,880,910,940,970,1000, :rem 19
    1030,1060:GOSUB 780
710 A(R1)=0:A(R2)=0 :rem 215
720 IF S=8 THEN 1080 :rem 232
730 GET E$:IF E$<>" " THEN 730 :rem 156
740 L=R2:N=P(R2):GOSUB 810 :rem 229
750 L=R1:N=P(R1):GOSUB 810 :rem 228
760 POKE 8093,45:POKE 8096,45:GOTO360 :rem 22
780 NC=N+CC:J=F(B(R)):POKE NC,J:POKE NC+1 :rem 254
    ,J:POKE NC+22,J:POKE NC+23,J:RETURN
810 CL=C(L):POKE N,160:POKE N+CC,CL:POKE :rem 55
    {SPACE}N+1,160:POKE N+1+CC,CL
820 POKE N+22,160:POKE N+22+CC,CL:POKE N+ :rem 33
    23,160:POKE N+23+CC,CL:POKE N,L:RETUR
    N
850 POKE N,233:POKE N+1,223:POKE N+22,95: :rem 183
    POKE N+23,105:RETURN
880 POKE N,85:POKE N+1,73:POKE N+22,74:PO :rem 53
    KE N+23,75:RETURN
910 POKE N,32:POKE N+1,233:POKE N+22,233: :rem 173
    POKE N+23,160:RETURN
940 POKE N,108:POKE N+1,123:POKE N+22,124 :rem 227
    :POKE N+23,126:RETURN
970 POKE N,98:POKE N+1,98:POKE N+22,226:P :rem 157
    OKE N+23,226:RETURN
1000 POKE N,225:POKE N+1,97:POKE N+22,225 :rem 186
    :POKE N+23,97:RETURN
1030 POKE N,223:POKE N+1,105:POKE N+22,23 :rem 222
    3:POKE N+23,95:RETURN
1060 POKE N,83:POKE N+1,83:POKE N+22,83:P :rem 90
    OKE N+23,83:RETURN
1080 FOR I=8076 TO 8096:POKE I,32:NEXT :rem 65
1090 FOR I=1TO25:POKE F1,INT(60*RND(0))+18 :rem 115
    0)

```

```

1100 FOR D=1TO100:NEXT D,I:POKE F1,0 :rem 253
1110 FOR R=1TO16:N=P(R) :rem 44
1120 ON B(R) GOSUB 850,880,910,940,970,10 :rem 90
    00,1030,1060
1130 GOSUB 780:NEXT :rem 93
1140 PRINT "{UP}TRY AGAIN? (Y/N) :rem 40
    {7 SPACES}";
1150 GET E$:IF E$="Y" THEN 190 :rem 229
1160 IF E$<>"N" THEN 1150 :rem 194
1170 END :rem 160

```

Program 2: Match-Em (64 Version)

```

1 POKE 53281,6:PRINT"{CLR}[73]" :rem 253
10 DIM A(16),B(16),C(16),P(16) :rem 181
20 PRINT TAB(13);"*** MATCH-EM ***":rem 206
30 PRINT "{2 DOWN}CHOOSE TWO LETTERS." :rem 98
40 PRINT "{DOWN}TRY TO MATCH THE SHAPES." :rem 40
50 PRINT "{DOWN}THE BETTER YOU ARE, THE L :rem 168
    OWER YOUR"
60 PRINT "SCORE WILL BE." :rem 160
70 PRINT "{DOWN}PRESS THE SPACE BAR TO CO :rem 46
    NTINUE."
80 PRINT "{2 DOWN}PRESS 'Q' TO QUIT AND S :rem 232
    EE ALL SHAPES."
90 FOR I=1TO16:READ P(I),C(I):NEXT :rem 211
100 DATA 1075,2,1080,6,1085,2,1090,6 :rem 221
110 DATA 1275,6,1280,2,1285,6,1290,2 :rem 230
120 DATA 1475,2,1480,6,1485,2,1490,6 :rem 239
130 DATA 1675,6,1680,2,1685,6,1690,2 :rem 248
140 CC=54272:A$="{RED}{RVS}{5 SPACES}":B$ :rem 252
    ="{BLU}{RVS}{5 SPACES}"
150 POKE54296,15:POKE54291,8:POKE54292,8 :rem 6
160 F1=54287:F2=54286:W=54290 :rem 31
170 PRINT "{3 DOWN}{WHT}PRESS F1 TO START :rem 4
    ."
180 GET E$:IF E$<>"{F1}" THEN 180 :rem 31
190 PRINT "{CLR}"; :rem 57
200 POKE 53281,1 :rem 33
210 FOR I=1TO2:FOR J=1TO5 :rem 183
220 PRINT TAB(10);A$;B$;A$;B$:NEXT J :rem 239
230 FOR J=1TO5:PRINT TAB(10);B$;A$;B$;A$ :rem 99
    NEXT J:NEXT I
240 FOR I=1TO16:POKE P(I)+41,I:NEXT I :rem 88
250 PRINT TAB(31);"{BLK}{UP}Q=QUIT" :rem 33
260 FOR I=1TO8:B(I)=I:B(I+8)=I:NEXT I :rem 110
270 FOR I=1TO16 :rem 65
280 RC=INT(16*RND(0))+1:IF B(RC)=0 THEN 2 :rem 33
    80
290 A(I)=B(RC):B(RC)=0:NEXT I :rem 108
300 FOR I=1TO16:B(I)=A(I):NEXT I :rem 43
310 FOR I=1TO8 :rem 13
320 F(I)=INT(16*RND(0)):IF F(I)=1 OR F(I) :rem 163
    =2 OR F(I)=6 THEN 320
330 NEXT I:SC=0:S=0 :rem 85
340 FOR I=56250 TO 56254:POKE I,0:NEXT I :rem 127
350 PRINT "{DOWN}PRESS 2 LETTERS :rem 182
    {3 SPACES}-{2 SPACES}";
360 SC=SC+1:SC$=STR$(SC) :rem 147
370 FOR I=1 TO LEN(SC$):POKE 1978+I,ASC(M :rem 108
    ID$(SC$,I,1)):NEXT I

```



```

380 N1=56154:POKE F1,84:POKE F2,125:POKE
{SPACE}W,17 :rem 205
390 FOR D=1TO150:NEXT D:POKE W,0 :rem 71
400 POKE N1,1:POKE N1,0:GET K$:IF K$=""TH
EN 400 :rem 232
410 IF (K$<"A") OR (K$>"Q") THEN 400
:rem 156
420 R=ASC(K$)-64:POKE 1882,R:R1=R :rem 89
430 IF K$="Q" THEN 1110 :rem 89
440 N=P(R1):A1=A(R1):IF A(R1)<>0 THEN 470
:rem 151
450 FOR I=N TO N+80 STEP 40 :rem 120
460 FOR J=I TO I+2:POKE J,24:NEXT J,I:GOT
O 480 :rem 38
470 ON A(R1) GOSUB 850,880,910,940,970,10
00,1030,1060:GOSUB 780 :rem 186
480 N1=56157 :rem 96
490 POKE N1,1:POKE N1,0:GET K2$:IF K2$=""
THEN 490 :rem 94
500 IF (K2$<"A") OR (K2$>"Q") THEN 490
:rem 9
510 R=ASC(K2$)-64:POKE 1885,R:R2=R
:rem 143
520 IF K2$="Q" THEN 1110 :rem 139
530 IF K2$=K$ THEN POKE 1885,45:GOTO 490
:rem 77
540 N=P(R2):A2=A(R2):IF A(R2)<>0 THEN 570
:rem 157
550 FOR I=N TO N+80 STEP 40 :rem 121
560 FOR J=I TO I+2:POKE J,24:NEXT J,I:GOT
O 600 :rem 33
570 ON A(R2) GOSUB 850,880,910,940,970,10
00,1030,1060:GOSUB 780 :rem 188
580 IF A1=0 THEN 600 :rem 208
590 IF A1=A2 THEN 650 :rem 25
600 POKE F1,21:POKE F2,31:POKE W,17
:rem 144
610 FOR D=1 TO 100:NEXT :rem 221
620 POKE F1,16:POKE F2,195:POKE W,17
:rem 209
630 FOR D=1 TO 100:NEXT:POKE W,0 :rem 251
640 GOTO 730 :rem 109
650 POKE F1,34:POKE F2,75:POKE W,17:FOR D
=1TO100:NEXT :rem 33
660 POKE F1,43:POKE F2,52:POKE W,17:FOR D
=1TO100:NEXT:POKE W,0 :rem 57
670 POKE F1,51:POKE F2,97:POKE W,17:FOR D
=1 TO 100:NEXT :rem 38
680 POKE F1,68:POKE F2,149:POKE W,17:FOR
{SPACE}D=1 TO 200:NEXT:POKE W,0
:rem 122
690 S=S+1:N=1901+S*4 :rem 74
700 ON A1 GOSUB 850,880,910,940,970,1000,
1030,1060:GOSUB 780 :rem 19
710 A(R1)=0:A(R2)=0 :rem 215
720 IF S=8 THEN 1080 :rem 232
730 GET E$:IF E$<>" " THEN 730 :rem 156
740 L=R2:N=P(R2):GOSUB 810 :rem 229
750 L=R1:N=P(R1):GOSUB 810 :rem 228
760 POKE 1882,45:POKE 1885,45 :rem 8
770 GOTO 360 :rem 112
780 NC=N+CC:FOR I=NC TO NC+80 STEP 40
:rem 11
790 FOR J=I TO I+2:POKE J,F(B(R)):NEXT J,
I :rem 51
800 RETURN :rem 120
810 CL=C(L) :rem 69
820 FOR I=N TO N+80 STEP 40 :rem 121
830 FOR J=I TO I+2:POKE J,160:POKEJ+CC,CL
:NEXT J,I :rem 104
840 POKE P(L)+41,L:RETURN :rem 218
850 POKE N,32:POKE N+1,32:POKE N+2,233
:rem 39
860 POKE N+40,32:POKE N+41,233:POKE N+42,
160 :rem 81
870 POKE N+80,233:POKE N+81,160:POKE N+82
,160:RETURN :rem 170
880 POKE N,32:POKE N+1,160:POKE N+2,32
:rem 41
890 POKE N+40,160:POKE N+41,160:POKE N+42
,160 :rem 133
900 POKE N+80,32:POKE N+81,160:POKE N+82,
32:RETURN :rem 63
910 POKE N,85:POKE N+1,67:POKE N+2,73
:rem 6
920 POKE N+40,66:POKE N+41,32:POKE N+42,9
3 :rem 247
930 POKE N+80,74:POKE N+81,64:POKE N+82,7
5:RETURN :rem 34
940 POKE N,108:POKE N+1,98:POKE N+2,123
:rem 101
950 POKE N+40,225:POKE N+41,160:POKE N+42
,97 :rem 93
960 POKE N+80,124:POKE N+81,226:POKE N+82
,126:RETURN :rem 174
970 POKE N,233:POKE N+1,160:POKE N+2,223
:rem 142
980 POKE N+40,160:POKE N+41,160:POKE N+42
,160 :rem 133
990 POKE N+80,95:POKE N+81,160:POKE N+82,
105:RETURN :rem 130
1000 POKE N,32:POKE N+1,233:POKE N+2,223
:rem 125
1010 POKE N+40,233:POKE N+41,160:POKE N+4
2,105 :rem 166
1020 POKE N+80,95:POKE N+81,105:POKE N+82
,32:RETURN :rem 113
1030 POKE N,112:POKE N+1,114:POKE N+2,110
:rem 168
1040 POKE N+40,107:POKE N+41,91:POKE N+42
,115 :rem 125
1050 POKE N+80,109:POKE N+81,113:POKE N+8
2,125:RETURN :rem 210
1060 FOR I=N TO N+80 STEP 40 :rem 166
1070 FOR J=I TO I+2:POKE J,83:NEXT J,I:RE
TURN :rem 100
1080 FOR I=1864 TO 1885:POKE I,32:NEXT I
:rem 135
1090 FOR I=1TO25:POKE F1,INT(60*RND(0)+34
):POKE F2,INT(100*RND(0)+55) :rem 63
1100 POKE W,17:FOR D=1TO100:NEXT D:POKE W
,0:NEXT I :rem 126
1110 FOR R=1TO16:N=P(R) :rem 44
1120 ON B(R) GOSUB 850,880,910,940,970,10
00,1030,1060 :rem 90
1130 GOSUB 780:NEXT R :rem 175
1140 PRINT "{UP}TRY AGAIN? (Y/N)
{7 SPACES}"; :rem 40
1150 GET E$:IF E$="Y" THEN 190 :rem 229
1160 IF E$<>"N" THEN 1150 :rem 194
1170 END :rem 160

```

Machine Language For Beginners

(Article on page 116.)

Program 2: VIC Slist

```

10 I=12288
20 READ A:IF A=256 THEN 50
30 POKE I,A:CK=CK+A:I=I+1:GOTO 20
40 END
50 IF CK<>7019 THEN PRINT"ERROR IN DATA S
TATEMENTS":STOP

```



```

12288 DATA 162,1,32,198,255,162
12294 DATA 6,32,207,255,202,208
12300 DATA 250,32,207,255,164,144
12306 DATA 208,28,201,0,240,14
12312 DATA 201,32,144,241,201,128
12318 DATA 176,237,32,210,255,76
12324 DATA 13,48,169,13,32,210
12330 DATA 255,162,3,76,7,48
12336 DATA 32,204,255,96,256

```

Program 3: 64 Slist

```

10 I=49152
20 READ A:IF A=256 THEN 50
30 POKE I,A:CK=CK+A:I=I+1:GOTO 20
40 END
50 IF CK<>7307 THEN PRINT "ERROR IN DATA
  {SPACE}STATEMENTS":STOP
49152 DATA 162,1,32,198,255,162
49158 DATA 6,32,207,255,202,208
49164 DATA 250,32,207,255,164,144
49170 DATA 208,28,201,0,240,14
49176 DATA 201,32,144,241,201,128
49182 DATA 176,237,32,210,255,76
49188 DATA 13,192,169,13,32,210
49194 DATA 255,162,3,76,7,192
49200 DATA 32,204,255,96,256

```

Power BASIC: Numeric Keypad

(Article on page 120.)

Program 1: Numeric Keypad (64 Version)

```

3 FORI=50176TO50261:READX:POKEI,X :rem 40
4 NEXT :rem 115
10 FORI=40960TO49151:POKEI,PEEK(I):NEXT
  :rem 142
20 FORI=57344TO65535:POKEI,PEEK(I):NEXT
  :rem 151
25 PRINT"TRANSFERRED" :rem 120
30 POKE 58823,76:POKE58824,0:POKE58825,19
  6 :rem 70
31 POKE58586,169:POKE58587,1:POKE58588,23
  4 :rem 134
32 FORI=44029TO44034:POKEI,234:NEXT
  :rem 103
40 POKE 1,53 :rem 88
500 DATA201, 14, 240, 65, 44, 40, 196, 24
  0, 28, 201, 85, 240, 40, 201 :rem 221
510 DATA73, 240, 40, 201, 79, 240, 40, 20
  1, 74, 240, 16, 201, 75, 240 :rem 221
520 DATA16, 201, 76, 240, 16, 201, 77, 24
  0, 28, 88, 24, 96, 0, 169 :rem 103
530 DATA 49, 208, 248, 169, 50, 208, 244,
  169, 51, 208, 240, 169, 52, 208
  :rem 163
540 DATA 236, 169, 53, 208, 232, 169, 54,
  208, 228, 169, 48, 208, 224, 169
  :rem 224
550 DATA 255, 77, 40, 196, 141, 40, 196,
  {SPACE}88, 165, 198, 240, 252, 120, 7
  6 :rem 117
560 DATA 180, 229 :rem 23

```

Program 2: Numeric Keypad (VIC Version)

```

5 POKE56,PEEK(56)-1:POKE55,0:CLR :rem 132
10 I=PEEK(56)*256 :rem 143
20 READ A:IF A=256 THEN 40 :rem 54
30 POKE I,A:I=I+1:GOTO 20 :rem 130

```

```

40 I=PEEK(56)*256 :rem 146
41 SH=I/256:SL=17 :rem 208
42 RH=SH:RL=50 :rem 82
43 POKEI+2,SL:POKEI+7,SH :rem 226
44 POKEI+36,RH:POKEI+39,RL :rem 77
50 SYS(PEEK(56)*256):END :rem 110
828 DATA 120,169,77,141,20,3 :rem 100
834 DATA 169,3,141,21,3,88 :rem 4
840 DATA 169,0,133,254,96,104 :rem 152
846 DATA 133,251,104,133,252,104 :rem 33
852 DATA 133,253,165,253,72,165 :rem 1
858 DATA 252,72,165,251,72,169 :rem 218
864 DATA 3,72,169,110,72,8 :rem 7
870 DATA 169,0,72,72,72,76 :rem 13
876 DATA 191,234,234,165,197,201 :rem 56
882 DATA 8,208,103,173,141,2 :rem 97
888 DATA 41,4,240,96,165,254 :rem 115
894 DATA 201,0,240,16,169,0 :rem 43
900 DATA 133,254,32,159,255,165 :rem 253
906 DATA 197,201,64,208,247,24 :rem 208
912 DATA 144,68,169,255,133,254 :rem 7
918 DATA 32,159,255,165,197,201 :rem 8
924 DATA 64,208,231,162,0,189 :rem 154
930 DATA 119,2,201,85,208,2 :rem 43
936 DATA 169,52,201,73,208,2 :rem 104
942 DATA 169,53,201,79,208,2 :rem 108
948 DATA 169,54,201,74,208,2 :rem 110
954 DATA 169,49,201,75,208,2 :rem 112
960 DATA 169,50,201,76,208,2 :rem 102
966 DATA 169,51,201,77,208,2 :rem 110
972 DATA 169,48,157,119,2,232 :rem 165
978 DATA 224,10,208,203,104,168 :rem 250
984 DATA 104,170,104,64,165,254 :rem 254
990 DATA 201,0,208,189,24,144 :rem 150
996 DATA 241,256 :rem 34

```

Nevets

(Article on page 52.)

Program 1: Nevets—VIC Version

```

5 PRINT"[CLR]{BLK}{9 DOWN} WE ARE ON THE
  {SPACE}WAY TO {22 RIGHT}{2 SPACES}THE
  {RVS}LAND OF ADNERB{OFF}" :rem 171
10 POKE52,28:POKE56,28:CLR :rem 18
20 X=36879:Y=41.25:FORI=7168TO7679:POKEI,
  PEEK(I+25600):POKEX,Y:Y=Y+.25:NEXT
  :rem 60
30 FORC=7432TO7511:READA:POKEC,A:NEXT:POK
  E36869,255 :rem 117
40 DATA129,66,36,24,24,36,66,129,16,24,28
  ,30,27,25,24,255,8,24,56,120,216,152,2
  4,255 :rem 91
50 DATA24,24,24,24,24,24,24,255,255,153,1
  53,153,153,153 :rem 127
55 DATA255,145,82,0,27,216,0,74,137
  :rem 236
60 DATA16,56,56,84,146,56,40,40,16,24,12,
  6,3,1,0,0,8,24,48,96,192,128,0,0
  :rem 37
70 DATA129,90,36,90,90,36,90,129 :rem 99
75 PRINT"[CLR]":X=7944:CL=30720:FORA=1TO2
  :FORB=1TO22:POKEX+CL,6:POKEX,37:X=X+1:
  NEXT:X=X+198 :rem 26
80 NEXT :rem 167
90 FORA=7713TO8175STEP22:POKEA+CL,0:POKEA
  ,32:NEXT :rem 44
110 FORB=0TO96:READC:POKE831+B,C:NEXT
  :rem 45
120 DATA169,0,141,62,3 :rem 94
130 DATA141,60,3,141,61,3,169,0,141,19,14
  5,169,127,141,34,145,173,32,145,41,12
  8 :rem 82

```



```

140 DATA201,0,208,5,169,1,141,60,3,169,25
    5,141,34,145,173,17 :rem 171
145 DATA145,41,8,201,0,208,5,169,22
    :rem 225
150 DATA141,60,3,173,17,145,41,16,201,0,2
    08,5,169,1,141 :rem 169
155 DATA61,3,173,17,145,41,4,201,0,208,5
    :rem 207
160 DATA169,22,141,61,3,173,17,145,41,32,
    201,0,208,5,169,1,141,62,3,96:rem 147
165 V=0:GOTO170 :rem 106
168 FORI=7680TO7745:POKEI,32:NEXT :rem 23
170 E=8:J=16:YY=0:W=0:U=0 :rem 205
180 POKEF,32:POKEK,32:POKEQ,32:GOSUB900:G
    OSUB800:FORX=7757TO8175STEP22:POKEX,3
    2:NEXT :rem 71
185 GOSUB950:YY=YY+1:IFY=10THENYY=1:E=E-
    (E*.5):J=J-(J*.5) :rem 12
190 A=8175:C=36:D=0:I=0:O=0:TI$="000000":
    Y=0:W=W+1:Q=A:AA=36874:POKEAA+4,15:BB
    =200:CC=1 :rem 163
200 SYS831:M=PEEK(828)-PEEK(829):P=PEEK(8
    30) :rem 39
210 D=D+1:IFD=ETHEND=0:POKEF,32:F=F+G:POK
    EF+CL,2:POKEF,39:IFPEEK(F+G)=38THENG
    OSUB700 :rem 203
215 IFPEEK(F+G+22)<>37THENPOKEF,32:GOSUB9
    00 :rem 80
220 I=I+1:IFI=JTHENI=0:POKEK,32:K=K+L:POK
    EK+CL,2:POKEK,39:IFPEEK(K+L)=38THENG
    OSUB600 :rem 12
225 IFPEEK(K+L+22)<>37THENPOKEK,32:GOSUB8
    00 :rem 95
230 IFR=1THEN245 :rem 174
235 IFP=1THENQ=A:S=SS:T=TT:R=1:GOTO245
    :rem 208
240 GOTO270 :rem 104
245 IFPEEK(Q+22+S)=37ORPEFK(Q+22+S)=38THE
    NPOKEQ,32:R=0:GOTO270 :rem 7
250 IFPEEK(Q+22+S)=39THENY=Y+1:POKEQ,32:Q
    =Q+22+S:POKEQ+CL,7:POKEQ,42:GOSUB400:
    GOTO260 :rem 10
255 GOTO265 :rem 114
260 POKEQ,32:POKEF,32:POKEK,32:GOSUB800:G
    OSUB900:R=0:GOTO270 :rem 216
265 POKEQ,32:Q=Q+22+S:POKEQ,T:POKEAA+1,BB
    +S :rem 131
270 IFM=-22THENB=33:GOTO280 :rem 100
275 B=32 :rem 130
280 IFA+M>8185ORA+M<7746THENM=0:B=32
    :rem 107
285 IFM=1THENC=34:M=0:SS=1:TT=40 :rem 196
290 IFM=-1THENC=35:M=0:SS=-1:TT=41:rem 28
295 IFM=21ORM=-21THENM=0 :rem 192
300 POKEA,B:A=A+M:POKEA,C:POKEAA+CC,BB+M
    :rem 191
305 PRINT"[HOME]{WHT}TIME{BLK}"60-INT(TI/
    60)"[LEFT]":PRINT"[HOME]{10 RIGHT}
    {WHT}LEVEL{BLK}";W :rem 1
310 PRINT"[HOME]{DOWN}{WHT}H.S.{BLK}";V:P
    RINT"[HOME]{DOWN}{10 RIGHT}{WHT}SCORE
    {BLK}";U:IFTI/60>=60THEN500 :rem 56
315 PRINT"[HOME]{2 DOWN}{16 RIGHT}{WHT}HA
    VE{BLK}";Y :rem 188
316 PRINT"[HOME]{2 DOWN}{WHT}NEVETS REMAI
    N{BLK}";YY-Y :rem 57
320 POKEAA+2,0:POKEAA+1,0:CC=CC+1:IFCC=3T
    HENCC=1 :rem 99
325 IFY=YYTHENU=U+(10*(60-INT(TI/60))):GO
    TO180 :rem 236
330 GOTO200 :rem 97
400 U=U+50:POKEAA+3,BB:FORX=15TO0STEP-1:P
    OKEAA+4,X:FORDD=1TO50:NEXT:NEXT:POKEA

```

```

A+3,0 :rem 17
410 POKEAA+4,15:RETURN :rem 81
500 POKEAA+4,0:PRINT"[HOME]{2 DOWN}{BLK}
    {6 SPACES}GAME{2 SPACES}OVER
    {6 SPACES}":FORX=1TO2000:NEXT:rem 236
505 IFU>VTHENV=U :rem 41
510 PRINT"[HOME]{2 DOWN}{BLK}PRESS TRIGGE
    R TO START" :rem 254
520 P=PEEK(37151):FB=-((PAND32)=0):rem 94
530 IFFB<>1THEN520 :rem 32
540 GOTO 168 :rem 113
600 POKEK,32:POKEK+L,32:O=O+1:IFO=4THEN50
    0 :rem 27
610 GOTO800 :rem 104
700 POKEF,32:POKEF+G,32:O=O+1:IFO=4THEN50
    0 :rem 13
710 GOTO900 :rem 106
800 N=INT(RND(1)*4)+1:ONNGOTO810,820,830,
    840 :rem 203
810 K=7922:L=+1:RETURN :rem 46
820 K=7943:L=-1:RETURN :rem 52
830 K=8142:L=+1:RETURN :rem 43
840 K=8163:L=-1:RETURN :rem 49
900 H=INT(RND(1)*4)+1:ONHGOTO910,920,930,
    940 :rem 196
910 F=7922:G=+1:RETURN :rem 37
920 F=7943:G=-1:RETURN :rem 43
930 F=8142:G=+1:RETURN :rem 34
940 F=8163:G=-1:RETURN :rem 40
950 X=7932:POKEX+CL,4:POKEX,38:X=X+2:POKE
    X+CL,4:POKEX,38:X=X+218:POKEX+CL,4:PO
    KEX,38 :rem 18
960 X=X+2:POKEX+CL,4:POKEX,38:RETURN
    :rem 54

```

Program 2: Nevets—64 Version

```

2 PRINTCHR$(142):POKE56,48:CLR :rem 47
3 FORL=54272TO54296:POKEL,0:NEXT:POKE5429
    6,15:POKE54277,72:POKE54278,90 :rem 242
4 HF=54273:LF=54272:VO=54276 :rem 53
5 POKE53281,1:POKE53280,15:PRINT"[CLR]
    {12 DOWN}"TAB(10)"[RED]PLEASE WAIT A MO
    MENT" :rem 20
10 PRINTCHR$(142):POKE56334,PEEK(56334)AN
    D254 :rem 90
11 POKE1,PEEK(1)AND251:FORI=0TO511:POKEI+
    12288,PEEK(I+53248):NEXT :rem 136
13 POKE1,PEEK(1)OR4:POKE56334,PEEK(56334)
    OR1 :rem 83
20 POKE53272,(PEEK(53272)AND240)OR12
    :rem 247
30 FORC=12800TO12879:READA:POKEC,A:NEXT
    :rem 156
40 DATA129,66,36,24,24,36,66,129,16,24,28
    ,30,27,25,24,255 :rem 44
45 DATA8,24,56,120,216,152,24,255:rem 134
50 DATA24,24,24,24,24,24,255,255,153,1
    53,153,153,153,255 :rem 71
55 DATA145,82,0,27,216,0,74,137 :rem 36
60 DATA16,56,56,84,146,56,40,40,16,24,12,
    6,3,1,0,0,8,24,48,96,192,128,0,0
    :rem 37
70 DATA129,90,36,90,90,36,90,129 :rem 99
73 PRINT"[CLR]{12 DOWN}"TAB(16)"[RED]NEVE
    TS":FORI=1TO2000:NEXT :rem 20
75 PRINT"[CLR]":CL=54272:FORX=1584TO1623:
    POKEX+CL,6:POKEX,68:POKEX+400+CL,6
    :rem 165
80 POKEX+400,68:NEXT :rem 193
90 GOTO 168 :rem 65
100 JV=PEEK(56320):P=15-(JVAND15):FR=JVAN
    D16 :rem 81
101 IFP=0ANDFR=16THENRETURN :rem 252
105 IFP=0ANDC=65THENS=41:T=71 :rem 247

```



```

106 IFP=0ANDC=66THENS=39:T=72:RETURN          :rem 27
110 IFP=1THENA=A-40:IFA<1164THENA=1164:RE      :rem 3
    TURN                                         :rem 3
120 IFP=2THENA=A+40:IFA>2004THENA=2004:RE      :rem 249
    TURN                                         :rem 249
130 IFP=4THENC=66:S=39:T=72:RETURN              :rem 131
135 IFP=5THENA=A-40:C=66:S=39:T=72:IFA<11      :rem 158
    64THENA=1164:RETURN                        :rem 158
136 IFP=6THENA=A+40:C=66:S=39:T=72:IFA>20      :rem 148
    04THENA=2004:RETURN                        :rem 148
140 IFP=8THENC=65:S=41:T=71:RETURN:rem 127
145 IFP=9THENA=A-40:C=65:S=41:T=71:IFA<11      :rem 154
    64THENA=1164:RETURN                        :rem 154
146 IFP=10THENA=A+40:C=65:S=41:T=71:IFA>2      :rem 183
    004THENA=2004:RETURN                       :rem 183
150 RETURN                                       :rem 118
168 V=0                                         :rem 98
170 E=8:J=16:YY=0:W=0:U=0:FORI=1024TO1263     :rem 102
    :POKEI,32:NEXT                             :rem 102
175 POKEF,32:POKEK,32:POKEQ,32                :rem 51
180 F=1944:K=F:G=1:L=G:FORX=1084TO2004STE      :rem 205
    P40:POKEK,32                              :rem 205
185 NEXT:GOSUB950:YY=YY+1:IFY=10THENYY=1       :rem 133
    :E=E-(E*.5):J=J-(J*.5)                   :rem 133
190 A=2004:C=67:D=0:I=0:O=0:TI$="000000":      :rem 243
    Y=0:W=W+1                                  :rem 243
195 GOSUB1100                                  :rem 225
200 GOSUB100:POKEA+CL,0:POKEA,C:IFA<2004T      :rem 155
    HENPOKEA+40+CL,0:POKEA+40,64             :rem 155
205 IFP=2ORP=6ORP=10THENPOKEA-40+CL,1:POK      :rem 248
    EA+CL,0:POKEA,C                           :rem 248
210 IFFR=0ANDA<2004THENQ=A                    :rem 59
211 POKEHF,34:POKELF,75:POKEVO,65:FORI=1T      :rem 69
    O5:NEXT                                     :rem 69
212 IFFL=1THENPOKEF,32:GOSUB800:F=KK:G=LL      :rem 84
213 POKEF,32:F=F+G:POKEF+CL,2:POKEF,70        :rem 26
214 IFPEEK(F+G)=73ANDFL=0THENPOKEVO,64:GO      :rem 112
    TO700                                       :rem 112
215 IFPEEK(F+40+G)<>68THENPOKEF,32:POKEVO      :rem 157
    ,16:GOSUB800:F=KK:G=LL                   :rem 157
222 POKEHF,45:POKELF,198:POKEVO,17:FORI=1      :rem 124
    TO5:NEXT                                   :rem 124
223 IFKL=1THENPOKEK,32:GOSUB800:K=KK:L=LL      :rem 106
224 POKEK,32:K=K+L:POKEK+CL,2:POKEK,70        :rem 58
225 IFPEEK(K+L)=73ANDKL=0THENPOKEVO,64:GO      :rem 128
    TO600                                       :rem 128
226 IFPEEK(K+40+L)<>68THENPOKEK,32:POKEVO      :rem 184
    ,16:GOSUB800:K=KK:L=LL                   :rem 184
230 KL=0:FL=0:IFFR=0THEN235                   :rem 105
231 GOSUB1000:POKEA+CL,0:POKEA,C:IFA<2004      :rem 207
    THENPOKEA+40+CL,0:POKEA+40,64             :rem 207
232 IFP=2THENPOKEA-40+CL,1:POKEA+CL,0:POK      :rem 5
    EA,C                                       :rem 5
235 IFFR=0ANDQ<2004ANDC<>67THENPOKEQ,32:G      :rem 156
    OTO242                                     :rem 156
240 GOTO305                                     :rem 103
242 POKEHF,100:POKELF,85:POKEVO,17:FORI=1      :rem 157
    TO10:NEXT                                  :rem 157
245 IFPEEK(Q+S)=70THENPOKEQ,32:Q=Q+S:POKE      :rem 154
    Q+CL,11:POKEQ,69:GOSUB400:GOTO305        :rem 154
246 IFPEEK(Q+S)=73THENPOKEQ+S+CL,2:POKEQ+      :rem 53
    S,73:GOTO305                              :rem 53
250 IFPEEK(Q+S)=68ORPEEK(Q+S)=69THENPOKEQ      :rem 10
    ,32:POKEVO,16:FR=16:GOTO305              :rem 10
265 IFC<>67THENQ=Q+S:POKEQ+CL,0:POKEQ,T        :rem 236
305 POKEVO,16:PRINT"{HOME}{BLU}TIME{BLK}"
60-INT(TI/60)}{LEFT} ";                      :rem 24
306 PRINTTAB(30){BLU}LEVEL{BLK}";W:rem 174
310 PRINT"{HOME}{DOWN}{BLU}HIGH SCORE
    {BLK}";V;                                  :rem 160
311 PRINTTAB(30){BLU}SCORE{BLK}";U:IFTI/      :rem 76
    60>=60THEN500                              :rem 76
315 PRINT"{HOME}{2 DOWN}{BLU}NEVETS REMAI      :rem 175
    NING{BLK}";YY-Y;SPC(11){BLU}HAVE
    {BLK}";Y;                                  :rem 175
320 IFY=YYTHENU=U+(10*(60-INT(TI/60))):GO      :rem 235
    TO175                                       :rem 235
321 GOSUB1000:POKEA+CL,0:POKEA,C:IFA<2004      :rem 207
    THENPOKEA+40+CL,0:POKEA+40,64             :rem 207
322 IFP=2THENPOKEA-40+CL,1:POKEA+CL,0:POK      :rem 5
    EA,C                                       :rem 5
323 IFFL=1ORKL=1THEN200                       :rem 142
324 IFFR<>0THEN200                             :rem 43
325 IFPEEK(Q+S)=70THENPOKEQ,32:Q=Q+S:POKE      :rem 147
    Q+CL,11:POKEQ,69:GOSUB400:GOTO200        :rem 147
326 IFPEEK(Q+S)=73THENPOKEQ+S+CL,2:POKEQ+      :rem 46
    S,73:GOTO200                              :rem 46
327 IFPEEK(Q+S)=68ORPEEK(Q+S)=69THENPOKEQ      :rem 9
    ,32:POKEVO,16:FR=16:GOTO200              :rem 9
328 IFC<>67THENPOKEQ,32:Q=Q+S:POKEQ+CL,0:      :rem 62
    POKEQ,T:GOTO211                           :rem 62
330 GOTO200                                    :rem 97
400 U=U+50:Y=Y+1:FR=15:KL=1:POKEVO,16:POK      :rem 5
    EHF,68:POKELF,200:POKEVO,129             :rem 5
405 IFPEEK(F)=69THENFL=1                      :rem 191
406 IFPEEK(K)=69THENKL=1                      :rem 202
410 FORI=1TO50:NEXT:POKEVO,128:POKEQ,32:R      :rem 238
    ETURN                                       :rem 238
500 PRINT"{HOME}{3 DOWN}{BLK}{15 SPACES}G      :rem 87
    AME{2 SPACES}OVER":FORX=1TO2000:NEXT
505 IFU>VTHENV=U                              :rem 41
510 PRINT"{DOWN}{BLK}{10 SPACES}PRESS TRI      :rem 218
    GGER TO START"                           :rem 218
520 P=PEEK(56320):FR=PAND16                   :rem 51
530 IFFR<>0THEN520                             :rem 47
540 GOTO 170                                   :rem 106
600 POKEK,32:POKEK+L,32:O=O+1:IFO=4THEN500    :rem 27
610 GOSUB800:K=KK:L=LL:GOTO235                :rem 111
700 POKEF,32:POKEF+G,32:O=O+1:IFO=4THEN500    :rem 13
710 GOSUB800:F=KK:G=LL:GOTO222                :rem 98
800 N=INT(RND(1)*4)+1:ONNGOTO810,820,830,      :rem 203
    840                                         :rem 203
810 KK=1544:LL=+1:RETURN                      :rem 191
820 KK=1583:LL=-1:RETURN                      :rem 197
830 KK=1944:LL=+1:RETURN                      :rem 197
840 KK=1983:LL=-1:RETURN                      :rem 203
950 X=1563:POKEX+CL,2:POKEX,73:X=X+2:POKE      :rem 97
    X+CL,2:POKEX,73:X=1963:POKEX+CL,2
960 POKEK,73:X=X+2:POKEK+CL,2:POKEK,73:RE      :rem 138
    TURN                                       :rem 138
1000 JV=PEEK(56320):P=15-(JVAND15)            :rem 152
1005 IFP=0THENRETURN                          :rem 33
1010 IFP=1THENA=A-40:IFA<1164THENA=1164:R      :rem 51
    ETURN                                       :rem 51
1020 IFP=2THENA=A+40:IFA>2004THENA=2004:R      :rem 41
    ETURN                                       :rem 41
1030 IFP=4THENC=66:RETURN                      :rem 73
1040 IFP=8THENC=65:RETURN                      :rem 77
1050 RETURN                                    :rem 166
1100 PRINT"{HOME}{20 DOWN}"TAB(17){RED}L      :rem 87
    EVEL{BLK}";W:FORI=1TO1000:NEXT:PRINT
    "{HOME}"
1110 FORI=1824TO1863:POKEI,32:NEXT:RETURN      :rem 74

```


French Tutor

(Article on page 70.)

BEFORE TYPING...

Before typing in programs, please refer to "How To Type COMPUTE!'s Gazette Programs," "A Beginner's Guide To Typing In Programs," and "The Automatic Proofreader" that appear before the Program Listings.

Program 1: VIC French Tutor, Part 1: Redefined Characters

```

10 POKE36879,237 :rem 105
20 PRINT"{CLR}{4 RIGHT}{4 DOWN}{BLK}"CHR$(122) :rem 245
30 FORT=1TO8 :rem 231
40 PRINTTAB(4)"{BLK}"CHR$(125)"{BLU}{RVS}{4 SPACES}{WHT}{4 SPACES}{RED}{4 SPACES}" :rem 161
50 NEXT :rem 164
60 PRINTTAB(4)"{BLK}"CHR$(125) :rem 13
70 PRINTTAB(4)"{BLK}"CHR$(125) :rem 14
80 S1=36876:V=36878:POKEV,10 :rem 96
90 READN,D :rem 67
100 IFN=-2THEN170 :rem 209
110 POKES1,(ABS(N)) :rem 55
120 FORT=1TO(ABS(D)) :rem 155
130 NEXTT :rem 39
140 POKES1,0 :rem 164
150 FORN=1TO20:NEXTN :rem 5
160 GOTO90 :rem 57
170 FORT=1TO2000:NEXTT :rem 115
180 GOTO210 :rem 101
190 DATA-201,-125,-201,-187,-201,-62,-215,-250,-215,-250,-219,-250,-219,-250,-228,-375 :rem 112
200 DATA-223,-125,-215,-1000,-2 :rem 247
210 POKE36879,26:PRINT"{CLR}{BLK}{9 DOWN}TAB(6)"VIC FRENCH":PRINTTAB(7)"TUTORIAL" :rem 70
220 PRINTTAB(7)"[8 T]" :rem 220
230 PRINT"{7 DOWN}{RIGHT}DEFINING CHARACTERS" :rem 30
260 X=PEEK(56)-2:POKE52,X:POKE56,X:POKE51,PEEK(55):CLR :rem 15
270 CS=256*PEEK(52)+PEEK(51) :rem 23
280 FORI=CS+511:POKEI,PEEK(I+32768-CS):NEXT :rem 166
290 READX :rem 15
300 IFX=-1THEN370 :rem 222
310 IFX<0THEN290 :rem 177
320 FORI=XTOX+7:READJ :rem 87
330 IFJ<0THEN320 :rem 159
340 POKEI,J:NEXT :rem 254
350 GOTO290 :rem 108
370 PRINT"{CLR}{BLK}{10 DOWN}"SPC(5)"INSTRUCTIONS?":PRINT:PRINTSPC(7)"{RED}Y{BLK}ES OR {RED}N{BLK}O" :rem 163
380 GETA$:IFA$<>"N"ANDAS$<>"Y"THEN380 :rem 51
390 IFA$="N"THENPOKE36869,255:GOTO555 :rem 167
400 PRINT"{CLR}{BLK}{6 DOWN}IN ORDER TO CREATE","FRENCH ACCENTS IN","THIS PROGRAM, CERTAIN" :rem 8
410 PRINT"LETTERS HAVE BEEN","RE-DEFINED {SPACE}USING","PROGRAMMABLE","CHARACTERS." :rem 215
420 PRINT:PRINT"PRESS {RED}C{BLK} TO CONTINUE." :rem 224
430 GETA$:IFA$<>"C"THEN430 :rem 209
440 PRINT"{CLR}{DOWN}{BLK}THE FRENCH CHARACTERS":PRINT"ARE {BLU}BLUE{BLK}, THE IR VIC"; :rem 147
450 PRINT"{3 SPACES}EQUIVALENTS {GRN}GREEN{BLK}." :PRINT :rem 207
460 POKE36869,255 :rem 161
470 PRINTTAB(4)"{BLU}< {BLK}{RVS}= {GRN}<{OFF}"SPC(4)"{BLU}> {BLK}{RVS}= {GRN}>" :rem 69
480 PRINT:PRINTTAB(4)"{BLU}$ {BLK}{RVS}= {SPACE}{GRN}$ {OFF}"SPC(4)"{BLU}% {BLK}{RVS}= {GRN}%>" :rem 155
490 PRINT:PRINTTAB(4)"{BLU}& {BLK}{RVS}= {SPACE}{GRN}& {OFF}"SPC(4)"{BLU}+ {BLK}{RVS}= {GRN}+>" :rem 172
500 PRINT:PRINTTAB(4)"{BLU}& {BLK}{RVS}= {GRN}& {OFF}"SPC(4)"{BLU}@ {BLK}{RVS}= {GRN}@>" :rem 58
510 PRINT:PRINTTAB(4)"{BLU}* {BLK}{RVS}= {SPACE}{GRN}* {OFF}"SPC(4)"{BLU}↑ {BLK}{RVS}= {GRN}↑>" :rem 19
520 PRINT:PRINTTAB(4)"{BLU}[ {BLK}{RVS}= {SPACE}{GRN}[ {OFF}"SPC(4)"{BLU}] {BLK}{RVS}= {GRN}]>" :rem 116
530 PRINT:PRINTTAB(4)"{BLU}= {BLK}{RVS}= {SPACE}{GRN}= {OFF}"SPC(4)"{BLU}< {BLK}{RVS}= {GRN}<>" :rem 247
535 PRINT:PRINTTAB(4)"{BLU}> {BLK}{RVS}= {SPACE}{GRN}> {OFF}"SPC(4)"{BLU}/ {BLK}{RVS}= {GRN}/>" :rem 228
540 PRINT:PRINT"{BLK}PRESS {RED}C{BLK} TO CONTINUE." :rem 115
550 GETA$:IFA$<>"C"THEN550 :rem 215
555 POKE36879,237 :rem 167
560 PRINT"{CLR}{8 DOWN}{2 RIGHT}{BLK}ONE {SPACE}MOMENT PLEASE." :rem 235
570 PRINT:PRINTTAB(6)"UN MOMENT," :PRINTTAB(3)"S'IL VOUS PLA{T.WHT}" :rem 180
580 POKE198,5:POKE631,78:POKE632,69:POKE633,87:POKE634,13:POKE635,131:END :rem 27
600 DATA7168,8,16,126,64,126,64,126,0 :rem 84
610 DATA7168,8,16,126,64,126,64,126,0 :rem 85
620 DATA7384,24,36,0,60,66,66,60,0 :rem 187
630 DATA7392,28,34,64,64,34,28,8,16 :rem 253
640 DATA7400,8,20,0,62,8,8,62,0 :rem 25
650 DATA7408,16,8,126,64,126,64,126,0 :rem 86
660 DATA7416,30,40,72,78,72,40,30,0 :rem 231
670 DATA7448,16,8,66,66,66,66,60,0 :rem 211
680 DATA7456,24,36,0,66,66,66,60,0 :rem 199
690 DATA7464,36,0,60,66,66,66,60,0 :rem 199
695 DATA7472,30,40,72,126,72,72,78,0 :rem 44
700 DATA7504,16,8,60,66,126,66,66,0 :rem 243
710 DATA7504,16,8,60,66,126,66,66,0 :rem 244
720 DATA7512,24,36,0,60,66,126,66,0 :rem 232

```



```

725 DATA7544,36,0,66,66,66,66,60,0
      :rem 203
730 DATA7648,36,0,126,64,126,64,126,0
      :rem 85
740 DATA7656,24,36,126,64,126,64,126,0
      :rem 139
750 DATA7664,20,0,62,8,8,8,62,0
      :rem 39
760 DATA-1
      :rem 21

```

Program 2: VIC French Tutor, Part 2: Vocabulary Drill And Translator

```

1 POKE36879,27:PRINT"{CLR}":L$="FRENCH":K
  $="ENGLISH":R$="{23 SPACES}":POKE36869,
  240
      :rem 37
2 PRINT"{CLR}{BLU}{RVS}"R$"ENTER DESIRED
  {SPACE}NUMBER"R$
      :rem 62
3 PRINT:PRINT"{GRN}1){BLK} "L$" TO "K$SPC
  (5)"VOCABULARY DRILL":PRINT:PRINT"{GRN}
  2) {BLK}"K$" TO "L$SPC(5)"VOCABULARY";
      :rem 60
4 PRINT" DRILL":PRINT:PRINT"{GRN}3) {BLK}
  "L$" TO "K$SPC(5)"TRANSLATOR":PRINT:PRI
  NT"{GRN}4) {BLK}"K$" TO "L$SPC(5)"TRANS
  LATOR"
      :rem 53
5 PRINT:PRINT:PRINT"{3 RIGHT}{RVS}{CYN}PU
  SH {RED}RETURN{CYN} AFTER"SPC(5)" EACH
  {SPACE}WORD INPUT "SPC(5)" IN THIS PROG
  RAM {OFF}"
      :rem 159
6 GETMQ$:IFVAL(MQ$)<1ORVAL(MQ$)>4THEN6
      :rem 114
8 POKE36869,255:ONVAL(MQ$)GOTO9,18,27,35
      :rem 60
9 CO=0:SC=0:PRINT"{CLR}{BLK}{DOWN}HOW MAN
  Y WORDS?"
      :rem 165
10 GETA$:IFVAL(A$)<1THEN10
      :rem 5
11 LETN=VAL(A$):IFCO=NTHEN14
      :rem 229
12 PRINT"{CLR}{DOWN}{GRN}TRANSLATE":PRINT
  "INTO "K$;
      :rem 147
13 PRINT"{HOME}{2 DOWN}{RED}"TAB(13)CO+1"
  {LEFT} OF"N:GOSUB43
      :rem 229
14 IFCO=NTHENGOSUB44:GOTO9
      :rem 212
15 PRINT"{HOME}{BLK}{5 DOWN}"W$;:INPUTT$
      :rem 39
16 IFT$=E$THENSEC=SC+1:CO=CO+1:PRINT"{BLU}
  CORRECT":FORL=1TO1500:NEXTL:GOTO11
      :rem 25
17 IFT$<>E$THENSEC=CO+1:PRINT"{BLU}WRONG!
  {SPACE}IT'S {PUR}";E$:FORT=1TO1500:NEX
  TT:GOTO11
      :rem 91
18 CO=0:SC=0:PRINT"{CLR}{BLK}{DOWN}HOW MA
  NY WORDS?"
      :rem 213
19 GETA$:IFVAL(A$)<1THEN19
      :rem 23
20 LETN=VAL(A$):IFCO=NTHEN23
      :rem 229
21 PRINT"{CLR}{DOWN}{GRN}TRANSLATE":PRINT
  "INTO "L$;
      :rem 148
22 PRINT"{HOME}{2 DOWN}{RED}"TAB(13)CO+1"
  {LEFT} OF"N:GOSUB43
      :rem 229
23 IFCO=NTHENGOSUB44:GOTO18
      :rem 4
24 PRINT"{HOME}{BLK}{5 DOWN}"E$;:INPUTT$
      :rem 21
25 IFT$=W$THENSEC=SC+1:CO=CO+1:PRINT"{BLU}
  CORRECT":FORL=1TO1500:NEXTL:GOTO20
      :rem 43
26 IFT$<>W$THENSEC=CO+1:PRINT"{BLU}WRONG!
  {SPACE}IT'S {PUR}";W$:FORT=1TO1500:NEX
  TT:GOTO20
      :rem 127
27 PRINT"{CLR}{DOWN}{BLK}ENTER "L$" WORD
  {5 SPACES}OR {GRN}M{BLK} TO GO TO MENU
  "
      :rem 137
28 X$="XX":PRINT"{BLK}":INPUTT$
      :rem 244
29 IFT$="M"THENRUN
      :rem 100

```

```

30 READE$,W$
      :rem 143
31 IFW$=T$THENPRINT"{2 RIGHT}{BLU}"E$:FOR
  T=1TO1500:NEXTT:PRINT:RESTORE:GOTO27
      :rem 255
32 IFW$=X$THENPRINT"{2 RIGHT}{BLU}TRY AGA
  IN.":RESTORE:GOTO28
      :rem 73
33 IFE$<>T$THEN30
      :rem 226
34 PRINT"{BLU}{2 RIGHT}TRY AGAIN.":RESTOR
  E:GOTO28
      :rem 89
35 PRINT"{CLR}{DOWN}{BLK}ENTER "K$" WORD
  {4 SPACES}OR {GRN}M{BLK} TO GO TO MENU
  "
      :rem 135
36 X$="XX":PRINT"{BLK}":INPUTT$
      :rem 243
37 IFT$="M"THENRUN
      :rem 99
38 READE$,W$
      :rem 151
39 IFE$=T$THENPRINT"{2 RIGHT}{BLU}"W$:FOR
  T=1TO1500:NEXTT:PRINT:RESTORE:GOTO35
      :rem 6
40 IFE$=X$THENPRINT"{2 RIGHT}{BLU}TRY AGA
  IN.":RESTORE:GOTO36
      :rem 53
41 IFW$<>T$THEN38
      :rem 251
42 PRINT"{BLU}{2 RIGHT}TRY AGAIN.":RESTOR
  E:GOTO36
      :rem 87
43 X=INT(RND(1)*101)+1:RESTORE:FORM=1TOX:
  READE$,W$:NEXTM:RETURN
      :rem 49
44 PRINT:PRINT"{CLR}{BLK}{4 DOWN}OUT OF";
  N;"WORDS YOU {3 RIGHT}HAVE CORRECTLY"S
  PC(8)"TRANSLATED";SC;"{LEFT}."
      :rem 122
45 PRINT:PRINT"YOUR SCORE IS";INT((SC/N)*
  100);SPC(6)"PER CENT."
      :rem 41
46 PRINT:PRINT"GO AGAIN?":PRINT"{DOWN}
  {2 RIGHT}{RED}Y{BLK} - YES":PRINT"
  {DOWN}{2 RIGHT}{RED}M {BLK}- RETURN TO
  MENU"
      :rem 228
47 GETQ$:IFQ$<>"Y"ANDQ$<>"M"THEN47
      :rem 2
48 IFQ$="Y"THENRETURN
      :rem 89
49 IFQ$="M"THENRUN
      :rem 99
51 DATASUMMER,@T@,APPLE,POMME,HERE,ICI,TH
  ERE,L*,NEST,NID
      :rem 165
52 DATAHOUSE,MAISON,FARM,FERME,WHERE,O#,S
  AME,M=ME,BOX,BO]TE,FRENCH,FRANFAIS,CA
  KE,G+TEAU
      :rem 7
53 DATACOW,VACHE,HORSE,CHEVAL,BIRD,OISEAU
  ,CHRISTMAS,NO<L,EGG,<UF,EYE,<IL,WORK
  ,<UVRE
      :rem 132
54 DATACOST,COST,TASTE,GO$T,RATHER,PLUT[T
  ,BELIEVE,CRO]RE,HEAD,T=TE,BEAST,B=TE,K
  EY,CL@
      :rem 154
55 DATANAME,NOM,YES,OUI,NO,NON,NOSE,NEZ,C
  OFFEE,CAF@,BOY,GAR&ON,DAY,JOUR,CASTLE
  ,CH+TEAU
      :rem 217
56 DATABLACK,NOIR,BLUE,BLEU,RED,ROUGE,GRE
  EN,VERT,WHITE,BLANC,PURPLE,VIOLET,YELL
  OW,JAUNE
      :rem 144
57 DATAFEBRUARY,F@VRIER,KNOT,N<UD,TASK,T
  +CHE,PUPIL,@L+VE,PASTE,P+TE,FOREST,FOR
  =T,OR,OU
      :rem 100
58 DATACHOIR,CH<UR,BONE,OS,BEAR,OURS,GOA
  T,CH+VRE,CITY,CIT@,NUT,NOIX,MOON,LUNE,
  BEEF,B<UF
      :rem 148
59 DATAFATHER,P+RE,MOTHER,M+RE,BABY,B@B@,
  FAIRY,F@E,IRON,FER,FIRE,FEU,WINDOW,FEN
  =TRE
      :rem 48
60 DATARULE,R+GLE,RICE,RIZ,CORN,MA>S,MAST
  ER,MA]TRE,WHEAT,BL@,VERY,TR+S,SOON,T[T
  ,WINE,VIN
      :rem 37
61 DATALIFE,VIE,JUNE,JUIN,TAIL,QUEUE,FOOT
  ,PIED,ARM,BRAS,WORD,MOT,LEG,JAMBE,CHIL
  D,ENFANT
      :rem 21
62 DATASTRONG,FORT,BUILD,B+TIR,AT,*,SWORD
  ,@P@E,FINGER,DOIGT,HEART,C<UR,SKY,CIE

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L, BEAK, BEC :rem 61
63 DATAHOUSE, MAISON, DOOR, PORTE, SOAP, SAVON
  , CUT, COUP, LIP, L↑VRE, SCHOOL, @COLE, SUN, S
  OLEIL :rem 10
64 DATAMILK, LAIT, TEA, TH@, WATER, EAU, ARROW,
  FL↑CHE, END, FIN, AUNT, TANTE, TOOTH, DENT, X
  X, XX :rem 79

Program 3: 64 French Tutor
100 DATA SUMMER, @T@, APPLE, POMME, HERE, ICI,
  THERE, L*, NEST, NID :rem 208
110 DATAHOUSE, MAISON, FARM, FERME, WHERE, O#,
  SAME, M=ME, BOX, BO]TE :rem 183
120 DATAFRENCH, FRANÇAIS, CAKE, G+TEAU
  :rem 252
130 DATACOW, VACHE, HORSE, CHEVAL, BIRD, OISEA
  U, CHRISTMAS, NO<L :rem 32
140 DATAEGG, <UF, EYE, <IL, WORK, <UVRE
  :rem 19
150 DATACOST, CO$T, TASTE, GO$T, RATHER, PLUT[
  T, BELIEVE, CRO]RE :rem 68
160 DATAHEAD, T=TE, BEAST, B=TE, KEY, CL@
  :rem 8
170 DATANAME, NOM, YES, OUI, NO, NON, NOSE, NEZ,
  COFFEE, CAF@, BOY, GARÇON :rem 152
180 DATA DAY, JOUR, CASTLE, CH+TEAU :rem 246
190 DATABLACK, NOIR, BLUE, BLEU, RED, ROUGE, GR
  EEN, VERT, WHITE, BLANC :rem 21
200 DATAPURPLE, VIOLET, YELLOW, JAUNE :rem 42
210 DATAFEBRUARY, F@VRIER, KNOT, N<UD, TASK,
  T+CHE, PUPIL, @L↑VE :rem 98
220 DATAPASTE, P+TE, FOREST, FOR=T, OR, OU
  :rem 171
230 DATACHOIR, CH<UR, BONE, OS, BEAR, OURS, GO
  AT, CH↑VRE :rem 19
240 DATACITY, CIT@, NUT, NOIX, MOON, LUNE, BEEF
  , B<UF :rem 45
250 DATAFATHER, P↑RE, MOTHER, M↑RE, BABY, B@B@
  , FAIRY, F@E, IRON :rem 193
260 DATAFER, FIRE, FEU, WINDOW, FEN=TRE
  :rem 30
270 DATARULE, R↑GLE, RICE, RIZ, CORN, MA>S, MAS
  TER, MA]TRE, WHEAT, BL@ :rem 81
280 DATAVERY, TR↑S, SOON, T[T, WINE, VIN
  :rem 143
290 DATALIFE, VIE, JUNE, JUIN, TAIL, QUEUE, FOO
  T, PIED, ARM, BRAS :rem 190
300 DATAWORD, MOT, LEG, JAMBE, CHILD, ENFANT
  :rem 12
310 DATASTRONG, FORT, BUILD, B+TIR, AT, *, SWOR
  D, @P@E, FINGER, DOIGT :rem 179
320 DATAHEART, C<UR, SKY, CIEL, BEAK, BEC
  :rem 57
330 DATAHOUSE, MAISON, DOOR, PORTE, SOAP, SAVO
  N, CUT, COUP, LIP, L↑VRE :rem 158
340 DATASCHOOL, @COLE, SUN, SOLEIL :rem 30
350 DATAMILK, LAIT, TEA, TH@, WATER, EAU, ARROW
  , FL↑CHE, END, FIN, AUNT, TANTE :rem 180
360 DATATOOTH, DENT, XX, XX :rem 80
365 POKE53280, 6 :rem 49
370 POKE53281, 12:CH=54272:FORT=CHTOCH+24:
  POKET, 0:NEXT:PRINTCHR$(142) :rem 159
375 POKECH+24, 15 :rem 124
380 POKECH+5, 17:POKECH+6, 241:POKECH, 100
  :rem 18
390 PRINT"{CLR}{8 RIGHT}{6 DOWN}{BLK}"CHR
  $(122) :rem 197
400 FORT=1TO10 :rem 65
410 PRINTTAB(8)"{BLK}"CHR$(125)"{BLU}
  {RVS}{8 SPACES}{WHT}{8 SPACES}{RED}
  {8 SPACES}" :rem 214
420 NEXT :rem 213
430 PRINTTAB(8)"{BLK}"CHR$(125) :rem 66
440 PRINTTAB(8)"{BLK}"CHR$(125) :rem 67
450 FORT=0TO1STEP 0:READA$:IF A$="XX"THE
  NT=1:READA$ :rem 71
451 NEXT :rem 217
460 READN, D :rem 116
470 IFD=-2THEN560 :rem 212
480 POKECH+1, (ABS(N)):POKECH+4, 33:rem 137
490 FORT=1TO(ABS(D)):NEXT :rem 30
510 POKECH+4, 32 :rem 64
520 FORN=1TO20:NEXTN :rem 6
530 GOTO460 :rem 107
560 PRINTCHR$(14):GOTO590 :rem 240
570 DATA-16, -125, -16, -187, -16, -62, -22, -25
  0, -22, -250, -25, -250, -25, -250, -33, -375
  :rem 230
580 DATA-28, -93, -22, -375, -2, -2 :rem 222
590 PRINT"{CLR}{BLK}{11 DOWN}"TAB(15)"64
  {SPACE}FRENCH{DOWN}":PRINTTAB(15)"TUT
  ORIAL" :rem 93
600 PRINTTAB(15)"[8 T]" :rem 13
605 PRINT"{3 DOWN}{3 RIGHT}PLEASE WAIT..."
  DEFINING CHARACTERS" :rem 19
610 PRINT:PRINT :rem 235
620 X=48:POKE56, X :rem 241
630 CS=12288 :rem 113
640 POKE56334, PEEK(56334)AND254:POKE1, PEE
  K(1)AND251 :rem 187
650 FORI=CSTOCS+4095:POKEI, PEEK(I+40960):
  NEXT :rem 24
660 READX :rem 16
670 IFX=-1THEN740 :rem 233
680 IFX<0THEN660 :rem 188
690 FORI=XTOX+7:READJ :rem 97
700 IFJ<0THEN690 :rem 170
710 POKEI+5120, J:NEXT :rem 242
720 POKE1, PEEK(1)OR4:POKE56334, PEEK(56334
  )OR1 :rem 136
730 GOTO660 :rem 111
740 PRINT"{CLR}{BLK}{10 DOWN}"SPC(13)"INS
  TRUCTIONS?{DOWN}":PRINTSPC(15)"{RVS}Y
  {OFF}ES OR {RVS}N{OFF}O" :rem 188
750 GETA$:IFA$<>"N"ANDAS<>"Y"THEN750
  :rem 53
760 IFA$="N"THEN1150 :rem 86
770 PRINT"{CLR}{BLK}{6 DOWN}{2 RIGHT}IN O
  RDER TO CREATE FRENCH ACCENTS IN
  {DOWN}" :rem 123
780 PRINT"{8 RIGHT}THIS PROGRAM, CERTAIN
  {DOWN}" :rem 235
790 PRINT"{2 RIGHT}LETTERS HAVE BEEN RE-D
  EFINED USING{DOWN}" :rem 86
800 PRINT"{8 RIGHT}PROGRAMMABLE CHARACTER
  S.{DOWN}" :rem 233
810 PRINT"{10 RIGHT}{5 DOWN}PRESS {RVS}C
  {OFF} TO CONTINUE." :rem 139
820 GETA$:IFA$<>"C"THEN820 :rem 215
830 PRINT"{CLR}{DOWN}{4 RIGHT}{BLK}THE FR
  ENCH CHARACTERS ARE BLACK," :rem 236
840 PRINT"{4 RIGHT}THEIR 64 EQUIVALENTS A
  RE {WHT}WHITE{BLK}.{2 DOWN}" :rem 86
850 POKE53272, 29 :rem 102
860 PRINTTAB(12)"< {RVS}={OFF} {RVS}
  {WHT}<{OFF}{BLK}"SPC(4)"# {RVS}=
  {OFF} {RVS}{WHT}#{OFF}{BLK}" :rem 225
870 PRINT:PRINTTAB(12)"$ {RVS}={OFF}
  {RVS}{WHT}$ {OFF}{BLK}"SPC(4)"% {RVS}=
  {OFF} {RVS}{WHT}% {OFF}{BLK}" :rem 55
880 PRINT:PRINTTAB(12)"& {RVS}={OFF}
  {RVS}{WHT}& {OFF}{BLK}"SPC(4)" + {RVS}=
  {OFF} {RVS}{WHT}+ {OFF}{BLK}" :rem 72

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890 PRINT:PRINTTAB(12)"£ {RVS}={OFF}
   {RVS}{WHT}£{OFF}{BLK}"SPC(4)"@ {RVS}
   ={OFF} {RVS}{WHT}@{OFF}{BLK}":rem 223
900 PRINT:PRINTTAB(12)"* {RVS}={OFF}
   {RVS}{WHT}*{OFF}{BLK}"SPC(4)"↑ {RVS}=
   {OFF} {RVS}{WHT}↑{OFF}{BLK}":rem 175
910 PRINT:PRINTTAB(12)"[ {RVS}={OFF}
   {RVS}{WHT}[{OFF}{BLK}"SPC(4)" ] {RVS}=
   {OFF} {RVS}{WHT}[{OFF}{BLK}":rem 16
920 PRINT:PRINTTAB(12)"= {RVS}={OFF}
   {RVS}{WHT}={OFF}{BLK}"SPC(4)"< {RVS}=
   {OFF} {RVS}{WHT}<{OFF}{BLK}":rem 147
930 PRINT:PRINTTAB(12)"> {RVS}={OFF}
   {RVS}{WHT}>{OFF}{BLK}"SPC(4)"/ {RVS}=
   {OFF} {RVS}{WHT}/[OFF]{BLK}":rem 124
940 PRINTTAB(9)"[2 DOWN]{BLK}PRESS {RVS}C
   {OFF} TO CONTINUE." :rem 43
950 GETA$:IFA$<"C"THEN950 :rem 223
952 DATA7168,8,16,126,64,126,64,126,0
   :rem 94
955 DATA7168,8,16,126,64,126,64,126,0
   :rem 97
960 DATA7384,24,36,0,60,66,66,60,0
   :rem 194
965 DATA7392,28,34,64,64,34,28,8,16:rem 8
970 DATA7400,8,20,0,62,8,8,62,0 :rem 31
975 DATA7408,16,8,126,64,126,64,126,0
   :rem 96
980 DATA7416,30,40,72,78,72,40,30,0
   :rem 236
985 DATA7448,16,8,66,66,66,66,60,0
   :rem 220
990 DATA7456,24,36,0,66,66,66,60,0
   :rem 203
995 DATA7464,36,0,60,66,66,66,60,0
   :rem 207
1000 DATA7472,30,40,72,126,72,72,78,0
   :rem 73
1005 DATA7504,16,8,60,66,126,66,66,0
   :rem 34
1010 DATA7504,16,8,60,66,126,66,66,0
   :rem 30
1015 DATA7512,24,36,0,60,66,126,66,0
   :rem 22
1020 DATA7544,36,0,66,66,66,66,60,0
   :rem 240
1025 DATA7648,36,0,126,64,126,64,126,0
   :rem 131
1030 DATA7656,24,36,126,64,126,64,126,0
   :rem 180
1035 DATA7664,20,0,62,8,8,8,62,0 :rem 84
1040 DATA-1 :rem 61
1150 POKE53272,29:CLR:RESTORE :rem 9
1160 PRINT"[CLR]":L$="FRENCH":K$="ENGLISH"
   :rem 65
1165 R$="{23 SPACES}" :rem 196
1170 POKE53280,7 :rem 93
1180 PRINT"[CLR]{DOWN}{WHT}{RVS}"SPC(10)"
   ENTER DESIRED NUMBER" :rem 121
1190 PRINT"[2 DOWN]{WHT}1){BLK}"L$" TO "
   K$" {WHT}-{BLK} VOCABULARY DRILL"
   :rem 232
1200 PRINT"[2 DOWN]{WHT}2) {BLK}"K$" TO "
   L$" {WHT}-{BLK} VOCABULARY DRILL"
   :rem 225
1210 PRINT"[2 DOWN]{WHT}3) {BLK}"L$" TO "
   K$" {WHT}-{BLK} TRANSLATOR" :rem 126
1220 PRINT"[2 DOWN]{WHT}4) {BLK}"K$" TO "
   L$" {WHT}-{BLK} TRANSLATOR" :rem 128
1225 PRINT"[2 DOWN]{WHT}5) {BLK}END THE P
   ROGRAM" :rem 128
1230 PRINT"[4 DOWN]{3 RIGHT}{RVS}{WHT}PUS
   H {BLK}RETURN{WHT} AFTER EACH WORD I
   NPUT{DOWN}"; :rem 153
1240 PRINTSPC(16)"IN THIS PROGRAM":rem 29
1250 GETMQ$:IFVAL(MQ$)<1ORVAL(MQ$)>5THEN1
   250 :rem 151
1255 IFVAL(MQ$)=5THENSYS2048 :rem 192
1260 POKE53272,29:ONVAL(MQ$)GOTO1270,1360
   ,1450,1530 :rem 67
1270 CO=0:SC=0:PRINT"[CLR]{BLK}{2 DOWN}
   {3 RIGHT}HOW MANY WORDS?" :rem 158
1280 GETA$:IFVAL(A$)<1THEN1280 :rem 217
1290 LETN=VAL(A$):IFCO=NTHEN1320 :rem 176
1300 PRINT"[CLR]{4 DOWN}{3 RIGHT}TRANSLAT
   E":PRINT"[3 RIGHT]INTO "K$ :rem 124
1310 PRINT"[2 UP]"TAB(24)CO+1"{LEFT} OF"N
   :GOSUB1610 :rem 122
1320 IFCO=NTHENGOSUB1620:GOTO1270 :rem 39
1330 PRINT"[3 DOWN]{7 RIGHT}"W$;:INPUTT$
   :rem 142
1340 IFT$=E$THENSC=SC+1:CO=CO+1:PRINT"
   {7 RIGHT}{2 DOWN}{WHT}CORRECT 1{BLK}
   ":FORL=1TO2E2:NEXTL :rem 12
1345 IFT$=E$THENT$="":GOTO1290 :rem 225
1350 CO=CO+1:PRINT"[7 RIGHT]{2 DOWN}{WHT}
   WRONG 1{2 SPACES}IT'S {BLK}";E$:FORT
   =1TO1500:NEXTT:GOTO1290 :rem 212
1360 CO=0:SC=0:PRINT"[CLR]{2 DOWN}
   {3 RIGHT}{BLK}HOW MANY WORDS?"
   :rem 158
1370 GETA$:IFVAL(A$)<1THEN1370 :rem 217
1380 LETN=VAL(A$):IFCO=NTHEN1410 :rem 176
1390 PRINT"[CLR]{4 DOWN}{3 RIGHT}TRANSLAT
   E":PRINT"[3 RIGHT]INTO "L$; :rem 193
1400 PRINT"[UP]"TAB(24)CO+1"{LEFT} OF"N:G
   OSUB1610 :rem 233
1410 IFCO=NTHENGOSUB1620:GOTO1360 :rem 39
1420 PRINT"[3 DOWN]{7 RIGHT}"E$;:INPUTT$
   :rem 124
1430 IFT$=W$THENSC=SC+1:CO=CO+1:PRINT"
   {WHT}{2 DOWN}{7 RIGHT}CORRECT 1{BLK}
   ":FORL=1TO1500:NEXTL :rem 59
1435 IFT$=W$THEN1380 :rem 135
1440 CO=CO+1:PRINT"[WHT]{2 DOWN}{7 RIGHT}
   WRONG 1 IT'S {BLK}";W$:FORT=1TO1500:
   NEXTT:GOTO1380 :rem 230
1450 PRINT"[CLR]{DOWN}{RIGHT}{BLK}ENTER "
   L$" WORD OR {RVS}M{OFF} TO GO TO MEN
   U" :rem 253
1460 X$="XX":PRINT"[DOWN]{RIGHT}";:INPUTT
   $ :rem 46
1470 IFT$="M"THEN1160 :rem 152
1480 READE$,W$ :rem 249
1490 IFW$=T$THENPRINT"[DOWN]{2 RIGHT}"E$;
   FORT=1TO1500:NEXTT:PRINT:RESTORE:GOT
   O1450 :rem 188
1500 IFW$=X$THENPRINT"[DOWN]{2 RIGHT}TRY
   {SPACE}AGAIN.":RESTORE:GOTO1460
   :rem 253
1510 IFES$<T$THEN1480 :rem 173
1520 PRINT"[DOWN]{2 RIGHT}TRY AGAIN.":RES
   TORE:GOTO1460 :rem 13
1530 PRINT"[CLR]{DOWN}{RIGHT}{BLK}ENTER "
   K$" WORD OR {RVS}M{OFF} TO GO TO MEN
   U" :rem 251
1540 X$="XX":PRINT"[DOWN]{RIGHT}";:INPUTT
   $ :rem 45
1550 IFT$="M"THEN1170 :rem 152
1560 READE$,W$ :rem 248
1570 IFES$=T$THENPRINT"[DOWN]{2 RIGHT}"W$;
   FORT=1TO1500:NEXTT:PRINT:RESTORE:GOT
   O1530 :rem 186

```



```

1580 IFES=X$THENPRINT "{DOWN}{2 RIGHT}TRY
      {SPACE}AGAIN.":RESTORE:GOTO1540      :rem 242
1590 IFW$<>T$THEN1560                      :rem 198
1600 PRINT "{DOWN}{2 RIGHT}TRY AGAIN.":RES
      TORE:GOTO1540                        :rem 11
1610 X=INT(RND(1)*101)+1:RESTORE:FORM=1TO
      X:READ$ ,W$:NEXTM:RETURN             :rem 146
1620 PRINT:PRINT "{CLR}{BLK}{4 DOWN}
      {3 RIGHT}OUT OF";N;"WORDS, YOU HAVE
      {SPACE}CORRECTLY"                  :rem 71
1625 PRINT "{12 RIGHT}TRANSLATED";SC;"
      {LEFT}."                           :rem 8
1630 PRINT:PRINT "{6 RIGHT}YOUR SCORE IS";
      INT((SC/N)*100);"PER CENT."         :rem 203
1640 PRINTTAB(15)"{2 DOWN}GO AGAIN?"      :rem 129
1645 PRINT "{DOWN}"TAB(16)"{RVS}Y{OFF} - Y
      ES":PRINT "{DOWN}"TAB(11)"{RVS}M{OFF}
      - RETURN TO MENU"                  :rem 96
1650 GETQ$:IFQ$<>"Y"ANDQ$<>"M"THEN1650
      :rem 196
1660 IFQ$="Y"THENRETURN                   :rem 186
1670 IFQ$="M"THEN1170                    :rem 152

```

Making Calendars

(Article on page 67.)

BEFORE TYPING...

Before typing in programs, please refer to "How To Type COMPUTE!'s Gazette Programs," "A Beginner's Guide To Typing In Programs," and "The Automatic Proofreader" that appear before the Program Listings.

Program 1: Monthly Screen Calendar

```

80 DIMM$(12):FORI=1TO12:READM$(I):NEXTI
      :rem 104
90 SYS65517:A=PEEK(781):IFA=40THENPOKE532
      81,1 :rem 167
100 PRINT "{CLR}{3 DOWN}{2 RIGHT}THIS IS A
      PROGRAM":PRINT "{6 RIGHT}TO SHOW A"
      :rem 109
105 PRINT "{3 RIGHT}{PUR}MONTHLY CALENDAR
      {BLU}":PRINT "{4 RIGHT}ON THE SCREEN"
      :rem 155
110 PRINT "{2 DOWN}{2 RIGHT}PLEASE TYPE IN
      THE":PRINT "{3 RIGHT}{RED}MONTH{BLU}
      {SPACE}AND {RED}YEAR{BLU}" :rem 149
111 PRINT "{RIGHT}THAT YOU WISH TO SEE":PR
      INT "{DOWN}{2 RIGHT}(EXAMPLE: {RED}12,
      1983{BLU}){PUR}{2 DOWN}" :rem 180
130 PRINT "{5 RIGHT}";:INPUTM0,Y:PRINT "
      {2 DOWN}{5 RIGHT}{PUR}THANK YOU!{BLU}
      {DOWN}":FORI=1TO800:NEXT :rem 167
292 IFM0=1ORM0=3ORM0=5ORM0=7ORM0=8ORM0=10
      ORM0=12THENEN1=31 :rem 26
293 IFM0=4ORM0=6ORM0=9ORM0=11THENEN1=30
      :rem 66
294 IFM0=2ANDY/4<>INT(Y/4)THENEN1=28
      :rem 103
295 IFM0=2ANDY/4=INT(Y/4)THENGOSUB1400
      :rem 83
297 PRINT "{CLR}{DOWN}{RIGHT}{RED}";M$(M0)
      ;" ";Y;"{BLU}" :rem 123
298 GOSUB1350:IFA=40THENPRINT :rem 83
300 PRINT "{2 RIGHT}{RED}S{BLU}{2 RIGHT}M
      {2 RIGHT}T{2 RIGHT}W{2 RIGHT}T
      {2 RIGHT}F{2 RIGHT}S" :rem 109
305 GOSUB1360 :rem 226
310 D=1:GOSUB1050 :rem 198
320 IFD1=7THENFORI=1TO19:PRINT "{RIGHT}";:
      NEXT:PRINTD:IFA=40THENPRINT :rem 53
321 IFD1=7THEN330 :rem 211
322 IFD1=6THENFORI=1TO16:PRINT "{RIGHT}";:
      NEXT:PRINTD;:GOTO330 :rem 16
323 IFD1=5THENFORI=1TO13:PRINT "{RIGHT}";:
      NEXT:PRINTD;:GOTO330 :rem 13
324 IFD1=4THENFORI=1TO10:PRINT "{RIGHT}";:
      NEXT:PRINTD;:GOTO330 :rem 10
325 IFD1=3THENFORI=1TO7:PRINT "{RIGHT}";:N
      EXT:PRINTD;:GOTO330 :rem 224
326 IFD1=2THENFORI=1TO4:PRINT "{RIGHT}";:N
      EXT:PRINTD;:GOTO330 :rem 221
327 IFD1=1THENPRINT "{RIGHT}{RED}";D;"
      {BLU}";:GOTO330 :rem 168
330 FORD=2TOE1:GOSUB1050 :rem 201
331 IFD1=1ANDD<=9THENPRINT "{RIGHT}{RED}";
      D;"{BLU}";:GOTO345 :rem 114
332 IFD1=1ANDD>9THENPRINT "{RED}";D;"{BLU}
      ";:GOTO345 :rem 27
333 IFD1=7THEN340 :rem 215
334 IFD<=9THENPRINTD;:GOTO345 :rem 105
335 PRINT "{LEFT}";D;:GOTO345 :rem 210
340 IFD>9THENPRINT "{LEFT}";D:GOTO345
      :rem 12
341 PRINTD :rem 105
345 IFA=40ANDD1=7THENPRINT :rem 133
346 NEXTD :rem 32
1045 PRINT:PRINT:FL=1:GOSUB1350:IFA=22THE
      NPRINT "{3 UP}" :rem 57
1049 END :rem 165
1050 IFM0=1THENM0=13:Y=Y-1:GOTO1080
      :rem 80
1060 IFM0=2THENM0=14:Y=Y-1 :rem 23
1080 M=M0-2 :rem 47
1100 D1=INT(2.6*M-0.2)+D+Y-1900+INT((Y-19
      00)/4) :rem 207
1150 D1=D1+INT(19/4)-2*19 :rem 21
1200 D1=D1-INT(D1/7)*7+1 :rem 235
1210 IFM0=4ORM0=9THEND1=D1+1 :rem 135
1230 IFM0=13THENM0=1:Y=Y+1:GOTO1245
      :rem 81
1240 IFM0=14THENM0=2:Y=Y+1:D1=D1+1
      :rem 210
1244 IFD1=8THEND1=1 :rem 86
1245 IF(Y=2100ANDM0>=3)OR(Y>2100)THEND1=D
      1-1:IFD1=0THEND1=7 :rem 198
1247 IF(Y=2200ANDM0>=3)OR(Y>2200)THEND1=D
      1-1:IFD1=0THEND1=7 :rem 202
1249 IF(Y=2300ANDM0>=3)OR(Y>2300)THEND1=D
      1-1:IFD1=0THEND1=7 :rem 206
1250 RETURN :rem 168
1350 IFFL=0THENPRINT:FORI=1TO22:PRINT "*"
      ;NEXT:PRINT:RETURN :rem 188
1355 IFD1=7THENPRINT "{3 UP}":FORI=1TO22:P
      RINT "*" ;NEXT:PRINT "{UP}":RETURN
      :rem 119
1358 FORI=1TO22:PRINT "*" ;NEXT:PRINT "{UP}
      ":RETURN :rem 21
1360 PRINT "{2 SPACES}{T}{2 SPACES}{T}
      {2 SPACES}{T}{2 SPACES}{T}
      {2 SPACES}{T}{2 SPACES}{T}
      {2 SPACES}{T}":RETURN :rem 42
1400 IF(Y/100=INT(Y/100))AND(Y/400<>INT(Y
      /400))THENEN1=28:GOTO1410 :rem 231
1405 EN1=29 :rem 232
1410 RETURN :rem 166
1420 DATA "{3 SPACES}JANUARY","{3 SPACES}F
      EBRUARY","{4 SPACES}MARCH","
      {4 SPACES}APRIL" :rem 210

```



```

1430 DATA "{5 SPACES}MAY","{5 SPACES}JUNE"
      , "{5 SPACES}JULY","{4 SPACES}AUGUST"
      :rem 172
1440 DATA "{2 SPACES}SEPTEMBER","
      {3 SPACES}OCTOBER","{3 SPACES}NOVEMB
      ER","{3 SPACES}DECEMBER" :rem 193

```

Program 2: Monthly Calendar For Printer

```

1 GOTO10 :rem 203
5 E1=1:E2=1:E3=1:E4=1:E5=1:E6=1:E7=1
      :rem 226
6 GOSUB1109:D8=D7-1:RETURN :rem 103
10 OPEN1,4:SYS65517:A=PEEK(781):IFA=40THE
      NPOKE53281,1 :rem 156
20 GOSUB4000:GOSUB3200:PRINT#1,"":rem 176
30 ONM0GOSUB3010,3020,3030,3040,3050,3060
      ,3070,3080,3090,3100,3110,3120 :rem 56
40 PRINT#1,"":PRINT#1,"":GOSUB1610:GOSUB1
      650:GOSUB1660 :rem 207
80 OND9GOSUB1811,1821,1831,1841,1851,1861
      ,1871 :rem 172
99 PRINT#1,"":PRINT#1,"" :rem 78
100 G1=D8 :rem 194
105 G=G1:GOSUB1720:D1=D:E1=E :rem 120
110 G2=G+1:G=G2:GOSUB1720:D2=D:E2=E
      :rem 10
115 G3=G+1:G=G3:GOSUB1720:D3=D:E3=E
      :rem 19
120 G4=G+1:G=G4:GOSUB1720:D4=D:E4=E
      :rem 19
125 G5=G+1:G=G5:GOSUB1720:D5=D:E5=E
      :rem 28
130 G6=G+1:G=G6:GOSUB1720:D6=D:E6=E
      :rem 28
135 G7=G+1:G=G7:GOSUB1720:D7=D:E7=E
      :rem 37
140 G1=G7+1:GOSUB1109:PRINT#1,"":PRINT#1,
      "":IFG1<=E9THEN105 :rem 188
155 PRINT#1,"" :rem 236
1000 GOTO5000 :rem 191
1109 GOSUB2000:X=E1:X1=D1:GOSUB11000
      :rem 115
1120 X=E2:X1=D2:GOSUB11000 :rem 242
1130 X=E3:X1=D3:GOSUB11000 :rem 245
1140 X=E4:X1=D4:GOSUB11000 :rem 248
1150 X=E5:X1=D5:GOSUB11000 :rem 251
1160 X=E6:X1=D6:GOSUB11000 :rem 254
1170 X=E7:X1=D7:FL=1:GOSUB11000 :rem 59
1209 GOSUB2000:X=E1:X1=D1:GOSUB12000
      :rem 117
1220 X=E2:X1=D2:GOSUB12000 :rem 244
1230 X=E3:X1=D3:GOSUB12000 :rem 247
1240 X=E4:X1=D4:GOSUB12000 :rem 250
1250 X=E5:X1=D5:GOSUB12000 :rem 253
1260 X=E6:X1=D6:GOSUB12000 :rem 0
1270 X=E7:X1=D7:FL=1:GOSUB12000 :rem 61
1309 GOSUB2000:X=E1:X1=D1:GOSUB13000
      :rem 119
1320 X=E2:X1=D2:GOSUB13000 :rem 246
1330 X=E3:X1=D3:GOSUB13000 :rem 249
1340 X=E4:X1=D4:GOSUB13000 :rem 252
1350 X=E5:X1=D5:GOSUB13000 :rem 255
1360 X=E6:X1=D6:GOSUB13000 :rem 2
1370 X=E7:X1=D7:FL=1:GOSUB13000 :rem 63
1409 GOSUB2000:X=E1:X1=D1:GOSUB14000
      :rem 121
1420 X=E2:X1=D2:GOSUB14000 :rem 248
1430 X=E3:X1=D3:GOSUB14000 :rem 251
1440 X=E4:X1=D4:GOSUB14000 :rem 254
1450 X=E5:X1=D5:GOSUB14000 :rem 1
1460 X=E6:X1=D6:GOSUB14000 :rem 4
1470 X=E7:X1=D7:FL=1:GOSUB14000 :rem 65

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```

1509 GOSUB2000:X=E1:X1=D1:GOSUB15000
      :rem 123
1520 X=E2:X1=D2:GOSUB15000 :rem 250
1530 X=E3:X1=D3:GOSUB15000 :rem 253
1540 X=E4:X1=D4:GOSUB15000 :rem 0
1550 X=E5:X1=D5:GOSUB15000 :rem 3
1560 X=E6:X1=D6:GOSUB15000 :rem 6
1570 X=E7:X1=D7:FL=1:GOSUB15000 :rem 67
1600 RETURN :rem 167
1610 PRINT#1,"{5 SPACES}";:PRINT#1,CHR$(1
      4)"SUN";:PRINT#1,CHR$(15)"{5 SPACES}
      " :rem 69
1611 PRINT#1,CHR$(14)"MON";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 116
1612 PRINT#1,CHR$(14)"TUE";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 121
1613 PRINT#1,CHR$(14)"WED";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 108
1614 PRINT#1,CHR$(14)"THU";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 126
1615 PRINT#1,CHR$(14)"FRI";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 111
1616 PRINT#1,CHR$(14)"SAT";:PRINT#1,CHR$(1
      5)" " :rem 1
1620 PRINT#1,"{5 SPACES}";:PRINT#1,CHR$(1
      4)"---";:PRINT#1,CHR$(15)"{5 SPACES}
      " :rem 215
1621 PRINT#1,CHR$(14)"---";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 18
1622 PRINT#1,CHR$(14)"---";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 19
1623 PRINT#1,CHR$(14)"---";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 20
1624 PRINT#1,CHR$(14)"---";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 21
1625 PRINT#1,CHR$(14)"---";:PRINT#1,CHR$(
      15)"{5 SPACES}"; :rem 22
1626 PRINT#1,CHR$(14)"---";:PRINT#1,CHR$(1
      5)" ":RETURN :rem 187
1650 IFM0=1ORM0=3ORM0=5ORM0=7ORM0=8ORM0=1
      0ORM0=12THENE9=31 :rem 81
1652 IFM0=4ORM0=6ORM0=9ORM0=11THENE9=30
      :rem 122
1654 IFM0=2ANDY/4<>INT(Y/4)THENE9=28
      :rem 160
1656 IFM0=2ANDY/4=INT(Y/4)THENE9=29
      :rem 102
1658 RETURN :rem 180
1660 IFM0=1THENM0=13:Y=Y-1:GOTO1670
      :rem 92
1665 IFM0=2THENM0=14:Y=Y-1 :rem 34
1670 M=M0-2 :rem 52
1675 D9=INT(2.6*M-0.2)+D+Y-1900+INT((Y-19
      00)/4) :rem 232
1680 D9=D9+INT(19/4)-2*19 :rem 45
1685 D9=D9-INT(D9/7)*7+1 :rem 20
1690 IFM0=4ORM0=9THEND9=D9+1 :rem 163
1695 IFM0=13THENM0=1:Y=Y+1:GOTO1710
      :rem 93
1700 IFM0=14THENM0=2:Y=Y+1:D9=D9+1
      :rem 227
1705 IFD9=8THEND9=1 :rem 104
1710 IF(Y=2100ANDM0>=3)OR(Y>2100)THEND9=D
      9-1:IFD9=0THEND9=7 :rem 227
1711 IF(Y=2200ANDM0>=3)OR(Y>2200)THEND9=D
      9-1:IFD9=0THEND9=7 :rem 230
1712 IF(Y=2300ANDM0>=3)OR(Y>2300)THEND9=D
      9-1:IFD9=0THEND9=7 :rem 233
1715 RETURN :rem 174
1720 IFG>E9THENGOTO1740 :rem 144
1722 IFG<10THENGOTO1742 :rem 117
1726 IFG>=10ANDG<20THENGOTO1746 :rem 116
1728 IFG>=20ANDG<30THENGOTO1748 :rem 122

```



```

1730 IFG>=30THENGOTO1750          :rem 180
1740 D=1:E=1:GOTO1755              :rem 176
1742 D=G+2:E=1:GOTO1755            :rem 37
1746 D=G-10+2:E=2:GOTO1755         :rem 184
1748 D=G-20+2:E=3:GOTO1755         :rem 188
1750 D=G-30+2:E=4                  :rem 114
1755 RETURN                          :rem 178
1811 D1=1:D2=3:D3=4:D4=5:D5=6:D6=7:D7=8:G
      OSUB5:RETURN                  :rem 149
1821 D1=1:D2=1:D3=3:D4=4:D5=5:D6=6:D7=7:G
      OSUB5:RETURN                  :rem 143
1831 D1=1:D2=1:D3=1:D4=3:D5=4:D6=5:D7=6:G
      OSUB5:RETURN                  :rem 138
1841 D1=1:D2=1:D3=1:D4=1:D5=3:D6=4:D7=5:G
      OSUB5:RETURN                  :rem 134
1851 D1=1:D2=1:D3=1:D4=1:D5=1:D6=3:D7=4:G
      OSUB5:RETURN                  :rem 131
1861 D1=1:D2=1:D3=1:D4=1:D5=1:D6=1:D7=3:G
      OSUB5:RETURN                  :rem 129
1871 D1=3:D2=4:D3=5:D4=6:D5=7:D6=8:D7=9:G
      OSUB5:RETURN                  :rem 163
2000 PRINT#1,"[4 SPACES]";:RETURN:rem 104
2001 PRINT#1,"[2 +]";:RETURN:rem 181
2002 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 182
2003 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 183
2004 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 184
2005 PRINT#1,"[2 +]";:RETURN:rem 185
2011 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 16
2012 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 17
2013 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 18
2014 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 19
2015 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 20
2021 PRINT#1,"[2 +]";:RETURN:rem 183
2022 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 184
2023 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 19
2024 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 20
2025 PRINT#1,"[4 +]";:RETURN:rem 7
2031 PRINT#1,"[3 +]";:RETURN:rem 94
2032 PRINT#1,"[3 SPACES][+]";:RETURN
      :rem 19
2033 PRINT#1,"[2 +]";:RETURN:rem 186
2034 PRINT#1,"[3 SPACES][+]";:RETURN
      :rem 21
2035 PRINT#1,"[3 +]";:RETURN:rem 98
2041 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 19
2042 PRINT#1,"[2 +]";:RETURN:rem 186
2043 PRINT#1,"[+] [+]";:RETURN
      :rem 187
2044 PRINT#1,"[4 +]";:RETURN:rem 8
2045 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 23
2051 PRINT#1,"[4 +]";:RETURN:rem 6
2052 PRINT#1,"[+]{3 SPACES}";:RETURN
      :rem 21
2053 PRINT#1,"[3 +]";:RETURN:rem 98
2054 PRINT#1,"[3 SPACES][+]";:RETURN
      :rem 23
2055 PRINT#1,"[3 +]";:RETURN:rem 100
2061 PRINT#1,"[2 +]";:RETURN:rem 187
2062 PRINT#1,"[+]{3 SPACES}";:RETURN
      :rem 22
2063 PRINT#1,"[3 +]";:RETURN:rem 99
2064 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 190
2065 PRINT#1,"[2 +]";:RETURN:rem 191
2071 PRINT#1,"[4 +]";:RETURN:rem 8
2072 PRINT#1,"[3 SPACES][+]";:RETURN
      :rem 23
2073 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 24
2074 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 25
2075 PRINT#1,"[+]{2 SPACES}";:RETURN
      :rem 26
2081 PRINT#1,"[2 +]";:RETURN:rem 189
2082 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 190
2083 PRINT#1,"[2 +]";:RETURN:rem 191
2084 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 192
2085 PRINT#1,"[2 +]";:RETURN:rem 193
2091 PRINT#1,"[2 +]";:RETURN:rem 190
2092 PRINT#1,"[+]{2 SPACES}[+]";:RETU
      RN                            :rem 191
2093 PRINT#1,"[3 +]";:RETURN:rem 102
2094 PRINT#1,"[3 SPACES][+]";:RETURN
      :rem 27
2095 PRINT#1,"[2 +]";:RETURN:rem 194
2111 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 17
2112 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 18
2113 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 19
2114 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 20
2115 PRINT#1,"[2 SPACES][+]";:RETURN
      :rem 21
3010 GOSUB2000:PRINT#1,"[3 +]
      [3 SPACES][3 +]{2 SPACES}[+]
      [3 SPACES][+]" :rem 193
3011 GOSUB2000:PRINT#1,"[2 SPACES][+]
      [3 SPACES][+]{3 SPACES}[+]
      [2 +]{2 SPACES}[+]" :rem 118
3012 GOSUB2000:PRINT#1,"[2 SPACES][+]
      [3 SPACES][+]{3 SPACES}[+] [3
      SPACES][+]" :rem 119
3013 GOSUB2000:PRINT#1,"[+] [3
      SPACES][5 +] [3 +]{2 SPACES}
      [2 +]" :rem 16
3014 GOSUB2000:PRINT#1,"[3 +]{3 SPACES}
      [3 +]{3 SPACES}[+] [3 +]{3 SPACES}
      [3 +]" :rem 31
3015 RETURN :rem 169
3020 GOSUB2000:PRINT#1,"[5 +] [5 +]
      [4 +]" :rem 166
3021 GOSUB2000:PRINT#1,"[+]{5 SPACES}
      [3 +]{5 SPACES}[3 SPACES][+]"
      :rem 43
3022 GOSUB2000:PRINT#1,"[3 +]{3 SPACES}
      [4 +]{2 SPACES}[4 +]" :rem 182
3023 GOSUB2000:PRINT#1,"[+]{5 SPACES}
      [3 +]{5 SPACES}[3 SPACES][+]"
      :rem 45
3024 GOSUB2000:PRINT#1,"[+]{5 SPACES}
      [5 +] [4 +]" :rem 18
3025 RETURN :rem 170
3030 GOSUB2000:PRINT#1,"[+]{3 SPACES}
      [3 +]{2 SPACES}[4 +]" :rem 105
3031 GOSUB2000:PRINT#1,"[2 +] [2 +]
      [3 +]{3 SPACES}[3 +]{3 SPACES}
      [3 +]" :rem 196

```



```

3032 GOSUB2000:PRINT#1,"[+][+][+][+]"
      [+][3 SPACES][+][4 +]" :rem 107
3033 GOSUB2000:PRINT#1,"[+][+][+][+]"
      [+][+][2 SPACES][+]" :rem 18
3034 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][+]"
      [3 SPACES][+]" :rem 123
3035 RETURN :rem 171
3040 GOSUB2000:PRINT#1,"[3 +]"
      [2 SPACES][4 +][2 SPACES][4 +]" :rem 182
3041 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][+]"
      [3 SPACES][+]" :rem 121
3042 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][4 +][2 SPACES][4 +]" :rem 18
3043 GOSUB2000:PRINT#1,"[5 +][+]"
      [5 SPACES][+][2 SPACES][+]" :rem 199
3044 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][5 SPACES][+][3 SPACES]"
      [+]" :rem 214
3045 RETURN :rem 172
3050 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][2 SPACES][3 +][2 SPACES]"
      [+][3 SPACES][+]" :rem 31
3051 GOSUB2000:PRINT#1,"[2 +][2 +]"
      [+][3 SPACES][+][+][3 SPACES]"
      [+]" :rem 198
3052 GOSUB2000:PRINT#1,"[+][+][+]"
      [+][3 SPACES][+][2 SPACES][+]"
      [+]" :rem 33
3053 GOSUB2000:PRINT#1,"[+][+][+]"
      [+][+][3 SPACES][+][2 SPACES]" :rem 110
3054 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][3 SPACES]"
      [+][2 SPACES]" :rem 215
3055 RETURN :rem 173
3060 GOSUB2000:PRINT#1,"[3 +]"
      [2 SPACES][+][3 SPACES][+][+]"
      [3 SPACES][+]" :rem 32
3061 GOSUB2000:PRINT#1,"[2 SPACES][+]"
      [3 SPACES][+][3 SPACES][+]"
      [2 +][2 SPACES][+]" :rem 123
3062 GOSUB2000:PRINT#1,"[2 SPACES][+]"
      [3 SPACES][+][3 SPACES][+][+]"
      [+][+]" :rem 124
3063 GOSUB2000:PRINT#1,"[+][+]"
      [3 SPACES][+][3 SPACES][+][+]"
      [2 SPACES][2 +]" :rem 35
3064 GOSUB2000:PRINT#1,"[3 +][4 SPACES]"
      [3 +][2 SPACES][+][3 SPACES]"
      [+]" :rem 202
3065 RETURN :rem 174
3070 GOSUB2000:PRINT#1,"[3 +]"
      [2 SPACES][+][3 SPACES][+][+]"
      [4 SPACES]" :rem 123
3071 GOSUB2000:PRINT#1,"[2 SPACES][+]"
      [3 SPACES][+][3 SPACES][+][+]"
      [4 SPACES]" :rem 48
3072 GOSUB2000:PRINT#1,"[2 SPACES][+]"
      [3 SPACES][+][3 SPACES][+][+]"
      [4 SPACES]" :rem 49
3073 GOSUB2000:PRINT#1,"[+][+]"
      [3 SPACES][+][3 SPACES][+][+]"
      [4 SPACES]" :rem 216
3074 GOSUB2000:PRINT#1,"[3 +][4 SPACES]"
      [3 +][2 SPACES][5 +]" :rem 189
3075 RETURN :rem 175
3080 GOSUB2000:PRINT#1,"[3 +]"
      [2 SPACES][+][3 SPACES][+]"
      [2 SPACES][3 +]" :rem 200
3081 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][+]"
      [4 SPACES]" :rem 215
3082 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][+]"
      [2 SPACES][2 +]" :rem 36
3083 GOSUB2000:PRINT#1,"[5 +][+]"
      [3 SPACES][+][+][3 SPACES][+]"
      "+" :rem 113
3084 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][2 SPACES][3 +][3 SPACES]"
      [3 +]" :rem 204
3085 RETURN :rem 176
3090 GOSUB2000:PRINT#1,"[4 +][5 +]"
      [SPACE][4 +]" :rem 7
3091 GOSUB2000:PRINT#1,"[+][5 SPACES]"
      [+][5 SPACES][+][3 SPACES][+]" :rem 50
3092 GOSUB2000:PRINT#1,"[3 +]"
      [2 SPACES][4 +][2 SPACES][4 +]" :rem 189
3093 GOSUB2000:PRINT#1,"[4 SPACES][+]"
      [+][5 SPACES][+][4 SPACES]" :rem 142
3094 GOSUB2000:PRINT#1,"[4 +][2 SPACES]"
      [5 +][+][4 SPACES]" :rem 25
3095 RETURN :rem 177
3100 GOSUB2000:PRINT#1,"[3 +]"
      [3 SPACES][3 +][2 SPACES][5 +]" :rem 179
3101 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][3 SPACES]"
      [+][2 SPACES]" :rem 208
3102 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][7 SPACES][+][2 SPACES]" :rem 43
3103 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][3 SPACES][+][3 SPACES]"
      [+][2 SPACES]" :rem 210
3104 GOSUB2000:PRINT#1,"[3 +]"
      [3 SPACES][3 +][4 SPACES][+]"
      [2 SPACES]" :rem 31
3105 RETURN :rem 169
3110 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][2 SPACES][3 +][2 SPACES]"
      [+][3 SPACES][+]" :rem 28
3111 GOSUB2000:PRINT#1,"[2 +][2 SPACES]"
      [+][+][3 SPACES][+][+]"
      [3 SPACES][+]" :rem 29
3112 GOSUB2000:PRINT#1,"[+][+][+]"
      [+][3 SPACES][+][+]"
      [3 SPACES][+]" :rem 30
3113 GOSUB2000:PRINT#1,"[+][2 SPACES]"
      [2 +][+][3 SPACES][+]"
      [2 SPACES][+][+]" :rem 31
3114 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][2 SPACES][3 +][4 SPACES]"
      [+][2 SPACES]" :rem 122
3115 RETURN :rem 170
3120 GOSUB2000:PRINT#1,"[4 +][2 SPACES]"
      [5 +][2 SPACES][3 +]" :rem 91
3121 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][5 SPACES][+][3 SPACES]"
      [+]" :rem 210
3122 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][4 +][2 SPACES][+]"
      [4 SPACES]" :rem 31
3123 GOSUB2000:PRINT#1,"[+][3 SPACES]"
      [+][+][5 SPACES][+][3 SPACES]"
      [+]" :rem 212
3124 GOSUB2000:PRINT#1,"[4 +][2 SPACES]"

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[5 +][2 SPACES][3 +] " :rem 95
3125 RETURN :rem 171
3200 I1=INT(Y/1000):J1=Y-I1*1000:I2=INT(J
1/100):J2=J1-I2*100:I3=INT(J2/10)
:rem 83
3210 I4=J2-I3*10 :rem 48
3211 IFI2=0THENI2=10 :rem 134
3212 IFI3=0THENI3=10 :rem 137
3213 IFI4=0THENI4=10 :rem 140
3214 GOSUB2000:X=I1:GOSUB6000:GOSUB2000:X
=I2:GOSUB6000:GOSUB2000:X=I3:GOSUB60
00 :rem 98
3215 GOSUB2000:X=I4:FL=1:GOSUB6000:rem 19
3314 GOSUB2000:X=I1:GOSUB7000:GOSUB2000:X
=I2:GOSUB7000:GOSUB2000:X=I3:GOSUB70
00 :rem 102
3315 GOSUB2000:X=I4:FL=1:GOSUB7000:rem 21
3414 GOSUB2000:X=I1:GOSUB8000:GOSUB2000:X
=I2:GOSUB8000:GOSUB2000:X=I3:GOSUB80
00 :rem 106
3415 GOSUB2000:X=I4:FL=1:GOSUB8000:rem 23
3514 GOSUB2000:X=I1:GOSUB9000:GOSUB2000:X
=I2:GOSUB9000:GOSUB2000:X=I3:GOSUB90
00 :rem 110
3515 GOSUB2000:X=I4:FL=1:GOSUB9000:rem 25
3614 GOSUB2000:X=I1:GOSUB10000:GOSUB2000:
X=I2:GOSUB10000:GOSUB2000:X=I3
:rem 60
3615 GOSUB10000:GOSUB2000:X=I4:FL=1:GOSUB
10000:RETURN :rem 7
4000 PRINT"{CLR}{DOWN}[2 SPACES]THIS IS A
PROGRAM":PRINT"{5 RIGHT}TO PRINT A"
:rem 115
4020 PRINT"[2 SPACES]{PUR}MONTHLY CALENDAR
{BLU}":PRINT"{3 RIGHT}ON THE PRINTER"
:rem 187
4030 PRINT"{DOWN}[2 RIGHT]PLEASE TYPE IN
[SPACE]THE":PRINT"{3 RIGHT}{RED}MONTH
{BLU} AND {RED}YEAR{BLU}":rem 185
4035 PRINT"THAT YOU WISH TO SEE":PRINT"
[2 SPACES](EXAMPLE: {RED}12,1983
{BLU}){PUR}{DOWN}":PRINTTAB(5);
:rem 211
4060 INPUTM0,Y :rem 92
4080 PRINT"[2 DOWN][2 SPACES]{BLU}THANK Y
OU! NOW--":PRINT"PLEASE {PUR}TURN ON
{BLU} THE" :rem 7
4085 PRINT"PRINTER AND THEN TYPE":PRINTTAB
B(8)"{PUR}OK{DOWN}":INPUTR$ :rem 252
4110 IFR$<>"OK"THEN4080 :rem 30
4130 PRINT"[BLU]PRINTING{DOWN}":FORI=1TO8
00:NEXT:RETURN :rem 218
4999 PRINT#1,CHR$(15)" " :rem 232
5000 GOSUB1620 :rem 14
5001 CLOSE1:END :rem 126
6000 ONXGOSUB2011,2021,2031,2041,2051,206
1,2071,2081,2091,2001 :rem 146
6010 IFFL<>1THENPRINT#1," ";:RETURN
:rem 104
6020 PRINT#1,"":FL=0:RETURN :rem 108
7000 ONXGOSUB2012,2022,2032,2042,2052,206
2,2072,2082,2092,2002 :rem 157
7010 IFFL<>1THENPRINT#1," ";:RETURN
:rem 105
7020 PRINT#1,"":FL=0:RETURN :rem 109
8000 ONXGOSUB2013,2023,2033,2043,2053,206
3,2073,2083,2093,2003 :rem 168
8010 IFFL<>1THENPRINT#1," ";:RETURN
:rem 106
8020 PRINT#1,"":FL=0:RETURN :rem 110
9000 ONXGOSUB2014,2024,2034,2044,2054,206
4,2074,2084,2094,2004 :rem 179

```

```

9010 IFFL<>1THENPRINT#1," ";:RETURN
:rem 107
9020 PRINT#1,"":FL=0:RETURN :rem 111
10000 ONXGOSUB2015,2025,2035,2045,2055,20
65,2075,2085,2095,2005 :rem 229
10010 IFFL<>1THENPRINT#1," ";:RETURN
:rem 147
10020 PRINT#1,"":FL=0:RETURN :rem 151
11000 ONXGOSUB2000,2111,2021,2031:PRINT#1
," " :rem 195
11010 ONX1GOSUB2000,2001,2011,2021,2031,2
041,2051,2061,2071,2081,2091
:rem 222
11020 IFFL<>1THENPRINT#1,"[2 SPACES]":RE
TURN :rem 149
11030 FL=0:PRINT#1,"":RETURN :rem 153
12000 ONXGOSUB2000,2112,2022,2032:PRINT#1
," " :rem 199
12010 ONX1GOSUB2000,2002,2012,2022,2032,2
042,2052,2062,2072,2082,2092
:rem 233
12020 IFFL<>1THENPRINT#1,"[2 SPACES]":RE
TURN :rem 150
12030 FL=0:PRINT#1,"":RETURN :rem 154
13000 ONXGOSUB2000,2113,2023,2033:PRINT#1
," " :rem 203
13010 ONX1GOSUB2000,2003,2013,2023,2033,2
043,2053,2063,2073,2083,2093
:rem 244
13020 IFFL<>1THENPRINT#1,"[2 SPACES]":RE
TURN :rem 151
13030 FL=0:PRINT#1,"":RETURN :rem 155
14000 ONXGOSUB2000,2114,2024,2034:PRINT#1
," " :rem 207
14010 ONX1GOSUB2000,2004,2014,2024,2034,2
044,2054,2064,2074,2084,2094
:rem 255
14020 IFFL<>1THENPRINT#1,"[2 SPACES]":RE
TURN :rem 152
14030 FL=0:PRINT#1,"":RETURN :rem 156
15000 ONXGOSUB2000,2115,2025,2035:PRINT#1
," " :rem 211
15010 ONX1GOSUB2000,2005,2015,2025,2035,2
045,2055,2065,2075,2085,2095:rem 10
15020 IFFL<>1THENPRINT#1,"[2 SPACES]":RE
TURN :rem 153
15030 FL=0:PRINT#1,"":RETURN :rem 157

```

Program 3: Monthly Appointment Calendar For Printer

```

80 DIMM$(12),W$(7):FORI=1TO12:READM$(I):N
EXTI:FORI=1TO7:READW$(I):NEXTI:rem 118
90 SYS65517:A=PEEK(781):IFA=40THENPOKE532
81,1 :rem 167
100 PRINT"{CLR}{DOWN}[2 SPACES]THIS IS A
[SPACE]PROGRAM":PRINT"[6 RIGHT]TO SHO
W A" :rem 17
105 PRINT"[2 RIGHT]{PUR}MONTHLY CALENDAR
{BLU}":PRINT"[3 RIGHT]ON THE PRINTER
{DOWN}" :rem 214
110 PRINT"[RIGHT]PLEASE TYPE IN THE":PRIN
T"[3 RIGHT]{RED}MONTH{BLU} AND {RED}Y
EAR{BLU}":rem 86
111 PRINT"THAT YOU WISH TO SEE":PRINT"
{RIGHT}(EXAMPLE: {RED}12,1983{BLU})
{PUR}{2 DOWN}" :rem 105
120 PRINTTAB(5);:INPUTM0,Y :rem 132
130 PRINT"[2 DOWN][2 SPACES]{BLU}THANK YO
U! NOW--":PRINT"PLEASE {PUR}TURN ON
{BLU} THE" :rem 207

```



```

131 PRINT"PRINTER AND THEN TYPE":PRINTTAB
(9)"{PUR}OK{DOWN}":INPUTR$ :rem 193
151 IFR$<>"OK"THEN130 :rem 183
154 PRINT"{BLU}PRINTING{DOWN}":FORI=1TO80
0:NEXT:GOSUB1292:OPEN1,4 :rem 23
202 PRINT#1,CHR$(14)"{3 SPACES}";M$(M0);"
";Y:GOSUB1600:GOSUB1700:FORD=1TOE1:J
1=J1+1 :rem 225
210 GOSUB1050:IFD<10THENG$=" " :rem 158
213 IFD>=10THENG$="" :rem 96
214 IFD1=1THENPRINT#1,CHR$(15)"{3 SPACES}
"W$(D1);CHR$(14)G$;"{RVS}"D"{OFF}";CH
R$(15)"(";J1;")" :rem 71
215 IFD1=1THENGOSUB1600 :rem 128
217 IFD1=1THENGOTO220 :rem 8
219 PRINT#1,CHR$(15)"{3 SPACES}"W$(D1);CH
R$(14)G$;D;CHR$(15)"(";J1;")":GOSUB16
00 :rem 0
220 NEXTD :rem 23
1000 CLOSE1:END :rem 121
1050 IFM0=1THENM0=13:Y=Y-1:GOTO1080
:rem 80
1060 IFM0=2THENM0=14:Y=Y-1 :rem 23
1080 M=M0-2 :rem 47
1100 D1=INT(2.6*M-0.2)+D+Y-1900+INT((Y-19
00)/4) :rem 207
1150 D1=D1+INT(19/4)-2*19 :rem 21
1200 D1=D1-INT(D1/7)*7+1 :rem 235
1210 IFM0=4ORM0=9THEND1=D1+1 :rem 135
1230 IFM0=13THENM0=1:Y=Y+1:GOTO1245
:rem 81
1240 IFM0=14THENM0=2:Y=Y+1:D1=D1+1
:rem 210
1244 IFD1=8THEND1=1 :rem 86
1245 IF(Y=2100ANDM0>=3)OR(Y>2100)THEND1=D
1-1:IFD1=0THEND1=7 :rem 198
1247 IF(Y=2200ANDM0>=3)OR(Y>2200)THEND1=D
1-1:IFD1=0THEND1=7 :rem 202
1249 IF(Y=2300ANDM0>=3)OR(Y>2300)THEND1=D
1-1:IFD1=0THEND1=7 :rem 206
1250 RETURN :rem 168
1292 IFM0=1ORM0=3ORM0=5ORM0=7ORM0=8ORM0=1
0ORM0=12THENE1=31 :rem 75
1293 IFM0=4ORM0=6ORM0=9ORM0=11THENE1=30
:rem 115
1294 IFM0=2ANDY/4<>INT(Y/4)THENE1=28
:rem 152
1295 IFM0=2ANDY/4=INT(Y/4)THENGOSUB1400
:rem 132
1296 RETURN :rem 178
1400 IF(Y/100=INT(Y/100))AND(Y/400<>INT(Y
/400))THENE1=28:GOTO1410 :rem 231
1405 E1=29 :rem 232
1410 RETURN :rem 166
1600 FORI=1TO20:PRINT#1,CHR$(15)" ";:NEXT
I :rem 170
1605 FORK=1TO18:PRINT#1,"."; " "; " ";:NEXT
K:PRINT#1,"." :rem 231
1610 RETURN :rem 168
1700 IFM0=1THENJ1=0 :rem 89
1702 IFM0=2THENJ1=31 :rem 144
1704 IFM0=3THENJ1=59 :rem 157
1706 IFM0=4THENJ1=90 :rem 155
1707 IFM0=5THENJ1=120 :rem 199
1709 IFM0=6THENJ1=151 :rem 206
1711 IFM0=7THENJ1=181 :rem 203
1713 IFM0=8THENJ1=212 :rem 201
1715 IFM0=9THENJ1=243 :rem 208
1717 IFM0=10THENJ1=273 :rem 253
1719 IFM0=11THENJ1=304 :rem 251
1721 IFM0=12THENJ1=334 :rem 248
1723 IFY/4<>INT(Y/4)THENGOTO1730 :rem 189
1725 IF(Y/100=INT(Y/100))AND(Y/400<>INT(Y

```

```

/400))THENGOTO1730 :rem 159
1727 IF(Y/4=INT(Y/4))AND(M0>=3)THENJ1=J1+
1 :rem 175
1730 RETURN :rem 171
2000 DATA "{2 SPACES}JANUARY"," FEBRUARY"
,"{4 SPACES}MARCH","{4 SPACES}APRIL"
,"{6 SPACES}MAY" :rem 36
2010 DATA "{5 SPACES}JUNE","{5 SPACES}JUL
Y","{3 SPACES}AUGUST","SEPTEMBER","
{2 SPACES}OCTOBER" :rem 229
2020 DATA " NOVEMBER"," DECEMBER" :rem 39
2030 DATA "{4 SPACES}{RVS}SUNDAY{OFF}","
{4 SPACES}MONDAY","{3 SPACES}TUESDAY
"," WEDNESDAY","{2 SPACES}THURSDAY"
:rem 90
2040 DATA "{4 SPACES}FRIDAY","{2 SPACES}S
ATURDAY" :rem 192

```

Program 4: Yearly Calendar For Printer

```

3 SYS65517:A=PEEK(781):IFA=40THENPOKE5328
1,1 :rem 113
5 OPEN1,4:DIMW4(3):GOSUB1510:I=1:J=2
:rem 128
7 PRINT#1,CHR$(14)SPC(13)"HAPPY NEW YEAR
{SPACE}";Y:PRINT#1 :rem 38
10 PRINT#1,CHR$(14)SPC(8)"JANUARY"SPC(13)
"FEBRUARY" :rem 49
12 GOSUB1009:GOSUB1000:GOSUB1012:C0=6:GOS
UB1019:GOSUB1000:GOSUB1022 :rem 69
15 M0=I:M8=1:GOSUB292:GOSUB20:GOTO35
:rem 228
20 D=1:GOSUB1050:W2=8-D1:W4(M8)=W2+1:GOSU
B321 :rem 123
22 IFD1=7THENGOTO30 :rem 167
25 FORD=2TOW2:GOSUB1050:GOSUB331:NEXTD
:rem 187
30 RETURN :rem 67
35 GOSUB990:M0=J:M8=2:GOSUB292:GOSUB20
:rem 105
44 W3=1 :rem 96
45 M0=I:M8=1:GOSUB292:GOSUB200 :rem 60
46 IFW4(2)=9THENPRINT#1,CHR$(15)SPC(1);
:rem 20
50 GOSUB991:M0=J:M8=2:GOSUB292:GOSUB200
:rem 151
56 IFW3=1ANDW4(1)>9THENPRINT#1,CHR$(15)SP
C(0); :rem 223
57 IFW3=1ANDW4(1)<10THENPRINT#1,CHR$(15)S
PC(1); :rem 7
58 IFW3=4ANDW4(2)>30THENPRINT#1,CHR$(15)S
PC(0); :rem 15
65 W3=W3+1 :rem 24
70 IFW3<C0THENGOTO45 :rem 0
71 PRINT#1," " :rem 185
72 IFI=1THENGOTO86 :rem 133
73 IFI=3THENGOTO96 :rem 137
74 IFI=5THENGOTO106 :rem 180
75 IFI=7THENGOTO116 :rem 184
76 IFI=9THENGOTO126 :rem 188
77 IFI=11THENGOTO199 :rem 240
86 PRINT#1,CHR$(14)SPC(9)"MARCH"SPC(16)"A
PRIL" :rem 171
88 I=3:J=4:GOTO12 :rem 244
96 PRINT#1,CHR$(14)SPC(10)"MAY"SPC(17)"JU
NE" :rem 11
98 I=5:J=6:GOTO12 :rem 249
106 PRINT#1,CHR$(14)SPC(9)"JULY"SPC(16)"A
UGUST" :rem 14
108 I=7:J=8:GOTO12 :rem 37
116 PRINT#1,CHR$(14)SPC(7)"SEPTEMBER"SPC(
13)"OCTOBER" :rem 162
118 I=9:J=10:GOTO12 :rem 81

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126 PRINT#1,CHR$(14)SPC(7)"NOVEMBER"SPC(1
3)"DECEMBER" :rem 131
128 I=11:J=12:GOTO12 :rem 125
199 PRINT#1,CHR$(15)SPC(1):CLOSE1:END :rem 194
200 D4=W4(M8):D7=W4(M8)+6 :rem 92
205 D=D4:GOSUB1050 :rem 16
210 IFD1<>1THENPRINT"WHY D1=";D1 :rem 156
212 IFM8=1AND(D+1)<10THENGOSUB528:rem 198
213 IFM8=1AND(D+1)>9THENGOSUB530 :rem 154
214 IFM8=2AND(D+1)<10THENGOSUB428:rem 200
215 IFM8=2ANDD4>=30ANDD4<=E1THENGOSUB433:
GOTO217 :rem 212
216 IFM8=2AND(D+1)>9THENGOSUB430 :rem 157
217 FORD=D4+1TOD7:GOSUB1050:GOSUB331:NEXT
D :rem 130
220 W4(M8)=D7+1 :rem 9
225 RETURN :rem 121
292 IFM0=1ORM0=3ORM0=5ORM0=7ORM0=8ORM0=10
ORM0=12THENEL=31 :rem 26
293 IFM0=4ORM0=6ORM0=9ORM0=11THENEL=30
:rem 66
294 IFM0=2ANDY/4<>INT(Y/4)THENEL=28
:rem 103
295 IFM0=2ANDY/4=INT(Y/4)THENGOSUB1400
:rem 83
296 RETURN :rem 129
321 IFD1=7THENPRINT#1,CHR$(15)SPC(36);D;:
GOTO330 :rem 101
322 IFD1=6THENPRINT#1,CHR$(15)SPC(31);D;:
GOTO330 :rem 96
323 IFD1=5THENPRINT#1,CHR$(15)SPC(26);D;:
GOTO330 :rem 100
324 IFD1=4THENPRINT#1,CHR$(15)SPC(21);D;:
GOTO330 :rem 95
325 IFD1=3THENPRINT#1,CHR$(15)SPC(16);D;:
GOTO330 :rem 99
326 IFD1=2THENPRINT#1,CHR$(15)SPC(11);D;:
GOTO330 :rem 94
327 IFD1=1THENPRINT#1,CHR$(15)SPC(6);D;:G
OTO330 :rem 50
328 PRINT#1,CHR$(15)SPC(3);D;:GOTO330
:rem 143
329 PRINT#1,CHR$(15)SPC(2);D; :rem 134
330 RETURN :rem 118
331 IFD>E1THENPRINT#1,CHR$(15)SPC(5);:GOT
O350 :rem 196
332 IFD1=1ANDD<=9THENPRINT#1,D;:GOTO350
:rem 153
333 IFD1=1ANDD>9THENPRINT#1,D;:GOTO350
:rem 95
335 IFD<=9THENPRINT#1,CHR$(15)SPC(2);D;:G
OTO350 :rem 66
336 PRINT#1,CHR$(15)SPC(1);D; :rem 131
350 RETURN :rem 120
428 IFD>E1THENPRINT#1,CHR$(15)SPC(9);:GOT
O435 :rem 211
429 GOTO328 :rem 117
430 IFD>E1THENPRINT#1,CHR$(15)SPC(9);:GOT
O435 :rem 204
431 GOTO329 :rem 111
433 PRINT#1,CHR$(15)SPC(1);D; :rem 129
435 RETURN :rem 124
528 IFD>E1THENPRINT#1,CHR$(15)SPC(9);:GOT
O535 :rem 213
529 GOTO532 :rem 115
530 IFD>E1THENPRINT#1,CHR$(15)SPC(9);:GOT
O535 :rem 206
531 GOTO533 :rem 109
532 PRINT#1,CHR$(15)SPC(5);D;:GOTO535
:rem 149
533 PRINT#1,CHR$(15)SPC(4);D; :rem 133
535 RETURN :rem 125

990 PRINT#1,CHR$(15)SPC(3);:GOTO992
:rem 35
991 PRINT#1,CHR$(15)SPC(6); :rem 16
992 RETURN :rem 132
1000 PRINT#1,CHR$(15)SPC(7); :rem 47
1001 RETURN :rem 162
1009 PRINT#1,CHR$(15)SPC(3); :rem 52
1010 PRINT#1,"{4 SPACES}S{4 SPACES}M
{4 SPACES}T{4 SPACES}W{4 SPACES}T
{4 SPACES}F{4 SPACES}S"; :rem 134
1011 RETURN :rem 163
1012 PRINT#1,"{4 SPACES}S{4 SPACES}M
{4 SPACES}T{4 SPACES}W{4 SPACES}T
{4 SPACES}F{4 SPACES}S" :rem 77
1013 RETURN :rem 165
1019 PRINT#1,CHR$(15)SPC(3); :rem 53
1020 PRINT#1,"{4 SPACES}{T}{4 SPACES}
{T}{4 SPACES}{T}{4 SPACES}{T}
{4 SPACES}{T}{4 SPACES}{T}
{4 SPACES}{T}"; :rem 196
1021 RETURN :rem 164
1022 PRINT#1,"{4 SPACES}{T}{4 SPACES}
{T}{4 SPACES}{T}{4 SPACES}{T}
{4 SPACES}{T}{4 SPACES}{T}
{4 SPACES}{T}" :rem 139
1023 RETURN :rem 166
1050 IFM0=1THENM0=13:Y=Y-1:GOTO1080
:rem 80
1060 IFM0=2THENM0=14:Y=Y-1 :rem 23
1080 M=M0-2 :rem 47
1100 D1=INT(2.6*M-0.2)+D+Y-1900+INT((Y-19
00)/4) :rem 207
1150 D1=D1+INT(19/4)-2*19 :rem 21
1200 D1=D1-INT(D1/7)*7+1 :rem 235
1210 IFM0=4ORM0=9THEND1=D1+1 :rem 135
1230 IFM0=13THENM0=1:Y=Y+1:GOTO1250
:rem 77
1240 IFM0=14THENM0=2:Y=Y+1:D1=D1+1
:rem 210
1244 IFD1=8THEND1=1 :rem 86
1245 IF(Y=2100ANDM0>3)OR(Y>2100)THEND1=D1
-1:IFD1=0THEND1=7 :rem 137
1247 IF(Y=2200ANDM0>3)OR(Y>2200)THEND1=D1
-1:IF{K}{RVS}=0THEND1=7 :rem 53
1249 IF(Y=2300ANDM0>3)OR(Y>2300)THEND1=D1
-1:IFD1=0THEND1=7 :rem 145
1250 RETURN :rem 168
1400 IF(Y/100=INT(Y/100))AND(Y/400<>INT(Y
/400))THENEL=28:GOTO1410 :rem 231
1405 EL=29 :rem 232
1410 RETURN :rem 166
1510 PRINT"{CLR}{DOWN}{2 RIGHT}THIS IS A
{SPACE}PROGRAM":PRINT"{6 RIGHT}TO SH
OW A" :rem 129
1520 PRINT"{3 RIGHT}{PUR}YEARLY CALENDAR
{BLU}":PRINT"{3 RIGHT}ON THE PRINTER
{DOWN}" :rem 208
1530 PRINT"{RIGHT}PLEASE TYPE IN THE":PRI
NT"{3 RIGHT}YEAR THAT YOU":PRINT"
{4 RIGHT}WISH TO SEE" :rem 38
1535 PRINT"{3 RIGHT}(EXAMPLE:{PUR}1984
{BLU}){2 DOWN}":PRINTTAB(6);:INPUTY
:rem 195
1570 PRINT"{DOWN}{3 RIGHT}THANK YOU! NOW-
-":PRINT"{RIGHT}PLEASE TURN ON THE"
:rem 145
1573 PRINT"PRINTER AND THEN TYPE" :rem 9
1575 PRINTTAB(8)"{PUR}OK{BLU}{DOWN}"
:rem 105
1580 INPUTR$ :rem 212
1585 IFR$<>"OK"THEN1570 :rem 44
1590 PRINT"PRINTING{DOWN}":FORI=1TO800:NE
XT:RETURN :rem 194

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Bingo 64

(Article on page 54.)

BEFORE TYPING...

Before typing in programs, please refer to "How To Type COMPUTE!'s Gazette Programs," "A Beginner's Guide To Typing In Programs," and "The Automatic Proofreader" that appear before the Program Listings.

```

150 POKE53281,1:POKE 53280,1 :rem 237
160 SS=54272:V=53248:D0=56323:D1=56320:D2
   =56321:POKE V+21,0 :rem 194
170 PRINT CHR$(147),CHR$(17),CHR$(17)
   :rem 223
180 PRINTSPC(14);CHR$(18);CHR$(31);"MODES
   OF PLAY":PRINT :rem 50
190 PRINTSPC(14);CHR$(28);"*****"
   :PRINT :rem 34
200 PRINTSPC(4);CHR$(144);"1- AUTO BALL F
   EED{3 SPACES}- AUTO COVER" :rem 218
210 PRINTSPC(4);"2- MANUAL BALL FEED - AU
   TO COVER" :rem 59
220 PRINTSPC(4);"3- MANUAL BALL FEED - MA
   NUAL COVER" :rem 194
230 PRINTSPC(4);"4- AUTO BALL FEED
   {3 SPACES}- MANUAL COVER" :rem 63
240 PRINT:PRINT"{5 SPACES}ENTER MODE SELE
   CTED:" :rem 84
250 GET A$:IF A$=""THEN 250 :rem 81
260 AU=VAL(A$)-1:IF AU<0 OR AU>3 THEN 170
   :rem 156
270 M1$="-CHIME RINGS FOR NUMBER ON CARD"
   :rem 57
280 M2$="-GONG RINGS FOR NUMBER ON NO CAR
   D" :rem 157
290 M3$="-HIT ANY KEY FOR BALL FEED"
   :rem 185
300 M4$="-USE JOYSTICK (PORT 2)-FIRE TO C
   OVER" :rem 128
310 PRINTCHR$(147),CHR$(17),CHR$(17)
   :rem 219
320 PRINT SPC(2);M1$:PRINT SPC(2);M2$
   :rem 118
330 IF AU=1 OR AU=2 THEN PRINT SPC(2);M3$
   :rem 211
340 IF AU=2 OR AU=3 THEN PRINT SPC(2);M4$
   :rem 215
350 PRINT:PRINT SPC(10);"HIT ANY KEY TO S
   TART" :rem 234
360 GET A$:IF A$=""THEN 360 :rem 85
370 PRINT CHR$(147) :rem 21
380 REM*** READ THE ML CODE TO SET A BLOC
   K OF MEMORY *** :rem 213
390 FOR I=0TO11:READ X$:POKE 28672+I,X$:N
   EXTI :rem 98
400 REM*** SET THE COLOR MEMORY TO BLACK
   {SPACE}*** :rem 153
410 FOR I=0TO3:HB=216+I :rem 22
420 POKE 251,0:POKE252,HB:POKE253,0:POKE2
   54,0:SYS 28672:NEXT :rem 235
430 DIM SD(4,62),CO(5),X(5),Y(5),FL(21),F
   H(21),DU(21),C(3,4,4),N(4,14) :rem 22
440 CO(0)=0:CO(1)=14:CO(2)=4:CO(3)=2:CO(4
   )=7:CO(5)=0 :rem 11
450 L(0)=130:L(1)=137:L(2)=142:L(3)=135:L
   (4)=143 :rem 180
460 S(0)=1104:S(1)=1127:S(2)=1624:S(3)=16
   47 :rem 194

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470 F(0)=1271+SS:F(1)=1294+SS:F(2)=1791+S
   S:F(3)=1814+SS :rem 222
480 GOSUB 640:REM*** MAKE THE BOX ***
   :rem 184
490 GOSUB 1470:REM*** MAKE BINGO SPRITES
   {SPACE}*** :rem 186
500 REM*** BLANK OUT THE FREE-BOXES ***
   :rem 134
510 FORI=0TO3:POKE F(I),1:POKEF(I)+1,1:NE
   XT :rem 42
520 GOSUB 840:REM*** CHOOSE THE NUMBERS F
   OR THE CARDS *** :rem 192
530 REM*** PUT RED COVER-TOKEN ON FREE-BO
   XES *** :rem 230
540 FOR I=0TO3:POKEF(I)-SS,160:POKEF(I)+1
   -SS,160:POKEF(I),8:POKEF(I)+1,8:NEXT
   :rem 85
550 FORCD=0TO3:C(CD,2,2)=0:NEXT:REM SET C
   ENTER BOX TO ILLEGAL VALUE (FREE BOX)
   :rem 108
560 REM*** DRAW THE PASS LINE ***:rem 233
570 FORLI=0TO6:POKE(1520+LI),64:NEXT LI
   :rem 68
580 REM*** START OF PLAY *** :rem 214
590 GOSUB 1100:REM*** GET THE NEXT NUMBER
   *** :rem 195
600 GOSUB 1170:REM*** CHECK THE CARDS FOR
   A MATCH *** :rem 58
610 IF AU=0 OR AU=3 THEN 590:REM*** CHECK
   FOR AUTO BALL-FEED *** :rem 145
620 GET A$:IF A$=""THEN 620 :REM*** WAIT
   {SPACE}FOR NEXT BALL *** :rem 227
630 GOTO 590 :rem 112
640 REM *** BOX MAKER *** :rem 211
650 T0$=" B{2 SPACES}I{2 SPACES}N
   {2 SPACES}G{SHIFT-SPACE} O " :rem 211
660 A1=176:A2=96:A3=178:A4=174:GOSUB710:T
   1$=A$ :rem 44
670 A1=98:A2=32:A3=98:A4=98:GOSUB710:T2$=
   A$ :rem 157
680 A1=171:A2=96:A3=123:A4=179:GOSUB710:T
   3$=A$ :rem 38
690 A1=173:A2=96:A3=177:A4=189:GOSUB710:T
   4$=A$ :rem 52
700 GOTO750 :rem 108
710 A$=CHR$(A2)+CHR$(A3)+CHR$(A2):rem 224
720 A$=CHR$(A1)+CHR$(A2)+A$+A$+A$+A$+CHR$
   (A2)+CHR$(A4) :rem 17
730 A$=A$+"{7 SPACES}"+A$ :rem 160
740 RETURN :rem 123
750 PRINT CHR$(18)CHR$(31)T0$CHR$(146)SPC
   (8)CHR$(18)CHR$(31)T0$CHR$(146)
   :rem 164
760 PRINT CHR$(144);T1$ :rem 249
770 FOR I=1TO4:PRINTT2$:PRINTT3$:NEXT
   :rem 111
780 PRINTT2$:PRINTT4$:PRINT :rem 16
790 PRINT CHR$(18)CHR$(31)T0$CHR$(146)SPC
   (8)CHR$(18)CHR$(31)T0$CHR$(146)
   :rem 168
800 PRINT CHR$(144);T1$ :rem 244
810 FOR I=1TO4:PRINTT2$:PRINTT3$:NEXT
   :rem 106
820 PRINTT2$:PRINTT4$; :rem 127
830 RETURN :rem 123
840 REM*** CHOOSE THE CARD NUMBERS ***
   :rem 84
850 REM*** FIRST ZERO THE CALLED NUMBER A
   RRAY *** :rem 19
860 FOR CL=0TO4:FORN=0TO14:N(CL,NN)=0:NE
   XT:NEXT :rem 25

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870 CD=0{2 SPACES}:REM*** CARD LOOP ***
:rem 1
880 CL=0{2 SPACES}:REM*** COLUMN LOOP ***
:rem 190
890 FOR I=0TO4:C(CD,CL,I)=0:NEXT:REM*** Z
ERO COL OF NUMBERS ON CARD ***:rem 32
900 RN=0{2 SPACES}:REM*** ROW LOOP ***
:rem 242
910 Z=INT(RND(0)*15)+1+15*CL :rem 8
920 REM*** TEST FOR THE NUMBER IN USE ***
:rem 208
930 J=0 :rem 83
940 IF C(CD,CL,J)=Z THEN 910 :REM*** NUMB
ER HAS BEEN USED *** :rem 226
950 IF J<RN THEN J=J+1:GOTO 940 :rem 191
960 C(CD,CL,RN)=Z :rem 216
970 REM*** PRINT NUMBER IN THE BOX ***
:rem 55
980 N$=STR$(Z) :rem 24
990 LN=LEN(N$) :rem 27
1000 FORQ=1TOLN-1 :rem 2
1010 SN=S(CD)+CL*3+RN*80+Q+(3-LN) :rem 49
1020 PN=ASC(MID$(N$,Q+1,1)) :rem 189
1030 POKE SN,PN :rem 94
1040 NEXTQ :rem 85
1050 IF RN<4 THEN RN=RN+1:GOTO 910
:rem 122
1060 IF CL<4 THEN CL=CL+1:GOTO 890:rem 79
1070 IF CD<3 THEN CD=CD+1:GOTO 880:rem 54
1080 RETURN :rem 169
1090 REM *** SELECT THE NEXT BALL NUMBER*
** :rem 110
1100 GOSUB 1730 :REM*** FIRST CHOOSE THE
[SPACE]LETTER *** :rem 33
1110 REM*** NEXT THE NUMBER *** :rem 140
1120 NU=INT(RND(0)*15):NM=NU+1+NC*15
:rem 50
1130 REM*** HAS IT ALREADY BEEN USED? ***
:rem 170
1140 IF N(NC,NU)=1 THEN 1110:REM*** YES-G
ET ANOTHER *** :rem 221
1150 N(NC,NU)=1 :rem 52
1160 RETURN :rem 168
1170 REM*** PRINT THE NUMBER ON THE BIG B
ALL *** :rem 75
1180 N1=INT(NM/10):N2=NM-N1*10 :rem 182
1190 IF N1=0THEN N1=-16 :rem 197
1200 POKE 1282,L(NC):POKE1283,N1+176:POKE
1284,N2+176 :rem 113
1210 POKEV+44,CO(NC) :rem 124
1220 REM*** CHECK FOR NUMBER ON THE CARDS
*** :rem 158
1230 NN=0 :rem 207
1240 BO=0 :rem 197
1250 CD=0{4 SPACES}:REM *** CARD LOOP ***
:rem 42
1260 CR=0{4 SPACES}:REM *** ROW LOOP ***
:rem 23
1270 IF C(CD,NC,CR)<>NM THEN 1390 :rem 3
1280 IF AU>1 THEN{2 SPACES}2270 :rem 89
1290 NN=1 :REM*** FOUND A MATCH ***
:rem 26
1300 REM*** PUT THE RED COVER-TOKEN ON TH
E NUMBER *** :rem 205
1310 P1=S(CD)+CR*80+NC*3+1 :rem 117
1320 POKE P1+SS,8 :rem 171
1330 POKE P1+1+SS,8 :rem 8
1340 POKE P1+1,N2+176 :rem 73
1350 POKE P1,N1+176 :rem 237
1360 GOSUB 1890 :REM*** RING THE CHIME **
* :rem 173
1370 GOSUB 2000:REM*** CHECK FOR A WINNER
*** :rem 128
1380 GOTO1400 :rem 202
1390 IF CR<4 THEN CR=CR+1:GOTO1270
:rem 144
1400 IF CD<3 THEN CD=CD+1:GOTO1260:rem 92
1410 IF NN=0THEN GOSUB 1950:REM*** NO MAT
CH-SOUND THE GONG *** :rem 194
1420 Y(NC)=230 :rem 212
1430 POKE V+1+NC*2,Y(NC):REM SET INIT Y
:rem 191
1440 IF BO=0 THEN RETURN:REM*** NO WINNER
- GET NEXT BALL *** :rem 86
1450 GET A$:IF A$=""THEN 1450:REM*** WINN
ER-WAIT FOR A RESTART *** :rem 83
1460 POKE V+21,0:RESTORE:CLR:GOTO150
:rem 188
1470 REM*** MAKE THE BINGO SPRITES ***
:rem 68
1480 REM*** ZERO THE SPRITES MEMORY ***
:rem 209
1490 FORI=0TO3 :rem 65
1500 POKE 251,I*64:POKE252,57:POKE253,63:
POKE 254,00:SYS 28672:NEXTI :rem 92
1510 POKE 251,00:POKE252,58:POKE253,63:PO
KE 254,00:SYS 28672 :rem 31
1520 REM*** SET UP TO ZERO SOUND ***
:rem 165
1530 POKE 251,00:POKE252,212:POKE253,24:P
OKE 254,00 :rem 4
1540 REM*** READ IN THE BIG BALL SPRITE *
** :rem 2
1550 FORI=0TO4:FORJ=22TO46:READ SD:rem 69
1560 POKE (14592+I*64+J),SD:NEXT:NEXT
:rem 131
1570 FOR I=0TO63:READ SD:POKE 14912+I,SD:
NEXT :rem 125
1580 POKE V+21,63:REM ENABLE THE SPRITES
:rem 70
1590 FORI=0TO5 :rem 68
1600 POKE 2040+I,228+I :rem 108
1610 REM*** SET UP THE SPRITES ***:rem 68
1620 POKE V+39+I,CO(I):REM*** SET THE SPR
ITE COLOR *** :rem 238
1630 X(I)=145+I*12 :rem 148
1640 Y(I)=230 :rem 144
1650 X(5)=156:Y(5)=83:REM*** LARGE SPRITE
LOCATION *** :rem 249
1660 POKE V+I*2,X(I):REM*** SET INITIAL X
-POSITION *** :rem 74
1670 POKE V+1+I*2,Y(I):REM*** SET INITIAL
Y *** :rem 7
1680 NEXTI :rem 87
1690 POKE V+23,32:POKE V+29,32 :rem 92
1700 REM*** READ IN THE BINGO SONG ***
:rem 226
1710 FORI=0TO21:READFL(I),FH(I),DU(I):NEX
T :rem 26
1720 RETURN :rem 170
1730 NC=INT(RND(1)*5):REM*** SELECT THE B
ALL LETTER *** :rem 64
1740 YM=INT(RND(0)*13):IF YM<5 THEN YM=5:
REM*** GET THE MAXIMUM HEIGHT ***
:rem 183
1750 J=0 :rem 132
1760 Y=J↑2-2*YM*J+230 :rem 161
1770 POKE (V+NC*2),X(NC):POKE(V+1+NC*2),I
NT(Y) :rem 104
1780 IF Y<=132THEN RETURN:REM*** BALL WEN
T OVER PASS LINE *** :rem 228
1790 IF J<2*YM THEN J=J+1:GOTO1760:rem.133

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1800 GOSUB1830:REM*** MAKE THE BALL PLOP
[SPACE]SOUND *** :rem 13
1810 GOTO1730:REM*** GET NEXT BALL ***
:rem 34
1820 REM*** SOUND OF THE BALL PLOP ***
:rem 0
1830 SYS 28672 :rem 212
1840 POKESS,255:POKESS+1,93:POKESS+5,2
:rem 58
1850 POKESS+22,104:POKESS+23,1:POKESS+24,
79:POKESS+4,129 :rem 97
1860 POKESS+24,0 :rem 145
1870 RETURN :rem 176
1880 REM*** CHIME SOUND *** :rem 160
1890 SYS 28672 :rem 218
1900 POKE SS+1,255:POKE SS+5,9:POKESS+15,
225:POKE SS+24,15 :rem 46
1910 POKESS+4,21 :rem 142
1920 FORTT=1TO300:NEXT:POKESS+4,20:rem 116
1930 RETURN :rem 173
1940 REM*** SOUR BONG SOUND *** :rem 166
1950 SYS 28672 :rem 215
1960 POKE SS+1,55:POKE SS+5,9:POKESS+15,2
5:POKE SS+24,15 :rem 208
1970 POKESS+4,21 :rem 148
1980 FORTT=1TO300:NEXT:POKESS+4,20:POKE S
S+24,0 :rem 118
1990 RETURN :rem 179
2000 REM*** ROUTINE TO LOOK FOR A WINNER
[SPACE]*** :rem 155
2010 A1=3:A2=80:A3=0:A4=0 :rem 46
2020 WI=NC:GOSUB 2120:REM*** CHECK ROWS *
** :rem 116
2030 A1=80:A2=3:A3=0:A4=0 :rem 48
2040 WI=CR:GOSUB 2120:REM*** CHECK COLS *
** :rem 96
2050 IF NC<>CR THEN 2080:REM*** IS # ON M
AJOR DIAGONAL? *** :rem 92
2060 A1=0:A2=3:A3=80:A4=0 :rem 51
2070 GOSUB 2120 :rem 14
2080 IF NC<>(4-CR) THEN RETURN:REM*** IS
[SPACE]# ON MINOR DIAGONAL? *** :rem 51
2090 A1=0:A2=3:A3=0:A4=80 :rem 54
2100 GOSUB 2120 :rem 8
2110 RETURN :rem 164
2120 WJ=0 :rem 211
2130 WM=S(CD)+WI*A1+WJ*A2+WJ*A3+(4-WJ)*A4
+1 :rem 133
2140 WP=PEEK(WM) :rem 197
2150 IF WP<128THENRETURN :rem 228
2160 W(WJ)=WM + SS :rem 196
2170 WJ=WJ+1:IF WJ<=4THEN2130 :rem 177
2180 REM*** CHANGE WINNERS COLOR ***
:rem 246
2190 FOR WJ=0TO4:FORQ=0TO1:POKEW(WJ)+Q,7:
NEXT:NEXT:BO=1 :rem 7
2200 REM*** PLAY THE BINGO SONG ***
:rem 97
2210 POKE54296,15:POKE54277,10:POKE54278,
10:REM SET VOL,ATT/DEC,SUS/REL
:rem 211
2220 FORI=0TO21:POKE54272,FL(I):POKE54273
,FH(I):POKE54276,33 :rem 243
2230 FORT=0TO DU(I)*4:NEXT:POKE54276,0:NE
XT :rem 98
2240 REM*** CHANGE WINNERS COLOR ***
:rem 243
2250 FOR WJ=0TO4:FORQ=0TO1:POKEW(WJ)+Q,6:
NEXT:NEXT:BO=1 :rem 3
2260 RETURN :rem 170
2270 REM JOYSTICK TOKEN ROUTINE :rem 198

2280 CM= F(CD) :rem 183
2290 OC=PEEK(CM):REM OC=OLD COLOR:rem 237
2300 POKE CM,5:POKE CM+1,5:REM COLOR IT G
REEN :rem 70
2310 KB=PEEK(D0):REM READ THE KEYBOARD CO
NTROL REG :rem 229
2320 POKE D0,255:PD=PEEK(D1) :rem 40
2330 J0=-((PDAND8)=0) :rem 90
2340 J1=-((PDAND2)=0) :rem 86
2350 J2=-((PDAND4)=0) :rem 90
2360 J3=-((PDAND1)=0) :rem 89
2370 FB=-((PDAND16)=0) :rem 155
2380 POKE D0,KB:REM RESTORE KEYBOARD
:rem 188
2390 IF(J0+J1+J2+J3+FB)=0 THEN 2560
:rem 57
2400 IF FB=1THEN 2490 :rem 73
2410 CC=CM+(J0-J2)*3+(J1-J3)*80:REM COMPU
TE NEW POSITION :rem 227
2420 FR=INT((CC-S(CD)-SS)/40) :rem 110
2430 X0=S(CD)+SS+FR*40:X1=X0+14:REM MIN,M
AX H-POSITIONS FOR CARD :rem 69
2440 IF CC>X1 OR CC<X0 OR FR>8{2 SPACES}O
R FR<0 THEN 2560:REM TEST IF OUTSIDE
BOX :rem 212
2450 REM VALID NEW POSITION-MOVE THE CURS
OR :rem 161
2460 POKE CM,OC:POKE CM+1,OC :rem 92
2470 CM=CC:REM MOVE THE CURSOR :rem 52
2480 GOTO2290 :rem 212
2490 REM ACT ON FIREBUTTON-WE MUST CHECK
[SPACE]IF THE CURSOR IS WITHIN A BOX
AND IF :rem 227
2500 REM IT IS, IS THE NUMBER THE CORRECT
ONE. :rem 89
2510 B0=PEEK(CM-SS)-48:B1=PEEK(CM-SS+1)-4
8 :rem 161
2520 IF B0=N1 AND B1=N2 OR B0=N1+128 ANDB
1=N1+128 THENGOTO1290 :rem 26
2530 REM FIRE BUTTON PRESSED WHEN NOT ON
[SPACE]BOX :rem 111
2540 POKECM,OC:POKECM+1,OC:GOSUB 1950:REM
SOUR GONG :rem 118
2550 NN=1:GOTO 1390:REM GET NEXT CARD
:rem 109
2560 REM LOOP TILL JOYSTICK IS ACTIVE
:rem 232
2570 FOR I=0TO20:NEXT :rem 233
2580 POKE CM,OC:POKE CM+1,OC :rem 95
2590 FOR I=0TO20:NEXT :rem 235
2600 GOTO 2300 :rem 198
2610 DATA 160,00,165,254,145,251,200,196,
253,208,249,96,252,0,3,255 :rem 227
2620 DATA 0,3,3,128,7,57,128,7,35,128,7,5
7,128,3,3,128,3,255,0,0,252,252,0
:rem 37
2630 DATA3,255,0,3,3,128,7,207,128,7,207,
128,7,207,128,3,3,128,3,255,0,0,252
:rem 183
2640 DATA252,0,3,255,0,3,25,128,7,25,128,
7,41,128,7,49,128,3,57,128,3,255,0
:rem 147
2650 DATA0,252,252,0,1,131,0,3,49,128,6,1
21,128,6,127,128,6,113,128,3,57
:rem 239
2660 DATA128,3,131,0,0,252 :rem 32
2670 DATA252,0,1,131,0,3,57,128,6,124,128
,6,124,128,6,124,128,3,57,128,3,131
:rem 184
2680 DATA 0,0,252 :rem 59
2690 DATA 0,126,0,1,255,128,7,255,224,31,
255,248,63,255,252,63,255,252,127,25

```



```

5                                     :rem 11
2700 DATA 254,120,0,30,248,0,31,248,0,31,
      248,0,31,120,0,30,127,255,254,63,255
      :rem 166
2710 DATA 252,63,255,252,31,255,248,7,255
      ,224,1,255,128,0,126,0,0,0,0,0,0,0
      :rem 157
2720 DATA 38,43,39,38,43,39,183,45,39,183
      ,45,44,183,45,64,113,38,46,113,38,42
      :rem 238
2730 DATA 38,43,32,38,43,36,38,43,47,64,3
      4,50,64,34,54,113,38,37,113,38,39
      :rem 75
2740 DATA 113,38,51,64,34,57,83,32,53,168
      ,25,72,204,28,54,83,32,51,64,34,62
      :rem 121
2750 DATA 64,34,75                     :rem 125

```

```

30 POKE198,5:POKE631,78:POKE632,69:POKE63
      3,87:POKE634,13:POKE635,131:END
      :rem 225
1000 DATA 0,72,236,126,55,239,124,56,24
      :rem 120
1001 DATA 1,63,63,30,118,118,30,63,63
      :rem 11
1002 DATA 2,24,56,124,239,55,126,236,72
      :rem 124
1003 DATA 3,24,24,90,126,102,126,126,66
      :rem 112
1005 DATA 5,66,126,126,102,126,90,24,24
      :rem 116
1006 DATA 6,18,55,126,236,247,62,28,24
      :rem 83
1007 DATA 7,252,252,120,110,110,120,252,2
      52                                     :rem 39
1008 DATA 8,24,28,62,247,236,126,55,18
      :rem 87
1009 DATA 9,0,0,12,28,56,48,0,0 :rem 225
1010 DATA 10,0,0,48,56,28,12,0,0 :rem 1
1011 DATA 11,0,24,24,24,24,24,0,0 :rem 45
1012 DATA 12,0,0,0,62,62,0,0,0 :rem 145
1016 DATA 16,0,112,126,102,32,48,48,0
      :rem 6
1017 DATA 17,228,18,37,68,36,18,33,198
      :rem 98
1018 DATA 18,0,48,48,32,102,126,112,0
      :rem 10
1019 DATA 19,68,170,145,0,34,85,137,129
      :rem 138
1020 DATA 20,153,90,60,255,255,60,90,153
      :rem 167
1021 DATA 21,129,137,85,34,0,145,170,68
      :rem 124
1022 DATA 22,0,14,126,102,4,12,12,0
      :rem 142
1023 DATA 23,198,33,18,36,68,37,18,228
      :rem 92
1024 DATA 24,0,12,12,4,102,126,14,0
      :rem 146
1046 DATA 46,0,0,66,36,24,36,66,0 :rem 79
1055 DATA 55,126,255,255,255,255,255,255,
      126,-1                               :rem 19

```

Tank Mania

(Article on page 102.)

BEFORE TYPING...

Before typing in programs, please refer to "How To Type COMPUTE!'s Gazette Programs," "A Beginner's Guide To Typing In Programs," and "The Automatic Proofreader" that appear before the Program Listings.

Program 1: Loader

```

4 PRINT "{CLR}":POKE56,28:POKE52,28:CB=716
      8:                                     :rem 116
5 FORI=7168TO7679:POKEI,PEEK(I+25600):NEX
      T:POKE36869,255                       :rem 119
6 READA:IFA=-1THEN9                       :rem 160
7 FORI=0TO7:READB:POKECB+A*8+I,B:NEXT
      :rem 93
8 GOTO6                                     :rem 167
9 POKE36878,15                             :rem 10
10 FORL=0TO21:POKE38400+L,C:POKE38905-L,C
      :POKE38400+L+1,4:POKE38905-L-1,0
      :rem 239
11 POKE7680+L,170:POKE7680+L+1,7:POKE8185
      -L,170:POKE8185-L-1,1               :rem 4
12 POKE36875,128+6*L:C=(C-(C<7))*-(C<7):I
      FC=1THENC=4                           :rem 122
13 NEXT:IFK=1THENRETURN                   :rem 52
14 PRINT "{6 DOWN}{6 SPACES}{RVS}{GRN}CCCC
      CCCCCC":PRINT "{6 SPACES}{RVS}{GRN}TAN
      K MANIA!"                             :rem 29
15 PRINT "{6 SPACES}{RVS}{GRN}CCCCCCCCCCCC"
      :rem 200
20 PRINT "{3 DOWN}{RVS}{BLU}{5 SPACES}PRES
      S ANY KEY"                           :rem 245
21 A$="":GETA$:IFA$=""THEN21              :rem 9
22 PRINT "{CLR}{DOWN}":PRINT "{RVS}{YEL}RIG
      HT JOYSTICK (RED)":PRINT "{OFF}{PUR} A"
      :rem 156
23 PRINT "{DOWN}{BLK}G";PRINT "{RVS}{YEL} LEFT J
      OYSTICK";PRINT "{RVS}{BLU}{DOWN}{BLU}";
      PRINT "{OFF}{RVS}{YEL} BLOCKADES":PRINT
      "{DOWN}{RVS} MINES"                  :rem 122
24 PRINT "{2 DOWN}{RVS}{CYN}{4 SPACES}PRES
      S ANY KEY "                          :rem 104
25 A$="":GETA$:IFA$=""THEN25              :rem 17
26 PRINT "{CLR}"                           :rem 204
27 K=1:GOSUB9:POKE7702,32:POKE8163,32:POK
      E36869,240                           :rem 230
28 PRINT "[HOME]{2 DOWN}{2 SPACES}JUST A F
      EW MOMENTS"                          :rem 252

```

Program 2: Main Program

```

1 C=22:R=22:S=7680:A=30720:DD=37154:P1=37
      151:P2=37152:SL=5:DA=37136:REM SL=SKILL
      LEVEL                               :rem 200
2 POKE36879,29:T=3:CY=4:CE=6:CA=7:CS=7:CQ
      =4:CM=0:X=-1                         :rem 156
3 V=36878:SL=V-2:S2=V-1:DIMDC%(2,2),OC%(2
      ,2),U(1),O(1),Q(1),D(1),E(1)       :rem 127
4 FORI=0TO2:FORJ=0TO2:X=X+1:DC%(I,J)=X:OC
      %(I,J)=X+16:NEXTJ,I                 :rem 193
5 DEFFNA(Z)=S+X+C*Y:DEFFNB(Z)=PEEK(FNA(Z)
      ):DEFFNR(Z)=INT(RND(1)*Z)           :rem 66
6 POKEV-9,255:PRINT "{CLR}{BLK}":X=S+A:FOR
      I=XTOX+505:POKEI,T:NEXTI:GOSUB100
      :rem 163
7 POKE36879,29:FORI=1TO3+2*SL:X=FNR(C):Y=
      FNR(R)                               :rem 132
8 POKEFNA(0),46:POKEFNA(0)+A,CA:NEXT
      :rem 167
11 X=FNR(C):Y=FNR(R):IFFNB(0)<>32THEN11
      :rem 90
12 D(0)=X:E(0)=Y:Q(0)=FNA(0):U(0)=-1:O(0)
      =FNR(3)-1                           :rem 172
13 POKEFNA(0),DC%(U(0)+1,O(0)+1):POKEFNA(
      0)+A,CY                             :rem 143
14 X=FNR(C):Y=FNR(R):IFFNB(0)<>32THEN14
      :rem 96

```



```

15 D(1)=X:E(1)=Y:Q(1)=FNA(0):U(1)=1:O(1)=
   FNR(3)-1 :rem 135
16 POKEFNA(0),DC%(U(1)+1,O(1)+1):POKEFNA(
   0)+A,CE:FORI=1TO500:NEXT :rem 9
18 ONW+1GOSUB75,41:IFFBTHENX=D(W):Y=E(W):
   PX=U(W):PY=O(W):GOTO46 :rem 4
19 B=0:F=0:IFJ3THENB=1 :rem 43
20 IFJ2THENB=-1 :rem 121
21 IFJ1THENF=1 :rem 80
22 IFJ0THENF=-1 :rem 125
23 IFB=0ANDF=0THEN B=U(W):F=O(W) :rem 136
27 U(W)=B:O(W)=F :rem 153
28 D(W)=D(W)+U(W):E(W)=E(W)+O(W) :rem 26
30 X=D(W):Y=E(W):J=FNB(0):IFJ=32THEN35
   :rem 5
31 IFJ>54THENX=X-U(W):D(W)=D(W)-U(W):Y=Y-
   O(W):E(W)=E(W)-O(W):GOTO35 :rem 64
34 GOTO 60 :rem 6
35 POKEQ(W),32:POKEQ(W)+A,T:Q(W)=FNA(0):P
   OKEQ(W),DC%(U(W)+1,O(W)+1):POKEQ(W)+A,
   CY+2*W :rem 12
37 J=0:IFW=1THENW=0:GOTO18 :rem 126
38 W=1:GOTO18 :rem 12
41 P=PEEK(DA):J0=-((PAND4)=0):J1=-((PAND8
   )=0):J2=-((PAND16)=0):J3=-((PAND2)=0)
   :rem 56
42 FB=-((PAND32)=0):RETURN :rem 9
46 Z=PX*PY:POKEV,8:IFZ=1THENJ=10 :rem 71
47 IFZ=-1THENJ=9 :rem 222
48 IFZ=0ANDPX=0THENJ=11 :rem 194
49 IFZ=0ANDPY=0THENJ=12 :rem 197
50 FORI=1TO10:X=X+PX:Y=Y+PY:POKES2,230-I
   :rem 35
51 IFI<>1THENPOKEZ,32:POKEZ+A,T :rem 225
52 B=FNB(0):IFB=32THEN58 :rem 134
53 IFB<>55THEN57 :rem 184
54 IFB=55THENI=10:NEXTI:POKEV,0:GOTO19
   :rem 177
57 I=10:NEXTI:GOTO60 :rem 238
58 Z=FNA(0):POKEZ,J:POKEZ+A,CM:NEXTI
   :rem 64
59 POKEZ,32:POKEZ+A,T:POKEV,0:GOTO19
   :rem 47
60 POKES2,230:SC=X-1:IFSC<0THENS=0
   :rem 155
61 FC=X+1:IFFC>CTHENFC=C :rem 236
62 SR=Y-1:IFSR<0THENS=0 :rem 28
63 FR=Y+1:IFFR>RTHENFR=R :rem 58
64 FORX=SC TOFC:FORY=SR TOFR:J=OC%(X-SC,Y-S
   R) :rem 122
65 POKEFNA(0),J:POKEFNA(0)+A,CQ:NEXTY,X
   :rem 167
66 POKES1,220:FORJ=15TO0STEP-1:POKEV,J:FO
   RJ=1TO50:NEXTJ1:NEXTJ :rem 88
67 POKEV,0:FORX=SC TOFC:FORY=SR TOFR:POKEF
   NA(0),32:POKEFNA(0)+A,T:NEXTY,X:rem 174
68 IFPEEK(Q(1))=32ANDPEEK(Q(0))=32THENWC=
   WC+1:WH=WH+1:A$="YOU GOT EACH OTHER!":
   GOTO72 :rem 73
69 IFPEEK(Q(0))=32THENA$="RED IS REARRANG
   ED1":WC=WC+1:GOTO72 :rem 83
70 IFPEEK(Q(1))=32THENA$="BLUE IS TANK DU
   ST1":WH=WH+1:GOTO72 :rem 54
71 GOTO18 :rem 10
72 POKEV-9,240:PRINT"[CLR]{3 DOWN}";A$:PR
   INT"[2 DOWN]SCORE: BLUE";WC;" RED";WH
   :rem 155
73 PRINT"[3 DOWN]PRESS ANY KEY TO STOP":F
   ORI=1TO400:GETA$:IFA$<>" "THENI=400:NEX
   TI:END :rem 75
74 NEXTI:GOTO6 :rem 156

```

```

75 POKEDD,127:P=PEEK(P2)AND128:J3=-((P=0):
   POKEDD,255 :rem 254
76 P=PEEK(P1):J1=-((PAND8)=0):J2=-((PAND1
   6)=0) :rem 51
77 J0=-((PAND4)=0):FB=-((PAND32)=0):RETUR
   N :rem 149
100 FOR RA=0TOSL*10:POKES+INT(RND(1)*484)
   ,55:NEXT :rem 167
101 FOR L=0 TO 21 :rem 56
103 POKE S+L,55 :rem 35
104 POKE S+(22*22)+L,55 :rem 146
105 NEXT L :rem 33
106 FOR U=0 TO 484 STEP 22 :rem 35
107 POKE S+U,55 :rem 48
108 POKE S+21+U,55 :rem 191
109 NEXT U:RETURN :rem 72

```

Variable Storage

(Article on page 108.)

Program 1: Variable Utility

```

44440 REM{3 SPACES}DUMP... :rem 164
44441 REM***START WITH GOTO 44444:rem 106
44443 END:REM PROTECT SUBROUTINE :rem 41
44444 ZB=PEEK(47)+256*PEEK(48)-7:ZA=PEEK(
   45)+256*PEEK(46) :rem 185
44450 PRINT"STRINGS &{2 SPACES}VARIABLES:
   ":PRINT"*****" :rem 114
44460 FOR ZZ=ZA TO ZB STEP 7 :rem 39
44465 IF PEEK(ZZ)>127 THEN GOSUB 44710:GO
   TO44520:REM INT VAR :rem 171
44470 IF PEEK(ZZ+1)<128 THEN GOSUB 44543:
   GOTO 44520:REM FP VAR :rem 177
44475 REM*****STRING*****VARIABLE
   E :rem 39
44480 GOSUB44485:GOTO44520 :rem 255
44485 PRINTCHR$(144)CHR$(PEEK(ZZ))CHR$(PE
   EK(ZZ+1)-128)CHR$(36)CHR$(61);
   :rem 76
44490 ZY=PEEK(ZZ+3)+256*PEEK(ZZ+4):ZX=PEE
   K(ZZ+2):REM STRINGADDRESS AND LENGTH
   H :rem 56
44495 IF ZY=0 THEN 44510 :rem 230
44500 FOR Z0=1TOZX:PRINTCHR$(PEEK(ZY));Z
   Y=ZY+1:NEXTZ0 :rem 234
44510 PRINT:RETURN :rem 165
44520 NEXTZZ :rem 242
44525 GOSUB 44805:REM DO ARRAYS NOW:rem 0
44530 PRINT:PRINTCHR$(144)"...ALL DONE":
   END :rem 75
44540 REM***FLOAT PT*****VARIABLE
   :rem 187
44543 IFPEEK(ZZ)=90 AND(PEEK(ZZ+1)=65 OR
   {SPACE}PEEK(ZZ+1)=66)THEN RETURN
   :rem 148
44545 PRINTCHR$(144)CHR$(PEEK(ZZ))CHR$(PE
   EK(ZZ+1))CHR$(61); :rem 198
44550 Z1=2↑(PEEK(ZZ+2)-129) :rem 251
44560 Z2=128:Z3=256:Z4=1 :rem 62
44570 Z5=PEEK(ZZ+3): IFZ5>=128 THEN Z5=Z5
   -128:Z4=-1 :rem 123
44580 Z9=Z1+Z5*Z1/Z2+PEEK(ZZ+4)*Z1/Z2/Z3+
   PEEK(ZZ+5)*Z1/Z2/Z3↑2+PEEK(ZZ+6)*Z1
   /Z2/Z3↑3 :rem 78
44590 PRINTZ9*Z4 :rem 222
44600 RETURN :rem 222
44700 REM***INTEGER*****VARIABLE
   E :rem 43

```



```

44710 PRINTCHR$(144)CHR$(PEEK(ZZ)-128)CHR
      $(PEEK(ZZ+1)-128)CHR$(37)CHR$(61);
      :rem 12
44720 Z4=1:Z7=PEEK(ZZ+2):Z8=PEEK(ZZ+3)
      :rem 29
44730 IF Z7 >127THENZ7=255-Z7:Z8=256-Z8:Z
      4=-1
      :rem 25
44740 Z9=Z7*256+Z8:REMNOTE REVERSE HIBYTE
      -LOBYTE SEQUENCE
      :rem 114
44750 PRINTZ9*Z4
      :rem 220
44760 RETURN
      :rem 229
44800 REM*** ARRAY*****VARIABLE
      S
      :rem 240
44805 IFZQ=0THENZA=0:GOSUB44550:ZA=0:GOS
      UB44720:ZR=2:ZQ=2:ZX=2:ZY=2:Z0=2
      :rem 84
44806 REM ABOVE DUMMIES NEEDED TO STABILI
      ZE{3 SPACES}POINTER TO ARRAYS
      :rem 240
44810 ZZ=PEEK(47)+256*PEEK(48):IFZZ=PEEK(
      49)+256*PEEK(50)THEN RETURN
      :rem 32
44815 PRINT"SPACEBAR WHEN READY{3 SPACES}
      FOR ARRAYS":WAIT197,32
      :rem 25
44820 IF PEEK(ZZ+4)<>1THENGOSUB45110:GOTO
      44820:REM MULTI-D ARRAY
      :rem 125
44825 IF PEEK(ZZ)>127 THEN GOSUB 44900:GO
      TO44820:REM INT ARRAY
      :rem 69
44828 IF PEEK(ZZ+1)>127 THEN GOSUB 45010:
      GOTO44820:REM STRING ARRAY
      :rem 137
44829 REM*****FLOAT PT *****ARRAY
      :rem 82
44830 ZQ=ZZ:ZZ=ZZ+7
      :rem 224
44840 FOR ZR=0 TO PEEK(ZQ+6)+256*PEEK(ZQ+
      5)-1:REM**DIM
      :rem 70
44850 PRINTCHR$(144)CHR$(PEEK(ZQ))CHR$(PE
      EK(ZQ+1))CHR$(40)ZCHR$(41)CHR$(61)
      :rem 204
44860 ZZ=ZZ-2:GOSUB44550:ZZ=ZZ+2
      :rem 2
44870 ZZ=ZZ+5
      :rem 12
44880 NEXTZR:IFZZ=PEEK(49)+256*PEEK(50)TH
      EN RETURN
      :rem 108
44890 GOTO44820
      :rem 68
44900 REM*****INTEGER*****ARRAYS
      :rem 101
44910 ZQ=ZZ:ZZ=ZZ+7
      :rem 223
44920 FOR ZR=0 TO PEEK(ZQ+6)+256*PEEK(ZQ+
      5)-1:REM**DIM
      :rem 69
44930 PRINTCHR$(144)CHR$(PEEK(ZQ)-128)CHR
      $(PEEK(ZQ+1)-128)CHR$(37)CHR$(40);
      :rem 251
44940 PRINTZCHR$(41)CHR$(61);
      :rem 233
44950 ZZ=ZZ-2:GOSUB44720:ZZ=ZZ+2
      :rem 1
44960 ZZ=ZZ+2
      :rem 9
44970 NEXTZR:IFZZ=PEEK(49)+256*PEEK(50)TH
      EN GOTO 44530
      :rem 197
44980 RETURN
      :rem 233
45000 REM*****STRING*****ARRAYS
      :rem 80
45010 ZQ=ZZ:ZZ=ZZ+7
      :rem 215
45020 FOR ZR=0 TO PEEK(ZQ+6)+256*PEEK(ZQ+
      5)-1:REM**DIM
      :rem 61
45030 PRINTCHR$(144)CHR$(PEEK(ZQ))CHR$(PE
      EK(ZQ+1)-128)CHR$(36)CHR$(40);
      :rem 42
45040 PRINTZCHR$(41)CHR$(61);
      :rem 225
45050 ZZ=ZZ-2:GOSUB44490:ZZ=ZZ+2
      :rem 253
45060 ZZ=ZZ+3
      :rem 2
45070 NEXTZR:IFZZ=PEEK(49)+256*PEEK(50)TH
      EN GOTO 44530
      :rem 189
45080 RETURN
      :rem 225
45100 REM**MULTI-D*****ARRAYS
      :rem 160
45110 ZX=2:ZY=2:PRINTCHR$(43)PEEK(ZZ+4)"D
      IMENSIONALARRAY:"PRINTTAB(5);
      :rem 16
45120 IF PEEK(ZZ)<127THENPRINTCHR$(PEEK(Z
      Z));:GOTO45140
      :rem 111
45130 PRINTCHR$(PEEK(ZZ)-128);:ZX=1
      :rem 99
45140 IFPEEK(ZZ+1)=0THEN45170
      :rem 176
45145 IFPEEK(ZZ+1)=128THEN ZY=1:GOTO45170
      :rem 180
45150 IF PEEK(ZZ+1)<127THENPRINTCHR$(PEEK
      (ZZ+1));:GOTO45170
      :rem 45
45160 PRINTCHR$(PEEK(ZZ+1)-128);:ZY=1
      :rem 195
45170 IF ZX=1 AND ZY=1THENPRINT"8";:GOTO4
      5190
      :rem 122
45180 IF ZY=1 THENPRINT"$";
      :rem 17
45190 PRINTCHR$(40);
      :rem 129
45200 Z9=PEEK(ZZ+4)
      :rem 84
45210 FORZ8=Z9TO1STEP-1:Z7=PEEK(ZZ+4+2*Z8
      )+(PEEK(ZZ+4+2*Z8-1))*256-1:rem 254
45220 PRINTZ7;
      :rem 86
45230 IFZ8=1THENPRINTCHR$(41):GOTO45250
      :rem 115
45240 PRINTCHR$(44);:NEXTZ8
      :rem 140
45250 PRINT
      :rem 141
45260 ZZ=ZZ+PEEK(ZZ+2)+PEEK(ZZ+3)*256:IF
      {SPACE}ZZ=PEEK(49)+256*PEEK(50)THEN
      44530
      :rem 107
45270 RETURN
      :rem 226

```

Program 2:

Variable Utility, Condensed Version

```

44443 END:REM MINIDUMP FPVAR & $
      :rem 36
44444 ZB=PEEK(47)+256*PEEK(48)-7:ZA=PEEK(
      45)+256*PEEK(46)
      :rem 185
44460 FORZZ=ZATOZBSTEP7
      :rem 39
44470 IFPEEK(ZZ+1)<128THENGOSUB44543:GOTO
      44520
      :rem 20
44480 GOSUB44485:GOTO44520
      :rem 255
44485 PRINTCHR$(144)CHR$(PEEK(ZZ))CHR$(PE
      EK(ZZ+1)-128)CHR$(36)CHR$(61);
      :rem 76
44490 ZY=PEEK(ZZ+3)+256*PEEK(ZZ+4):ZX=PEE
      K(ZZ+2)
      :rem 168
44495 IFZY=0THEN44510
      :rem 230
44500 FOR Z0=1TOZX:PRINTCHR$(PEEK(ZY));:Z
      Y=ZY+1:NEXTZ0
      :rem 234
44510 PRINT:RETURN
      :rem 165
44520 NEXTZZ
      :rem 242
44530 END
      :rem 215
44543 IFPEEK(ZZ)=90THENRETURN
      :rem 114
44545 PRINTCHR$(144)CHR$(PEEK(ZZ))CHR$(PE
      EK(ZZ+1))CHR$(61);
      :rem 198
44550 Z1=2↑(PEEK(ZZ+2)-129)
      :rem 251
44560 Z2=128:Z3=256:Z4=1
      :rem 62
44570 Z5=PEEK(ZZ+3):IFZ5>128THENZ5=Z5-12
      8:Z4=-1
      :rem 123
44580 Z9=Z1+Z5*Z1/Z2+PEEK(ZZ+4)*Z1/Z2/Z3+
      PEEK(ZZ+5)*Z1/Z2/Z3↑2+PEEK(ZZ+6)*Z1
      /Z2/Z3↑3
      :rem 78
44590 PRINTZ9*Z4
      :rem 222
44600 RETURN
      :rem 222

```

BEFORE TYPING...

Before typing in programs, please refer to "How To Type COMPUTE!'s Gazette Programs," "A Beginner's Guide To Typing In Programs," and "The Automatic Proofreader" that appear before the Program Listings.

Checksums

For Early GAZETTE Programs

In the January issue, we asked for reader response concerning checksums for early (July-October) GAZETTE programs. Response was great, so we've chosen some of the longer and most difficult-to-type programs.

If you've already typed in a program, you can use "Automatic Proofreader" to check each line of the program. Disk drive users can LOAD and RUN Automatic Proofreader, then LOAD the program to be checked. If you own a cassette drive, see the special loading instructions below.

When the program to be checked has been LOADED, type SYS 886 to start Automatic Proofreader. LIST the program and stop when it fills the screen (remember that CTRL will slow the listing and RUN/STOP will stop it). Position the cursor on the first program line and hit RETURN. The checksum number will appear in the upper left-hand corner. Press RETURN again and you will see the next number. When you reach the bottom of the screen, LIST the next section of the program.

If you're typing in one of the programs below for the first time, LOAD and RUN Automatic Proofreader. Then type in the original listing while comparing the checksums.

Special Notations

There are a few symbols in the listings which should be noted. First, any letters appearing to the left of the line number represent the month (O for October, D for December, etc.) in which a necessary correction was made in "Bug-Swatter." We've not included minor modifications. The letter appears only if the contents of the line are different from the original listing. Refer to "Bug-Swatter" in the issue noted for the correction.

An asterisk (*) following a line number indicates that there were too many characters per logical line; therefore, the checksum is meaningless. Remember, the VIC accepts no more than 88 characters per line, and the 64 no more than 80. In cases where you see the asterisk, you can split the line by creating a new line number. For ex-

ample, if line 350 is too long and the next line number is 360, simply create line 355 and type in a latter section of line 350. (After a colon is always a safe bet.) A better alternative is to type in the statement using keyword abbreviations (? for PRINT, P SHIFTEd O for POKE, etc.).

For Tape Users

Because Automatic Proofreader is a machine language program that fits in the cassette buffer, it is erased when you load a program from tape. To get around this problem, follow these instructions:

1. LOAD and RUN Automatic Proofreader. This will put the machine language program into the cassette buffer.
2. Type the following lines in direct mode (without line numbers):

```
A$="PROOFREADER.T": B$="{10 SPACES}": FOR  
X = 1 TO 4: A$=A$+B$:NEXTX  
FORX= 886 TO 1018: A$ = A$ + CHR$(PEEK(X))  
):NEXTX  
OPEN1,1,1,A$:CLOSE1
```

After you type the last line, you will be asked to press RECORD and PLAY. We recommend that you start at the beginning of a new tape.

You now have a new version of Automatic Proofreader. Turn your computer off and on, then LOAD the program you were working on. Put the cassette containing PROOFREADER.T into the tape drive and type:

```
OPEN1:CLOSE1
```

You can now get into Proofreader by typing SYS 886. To test this, PRINT PEEK (886) should return the number 173. If it does not, repeat the steps above, making sure that A\$ (PROOFREADER.T) contains 13 characters and that B\$ contains 10 spaces.

The new version of Automatic Proofreader will load itself into the cassette buffer whenever you type OPEN1: CLOSE1 and PROOFREADER.T is the next program on your tape. It will not disturb the contents of BASIC memory.

July

Snake Escape (VIC)

100 :212	7010 :250
110 :186	7020 :006
120 :247	7030 :194
130 :199	7040 :236
140 :247	7050 :083
150 :240	7060 :099
160 :017	7070 :174
170 :119	8000 :085
180 :119	8005 :113
190 :057	8010 :180
200 :190	8020 :178
210 :235	8030 :176
220 :110	8040 :051
230 :219	8045 :120
240 :102	8050 :225
250 :232	8060 :009
260 :245	8070 :122
270 :046	8080 :132
280 :189	8090 :128
300 :125	8100 :124
310 :014	8110 :208
4000 :234	9000 :111
4010 :120	9010 :210
4020 :018	9020 :201
4030 :031	9030 :144
4040 :112	9040 :227
4050 :091	9050 :042
4060 :151	9060 :175
4070 :170	9500 :120
4080 :188	9510 :051
4090 :189	9520 :046
4100 :165	9530 :251
5000 :217	9540 :183
5010 :124	9550 :189
5020 :127	9560 :174
5030 :130	9570 :072
5035 :137	9580 :224
5040 :169	9590 :023
5050 :073	9600 :201
5060 :007	9610 :123
5070 :087	9620 :157
5080 :136	10000 :242
5090 :225	28000 :143
5100 :201	29000 :140
5110 :242	29010 :097
5120 :189	30000 :200
6000 :048	30010 :072
6005 :238	30020 :104
6010 :194	30030 :173
6020 :049	30040 :106
6025 :198	30050 :049
6030 :123	30060 :103
6040 :080	30070 :243
6050 :215	30080 :041
6060 :122	30090 :174
6070 :214	30100 :228
6080 :247	30110 :041
7000 :187	30120 :214

Snake Escape (64)

5 :255	6025 :139
10 :057	6026 :173
15 :059	6027 :151
20 :136	6028 :142
30 :067	6040 :027
100 :239	6050 :215
110 :186	6060 :122
120 :247	6070 :214
130 :199	6080 :228
140 :247	7000 :063
150 :240	7010 :253
160 :017	7020 :040
170 :119	7030 :227
180 :119	7040 :154
190 :057	7042 :102
200 :195	7043 :176
210 :237	7045 :197
220 :113	7050 :083
230 :219	7060 :099
240 :102	7070 :174
250 :232	8000 :185
260 :245	8005 :113
270 :046	8010 :194
280 :189	8020 :179
300 :096	8030 :177
310 :126	8040 :052
4000 :234	8045 :137
4010 :009	8050 :225
4020 :163	8060 :009
4030 :065	8070 :122
4040 :112	8080 :132
4050 :091	8090 :128
4060 :151	8100 :124
4070 :057	8110 :208
4080 :166	9000 :200
4090 :189	9010 :195
4100 :165	9020 :171
5000 :093	9030 :120
5010 :124	9040 :225
5020 :127	9050 :030
5030 :130	9060 :175
5035 :137	9500 :173
5040 :169	9505 :108
5050 :158	9510 :141
5060 :007	9515 :179
5070 :138	9520 :153
5080 :059	9525 :147
5090 :044	9530 :176
5100 :158	9533 :156
5102 :102	9536 :149
5103 :017	9540 :183
5106 :131	9550 :054
5120 :221	9560 :174
6000 :045	9570 :033
6003 :098	9580 :090
6005 :214	9590 :033
6010 :155	9600 :216
6020 :167	9610 :123
6021 :146	9620 :157
6022 :136	10000 :242

28000 :141	30050 :054
29000 :135	30070 :092
29010 :097	30080 :041
30000 :076	30090 :174
30010 :077	30100 :228
30020 :109	30110 :041
30030 :178	30120 :214
30040 :111	

Alfabug (VIC)

1 :060	79 :003
5 :147	80 :175
10 :223	81 :114
20 :193	85 :012
25 :237	90 :087
30 :094	100 :200
34 :172	102 :094
36 :131	105 :111
40 :242	110 :020
50 :097	115 :056
55 :039	118 :155
57 :240	120 :061
60 :031	130 :123
70 :002	140 :043
75 :083	145 :004
76 :218	150 :109
77 :090	175 :037
78 :089	200 :022

Alfabug (64)

0 :031	85 :012
1 :065	90 :214
5 :094	100 :123
6 :227	102 :094
10 :030	105 :073
20 :193	110 :020
25 :236	115 :056
30 :136	118 :091
34 :219	120 :205
36 :131	130 :123
40 :242	140 :043
50 :059	145 :003
55 :039	150 :109
57 :235	174 :124
60 :147	175 :100
70 :002	176 :042
74 :128	177 :240
75 :124	178 :128
76 :218	200 :114
77 :090	205 :094
78 :233	210 :235
79 :003	215 :233
80 :174	220 :116
81 :134	

Word Hunt (VIC)

2 :019	5 :080
3 :225	10 :123
4 :216	11 :091

12 :215	710 :186
13 :093	720 :093
14 :235	740 :162
20 :091	760 :181
25 :161	770 :242
70 :165	775 :117
80 :116	780 :126
90 :232	790 :027
95 :137	800 :166
100 :063	810 :108
110 :213	820 :228
120 :045	860 :02
130 :235	861 :175
140 :166	870 :214
150 :108	880 :179
170 :045	890 :228
180 :193	900 :159
190 :014	910 :074
200 :226	920 :204
210 :007	921 :149
220 :131	930 :164
230 :228	940 :207
240 :122	950 :160
250 :141	951 :204
260 :136	960 :226
270 :029	970 :133
280 :217	980 :048
290 :218	1000 :245
295 :170	1020 :252
300 :125	1025 :243
310 :037	1030 :038
320 :120	1040 :204
340 :090	1050 :210
360 :184	1060 :122
370 :201	1070 :156
380 :203	1080 :156
400 :116	1090 :215
410 :221	1100 :120
430 :086	1110 :170
440 :033	1120 :158
450 :081	1140 :154
460 :221	1150 :183
470 :246	1160 :126
490 :052	1170 :012
500 :175	1190 :108
510 :095	1200 :163
520 :080	1210 :112
530 :061	1230 :110
550 :130	1240 :049
560 :098	1250 :175
570 :114	1260 :203
580 :134	1270 :213
590 :134	1280 :024
600 :108	1300 :065
610 :093	1310 :040
620 :129	1320 :017
630 :111	1330 :151
640 :097	1340 :070
650 :097	1341 :214
670 :027	1342 :012
680 :035	1343 :061
690 :140	1344 :063

1345 :036	1520 :056
1350 :201	1525 :040
1360 :167	1530 :061
1370 :213	1535 :138
1380 :194	1540 :121
1390 :157	1541 :079
1400 :066	1550 :113
1420 :000	1560 :025
1430 :160	1570 :048
1450 :173	1580 :023
1460 :045	1590 :052
1470 :032	1600 :018
1480 :094	1610 :045
1490 :083	1620 :020
1491 :168	1630 :049
1492 :006	1650 :206
1493 :008	1660 :134
1500 :002	1670 :253
1505 :150	1680 :119
1510 :062	1700 :137
1515 :050	

Word Hunt (64)

4 :137	780 :254
10 :224	790 :032
11 :009	810 :039
12 :133	1480 :094
13 :011	1491 :046
14 :080	1492 :241
90 :188	1493 :001
295 :047	1520 :238
300 :175	1525 :086
310 :072	1527 :010
320 :172	1530 :181
430 :086	1535 :237
775 :055	1541 :169

VIC Timepiece

10 :188	300 :070
15 :155	310 :072
20 :059	320 :067
30 :094	325 :090
50 :022	330 :253
60 :175	340 :038
70 :171	350 :039
80 :099	400 :116
83 :152	410 :020
85 :253	420 :175
90 :170	430 :013
100 :015	440 :207
105 :136	450 :230
110 :173	460 :202
120 :100	500 :229
130 :081	505 :011
140 :251	510 :119
150 :208	520 :111
160 :220	525 :172
170 :115	530 :011
200 :172	600 :199
210 :018	605 :009
220 :010	610 :165

620 :115	1070 :141
630 :053	1080 :164
640 :236	1090 :109
650 :090	1100 :135
659 :199	1110 :162
660 :234	1120 :030
670 :101	1130 :143
680 :151	2000 :047
690 :243	2005 :196
695 :212	2010 :076
700 :019	2015 :172
710 :119	2020 :202
720 :142	2030 :154
730 :086	2035 :198
740 :021	2040 :127
750 :088	2060 :119
760 :148	2080 :167
900 :114	2085 :166
905 :206	2090 :165
910 :235	2100 :057
920 :240	2110 :061
930 :110	2120 :198
1000 :024	2180 :027
1010 :004	2190 :144
1020 :184	7999 :253
1030 :254	8000 :028
1040 :227	8010 :249
1045 :175	8020 :240
1050 :052	8025 :199
1055 :047	8030 :007
1060 :046	8040 :181

August Wordspell (VIC)

0 :242	
21 :159	47 :197
22 :007	48 :076
23 :254	49 :091
24 :194	50 :254
25 :237	51 :181
26 :025	52 :242
27 :205	53 :128
28 :194	54 :069
29 :132	55 :113
30 :075	56 :196
31 :072	57 :159
32 :164	58 :098
33 :007	59 :069
34 :095	60 :255
35 :238	61 :*
36 :103	62 :157
37 :194	63 :102
38 :170	64 :038
39 :076	65 :087
40 :090	66 :035
41 :093	67 :031
42 :192	68 :117
43 :126	69 :021
44 :252	70 :160
45 :070	71 :057
46 :241	72 :245

73 :169	78 :028
74 :069	79 :164
75 :154	80 :015
76 :088	81 :039
77 :162	82 :179

Wordspell (64)

0 :202	57 :202
21 :103	58 :098
22 :007	59 :069
24 :194	60 :255
25 :237	61 :110
26 :025	62 :*
27 :205	63 :*
28 :212	64 :253
29 :132	65 :136
30 :075	66 :224
31 :072	67 :000
32 :164	68 :033
33 :007	69 :118
34 :095	70 :014
35 :238	71 :005
36 :103	72 :245
37 :194	73 :169
38 :170	74 :069
39 :076	75 :154
40 :108	76 :088
41 :093	77 :162
42 :018	78 :028
43 :126	79 :164
44 :078	80 :015
45 :070	81 :104
46 :241	83 :116
47 :255	85 :009
48 :076	87 :092
49 :091	89 :083
50 :254	90 :001
51 :181	100 :150
52 :242	110 :141
53 :130	120 :128
54 :069	130 :094
55 :113	140 :117
56 :196	

VIC/64 Mailing List

8 :209	29 :024
10 :185	30 :153
11 :016	31 :091
13 :063	32 :115
16 :199	33 :242
17 :222	34 :152
18 :213	35 :137
19 :014	36 :127
20 :*	37 :088
21 :*	38 :250
22 :208	39 :241
23 :237	40 :149
24 :095	41 :188
25 :072	42 :199
26 :079	43 :181
28 :012	44 :243

45 :198	99 :253
46 :014	100 :149
47 :028	101 :064
48 :012	102 :214
49 :045	103 :042
50 :158	104 :117
51 :217	106 :155
52 :119	107 :170
53 :011	108 :*
54 :021	110 :161
55 :059	112 :102
56 :066	114 :029
60 :078	116 :180
62 :034	118 :054
64 :214	120 :096
66 :040	500 :207
68 :134	510 :001
70 :124	511 :003
72 :039	512 :146
73 :179	513 :225
74 :196	514 :110
76 :142	515 :216
78 :044	516 :063
80 :011	517 :117
82 :078	518 :061
84 :247	520 :249
86 :192	530 :251
88 :227	540 :253
90 :014	550 :255
92 :205	560 :001
93 :053	570 :003
94 :245	580 :005
95 :174	590 :007
96 :151	600 :039
98 :092	610 :204

The Viper (VIC)

10 :110	250 :106
20 :195	260 :204
30 :136	270 :058
40 :172	280 :237
50 :060	290 :128
60 :128	300 :079
70 :135	310 :138
80 :042	320 :017
90 :040	330 :134
100 :122	340 :056
110 :068	350 :120
120 :133	360 :007
130 :162	370 :220
140 :077	380 :042
150 :145	390 :113
160 :174	400 :131
170 :057	410 :105
180 :211	420 :194
190 :233	430 :147
200 :183	440 :244
210 :247	450 :173
220 :113	460 :087
230 :054	470 :202
240 :059	480 :208

490 :221	640 :141
500 :197	650 :022
510 :052	660 :175
520 :056	670 :001
530 :039	680 :038
540 :156	690 :059
550 :089	700 :101
560 :012	710 :000
N570 :*	720 :121
580 :094	730 :249
590 :249	740 :245
600 :226	750 :131
610 :034	760 :007
620 :167	770 :059
630 :166	780 :045

The Viper (64)

100 :007	540 :028
110 :022	550 :060
120 :156	560 :219
130 :102	0570 :184
140 :018	580 :104
150 :222	590 :202
160 :124	600 :000
170 :143	0610 :161
180 :026	620 :235
190 :204	630 :039
200 :237	640 :127
210 :168	650 :195
220 :075	660 :108
230 :080	670 :029
240 :134	680 :254
250 :111	0690 :254
260 :143	700 :016
270 :040	710 :199
280 :120	720 :153
290 :155	730 :013
300 :038	740 :125
310 :218	750 :017
320 :167	760 :205
330 :034	770 :114
340 :173	780 :184
350 :126	790 :175
360 :177	800 :165
370 :201	810 :237
380 :106	820 :021
390 :039	830 :174
400 :098	840 :159
410 :217	850 :059
420 :180	860 :252
430 :216	870 :109
440 :245	880 :185
450 :039	890 :161
460 :103	900 :121
470 :028	910 :243
480 :053	920 :029
490 :079	930 :255
500 :207	940 :004
510 :004	950 :168
520 :211	960 :018
530 :096	970 :233

980 :010	1220 :025
990 :244	1230 :172
1000 :024	1240 :235
1010 :229	1250 :175
1020 :047	1260 :221
1030 :*	1270 :244
1040 :058	1280 :180
1050 :188	1290 :236
1060 :068	1300 :103
1070 :*	1310 :019
1080 :008	1320 :072
1090 :199	1330 :213
1100 :084	1340 :094
1110 :083	1350 :115
1120 :000	1360 :078
1130 :070	1370 :109
1140 :247	1380 :177
1150 :224	1390 :219
1160 :104	1400 :083
1170 :017	1410 :019
1180 :054	01420 :124
1190 :053	1430 :186
1200 :163	1440 :055
1210 :023	1450 :069

Cylon Zap: Setup (VIC)

10 :039 20 :000

Cylon Zap: Instructions (VIC)

10 :219	165 :182
30 :232	170 :227
35 :130	175 :138
40 :120	180 :114
45 :074	185 :160
50 :015	190 :146
55 :202	195 :164
60 :153	200 :118
65 :032	205 :241
70 :067	210 :042
75 :243	215 :235
80 :033	220 :202
85 :191	225 :207
90 :098	230 :032
95 :121	235 :114
100 :222	240 :015
105 :092	245 :251
110 :244	250 :176
115 :220	255 :092
120 :106	260 :035
125 :198	265 :141
130 :051	270 :200
135 :121	275 :134
140 :220	280 :238
145 :155	285 :229
150 :151	290 :056
155 :151	295 :113
160 :238	300 :105

305 :182	504 :232
310 :069	505 :*
400 :044	506 :227
420 :246	507 :172
430 :119	508 :194
440 :215	509 :*
450 :121	510 :*
500 :*	511 :141
501 :*	512 :192
502 :251	513 :149
503 :023	

Cylon Zap (VIC)

35 :093	330 :242
40 :102	335 :247
45 :186	340 :128
50 :005	345 :154
55 :068	350 :222
60 :108	355 :253
65 :199	360 :063
70 :051	365 :135
75 :041	370 :152
80 :126	375 :232
90 :156	380 :206
95 :024	385 :226
100 :131	390 :134
105 :211	395 :159
110 :008	400 :067
115 :045	405 :201
120 :099	410 :220
125 :104	415 :130
130 :105	420 :056
135 :109	425 :007
140 :110	430 :223
145 :161	435 :252
150 :156	440 :056
155 :163	445 :160
160 :161	450 :249
165 :168	455 :191
170 :123	460 :110
175 :132	465 :127
180 :132	470 :147
185 :141	475 :168
190 :121	480 :224
195 :211	485 :024
200 :127	490 :224
205 :206	495 :204
210 :118	500 :035
215 :155	505 :095
220 :128	510 :022
225 :159	515 :017
230 :172	520 :111
233 :088	525 :124
235 :060	530 :045
240 :135	535 :214
295 :227	540 :172
300 :042	545 :075
310 :116	550 :151
315 :121	555 :222
320 :147	560 :072
325 :015	565 :158

570 :219	750 :027
575 :095	755 :042
580 :157	760 :248
585 :008	765 :001
590 :090	770 :248
595 :245	775 :255
600 :082	780 :143
605 :215	785 :250
610 :059	790 :042
615 :124	795 :071
620 :061	800 :060
625 :178	805 :119
630 :044	810 :047
635 :040	815 :118
640 :252	820 :192
645 :204	825 :099
650 :152	830 :024
655 :163	835 :161
660 :070	840 :160
665 :101	845 :164
670 :246	850 :125
675 :030	855 :153
680 :209	860 :154
685 :124	865 :149
690 :025	870 :000
695 :118	875 :206
700 :217	880 :213
705 :238	885 :222
710 :190	890 :225
715 :163	895 :085
720 :156	900 :096
725 :028	905 :107
730 :090	910 :105
735 :073	915 :112
740 :141	920 :110
745 :221	925 :117

Cylon Zap (64)

100 :070	330 :*
125 :054	340 :249
130 :252	350 :221
140 :078	360 :*
145 :200	370 :*
150 :007	380 :058
160 :181	390 :124
170 :172	400 :219
180 :011	410 :005
190 :087	420 :151
200 :155	430 :147
210 :243	440 :239
220 :199	450 :174
230 :028	460 :206
240 :200	470 :136
250 :141	480 :112
260 :069	490 :222
270 :040	500 :141
280 :*	510 :155
290 :012	520 :123
300 :141	530 :242
310 :*	540 :048
320 :*	550 :237

560 :217	1130 :115	1745 :121	2270 :234	12 :046	72 :166
570 :218	1140 :146	1750 :175	2280 :158	13 :122	80 :242
580 :040	1150 :017	1770 :183	2290 :015	14 :174	90 :017
590 :110	1160 :247	1780 :130	2300 :023	15 :169	92 :081
600 :007	1170 :020	1790 :123	2310 :236	16 :180	93 :006
610 :239	1180 :181	1800 :169	2320 :205	20 :027	94 :001
611 :001	1190 :097	1810 :194	2330 :177	21 :125	104 :189
620 :186	1200 :147	1820 :211	2340 :169	22 :029	106 :002
630 :098	1210 :049	1830 :226	2350 :072	23 :127	108 :082
640 :046	1220 :057	1840 :190	2360 :134	50 :075	109 :087
650 :148	1230 :057	1850 :017	2370 :023	51 :071	110 :085
660 :212	1240 :068	1860 :128	2380 :067	52 :141	111 :048
670 :142	1250 :106	1870 :220	2390 :158	54 :199	150 :058
680 :242	1260 :207	1880 :150	2400 :148	55 :012	152 :032
700 :104	1270 :210	1890 :082	2410 :033	56 :028	154 :*
710 :044	1280 :213	1900 :064	2420 :036	58 :172	156 :244
711 :160	1290 :216	1910 :216	2430 :185	60 :132	158 :186
712 :099	1300 :222	1920 :172	2440 :032	62 :063	160 :117
720 :225	1310 :227	1930 :157	2450 :080	64 :141	164 :*
721 :140	1320 :232	1940 :250	2460 :003	66 :199	166 :144
730 :227	1330 :237	1950 :223	2470 :006	68 :255	168 :046
735 :131	1340 :167	1960 :125	2480 :061	70 :213	170 :111
750 :178	1350 :034	1970 :197	2490 :096		
760 :253	1360 :183	1980 :017	2500 :204		
770 :126	1370 :039	1990 :128	2510 :087		
780 :222	1380 :175	2000 :190	2520 :*		
790 :128	1390 :245	2010 :002	2530 :127		
800 :051	1400 :177	2020 :179	2540 :203		
810 :218	1410 :241	2030 :239	2550 :205		
820 :110	1420 :012	2040 :094	2560 :078		
825 :071	1430 :136	2050 :*	2570 :209		
830 :012	1440 :202	2060 :165	2580 :175		
835 :176	1450 :130	2070 :000	2590 :226		
840 :113	1460 :246	2080 :028	2600 :196		
845 :057	1470 :103	2090 :183	2610 :076		
850 :162	1480 :173	2100 :231	2620 :184		
855 :009	1490 :222	2110 :156	2630 :045		
860 :116	1500 :166	2120 :165	2640 :057		
865 :065	1510 :247	2130 :042	2650 :063		
870 :008	1520 :199	2140 :220	2660 :061		
875 :160	1530 :054	2150 :137	2670 :068		
880 :055	1540 :032	D2155 :*	2680 :104		
885 :158	1550 :083	2160 :090	2690 :171		
890 :017	1560 :100	2170 :043	2700 :129		
895 :120	1570 :253	2180 :248	2710 :134		
900 :052	1580 :205	2190 :224	2720 :175		
905 :137	1590 :023	2200 :092	2730 :215		
910 :030	1600 :033	2210 :134	2740 :218		
915 :146	1610 :163	2220 :071	2750 :221		
920 :174	1620 :097	2230 :161	2760 :224		
925 :113	1630 :250	2240 :251	2770 :227		
930 :126	1640 :202	2250 :206			
935 :004	1650 :023	2260 :165			
940 :153	1660 :250				
1000 :000	1670 :061				
1060 :184	1680 :113				
1070 :231	1690 :000				
1080 :165	1700 :199				
1090 :239	1710 :112				
1100 :098	1720 :244				
1110 :194	1730 :053				
1120 :202	1740 :108				

September

Demon Star: Main Program (VIC)

1 :010	35 :055
2 :187	36 :229
3 :068	37 :228
4 :074	38 :216
5 :012	39 :215
6 :057	40 :202
7 :108	41 :146
8 :179	42 :235
9 :162	43 :083
10 :068	44 :009
11 :226	45 :027
12 :068	46 :186
13 :002	47 :108
14 :209	48 :151
15 :073	49 :082
16 :130	50 :195
17 :147	51 :224
18 :249	52 :087
20 :204	53 :184
21 :088	54 :250
22 :142	55 :036
23 :099	56 :096
24 :147	57 :167
25 :013	58 :065
26 :099	59 :069
27 :124	60 :193
28 :140	61 :033
29 :139	62 :208
30 :189	63 :252
31 :234	64 :026
32 :005	65 :241
33 :007	66 :229
34 :094	67 :018

The Beginner's Corner: Keyboard

2 :219	7 :068
3 :067	8 :251
4 :077	9 :073
5 :086	10 :032
6 :203	11 :117

68 :113	72 :109
69 :224	73 :088
70 :162	74 :243
71 :023	75 :197

Demon Star: Data File (VIC)

10 :120	160 :226
20 :247	170 :219
30 :200	180 :235
40 :255	190 :177
50 :012	200 :248
60 :074	210 :115
100 :009	220 :127
110 :183	230 :242
120 :018	240 :043
130 :128	250 :021
140 :066	260 :231
150 :128	999 :130

Demon Star (64)

90 :230	480 :033
100 :181	490 :032
110 :086	500 :002
120 :080	510 :001
130 :181	520 :048
140 :071	530 :248
150 :221	540 :030
160 :134	550 :083
170 :066	560 :103
180 :164	570 :129
190 :180	580 :073
200 :062	590 :159
210 :123	600 :193
220 :119	610 :175
230 :007	620 :040
240 :250	630 :004
250 :182	640 :137
260 :102	650 :030
270 :161	660 :096
280 :130	670 :130
290 :021	680 :142
300 :003	690 :229
310 :020	700 :239
320 :101	710 :111
330 :139	720 :246
340 :193	730 :111
350 :150	740 :252
360 :198	750 :075
370 :064	760 :219
380 :150	770 :233
390 :175	780 :067
400 :191	790 :107
410 :190	800 :155
420 :035	810 :100
430 :029	820 :008
440 :056	830 :074
450 :101	840 :184
460 :107	850 :190
470 :106	860 :081

870 :127	1010 :030
880 :028	1020 :088
890 :203	1030 :068
900 :021	2000 :013
910 :132	2010 :142
920 :071	2020 :138
930 :134	2030 :199
940 :233	2040 :143
950 :218	2050 :127
960 :235	2060 :144
970 :187	2065 :098
980 :012	2070 :169
990 :136	3000 :018
1000 :170	

Potholes: Initialization (VIC)

10 :183	130 :004
20 :219	140 :062
30 :023	150 :000
40 :089	160 :063
50 :054	170 :252
60 :035	180 :253
70 :092	190 :254
80 :025	200 :064
90 :005	210 :003
100 :015	220 :098
110 :124	230 :247
120 :204	250 :101

Potholes: Main Program (VIC)

100 :152	570 :168
110 :057	580 :234
300 :176	600 :047
310 :014	610 :128
320 :019	620 :162
330 :019	630 :198
340 :022	1000 :192
350 :120	1010 :051
360 :170	1020 :130
370 :202	1040 :094
400 :207	1050 :086
402 :051	1060 :195
403 :104	1100 :229
405 :201	1110 :037
410 :185	1120 :164
420 :186	1200 :207
430 :178	1210 :129
440 :170	1220 :041
450 :120	1230 :166
460 :174	1500 :014
500 :045	1510 :156
510 :123	1520 :132
520 :027	1530 :201
530 :214	1700 :010
540 :082	1710 :007
550 :199	1720 :015
560 :003	1730 :103

1740 :199	6030 :248
3000 :187	6040 :201
3010 :241	6100 :250
3020 :108	6110 :195
3030 :019	10000 :135
3100 :189	10010 :080
3110 :238	10020 :104
3120 :102	10030 :218
3130 :020	10040 :235
3200 :091	10050 :101
3210 :208	10060 :221
3220 :240	10065 :188
3230 :108	10070 :122
3240 :090	10080 :141
3250 :176	10090 :167
4000 :008	10100 :010
4001 :186	10110 :051
4010 :169	10120 :233
4020 :045	10130 :085
4030 :239	10140 :196
4031 :160	10150 :202
4040 :220	10200 :056
4050 :196	10210 :037
4060 :106	20000 :216
4070 :210	20010 :159
4071 :115	20020 :204
6000 :181	20030 :104
6010 :142	20040 :194
6020 :253	20050 :215

Potholes (64)

70 :190	510 :123
80 :123	520 :027
90 :079	530 :214
91 :179	540 :082
92 :009	550 :199
93 :186	560 :085
94 :074	570 :168
95 :241	580 :125
96 :072	600 :047
99 :058	610 :128
110 :057	620 :162
300 :176	630 :198
310 :011	1000 :192
320 :019	1010 :051
330 :023	1020 :130
340 :024	1040 :094
350 :120	1050 :086
360 :170	1060 :195
370 :202	1100 :229
400 :207	1110 :037
402 :051	1120 :164
403 :104	1200 :254
405 :201	1210 :129
410 :185	1220 :041
420 :186	1230 :166
430 :178	1500 :014
440 :170	1510 :156
450 :120	1520 :132
460 :174	1530 :201
500 :045	1700 :010

1710 :007	10000 :135
1720 :015	10010 :080
1730 :103	10020 :104
1740 :199	10030 :218
3000 :187	10040 :235
3010 :028	10050 :101
3020 :148	10060 :221
3030 :166	10065 :188
3100 :189	10070 :122
3110 :026	10080 :141
3120 :148	10090 :167
3130 :167	10100 :010
3200 :091	10110 :051
3220 :190	10120 :233
3230 :053	10130 :085
3250 :170	10140 :196
4000 :008	10150 :249
4001 :186	10200 :056
4010 :169	10210 :037
4020 :045	20000 :216
4030 :239	20010 :110
4031 :160	20020 :204
4040 :220	20030 :104
4050 :196	20040 :194
4060 :106	20050 :215
4070 :210	30000 :087
4071 :115	30010 :088
6000 :181	30020 :089
6010 :142	30030 :164
6020 :194	30040 :103
6030 :248	30050 :198
6040 :201	30060 :091
6100 :250	30070 :145
6110 :195	

Checkbook Reporter

20 :066	80 :201
23 :043	83 :035
26 :204	86 :056
29 :084	89 :150
30 :240	90 :147
32 :143	91 :209
35 :187	92 :027
36 :246	96 :252
37 :247	97 :240
38 :173	98 :063
40 :241	101 :188
41 :160	104 :255
42 :243	107 :182
44 :181	110 :026
47 :207	113 :162
50 :028	116 :046
53 :216	119 :040
54 :095	122 :194
55 :061	125 :109
56 :063	128 :114
57 :101	131 :*
58 :103	134 :219
71 :138	137 :099
74 :022	140 :092
77 :146	143 :191

146 :025	186 :100
149 :010	188 :085
152 :042	191 :077
153 :138	194 :084
155 :102	197 :085
158 :070	200 :144
161 :029	203 :102
164 :034	206 :085
167 :075	209 :108
170 :018	212 :181
173 :123	215 :119
176 :064	218 :017
179 :221	221 :214
182 :058	224 :205
185 :234	227 :160

States & Capitals Tutor: Main Program

5 :149	195 :130
10 :033	200 :026
15 :019	205 :198
20 :212	210 :095
25 :082	220 :145
30 :236	225 :008
35 :240	230 :039
40 :011	235 :102
45 :097	250 :204
48 :231	255 :141
50 :168	260 :241
55 :218	300 :117
60 :105	305 :010
65 :150	310 :085
70 :241	315 :108
100 :209	320 :059
105 :122	325 :089
110 :013	330 :193
115 :255	335 :089
120 :218	340 :097
125 :102	400 :001
130 :024	405 :054
140 :216	408 :056
145 :121	410 :077
150 :069	415 :060
155 :107	430 :063
170 :199	435 :018
175 :184	440 :251
180 :010	445 :093
185 :015	450 :059
190 :215	

October

Aardvark Attack

10 :121	19 :004
12 :138	20 :097
14 :006	22 :133
15 :251	23 :073
16 :173	24 :245
18 :134	25 :189

30 :003	319 :088
32 :183	320 :117
40 :006	321 :095
45 :220	322 :115
48 :186	323 :135
50 :077	324 :133
53 :220	326 :026
J55:	328 :063
58 :246	800 :182
60 :214	801 :130
63 :241	805 :203
70 :063	810 :025
72 :233	815 :088
74 :249	820 :136
80 :024	825 :127
82 :139	898 :128
84 :057	899 :031
86 :185	900 :160
90 :167	910 :193
98 :229	920 :029
99 :026	925 :193
100 :074	930 :114
105 :131	940 :119
110 :119	950 :024
120 :186	955 :009
130 :082	960 :248
140 :122	961 :066
150 :210	970 :128
160 :254	994 :070
170 :086	995 :123
180 :011	999 :139
190 :075	1000 :090
200 :041	1001 :066
210 :176	1002 :075
220 :110	1003 :026
221 :189	1004 :042
222 :034	1200 :218
223 :134	1210 :202
230 :099	1220 :146
240 :126	1230 :125
250 :201	1240 :026
260 :234	1250 :050
280 :225	1260 :025
299 :027	1270 :195
300 :097	1280 :171

Word Match (VIC)

1 :190	38 :021
2 :243	39 :232
3 :163	40 :067
4 :139	41 :123
10 :104	42 :227
12 :192	43 :084
13 :111	44 :087
20 :028	45 :168
30 :074	47 :124
32 :207	50 :223
33 :152	51 :217
35 :024	52 :236
36 :191	53 :201
37 :144	54 :124

55 :077	153 :112
56 :013	154 :026
60 :084	155 :098
62 :199	156 :103
64 :214	160 :231
66 :191	162 :100
70 :149	200 :214
71 :176	205 :135
74 :238	210 :056
80 :072	211 :185
81 :102	212 :189
100 :143	215 :003
105 :092	220 :178
110 :226	225 :018
115 :218	230 :072
117 :022	231 :015
120 :087	232 :078
121 :080	235 :086
122 :189	237 :242
123 :055	238 :212
124 :238	240 :097
125 :060	300 :216
126 :097	305 :175
127 :199	306 :004
128 :065	307 :159
129 :247	308 :161
130 :186	309 :165
131 :239	310 :052
132 :015	311 :037
135 :130	312 :233
136 :037	314 :102
137 :020	400 :112
138 :015	1000 :016
139 :220	1005 :155
140 :069	1040 :100
150 :083	1050 :200
151 :165	1060 :068
152 :249	1065 :069

Word Match (64)

100 :009	250 :118
110 :254	260 :174
120 :073	270 :022
130 :155	280 :186
140 :212	290 :138
145 :252	300 :210
150 :161	310 :165
160 :039	320 :015
161 :048	330 :009
162 :160	340 :028
163 :103	350 :249
164 :063	360 :172
165 :243	370 :125
170 :127	380 :061
180 :*	390 :138
190 :204	400 :253
200 :066	410 :001
210 :019	420 :011
220 :186	430 :197
230 :*	440 :224
240 :018	450 :028

460 :122	831 :052
470 :*	832 :162
480 :154	833 :155
490 :099	834 :245
500 :229	835 :108
510 :217	836 :247
520 :163	837 :107
530 :092	838 :002
540 :146	840 :193
550 :199	850 :197
560 :065	860 :009
570 :253	870 :189
580 :065	880 :025
590 :154	890 :181
600 :200	900 :018
610 :066	910 :178
620 :253	920 :087
630 :196	930 :254
640 :247	940 :212
650 :020	950 :108
660 :133	960 :228
670 :186	970 :183
680 :023	980 :012
690 :018	990 :167
700 :214	1000 :199
710 :079	1010 :203
720 :131	1020 :099
730 :136	1030 :084
731 :051	1040 :075
732 :165	1050 :195
733 :099	1060 :172
734 :106	1061 :096
735 :253	1062 :211
740 :252	1063 :146
750 :115	1064 :060
760 :029	1065 :172
770 :101	1070 :015
780 :106	1080 :166
790 :243	1090 :110
800 :102	1100 :201
810 :221	1110 :200
820 :138	1120 :064
830 :046	

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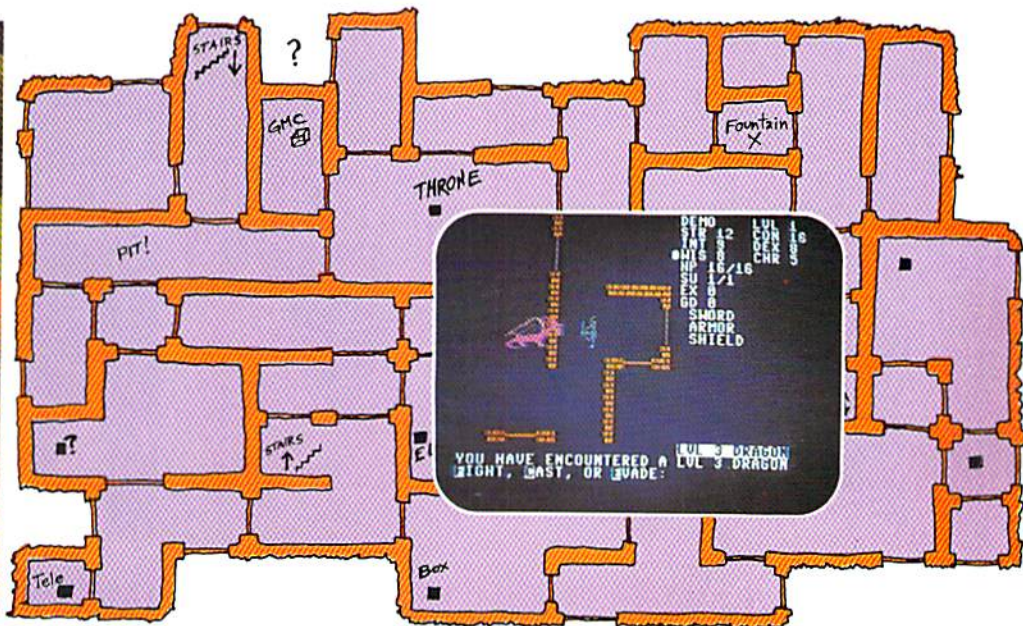
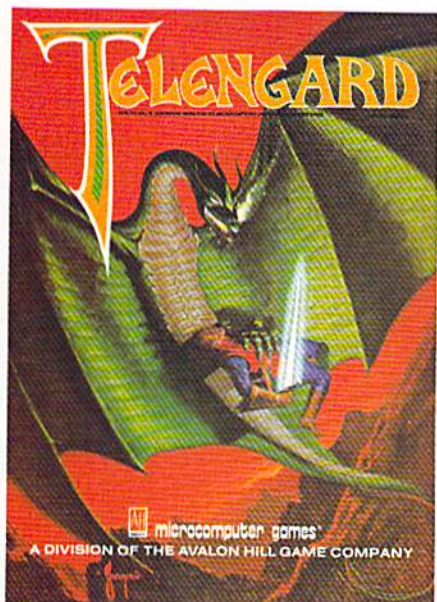
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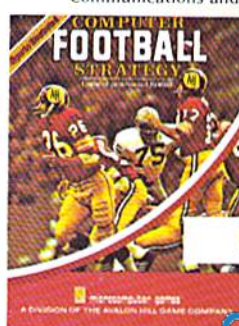
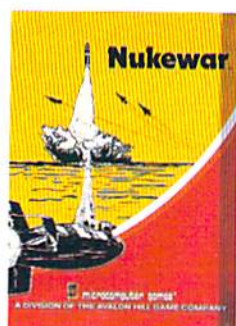
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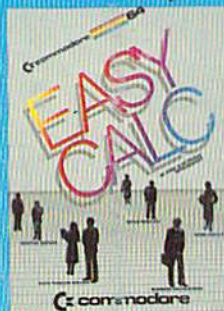
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