

Constructing The Ideal Computer Game

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Major Feature:
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V/64

P/64
V/64/AT/II/AP

V
AT
T/S
AT
V

AP/P/64
AT/AP
AT
AT

AT
TI

V/64
AT
P

RN/64/CC
V/64
AT

PN/64
V
T/S
.64
AT

PN/64
PN/64
C
V
AT
TI
V

AP Apple, AT Atari, P PET, CBM, V VIC-20, O OS, C Radio Shack Color Computer, 64 Commodore 64, T/S Timex/Sinclair, TI Texas Instruments. All or several of the above.

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GOBLIN

Dan Goff

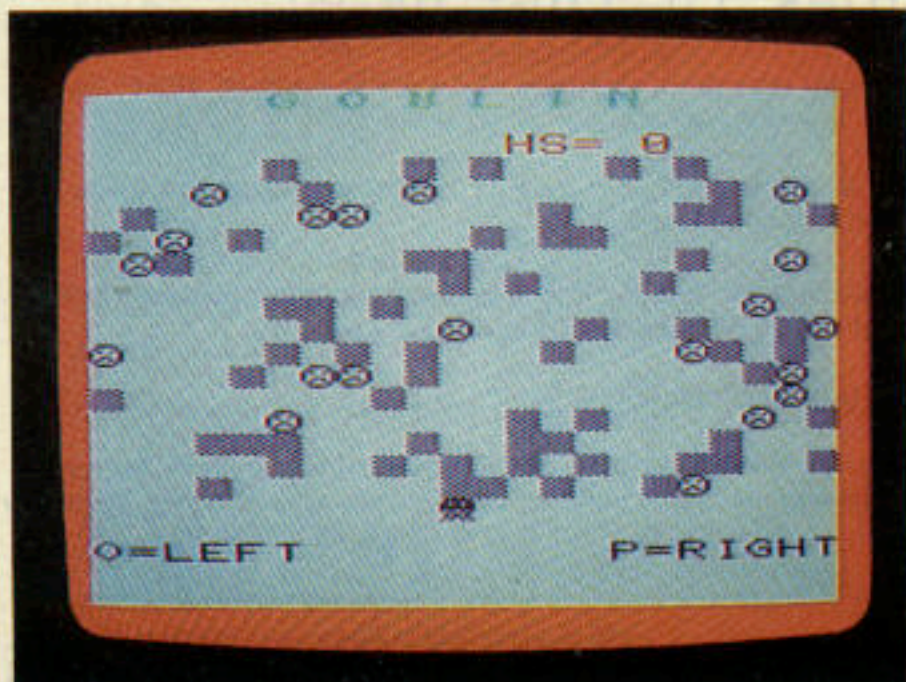
In "Goblin" (for the unexpanded VIC, 64, Atari, TI, and Apple) custom characters are used to create a simple yet entertaining game. The object is to capture the scowling creatures with your goblin while avoiding the many block-shaped obstacles that lie in your path.

After obstacles and sad faces have been positioned, "Goblin" begins when the main character appears at the bottom of the screen. As the game progresses, the goblin moves continually upward and the player controls only its horizontal movement. The "O" and "P" keys, in conjunction with the GET command in line 260, enable the player to move the goblin left and right, respectively. Children especially like the cumulative effect of the GET statement; they make rapid key punches and then wait for the delayed effects.

As each sad face is captured by the goblin, the score is updated and printed at the upper left. If the goblin successfully clears the screen of all the faces, an entirely new playfield will be provided. A game lasts as long as you wish.

A single round ends when the goblin crashes into an obstacle. At this point, the remaining sad faces smile, and you are asked if you wish to play again. If you don't, it is probably best to respond by typing "N" so that full memory is restored to the VIC.

On the other hand, if you play again, your previous highest score will be posted as the new game begins. The incentive to exceed a record score makes any game more fun.



Chasing goblins on the VIC-20 version of Goblin.

64, Atari, TI-99/4A And Apple Version Notes

The 64, Atari, TI-99/4A, and Apple versions of Goblin are almost identical to the VIC version. Minor differences do exist, however, in the Atari and Apple versions.

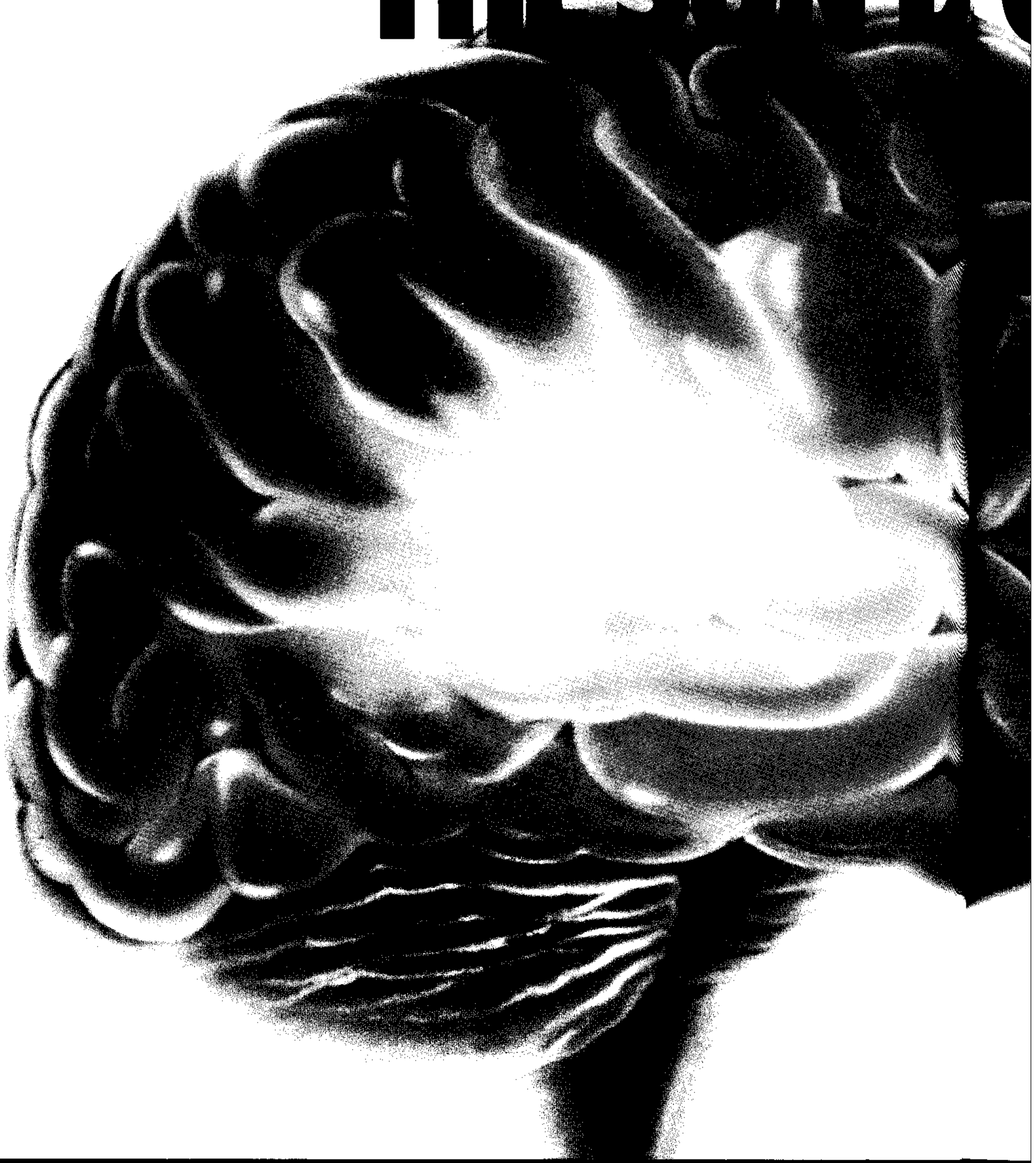
The Atari version uses the "+" and "-" keys to control left and right movement of the goblin. The Apple uses the left and right arrow keys.

The Apple version requires that you have a disk drive with the DOS Tool Kit disk in the drive when the program is run. This version defines certain characters using the program "Animatrix" from this disk. As Goblin is run, these custom characters are placed in memory as shapes and are later drawn on the high-resolution graphics screen. When the game begins, they are simultaneously POKEd into the areas of memory associated with the text and the high-resolution graphics screens. So, although you see these redefined characters on the high-resolution page, collision detection is actually carried out by PEEKing text screen memory.



Goblin on the Commodore 64.

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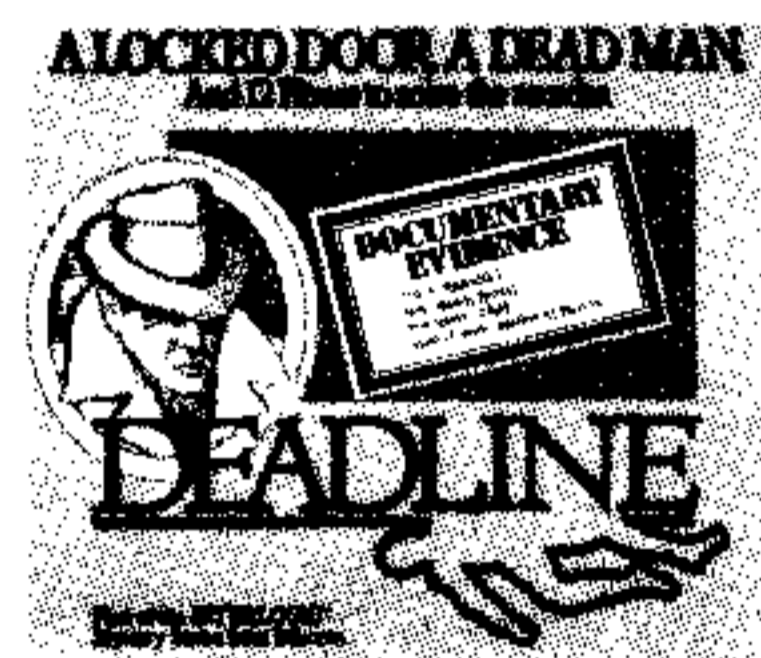
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Program 4: Goblin - TI-99/4A Version

```
100 RANDOMIZE
110 GOTO 170
120 FOR I=1 TO LEN(H$)
130 R=ASC(SEG$(H$,I,1))
140 CALL HCHAR(ROW,XCOL+I,R)
150 NEXT I
160 RETURN
170 A=96
180 B=97
190 C=104
200 D=105
210 Z=24
220 COL=16
230 W=0
240 G=0
250 S=J
260 CALL CLEAR
270 IF S>HS THEN 290
280 GOTO 300
290 HS=S
300 GOSUB 1270
310 CALL SCREEN(16)
320 PRINT "{8 SPACES}G O B L I N"
330 PRINT
340 PRINT "{10 SPACES}HS : "
350 FOR I=1 TO 19
360 PRINT
370 NEXT I
380 PRINT "O=LEFT(14 SPACES)P=RIGHT"
;
390 ROW=4
400 XCOL=17
410 H$=STR$(HS)
420 GOSUB 120
430 FOR I=1 TO 80
440 X=INT(RND*30)+2
450 Y=INT(RND*16)+6
460 CALL GCHAR(Y,X,L)
470 IF L=B THEN 440
480 CALL HCHAR(Y,X,B)
490 NEXT I
500 FOR I=1 TO 27
510 X=INT(RND*30)+2
520 Y=INT(RND*16)+6
530 CALL GCHAR(Y,X,L)
540 IF (L=B)+(L=C)+(L=D) THEN 510
550 CALL GCHAR(Y+1,X-1,L)
560 CALL GCHAR(Y+1,X,M)
570 CALL GCHAR(Y+1,X+1,N)
580 IF (L<>B)+(M<>B)+(N<>B) THEN 620
590 CALL HCHAR(Y,X,D)
600 G=G+1
610 GOTO 630
620 CALL HCHAR(Y,X,C)
630 NEXT I
640 CALL SOUND(100,500,6)
650 CALL HCHAR(Z,COL,32)
660 IF L<>C THEN 680
670 CALL SOUND(10,880,4)
680 Z=Z-1
690 IF Z>4 THEN 710
700 Z=23
710 CALL KEY(0,L,ST)
720 IF (L<>79)*(L<>80) THEN 770
730 IF L<>79 THEN 760
740 COL=COL-SBN(COL-2)
750 GOTO 770
760 COL=COL+SBN(30-COL)
770 CALL GCHAR(Z,COL,L)
```

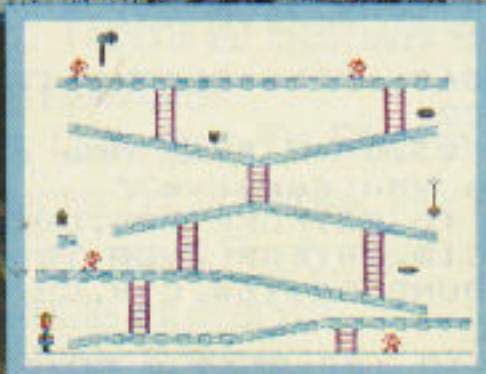
```
780 IF L=B THEN 1060
790 IF L=C THEN 850
800 CALL HCHAR(Z,COL,A)
810 FOR I=1 TO 25
820 NEXT I
830 IF W=27-G THEN 920
840 GOTO 650
850 W=W+1
860 S=S+25
870 H$=STR$(S)
880 ROW=4
890 XCOL=3
900 GOSUB 120
910 GOTO 800
920 J=S
930 CALL HCHAR(10,1,32,31)
940 GOSUB 120
950 H$="**** ALL RIGHT! ****"
960 XCOL=6
970 ROW=10
980 GOSUB 120
990 FOR I=1 TO 15
1000 X=INT(RND*100)+300
1010 CALL SOUND(75,X,8)
1020 NEXT I
1030 FOR I=1 TO 100
1040 NEXT I
1050 GOTO 210
1060 REM WHOOPS! ...YOU CRASHED...
1070 CALL HCHAR(Z,COL,98)
1080 FOR I=3 TO 30 STEP 3
1090 CALL SOUND(50,-7,I)
1100 NEXT I
1110 CALL CHAR(104,"3C42A581A599423
C")
1120 J=0
1130 HS=S
1140 H$="PLAY AGAIN (Y / N)?"
1150 ROW=22
1160 XCOL=2
1170 GOSUB 120
1180 CALL KEY(0,L,ST)
1190 IF ST=0 THEN 1180
1200 H$=CHR$(L)
1210 IF H$="Y" THEN 1250
1220 CALL CLEAR
1230 PRINT "SEE YA!"
1240 END
1250 CALL CHAR(104,"3C3CA58199A5423
C")
1260 GOTO 210
1270 REM DEFINE CUSTOM CHARS
1280 REM CHAR 96 - GOBLIN
1290 CALL CHAR(96,"7EDBDBFFA55A5AA5
")
1300 REM CHAR 97 - BARRIER
1310 CALL CHAR(97,"CCCC3333CCCC3333
")
1320 REM CHAR 98 - CRUNCHED GOBLIN
1330 CALL CHAR(98,"CCCC33337EDBFFBD
")
1340 REM CHAR - 104 - FROWN
1350 CALL CHAR(104,"3C3CA58199A5423
C")
1360 REM CHAR - 105 - SMILE
1370 CALL CHAR(105,"3C42A581A599423
C")
1380 CALL COLOR(10,7,1)
1390 FOR I=5 TO 8
1400 CALL COLOR(I,16,14)
1410 NEXT I
1420 RETURN
```

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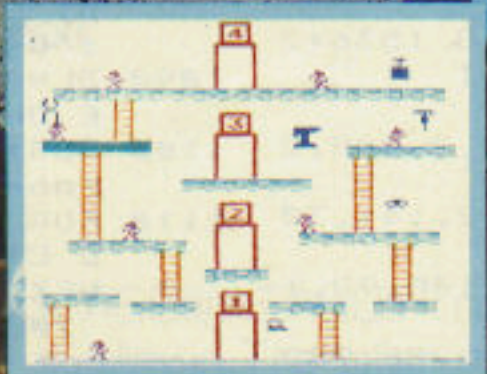


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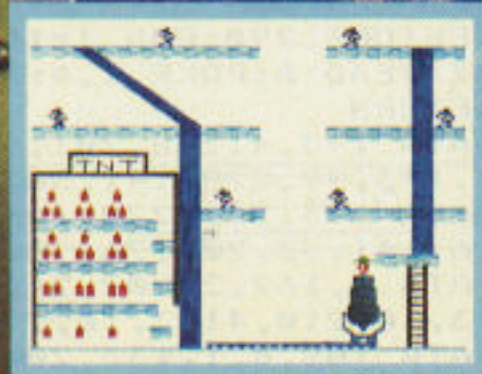
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PROGRAMMING THE TI

C. Regena

Planning Color Sets

In a previous column we looked at defining characters for graphics. Let's expand on that idea and discuss in more detail how to plan the color sets for high-resolution graphics.

To define colors for your graphics, use the CALL COLOR statement. The form is CALL COLOR(s,f,b) where s is the set number, f is the foreground color, and b is the background color. Each of the numbers can be from 1 to 16. Each graphics character you define can have two colors (a foreground color and a background color) chosen from the list of 16 colors.

The Color Sets

There are 16 color sets. Each color set contains eight character numbers (ASCII codes). The table shows which ASCII character codes are in which color set. You may find it handy to mark off these sets on the "Character Codes" table on the BASIC Reference Card that came with your computer. Just make a mark after every eighth number, then number the sets so you can tell at a glance which character is in which set -- and which other characters are in the same set.

Color Sets			
Set	Character Codes	Set	Character Codes
1	32-39	9	96-103
2	40-47	10	104-111
3	48-55	11	112-119
4	56-63	12	120-127
5	64-71	13	128-135
6	72-79	14	136-143
7	80-87	15	144-151
8	88-95	16	152-159

Now try this short program to see how the CALL COLOR statement works:

```
100 PRINT "HELLO THERE!"
110 PRINT "THIS IS A SAMPLE."
120 CALL COLOR(5,7,1)
130 GOTO 130
```

RUN the program. Lines 100 and 110 just print some words on the screen. By the way, we didn't use a CALL CLEAR statement, so the program will also still be on the screen. The screen turns

green when the program starts to run. Line 120 says to change all characters in set number 5 to a red foreground (color 7) and a transparent background (color 1). Line 130 holds the colors on the screen until you press FCTN 4 to CLEAR or stop the program (SHIFT C on the TI-99/4 console). You will notice when you RUN the program that the screen turns green, and then all the letters in Set 5 (@,A,B,C,D,E,F,G) turn red. Color 1 for the transparent background means that the background for the character will be the screen color.

Stop the program by pressing CLEAR. Change line 120 to

```
120 CALL COLOR(5,6,1)
```

The letters turn blue. Go ahead and try different colors for the second number in parentheses.

Now experiment with background color. Add these lines to your program:

```
130 FOR DELAY=1 TO 100
140 NEXT DELAY
150 CALL COLOR(6,7,16)
160 FOR DELAY=1 TO 100
170 NEXT DELAY
180 CALL COLOR(6,16,7)
190 GOTO 130
```

Lines 130-140 and 160-170 are delay loops. RUN the program. Line 120 changes the letters in Set 5 to whatever color you specified. Line 150 changes the letters in Set 6 (H,I,J,K,L,M,N,O) to a red (7) foreground and a white (16) background. Each character will look like a red letter on a white square. After the delay loop, line 180 changes the letters in Set 6 to a white foreground and a red background -- now white letters on red squares. Line 190 branches to the delay loop in line 130, so the letters in Set 6 blink red on white then white on red.

Screen Changes

Notice that as soon as you use a CALL COLOR statement, *all* characters in that set change color -- those already on the screen and any that you may later print or draw on the screen. Careful planning

is necessary so you know exactly which characters you are defining to be certain colors.

If you would like to change the screen color, use CALL SCREEN(c), where c is a color number from 1 to 16. For example, add line 90 and run your program:

```
90 CALL SCREEN(12)
```

Keep in mind that anywhere you have used the color number 1, for transparent, it really means the screen color.

Now try another special effect. Add line 125:

```
125 CALL COLOR(1,2,8)
```

This changes all characters in Set 1 to black on cyan (instead of black on transparent). RUN the program. The "space" is Character 32 in Set 1, and all spaces have been turned to cyan. The screen is light yellow from line 90, so you get a border around a cyan rectangle with various colors of letters from the rest of the program.

The default value of all character sets is black on transparent, so the letters on the screen are black on the screen color of yellow. If you would like a complete cyan rectangle with black letters on the cyan background, the character sets would need to be changed to black on cyan.

Keep in mind that it does make a difference in your programming whether you print first then define the colors, or define the colors and then print. Plan your program so that the computer will perform the actions in exactly the order you want.

Here is another sample program. Type NEW (enter), and then try this program. Watch carefully.

```
100 CALL CLEAR
110 CALL VCHAR(10,5,42,9)
120 CALL VCHAR(10,10,42,9)
130 CALL HCHAR(14,6,42,4)
140 CALL VCHAR(10,17,42,9)
150 CALL VCHAR(10,24,33,6)
160 CALL VCHAR(18,24,33)
170 CALL COLOR(2,7,1)
180 GOTO 180
```

The computer is quite fast, but you can see that the screen clears, the characters are drawn in black, and then some of the characters turn red. If you prefer to have the asterisks printed in red from the start, the CALL COLOR statement must come before the CALL VCHAR and CALL HCHAR statements. Delete line 170 and add

```
105 CALL COLOR(2,7,1)
```

RUN the program and you can see the difference.

Invisible Characters

Another thing you can try is to draw your characters invisibly and then make them appear all at once. This is quite effective if you have a lot of

CALL HCHAR and CALL VCHAR statements drawing an intricate picture. For this program, make the following changes:

```
105 CALL COLOR(2,1,1)
106 CALL COLOR(1,1,1)
170 CALL COLOR(2,7,1)
175 CALL COLOR(1,2,1)
```

First the characters in Sets 2 and 1 are made invisible by setting both foreground and background to transparent. Next the characters are drawn with CALL HCHAR and CALL VCHAR statements. You won't be able to see this process. Last, line 170 colors the asterisks red, and line 175 colors the exclamation points black so the greeting appears all at once.

When defining your own graphics characters, you may use any character number. If you want to keep the alphabet intact, you will probably use character numbers beyond 95. Group your characters so that all characters of the same color will be in the same set.

Remember that there are eight characters per set. If you are using many different colors or need to conserve memory, you will also need to plan the number of characters you can design in each set. For example, if you have a dog that uses nine characters, could you redraw him in eight characters so only one CALL COLOR statement would be needed?

Refer to the table to determine which characters are in which set. For example, if you are designing character number 134, it will be in Set 13, which contains characters 128-135. Your CALL COLOR statement will use set number 13.

If you are not using the small letters in character codes 97-122 (available on the TI-99/4A console, but not on the TI-99/4), use those numbers to define your graphics characters, then PRINT the characters rather than using HCHAR and VCHAR to draw them on the screen. PRINT TAB(10);"hikn" will be much faster than four separate CALL HCHAR statements to put up characters 104, 105, 107, and 110. By the way, your listing will say "hikn" with the small letters, but when your program is run those letters will be substituted by the graphics characters as you defined them. If you want to use the PRINT method on characters numbered higher than 126, you may use a statement such as PRINT CHR\$(132)&CHR\$(133)&CHR\$(137).

Teeth Wisdom

The following program illustrates the use of color sets in an educational program. "Teeth Wisdom" draws the teeth and their names on the screen in high resolution graphics. After the user knows the names, he or she presses ENTER and the labels clear. The names will be reprinted in a random

order. For a quiz, certain teeth will "blink" and the user must press the correct answer. The order will be random.

The teeth are drawn white on a light red background, and the gums are light red on a transparent background. Although all the teeth are white, they are defined in different color sets so that only certain teeth will blink during the quiz. The central incisors use characters 96-100; the lateral incisors, 104-107; the cuspids, 112-117; the bicuspids, 120-127; and the molars 128-134. The gums use characters from 136 to 157.

Since so many graphics characters are defined, DATA statements rather than individual CALL CHAR statements are used. The DATA in lines 240 to 330 are character definitions. Be careful to type these lines exactly as shown. The round symbols are zeros and not the letter O. When there are two or more commas in a row, it means that a character is defined as a null string. At the end of a data list such as line 250, the "" (double quotes) marks are necessary to indicate a null string, but in a series such as in line 260, the quote marks may be omitted between commas. These null strings correspond to unused character numbers.

Lines 180-230 let the character number C vary from 94 to 157 and READ in a string then define character C with graphics definition C\$. The CALL COLOR statements blink the asterisks on the title screen while the characters are being defined. Lines 340-390 define the colors for the teeth and gums.

Lines 590-690 PRINT the graphics on the screen, which is faster than using individual CALL HCHAR or CALL VCHAR statements for this many special characters. Within the quotation marks are the lowercase letters - release the ALPHA LOCK key to type these symbols in. Line 610 uses the symbol found on the face of the "C" key and is typed by pressing FCTN and C. Other symbols requiring the FCTN key are in lines 640 and 650.

For The TI-99/4 Console

If you have the TI-99/4 console, you will not be able to type in these lines. You can use the method found in line 600 to print the characters, listing each character number. *Note:* If a program like this has been typed in on the TI-99/4A console, it will work correctly on the TI-99/4 console (read it in from cassette or diskette).

In the quiz, lines 900 and 910 blink the particular teeth while the computer waits for a response. A random number (I) is chosen, and the corresponding color set is I+8 for the CALL COLOR statements.

Program Structure

Lines		
100	Title.	24
110-170	Clear screen; print title screen.	25
180-230	Define graphics characters 94 through 157 by READing the definitions from DATA; blink asterisks on screen green and white.	26
240-330	DATA containing graphics definitions.	
340-360	Define color sets 9 through 13 as white on light red for teeth.	
370-390	Define color sets for light red on transparent for graphics surrounding teeth.	27
400-510	Clear screen; print instructions; define strings as groups of characters for later printing.	28
520-560	READ in names of five groups of teeth as N\$ array and set the W\$ array elements equal to the N\$ array elements.	29
570	Prints message to press ENTER and waits for response.	
580-690	Clear screen; print teeth with labels.	
700	Prints message to press ENTER and waits for response.	30
710-760	Clear message and clear labels.	
770	Prints quiz title.	31
780-850	Randomly print names of teeth on screen from the W\$ array of five names. A(I) will be the correct corresponding answer.	32
860-1060	Perform quiz.	
870-880	Randomly choose teeth.	
890-920	Blink teeth blue and white while waiting for response.	33
930-940	If number 1-5 is pressed, show which number was pressed, otherwise return to line 890.	
950-990	If answer is incorrect, sound "uh-oh" and return for another response.	34
1000-1030	If answer is correct, play arpeggio.	35
1040	Clears answer chosen.	36
1050-1060	Set A element to zero so that tooth will not be chosen again; return to next problem.	37
1070-1100	Print option to try again; wait for response; branch appropriately.	38
1110-1140	If user wants to try again, set W\$ array elements equal to names of teeth, branch to beginning of exercise.	39
1150	Stop.	40
1160-1190	Subroutine to print "PRESS <ENTER>" and wait for response.	41
1200-1210	Clear screen and END.	42

Teeth Wisdom

100	REM TEETH FOR TI	520
110	CALL CLEAR	530
120	PRINT TAB(4); "*****"	540
	***	550
130	PRINT TAB(4); "*" ; TAB(22); "*"	560
140	PRINT TAB(4); "*" TEETH WISDOM	
	*	
150	PRINT TAB(4); "*" ; TAB(22); "*"	570
160	PRINT TAB(4); "*****"	580
	**"::::: :	590
170	PRINT :::	
180	FOR C=94 TO 157	600
190	CALL COLOR(2,13,1)	
200	READ C\$	610
210	CALL CHAR(C,C\$)	

```

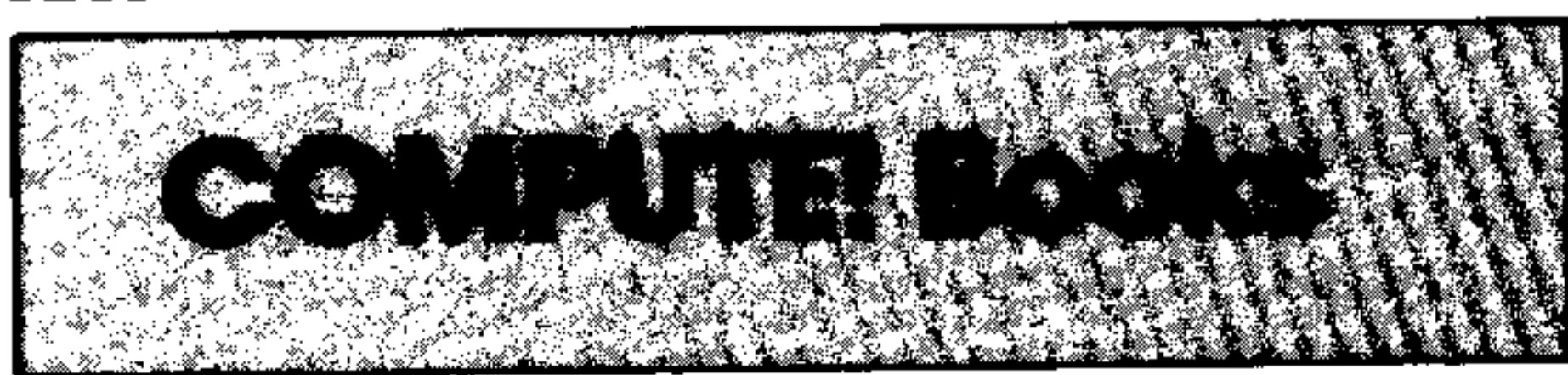
20 CALL COLOR(2,16,1)
30 NEXT C
40 DATA 0000001F1010101,000000FF
50 DATA 00000F1F3F7F7F7F,000083C7C
7E7EFEF,0000E0F0F8FCFEFE,FFFFFF
FFFFFFFF,EFEFEFEFEFEFEF,0,, ""
60 DATA 70F8FCFCFEFEFEFF,FEF8C,0E1
F3F3F7F7F7FFF,7F1F03,,,,000000
00000000F8,0101010101,FCFEFFFF
EFCF83
70 DATA 0000000000000001F,3F7FFFFFF7
F3F1F0C,80808080808,,0F1F1F1F1
F1F0E,E0F8F8F8F8F8F,071F1F1F1F1F0F
80 DATA F0F8F8F8F8F87,1F3F3F3F3F3F
1F,F0F8F8F8F8F8F,0F1F1F1F1F1F0F
,F8FCFCFCFCFCF8,7FFFFFFFFFFFF7F
90 DATA E0F0F0F0F0F0E,070F0F0F0F0F
07,FEFFFFFFFFFFFFE,0303030303030
301,FFFFFFFFFFFFFFFF,00C0C0C0C0C0
C08, ""
300 DATA FFFFFFF0E0C08,FFFF7E181,FF
FF3F0F070301,FFFEF0FCFCF8F8F8,F
F7F7F3F3F1F1F1F,F0F0F0F0F0F0F0F
310 DATA 0F0F0F0F0F0F0F,E0E0E0E0C
0C0808,0707070703030101,00000000
000071FFF,0000031FFFFFFFF,00FFFF
FFFFFFFF
320 DATA 0000C0F8FFFFFFFF,0000000000
070F8FF,01070F1F3F3F7FFF,80E0F0
F8FCFCFEFF,010103030307070F,8080C0
C0C0E0E0F
330 DATA 0F0F1F1F1F3F3F3F,F0F0F8F8F
8FCFCFC,3F7F7F7F7F7F7F7F,FCFE
FEFEFEFEFE
340 FOR C=9 TO 13
350 CALL COLOR(C,16,10)
360 NEXT C
370 CALL COLOR(14,10,1)
380 CALL COLOR(15,10,1)
390 CALL COLOR(16,10,1)
400 CALL CLEAR
410 CALL COLOR(2,2,1)
420 PRINT "YOU WILL SEE A DIAGRAM O
F"
430 PRINT : "THE TEETH WITH THE NAME
S"
440 PRINT : "OF THE TEETH."
450 A$=CHR$(128)&CHR$(129)
460 B$=CHR$(130)&CHR$(131)
470 PRINT : "WHEN YOU KNOW THE NAME
S,"
480 PRINT : "PRESS <ENTER>."
490 D$=CHR$(132)&CHR$(133)&CHR$(134
)
500 PRINT : "THE LABELS WILL CLEAR
AND"
510 PRINT : "YOU WILL BE GIVEN A QUI
Z.":::
520 FOR C=1 TO 5
530 READ N$(C)
540 W$(C)=N$(C)
550 NEXT C
560 DATA CENTRAL INCISORS,LATERAL I
NCISORS,CUSPIDS,BICUSPIDS,MOLAR
S
570 GOSUB 1160
580 CALL CLEAR
590 PRINT TAB(8);"^_CENTRAL INCISOR
S"
600 PRINT TAB(5);CHR$(145)&CHR$(146
)&CHR$(147)&CHR$(148)&CHR$(149)
610 PRINT TAB(4);CHR$(150);"e'abe";C
HR$(151);"_LATERAL INCISORS"

```

```

620 PRINT " ";CHR$(150);"phcdcjs";C
HR$(151)
630 PRINT " ";CHR$(152);"qrieeektu";
CHR$(153);"CUSPIDS"
640 PRINT " ";CHR$(154);"xyeeeeez(";
CHR$(155);"BICUSPIDS"
650 PRINT " ";CHR$(156);"!{,}e";CHR$
(136)&CHR$(137)&CHR$(138);"e{,}"
;CHR$(127)&CHR$(157)
660 PRINT " e";A$;CHR$(139);"
{3 SPACES}";CHR$(140);B$;"e";"MO
LARS"
670 PRINT " e";A$;CHR$(141);"
{3 SPACES}";CHR$(142);B$;"e"
680 PRINT " ";D$;CHR$(143);"
{3 SPACES}";CHR$(144);D$
690 PRINT " eee{5 SPACES}eee":::
700 GOSUB 1160
710 CALL HCHAR(23,16,32,13)
720 CALL HCHAR(10,10,32,18)
730 CALL HCHAR(12,13,32,18)
740 CALL HCHAR(14,15,32,7)
750 CALL HCHAR(15,15,32,9)
760 CALL HCHAR(17,15,32,6)
770 PRINT TAB(8);"NAME THE TEETH":::
780 FOR C=1 TO 5
790 RANDOMIZE
800 I=INT(5*RND+1)
810 IF W$(I)="" THEN 800
820 PRINT TAB(9);C;W$(I)
830 A(I)=C
840 W$(I)=""
850 NEXT C
860 FOR C=1 TO 5
870 I=INT(5*RND+1)
880 IF A(I)=0 THEN 870
890 CALL KEY(0,K,S)
900 CALL COLOR(I+8,6,10)
910 CALL COLOR(I+8,16,10)
920 IF S<1 THEN 890
930 IF (K<49)+(K>53) THEN 890
940 CALL HCHAR(18+K-48,11,62)
950 IF K-48=A(I) THEN 1000
960 CALL SOUND(150,330,0)
970 CALL SOUND(150,262,0)
980 CALL VCHAR(19,11,32,5)
990 GOTO 890
1000 CALL SOUND(150,262,0)
1010 CALL SOUND(150,330,0)
1020 CALL SOUND(150,392,0)
1030 CALL SOUND(200,523,0)
1040 CALL VCHAR(19,11,32,5)
1050 A(I)=0
1060 NEXT C
1070 PRINT : "TRY AGAIN? (Y/N)"
1080 CALL KEY(0,K,S)
1090 IF K=78 THEN 1200
1100 IF K<>89 THEN 1080
1110 FOR C=1 TO 5
1120 W$(C)=N$(C)
1130 NEXT C
1140 GOTO 580
1150 STOP
1160 PRINT TAB(14);"PRESS <ENTER>"
1170 CALL KEY(0,K,S)
1180 IF K<>13 THEN 1170
1190 RETURN
1200 CALL CLEAR
1210 END

```



TI Mailing List

Doug Hapeman

This program can be used for developing small mailing lists, for families or for organizations. There are ten options, including printing a single label or an entire alphabetized mailing list. For the TI-99/4A.

Have you ever kept a file of addresses on index cards, hoping to organize them someday in an orderly fashion? It sounds simple, but in practice you know how difficult it is to organize and update a paper-based filing system. "TI Mailing List" offers you an easy method of creating, maintaining, and utilizing a mailing list file.

Without any programming experience you can keep an up-to-date, well-organized file. The program will prompt you step-by-step through the entry of names, addresses, and phone numbers. Then, with a few simple keystrokes, you can update your file, print lists in two different modes, or save your file on a storage device. It's that easy.

TI Mailing List is designed specifically as a family mailing list, but is flexible enough to accommodate a number of applications. The program will store last names, first names, children's names, addresses, and phone numbers.

The program is written in a Canadian format, that is, Province and Postal Code. However, the format can be easily adjusted to the American system as you type in the program.

Program Environment

The program is set up for 45 entries. After 45 entries you will be given the message *DATA FILE IS FULL*. This feature will prevent your program from crashing with a MEMORY FULL error message. If you have more than 45 addresses to enter, you may easily divide your list into two or more files - for example: (A - L) and (M - Z).

When you RUN the program, the initial title screen appears. The next display permits you to initialize the printer. Be sure to enter the proper name and spelling of the device you're using, because an improper name will cause the program to break when you attempt to address the device later in the program.

Ten Options

Once the computer "environment" is established,

you are taken to the Main Index. Here you will discover ten options:

- 1 View Names List
- 2 Search For a Name
- 3 Add Names
- 4 Change Names
- 5 Delete Names
- 6 Alphabetize List
- 7 Save Data File
- 8 Load Data File
- 9 Print Labels/List
- 10 Finish Session

Of course, to create a mail list you would first choose option 3 (Add Names). The other options will enable you to update, maintain, and utilize an existing file. The program will guide you step-by-step through the procedure for each option. There are many helpful features, such as the Search, Change, and Delete. You can also enter names and addresses in any order, and then, by choosing the Alphabetize option, have the computer sort them for you.

The Data File

The program is written to both save and load data files for either cassette or disk storage. When you choose either the Save or Load option, you will be given any further step-by-step instructions.

Print Options

The program offers you two print options - one for mailing labels, and the other for the mailing list.

The Print Labels option will print the first name, followed by the last name, and then the address on lines two and three. For example:

```
John Doe  
1234 Street Address  
City Province Postal Code
```

The Print Mailing List option will print the last name first, followed by the first name and children's names, with the address on line two, and the phone number on line three. For example:

```
Doe, John Mary Joe/Sally  
1234 Street Address City Province Postal Code  
(p)-444/4456
```

Line spacing between addresses is flexible via a minor program change. If you wish to alter the

line spacing, program lines 497 (labels) and 517 (list) may be adjusted by either increasing or decreasing the number of colons (:) at the end of each line. Each colon represents one line space. For example:

```
#497 PRINT #2:TAB(5);NA$(I);" ";LN$(I):TAB(5);
AD$(I):TAB(5);CP$(I);" ";PC$(I)::: (Add or
delete colons here.)
```

In the Print Labels option, you may wish to print two labels per line instead of one. If so, you should adjust the line listing as follows:

```
(Chg) #487 FOR I=1 TO N STEP 2
(Chg) #497 PRINT #2:TAB(5);NA$(I);" ";LN$(I);
TAB(45);NA$(I+1);" ";LN$(I+1):TAB(5);
AD$(I):TAB(45);AD$(I+1)
(Add) #498 PRINT #2:TAB(5);CP$(I);" ";PC$(I);
TAB(45);CP$(I+1);" ";PC$(I+1):::
```

The Search option permits the printing of a single mailing label. After finding the name you are seeking, the display asks if you would like a mailing label printed. If yes, the program branches to the print routine and then returns to the search option.

TI Mailing List Program Structure

Line Nos.

- 1-21 REMs and computer environment.
- 23-47 Main loop, main index.
- 49-73 Subroutine to view names.
- 75-109 Subroutine to search for a name.
- 111-181 Subroutine to add names.
- 183-285 Subroutine to change data.
- 287-331 Subroutine to delete names.
- 333-423 Subroutine to alphabetize list.
- 425-441 Subroutine to save data.
- 443-471 Subroutine to load data.
- 473-521 Subroutine to print.
- 523-533 Subroutine to finish session.

TI Mailing List

```
1 REM(4 SPACES)99/4A MAIL LIST
(5 SPACES)
5 REM(3 SPACES)**COMPUTER ENVIRONMEN
T**
7 DIM LN$(45),NA$(45),CH$(45),AD$(45
),CP$(45),PC$(45),TP$(45)
9 CALL CLEAR
11 PRINT " *(3 SPACES)99/4A MAILING
LIST(3 SPACES)*"::::
13 INPUT "(4 SPACES)PRESS ENTER TO B
EGIN":X$
15 CALL CLEAR
17 PRINT "(5 SPACES)WHAT IS THE NAME
OF":"(4 SPACES)YOUR PRINTING DEV
ICE?":::: (EXAMPLE: RS232.BA=4800)
"::::
19 INPUT P$
21 G$="(7 SPACES)PLEASE WAIT...
(7 SPACES)WHILE THE PRINTER IS WO
```

```
RKING"
23 REM(3 SPACES)**MAIL LIST MENU**
25 CALL CLEAR
27 PRINT "(8 SPACES)MAIN INDEX"::::
29 PRINT "PRESS(3 SPACES)TO"::::
31 PRINT " 1 = VIEW NAMES LIST":"
    2 = SEARCH FOR A NAME":" 3
    = ADD NAMES":" 4 = CHANGE NAMES"
33 PRINT " 5 = DELETE NAMES":" 6
    = ALPHABETIZE LIST":" 7 = S
AVE DATA FILE":" 8 = LOAD DATA
FILE"
35 PRINT " 9 = PRINT LABELS/LIST"
:" 10 = FINISH SESSION"::::
37 INPUT P
39 IF P>10 THEN 37
41 IF P<1 THEN 37
43 CALL CLEAR
45 ON P GOSUB 51,77,113,185,289,335,
427,445,475,525
47 GOTO 25
49 REM(4 SPACES)**VIEW NAMES LIST**
51 T=0
53 FOR I=1 TO N
55 T=T+1
57 PRINT NA$(I),LN$(I):CH$(I):AD$(I)
:CP$(I):PC$(I):"(P)-";TP$(I):::
59 IF T<2 THEN 69
61 PRINT " *PRESS ENTER TO CONTINUE*
":" *R",ENTER FOR MAIN INDEX"
63 INPUT X$
65 IF X$="R" THEN 73
67 T=0
69 NEXT I
71 INPUT "(7 SPACES)*END OF FILE*
(9 SPACES)*PRESS ENTER TO CONTINU
E*":X$
73 RETURN
75 REM(4 SPACES)**SEARCH NAMES**
77 INPUT "LAST NAME? ":Y$
79 FOR I=1 TO N
81 IF LN$(I)<>Y$ THEN 103
83 PRINT :::" IS THE PERSON":::: "
;NA$(I):" ";LN$(I):::
85 INPUT " (Y/N)?:":X$
87 IF X$="N" THEN 103
89 PRINT :::NA$(I),LN$(I):CH$(I):AD$
(I):CP$(I):PC$(I):"(P)-";TP$(I):::
:
91 INPUT "(3 SPACES)DO YOU WISH TO P
RINT(6 SPACES)A MAILING LABEL? (
Y/N)":Z$
93 IF Z$<>"Y" THEN 97
95 GOSUB 495
97 INPUT "SEARCH MORE NAMES? (Y/N)":
X$
99 IF X$="Y" THEN 77
101 GOTO 109
103 NEXT I
105 PRINT :::" THE ";Y$:" YOU ARE
SEARCHING FOR":" IS NOT IN THIS
FILE."::::
107 GOTO 97
109 RETURN
111 REM(4 SPACES)**ADD NAMES**
(5 SPACES)
113 A=N+1
115 FOR I=A TO 45
117 CALL CLEAR
119 PRINT :::"ENTER DATA: ";"#";I;"
(MAX:45)"::::
121 PRINT " *LAST NAME:"
123 INPUT LN$(I)
125 PRINT : " *FIRST NAME(S):"
```

```

127 INPUT NA$(I)
129 PRINT : " #CHILDREN:" : "
      (3 SPACES)NOTE--DO NOT USE COMMA
      S!"
131 INPUT CH$(I)
133 PRINT : " #STREET ADDRESS:"
135 INPUT AD$(I)
137 PRINT : " #CITY/PROVINCE:" : "
      (3 SPACES)NOTE--DO NOT USE COMMA
      S!"
139 INPUT CP$(I)
141 PRINT : " #POSTAL CODE:"
143 INPUT PC$(I)
145 PRINT : " #PHONE:"
147 INPUT TP$(I)
149 V=I
151 REM(3 SPACES)**VERIFY ENTRIES**
153 CALL CLEAR
155 PRINT "ENTRY";"#";V:::
157 PRINT "YOU ENTERED:":::" ";LN$(V
);", ";NA$(V):" ";CH$(V):" ";A
D$(V):" ";CP$(V)

159 PRINT " ";PC$(V):" PHONE: ";TP
$(V):::
161 INPUT "CHANGE ANYTHING? (Y/N)":
X$
163 IF X$<>"Y" THEN 171
165 C=N+1
167 CALL CLEAR
169 GOSUB 201
171 INPUT "ADD MORE NAMES? (Y/N)":X
$
173 N=N+1
175 IF X$="N" THEN 181
177 NEXT I
179 INPUT "{4 SPACES}*DATA FILE IS F
ULL*{6 SPACES}*PRESS ENTER TO CO
NTINUE*":X$
181 RETURN
183 REM(4 SPACES)**CHANGE DATA**
185 PRINT " LAST NAME OF THE PERSON
(3 SPACES)WHOSE DATA IS TO BE CH
ANGED:":::
187 INPUT C$
189 CALL CLEAR
191 FOR C=1 TO N+1
193 IF LN$(C)=C$ THEN 195 ELSE 239
195 PRINT "IS THE PERSON:" : " ";NA$(
C):" ";LN$(C):::
197 INPUT " (Y/N)?":X$
199 IF X$="Y" THEN 201 ELSE 239
201 PRINT ::: "PRESS(3 SPACES)TO
CHANGE"::
203 PRINT " 1 = LAST NAME": " 2
= FIRST NAME(S)": " 3 = CHILD
REN": " 4 = STREET ADDRESS"

205 R=C
207 R$=" #ENTER THE NEW DATA:"
209 PRINT " 5 = CITY/PROVINCE": "
6 = POSTAL CODE": " 7 = PHO
NE": " 8 = NO CHANGE"::::
211 INPUT P
213 CALL CLEAR
215 IF P<1 THEN 211
217 IF P>8 THEN 211
219 IF P=8 THEN 229
221 ON P GOSUB 245,251,257,263,269,2
75,281
223 PRINT :::"MORE CHANGES FOR:" : " "
;NA$(R):" ";LN$(R):::
225 INPUT " (Y/N)?":Y$
227 IF Y$<>"N" THEN 201
229 PRINT :::"CHANGE DATA FOR OTHER
NAMES?"::

```

```

231 INPUT " (Y/N)":Z$
233 CALL CLEAR
235 IF Z$<>"N" THEN 185
237 RETURN
239 NEXT C
241 RETURN
243 REM(3 SPACES)**CHANGE LOOPS**
245 PRINT "LAST NAME WAS:":::LN$(R):::
R$
247 INPUT LN$(R)
249 RETURN
251 PRINT "FIRST NAME(S) WERE:":::NA$(
R):::R$
253 INPUT NA$(R)
255 RETURN
257 PRINT "CHILDREN WERE:":::CH$(R):::
R$
259 INPUT CH$(R)
261 RETURN
263 PRINT "ADDRESS WAS:":::AD$(R):::R
$
265 INPUT AD$(R)
267 RETURN
269 PRINT "CITY/PROVINCE WAS:":::CP$(
R):::R$
271 INPUT CP$(R)
273 RETURN
275 PRINT "POSTAL CODE WAS:":::PC$(R)
:::R$
277 INPUT PC$(R)
279 RETURN
281 PRINT "PHONE NUMBER WAS:":::TP$(R
):::R$
283 INPUT TP$(R)
285 RETURN
287 REM(4 SPACES)**DELETE NAMES**
289 INPUT "LAST NAME? ":X$
291 FOR I=1 TO N
293 IF LN$(I)<>X$ THEN 325
295 PRINT :::"IS THE PERSON:" : " ";N
A$(I):" ";LN$(I):::
297 INPUT " (Y/N)?":Y$
299 IF Y$<>"Y" THEN 325
301 A=I
303 FOR D=A TO N
305 LN$(D)=LN$(D+1)
307 NA$(D)=NA$(D+1)
309 CH$(D)=CH$(D+1)
311 AD$(D)=AD$(D+1)
313 CP$(D)=CP$(D+1)
315 PC$(D)=PC$(D+1)
317 TP$(D)=TP$(D+1)
319 NEXT D
321 N=N-1
323 GOTO 327
325 NEXT I
327 INPUT "MORE DELETIONS? (Y/N)":X$
329 IF X$="Y" THEN 289
331 RETURN
333 REM(3 SPACES)**ALPHABETIZE LIST*
*(3 SPACES)
335 PRINT "{7 SPACES}PLEASE WAIT..."
:::" THE LIST IS BEING ARRANGED"
:::
337 B=1
339 B=2*B
341 IF B<=N THEN 339
343 B=INT(B/2)
345 IF B=0 THEN 369
347 FOR Y=1 TO N-B
348 X=Y
349 I=X+B
351 IF LN$(X)=LN$(I) THEN 363
353 IF LN$(X)<LN$(I) THEN 365
355 GOSUB 381
357 X=X-B
359 IF X>0 THEN 349

```



```

361 GOTO 365
363 GOSUB 373
365 NEXT Y
367 GOTO 343
369 RETURN
371 REM(3 SPACES)**ORDER FIRST NAMES
**{3 SPACES}
373 IF NA$(X)<NA$(I)THEN 377
375 GOSUB 381
377 RETURN
379 REM(3 SPACES)**CHANGE ORDER**
381 N$=LN$(X)
383 LN$(X)=LN$(I)
385 LN$(I)=N$
387 N$=NA$(X)
389 NA$(X)=NA$(I)
391 NA$(I)=N$
393 N$=CH$(X)
395 CH$(X)=CH$(I)
397 CH$(I)=N$
399 N$=AD$(X)
401 AD$(X)=AD$(I)
403 AD$(I)=N$
405 N$=CP$(X)
407 CP$(X)=CP$(I)
409 CP$(I)=N$
411 N$=PC$(X)
413 PC$(X)=PC$(I)
415 PC$(I)=N$
417 N$=TP$(X)
419 TP$(X)=TP$(I)
421 TP$(I)=N$
423 RETURN
425 REM(3 SPACES)**SAVE DATA FILE**
{5 SPACES}
427 GOSUB 467
429 OPEN #1:L$,INTERNAL,OUTPUT,FIXED
150
431 PRINT #1:N
433 FOR I=1 TO N
435 PRINT #1:LN$(I),NA$(I),CH$(I),AD
$(I),CP$(I),PC$(I),TP$(I)
437 NEXT I
439 CLOSE #1
441 RETURN
443 REM(4 SPACES)**LOAD DATA FILE**
{6 SPACES}
445 GOSUB 467
447 OPEN #1:L$,INTERNAL,INPUT ,FIXED
150
449 INPUT #1:N
451 FOR I=1 TO N
453 INPUT #1:LN$(I),NA$(I),CH$(I),AD
$(I),CP$(I),PC$(I),TP$(I)
455 NEXT I
457 CLOSE #1
459 CALL CLEAR
461 PRINT " ";L$::" THIS FILE HAS"
;N;"ENTRIES."::" *45 ENTRIES IS
MAXIMUM*":::::::::::
463 INPUT " *PRESS ENTER TO CONTINUE
*":X$
465 RETURN
467 PRINT "{5 SPACES}WHAT IS THE NAM
E OF:"{4 SPACES}YOUR STORAGE DE
VICE?":::"(EXAMPLE: CS1OR DSK1.FIL
E)":::::::::::
469 INPUT L$
471 RETURN
473 REM **SUB TO PRINT LABELS/LIST*
*
475 PRINT "PRESS{3 SPACES}TO PRINT":
::" 1{5 SPACES}MAILING LABELS":
:" 2{5 SPACES}MAILING LIST"::::::
::

```

```

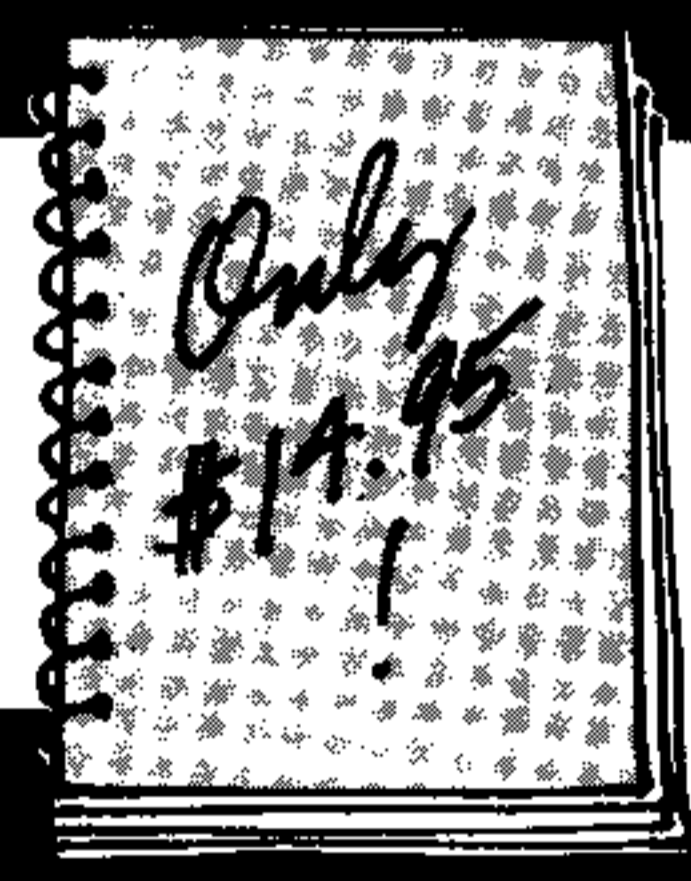
477 INPUT P
479 IF P<1 THEN 477
481 IF P>2 THEN 477
483 PRINT :::::::::::G$::::::::::
485 IF P<>1 THEN 505
487 FOR I=1 TO N
489 GOSUB 495
491 NEXT I
493 RETURN
495 OPEN #2:P$
497 PRINT #2:TAB(5);NA$(I);" ";LN$(I
):TAB(5);AD$(I):TAB(5);CP$(I);"
";PC$(I)::::
499 CLOSE #2
501 RETURN
503 REM(4 SPACES)**PRINT MAIL LIST**
505 FOR I=1 TO N
507 GOSUB 513
509 NEXT I
511 RETURN
513 OPEN #2:P$
515 PRINT #2:TAB(5);LN$(I);", ";NA$(
I);"{6 SPACES}";CH$(I):TAB(5);AD
$(I);"{3 SPACES}";CP$(I);" ";PC$(I)
517 PRINT #2:TAB(60);"(P)-";TP$(I)::
519 CLOSE #2
521 RETURN
523 REM(3 SPACES)**FINISH SESSION**
{5 SPACES}
525 INPUT "{7 SPACES}DO YOU WISH TO
{10 SPACES}TERMINATE THIS SESSION
?(5 SPACES}(Y/N)":X$
527 CALL CLEAR
529 IF X$<>"Y" THEN 25
531 PRINT "{6 SPACES}HAVE A NICE DAY
!":::::::::::
533 STOP

```

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NEWS & PRODUCTS

Game Cartridges For TI, VIC And Atari

Romox has adapted some of its Atari games into cartridges for the TI-99/4A and VIC-20 computers. The games include *Ant Eater*, *Princess and the Frog*, and *Typo*. In addition, the company has released a new space adventure game for the Atari - *Attack at EP-CYG-4*.

The cartridges for the TI do not make use of the Texas Instruments GROM, so they are limited to 8K of memory. The VIC cartridges can make use of up to 32K. The suggested price for each game is \$44.95.

• *Ant Eater* is a two-player survival game. The players control the ants, which must risk battle with the anteater to gather food and return it to their colony.

• *Typo* is an educational spelling and typing drill combined with a space maze. The drill consists of random letters, words and phrases, or the user can enter and be tested on his or her own list.

• In *The Princess and the Frog*, a two-player game, the object is to cross a field of jousting knights, navigate the castle moat, kiss the princess, and be transformed from frog to prince - all within the space of 60 seconds.

• *Attack at EP-CYG-4* puts you in command of a flying saucer assigned to attack the cities on the planet below. The planet has 20 areas to navigate and three levels of difficulty.

Romox, Inc.
501 Vandell Way
Campbell, CA 95008
(408)374-7200

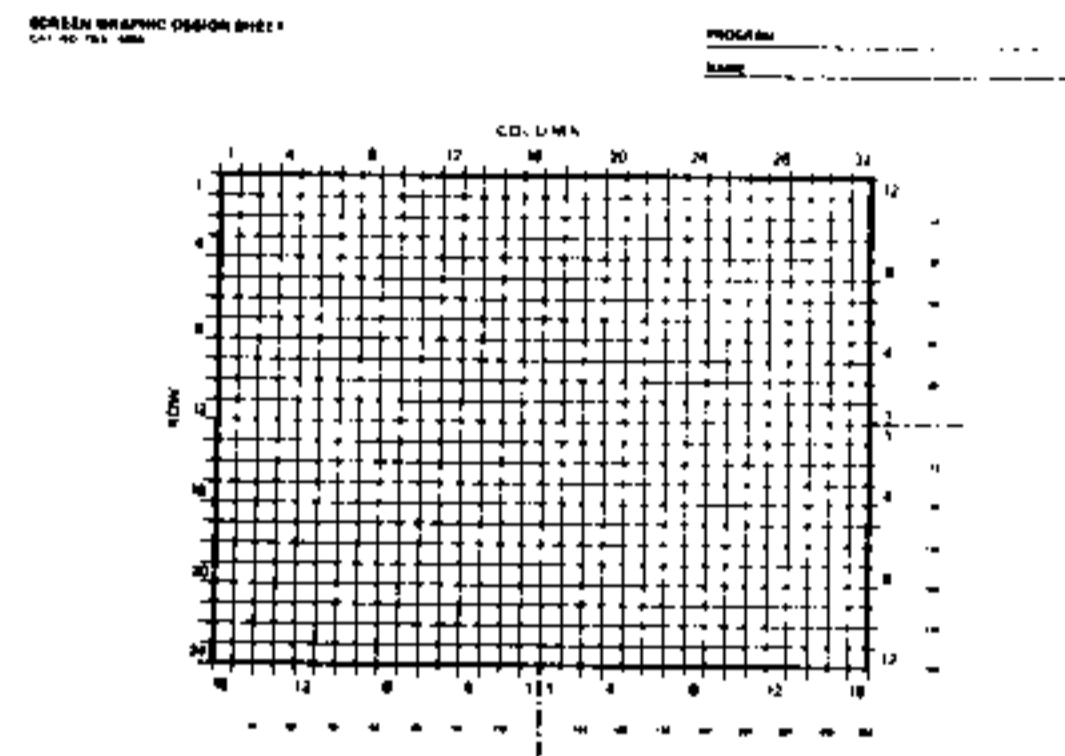
Graphic Design Aids For TI

TENEX Computer Marketing Systems has designed two forms to assist the TI-99/4A programmer in graphic design.

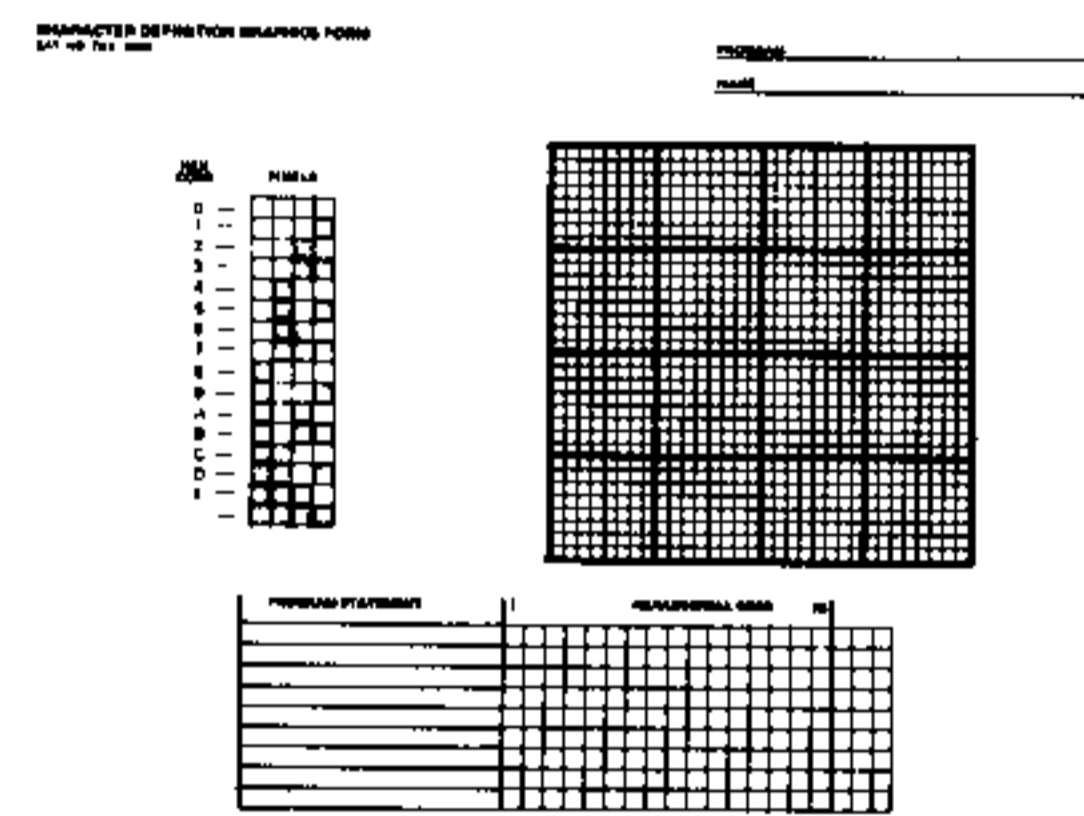
The Screen Graphic design sheet is divided into 24 rows of 32 columns, allowing simple layout of text and characters. Another scale divides the sheet into 192 rows of 256 characters, assisting with the definition of sprite coordinates.

The Character Definition form displays a four-character by four-character matrix that can be used to design anything up to the largest sprite. The form also contains a pixel to hex code conversion chart, and space for program statements.

The forms are available in 40-sheet pads for \$1.95 each. Screen graphic design sheet for the TI.



Character definition graphics form for the TI.



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High-Speed Disk System For 64

cgrs Microtech has developed a high-speed floppy disk system for the Commodore 64. The PEDISK II is available in single or dual drive versions and can accommodate 3-inch, 5 1/4-inch, or 8-inch disk drives.

The system includes a controller circuit assembly, cable, and standard disk drives. It features IBM-CP/M compatibility and the ability to transfer data to computer memory at 250,000 bits per second.

Each PEDISK is supplied with the PDOS operating system, which includes a full set of utilities and BASIC commands. The C540-1, a single drive 5 1/4-inch system, retails for \$595.

cgrs Microtech
P.O. Box 102
Langhorne, PA 19047
(215)757-0284

Apple Word Processor

Write Away, a word processor for the Apple IIe, can be used for home or office work and makes use of the features of any printer. A mailmerge/form letter feature and data base utilities are included with the program.

The program, which sells for \$175, is compatible with most popular 80-column cards.

Midwest Software Associates
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St. Louis, MO 63074
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TI-99/4A Directory

A wealth of information on and about the TI-99/4A computer is provided in Micronova's *Home Computer Directory for the 99/4A*.

The 52-page directory includes information on new TI

equipment, TI hotlines and contacts, clubs and user groups, third-party software listings, technical information, and on-line data bases.

The directory is available for \$4.95.

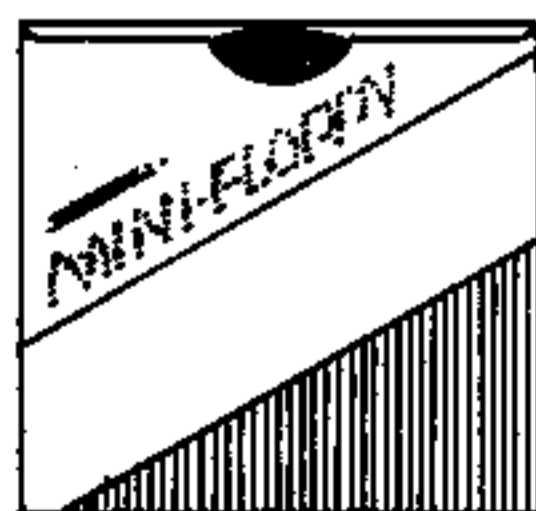
Micronova
P.O. Box 1058
Northampton, MA 01061

Timex/Sinclair Selections

D. Lipinski Software has introduced a group of programs for the 16K Timex/Sinclair computers. All programs are self-expanding to fit any memory configuration and are available on cassette for \$10.

- *Tutor* is a quiz-making program that enables you to tailor tests for each student.

- *List* is a data entry and retrieval program for up to four categories of information.



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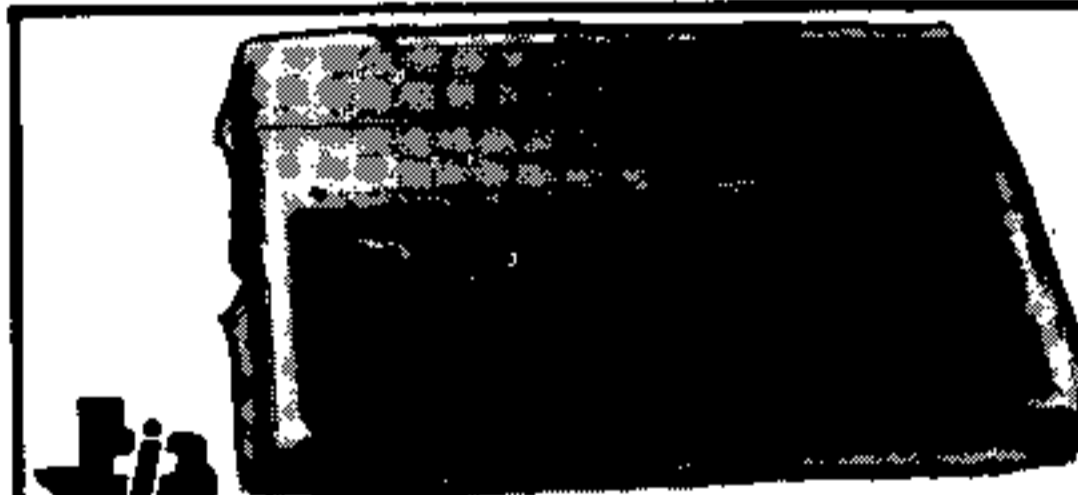
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