

THE MSP 99 NEWSLETTER

BASIC TIPS

by Ed Neu

-Part 4-

Ah, yess! The very part you have all been waiting for! All you gamesters out there who picture yourself as the next person to create a graphics extravaganza to rival PARSEC have been drooling for months now waiting for THE WORD about sound, music and, of course, graphics in TI Basic. The sound and music will have to wait another month because of space . . . but here goes graphics.)

I hope I don't disappoint too many of you. I am not a graphics guru, but I can get a few of you off to a good start with this aspect of the 99/4A.

By now, those of you who started programming with the beginning of this series have probably figured out how to create your own graphics shapes with the CALL CHAR function. Many of you have probably even typed in the program in the TI owners manual to help you determine the proper character codes of your own character creations. If you haven't, you may be interested in getting a copy of "Define Character" (U01010) from our library — an excellent character generator program with quite a few enhancements over the one in the manual.

In Part-2 I introduced you to the CALL HCHAR and CALL VCHAR commands which allowed us to put special characters on the screen in any one of the 768 character positions — but they just stayed where we put them. Now it's time to get them to moving.

I remember the very first program I wrote with my TI. I wanted a colored square to move around the screen and leave a trail. To do the same thing you need a few things in your program.

(continued on page 4)

WHITE ELEPHANT?

To thwart unauthorized (unlicensed) software module manufacturers. TI made changes on some of their white 99/4A consoles last year. Third party modules won't work on most of them. The only way to determine it you have a white elephant is to see it in operation. Turn on the computer, look at the color bar screen and check the bottom right hand edge of the screen. If it says "c 1983 Texas Instruments V2.2", it will NOT play most cartridges made by companies not licensed by TI. This includes Funware, Romox, Atari, Parker Bros. and others.

On the other hand, if the bottom line says "c 1981 Texas Instruments" this means most third party modules PROBABLY WILL work fine. Unfortunately, there is no way to differentiate the white elephants by package, serial number or color. And TI isn't making any more modules.



(BASIC Tips, from page 1)

First you need a colored square (black will do). Then you need a couple of variables to keep track of where it is. You'll need to put some information about where you want it to go into the computer. For my first program I used the arrow keys. Then you need a couple lines of code to move the square to a new location and leave one behind. You'll also need some code to check to make sure the square doesn't fall off the ends of the screen and hurt someone. (You'll be the one who gets your feelings hurt because the program will stop with an error.)

The little ditty below does all these things. When you get tired of it fix it up so you can change the color of the moving square. Maybe you might even want to make it draw with different shapes or be able to erase all or part of a design you don't like. You can get a better idea of how to do all these from the program "Sketch-A-Sketch" (M02170) from our library.

```
100 REM ***********
110 REM SQUARE SCOOTER
120 REM ************
130 REM
140 REM INSTRUCTIONS
150 REM
160 CALL KEY(3,K,S)
170 CALL CLEAR
180 CALL SOUND(100,880,2)
190 PRINT "USE THE ARROWS (L
ETTERS E,S,D,X) TO MOVE THE
PRINT "press any key to begi
n"
210 CALL KEY(0,K,S)
220 IF S=0 THEN 210
230 C#30
240 REM "C" IS THE SQUARE.
       THE TI ALREADY KNOWS
       ITS DEFINITION
250 CALL CLEAR
260 X=16
270 Y=12
280 REM "X" "Y" ARE WHERE
        IT IS.
290 CALL SOUND(100,880,8)
300 XL=X
310 YL=Y
320 REM "XL" "YL" ARE
       WHERE IT USED TO BE
330 CALL HCHAR(Y,X,C)
340 REM THIS PUTS IT ON THE
        SCREEN AT IT PRESENT
        LOCATION
350 CALL KEY(3,K,S)
360 IF S=0 THEN 350
370 X=X+(K=68)*(X(32)-(K=83)
*(X)1)
```

4

```
380 Y=Y+(K=88)*(Y(24)-(K=69)
*(Y)1)
390 REM THESE LAST-FOUR
        LINES READ THE ARROW
        KEYS, FIGURE UUT
        WHERE TO MOVE THE
400 REM SQUARE TO AND CKECK
        TO MAKE SURE IT DOES
        NOT FALL OFF THE
        SCREEN.
418 REM (pretty neat!)
420 CALL HCHAR(YL,XL,C)
430 REM THIS ONE FILLS IN
        HOLE WHERE THE
        SQUARE USED TO BE
        AND STARTS OVER
440 GOTO 290
```

It is also easy to create the illusion of smooth motion using animation techniques. To do this you create several character patterns which are just a bit different. After the starting character is located on the screen with a CALL HCHAR or CALL VCHAR statement the shape of the character is changed by redifining it with CALL CHAR statements using other pre-defined shapes in quick succession. Or a different shape can be put in that location with the CALL HCHAR and CALL VCHAR statements again. The effect is motion.

This is demonstrated by making a few modifications to the program "BORDER" from Part-2. By creating four different characters and alternating their definition with CALL CHAR statements, we can make the frame appear to be made of flashing lights - like this!

```
460 REM*************
470 REM FLASHING BORDER
480 REM*************
490 CALL CLEAR
500 CALL COLOR(13,16,4)
510 CALL CHAR(128, "FFFFC3C3C
3C3FFFF")
520 REM ** THE FLASHING
           CHARACTERS
530 H1$="0000CCCC00CCCC00"
540 H2$="0000333300333300"
550 V1$="5858000058580000"
560 V2$="0000585800005858"
570 CALL CHAR(129,H1$)
580 CALL CHAR(131,V1$)
390 REM ** MAKE THE BORDER
600 CALL HCHAR(2,2,128)
610 CALL HCHAR(2,3,129,29)
628 CALL HCHAR(2,31,128)
630 CALL VCHAR(3,31,131,20)
640 CALL UCHAR(3,2,131,20)
650 CALL VCHAR(23,2,128)
660 CALL HCHAR(23,3,129,28)
```

AN MSP 99 SOFTWARE REVIEW

GRAVITY GAME

By Bruce Larson

Try this one if you want to give your a good workout! speech synthesizer Requiring a Terminal Emulator II Command Module and a speech synthesizer, all instructions for this game are given verbally by the computer. Isaac Newton probably wasn't hit on the bean with an apple, but he did formulate some physical laws dealing with the motion of bodies in space. This fun game attempts to duplicate that very thing.

You're given a spacecraft loaded with ten supply capsules and your job is to get one of them to a space station. Sound easy? Not so! While on their way, their path is bent by various heavenly bodies (couldn't tell they were stars or planets) tucked around the Cosmos.

You use the 'UP' arrow or 'DOWN' arrow (without the function Key) to aim your capsule and the 'L' key to launch it. If you're lucky, you'll bring goodies to all those starving astronauts. If you're not so lucky, your capsule will hit a planet/star. lost in space, or (perish the become thought), hit your own spacecraft. (At which point your computer will call you a KLUTZ!). If you aim in the same direction twice, your computer will tell you "YOU TRIED THIS ONE PERSON THIS ONE BEFORE, TURKEY, AND IT TRIED DIDN'T WORK!". Sticks and stones may break my bones....

Each run gives you a different Cosmos, so there's not much chance to perfect your aim. Also, some versions of the Cosmos don't seem to have a "launch window." (at least I didn't find one before I ran out of capsules). Written by Tom Wible of the Philadelphia Users Group, this one is worth a try. Order Code Number 605111.

AN MSP 99 SOFTWARE REVIEW

CODE OF LIFE By Jon Todd

Although grossly simplified and somewhat inaccurate, this tries to program demonstrate the way the elements of DNA combine to determine physical traits in human beings.

Written in Extended Basic, the user presses keys to move nucleotides into sinale position along a short segment of a gene. Although real genes would be comprised of over 1000 nucleotides, or bases, this program uses only one base per gene. The successfully illustrates the combinations of the four bases found in DNA, but could cause confusion between the bases and genes. It contains no textual help explain how the background to different combinations would affect traits in the resulting human. Catalog # E03032.

AN MSP 99 SOFTWARE REVIEW

ShapeArt By Jon Todd

This is an excellent program for creative children of all ages! Written in Extended Basic. ShapeArt allows the user to select and manipulate colored shapes. My 7-year old first created a solar system of colored planets, then built a village of large and small buildings.

The user types simple one-letter commands to select the shape and the color of the shape, then positions it using the arrow keys. When the position, color and form of the shape is as desired, a single Keystroke fixes the position of the shape and readies the computer for creation of the next one. These shapes can be placed anywhere on the screen, even overlapping each other, so numberless combinations are possible. It's great fun, even for adults! Order it with catalog number E02072.

SOFTWARE CONTEST UPDATE

Entries for our Second Annual Software Contest are coming in well. We have already received more than a half dozen programs in the categories of games, educational, and business programs. There are still many more categories to fill, and I'm sure you could make a program better than the next person.

Sharpen those keyboards and get your entries in today. YOU MAY BE A WINNER!

TI-99/4A

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The Above PRICELIST Was Created With TI-WRITER And A PROWRITER Printer.

Graphic Illustrations:

Across from Southdale in the COMMUNITY CREDIT BLDG CALL FOR AN APPOINTMENT

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Inspired By RONALD P.HALVERSON of the MSP 99 USERS GROUP

PROWRITER GRAPHICS

By Bonnie Burton

One thing that sold me on the Prowriter was the test print that showed remarkable graphics potential. Unfortunately, other than making it print in Greek, I was unable to tap its potential. Not until I heard about MSP member Ron Halverson's presentation a Business at sub-group meeting, did I really learn what the Prowriter, combined with TI-Writer Word Processor, could do. TI-Writer allows for user defined ASCII strings that are interpreted by your printer. This means you can send the necessary escape and ASCII codes to change printer functions. has graphic symbol Prowriter The functions, so you can produce interesting designs via the TI-Writer.

To make this work for you, enter the following "document" in the text-editor mode. The first portion consists of comments (.CO command) and lets the text-formatter Know these are not to be printed with the rest of the document. This section serves as your key or "cheat sheet", providing pertinent information for user reference. The next section consists of the transliterate commands. Following this, type in one of the samples for practice. It won't be long before you're creating your own displays.

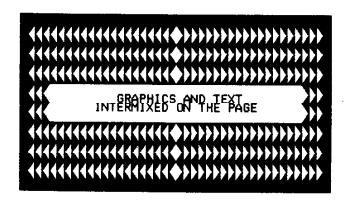
,CO************************************		
.00	* *	*
.CO FUNCTION	* CHR *	ASCII STRINGS *
.00	* *	*

.CO PICA PITCH	= 2 =	97:27,78
.CO ELITE PITCH	= b =	98:27,69
.CO COMP PITCH	= c =	99:27,81
.CO PROPOR PITCH	= d =	100:27,80
.CO SET ELONGATE	= 6 =	101:14
.CO STOP ELONGATE	= f =	102:15
.CO SET BOLD	= g =	103:27,33
.CO STOP BOLD	= h =	104:27,34
.CO SET UNDERLINE	= i =	105:27,98
.CO STOP UNDERLINE	= j =	106:27,89
.CO START LINE GRAPHICS	= x =	120:27,35,27,62,
		27,84,49,54,95
.CO START IMBED GRAPHICS	= y =	121:27,35,27,62,
		27,84,49,54,95,95
.CO END GRAPH	= 0 =	111:27,36,27,65,27,60
	*******	*****************
.TL 97:27,78		
TL 98:27,69		
.TL 99:27,81		
.TL 100:27,80		
.TL 101:14		
.TL 102:15		

.TL 103:27.33

.TL 104:27,34 .TL 105:27,88 .TL 106:27,89 .TL 120:27,35,27,62,27,84,49,54,95 .TL 121:27,35,27,62,27,84,49,54,95,95 .TL 111:27,36,27,65,27,60 .NF .NA .SP3

I hadn't heard Ron's presentation and only had a hand-out of samples to work from. So my initial results were frustrating. (For example, note that the ASCII codes in the transliterate commands equate to lower-case letters. In this capacity, they change printer function, therefore cannot be used in a text-graphics combination. In one sample, I typed a lower-case 'this'. The 'i' turned on the underline function and had me completely bewildered for some time. Use capital letters in your Additionally, I text-graphic combos.) seemed to have more success using non-fill (.NF)and non-adjust (.NA), while spacing precisely and using carriage return. After trial and error, I finally obtained this:



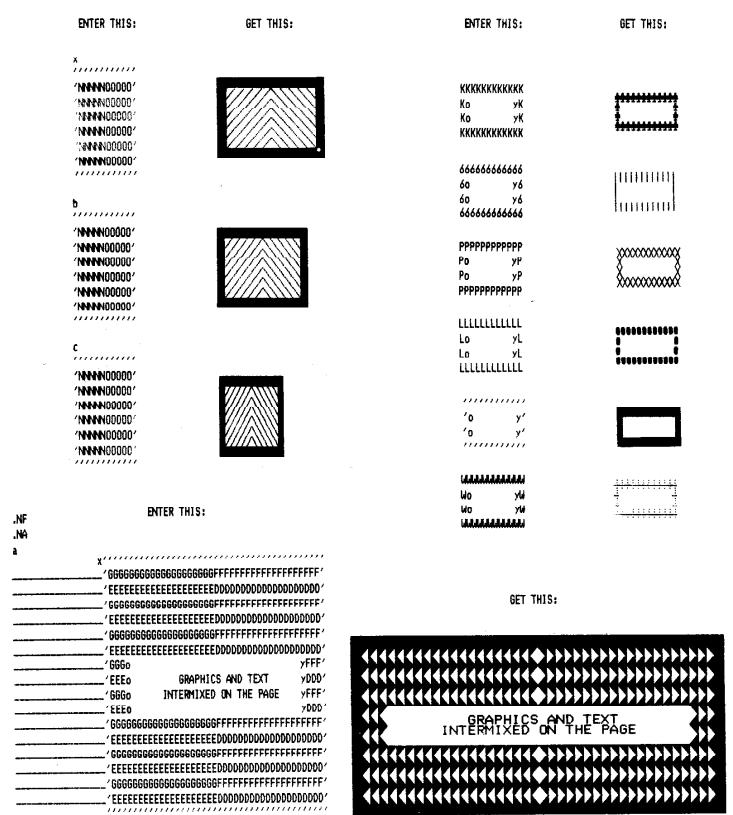
As you can see, various special graphics may be intermixed with phrases and text. This allows the user to design elaborate graphic presentations. (Check out OBM Systems' ad in this issue.)

Ron advises, however, that using this method to enhance word processing graphics does not come without some difficulties which are aggravating. For example, in order to allow for contiguous graphics printing, the normal 6 lines to the inchare modified to 16 vertical dot positions per line. This tends to confuse the automatic line-count feature of TI-Writer and results in bad top of form skips. As yet, there seems to be no way to remedy this condition other than formatting graphics pages in a separate disk file from the main portion of the report.

(continued on page 8)

PROWRITER GRAPHIC EXAMPLES

In the following examples, note that the command codes control the printer pitch (examples on right). Then, the character used to form the design will determine the end result (examples on left). Enter the samples following the formatter control document. Experiment! (Note however, that to get blank space, you have to use underlines as in the bottom example. The space bar produces a design too!) These samples have been assembled for use with the Prowriter. Other printers may possess similar qualities.



over anything of value. Then you will be instructed to push the record button and press enter. After you press enter, a section of blank tape is recorded and the computer prompts you to "TYPE A SPELLING WORD." After you type each spelling word and press enter, the computer turns on the cassette motor, records several seconds of tone, records the data corresponding to your word and turns the cassette motor off. When your list of spelling words has been entered, type """ and enter; ending Program #1.

comes the tricky part. From the recorder, unplug the black and red leads coming from the computer. Rewind the cassette to the beginning and push the play button. Listen to the length of time the tone is on before the data begins. When you are familiar with this time interval, rewind the tape again. Now push the play button and wait until the first data plays, then immediately push stop. Now you are ready to record someone speaking the first word on your spelling list. You may find you have enough time to say quite a bit the next data begins, but be before careful! If you erase the data section of the tape, you will get errors and will have to start over with Program #1. You can say something like "Spell the word" and whatever your word is; or even "Spell red, as in the color red." Be sure to speak in a loud clear voice.

After you record the first spelling word, immediately push stop and play until you hear the next data recording, then continue with the rest of your list. When your complete list is recorded, play some of the rest of the tape as a check. You should hear one more data sound after your last word, followed by blank tape (or whatever was on your tape when you began.)

Now you are ready to run Program #2. This program plays the data into the computer, stopping after each one. On the TV speaker you hear the tone, the data, and then the spoken message you recorded above. The program then asks you to type the word and tests it against the word it got from the tape. If they are the same, it gets another word and so on. If you do not spell the word correctly, you are given more chances; but obviously the computer cannot repeat the spoken word since it has no way to rewind the tape. Instead, each time a mistake is made, an additional letter of the word is displayed until the entire word is shown. Them a new word is imput and the process begins again.

We said certain compromises had to be made, namely that the spoken word cannot be repeated, and that we must listen to the tone and data as well as the spoken message. Also, the time given us is certainly not very much to be of great use. This last problem can be eliminated during Program #1 if we run the recorder manually between inputting the words. Then we can have as much time as we want, and if we use that manual time to record the message, we eliminate the possibility of erasing the data.

In any case, this is a pretty poor substitute for real speech control by a computer, but unless we have a speech synthesizer (and the command modules to control it) it might be the most we can expect.

100 OPEN #1:"CS1", OUTPUT, INTERNAL, FIXED 64
110 A\$="READY"
120 PRINT #1:A\$
125 CALL CLEAR
130 PRINT "TYPE A SPELLING WORD"
148 PRINT "(TO END, TYPE '^^/)"
150 INPUT A\$
160 IF A\$="^" THEN 190
170 GOTO 120
190 END

100 REM ********** 110 REM * PROGRAM #2 * 120 REM ********** 130 REM 140 OPEN #1:"CS1", INPUT , INTERNAL, FIXED 64 150 INPUT #1:A\$ 160 IF AS="READY" THEN 220 170 PRINT : "AN ERROR HAS OCCURRED" 180 PRINT : "THE WORD WAS ":A\$ 190 PRINT : "BE SURE CASSETTE IS REMOUND" 200 CLOSE #1 210 GOTO 140 220 INPUT #1:A\$ 230 PRINT "SPELL THE WORD:" 240 PRINT 250 INPUT 8\$ 260 IF 85-A5 THEN 360 270 LIRON8=LIRON6+1 280 IF WRONG) LEN(A\$) THEN 330 290 PRINT : "SORRY, TRY AGAIN" 300 PRINT :" (HINT) THE WORD BEGINS WITH:" 318 PRINT SEG\$(A\$,1,WRONG) 320 GOTO 250 330 PRINT : "SORRY, THAT WAS NOT RIGHT" 340 PRINT : "THE WORD WAS ";A\$ 350 GOTO 370 360 PRINT :"GREAT!"::: 370 PRINT : "NOW TRY ANOTHER WORD" 380 GOTO 220

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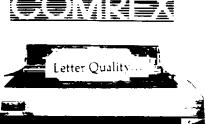
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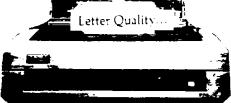
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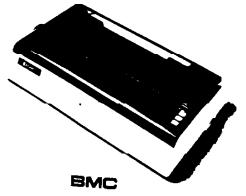






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(BASIC Tips, from page 4)

730 GOTO 690

670 CALL HCHAR(23,31,128)
680 REM ** ALTERNATE FLASH
CHARACTERS
690 CALL CHAR(129,H2\$)
700 CALL CHAR(131,V2\$)
710 CALL CHAR(129,H1\$)
720 CALL CHAR(131,V1\$)

The applications and adaptations of these techniques are endless. A new program coming soon called "Tijuana Taxi" uses one adaptation most adeptly to create an exciting, fast moving action game in TI Basic. It changes the color of characters, creating the illusion of quick motion.

You can even create your own version of Pinochio. Type in the program below and introduce yourself to "Guy". He's real friendly.

750 REM ************ 760 REM 770 REM ************ 780 CALL CLEAR 790 CALL SCREEN(8) 800 REM ** FACE - TALKING 810 CALL CHAR(48, "FF99002400 302418") 820 REM ** FACE - SMILING 838 CALL CHAR(49, "FF99002400 840 REM ** TORSO 850 CALL CHAR(56, "18183CFF3C 303030") 860 REM ** LEGS 870 CALL CHAR(57, "3C3C242424 2424E7") 880 REM ** RIGHT ARM 890 CALL CHAR(58, "04040407") 900 REM ** LEFT ARM 910 CALL CHAR(59,"202020E") 920 REM ** LEFT ARM - WAVING 930 CALL CHAR(60, "0C1830E") 940 CALL COLOR(3,2,16) 950 REM ** FACING FRONT 960 CALL HCHAR(10,16,49) 970 CALL HCHAR(11,16,56) 980 CALL HCHAR(12,16,57) 990 CALL HCHAR(11,15,58) 1000 CALL HCHAR(11.17.59) 1010 REM ** WAVING LEFT HAND 1020 FOR I=1 TO 10 1030 CALL HCHAR(11,17,60) 1040 CALL SOUND(25,40000,30) 1050 CALL HCHAR(11,17,59) 1060 CALL SOUND(25,40000,30)

1070 NEXT I
1080 REM ** TALKING
1090 MSG\$="Hello, my name is
Guy."
1100 FOR I=1 TO 22
1110 CALL HCHAR(10,16,48)
1120 CALL SOUND(25,40000,30)
1130 CALL HCHAR(8,I+3,ASC(SE
G\$(MSG\$,I,1)))
1140 CALL HCHAR(10,16,49)
1150 CALL SOUND(25,40000,30)
1160 NEXT I
1170 FOR T=1 TO 1000
1180 NEXT T

Notice how the CALL SOUND statements are used to create time delays. This saves an extra line of code for each delay compared to using FOR...NEXT loops. Plus, each delay can be precisely timed with the duration parameter of the CALL SOUND. This shows how the versatility of TI Basic is limited only by your own resourcefulness!

Enough of the serious stuff. Have you got any good ideas from all of this? I hope so!

By the way, if you plan to write programs in Basic and later use them in Extended Basic, don't use any graphics characters in groups 15 or 16 - that's ASCII codes 144-159. Extended Basic does not support these character codes. That's one price which had to be paid to support the tremendous capabilities of sprites. (Those are GREAT!!! When you work your way up to Extended Basic you'll love them.)

The space goes so quickly sometimes in these articles. Volumes could be written on graphics. The best thing to do is study other people's programs for ideas and come to meetings and ask questions.

Next month I promise we'll talk about sound and music. We'll make some bells ring and look at elementary music programming techniques.

SPRITES
(Use Extended Basic)

100 CALL CLEAR::CALL SCREEN(7)::CALL MAGNIFY(2)::FOR R=1 TO 28::CALL SPRITE(#R,64+R,16,80,80,30,3*R,8)::NEXT R::FOR D=1 TO 5000::NEXT D

*** The Education Committee is trying to re-gather the MSP 99 library of books, magazines and newsletters to make available for all members to use. If you currently have any library materials, please return them to Marilyn McPartlin, 636-5663. Also, if you would like to donate books, modules, or whatever to the library, contact Marilyn or any Education Committee member.

*** We finally received TI FORTH! It is available to MSP 99 members for the nominal fee of \$15. You need the Editor/Assembler module, memory-expansion and disk drive in order to use it. If interested, contact Ed Neu at 425-8744 to place your order.

*** Anyone interested in supporting a club sponsored electronic Bulletin Board System, please contact Joel Gerdeen (572-0148) or Scott Morgan (454-8684).

*** The MSP 99 User Group is interested in organizing a beginner's class in BASIC programming. If you would like to participate in these valuable sessions, look for the sign-up sheet that will be located in the entry area at the next general membership meeting.

*** Ed Neu's BASIC Tips - Part 2 (from the December '83 issue) appeared in the Melbourne Times, February, '84. That's Melbourne, Australia!

*** An updated Membership Roster is enclosed with this issue. MSP 99 Software Catalogs will be sent to all members in good standing with the April issue of the newsletter.

*** An MSP member reports that TI told him that cleaning your disk drive will void its warranty. So don't clean. Or don't admit you clean. Beats me what we're supposed to do with all that dust, dirt and nicotine residue.

Members may place want ads, at no charge, by calling Jon Todd 920-3263 or by turning in written copy of the ad at any MSP 99 meeting. Businesses may purchase ad space at the cost of \$1 per line.

WANTED: Used Extended Basic and Mini-Memory command modules, Call Steve, 431-5821.

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