Radio Shack

TRS-80™ Microcomputer NEWS

MAY 1980

THE MICROCOMPUTER NEWSLETTER PUBLISHED FOR TRS-80 OWNERS Volume 2 Issue 3

Fort Worth SCENE

TANDY CENTER

As you noticed, we combined the March/April issues. This does not signal a move to Bi-monthly issues, simply a missed deadline. If everything went on schedule, you have this issue in very early May.

In the Jan/Feb issue, page 7, we gave you a correction for the W-2 program in Disk Payroll (26-1556). Line 5290 in the correction contains an error which we missed in proofreading. Line 5290 should read:

```
5290 FORN=1TOK:AN=ASC(MID$(C$,
     N,1)): IFAN=440RAN=59THEN
     A$=LEFT$(C$, N-1):B$=
     RIGHT$(C$,LEN(C$)-N):
     ELSENEXT
```

The change is to add a close parenthesis after the second C$ in the third line.

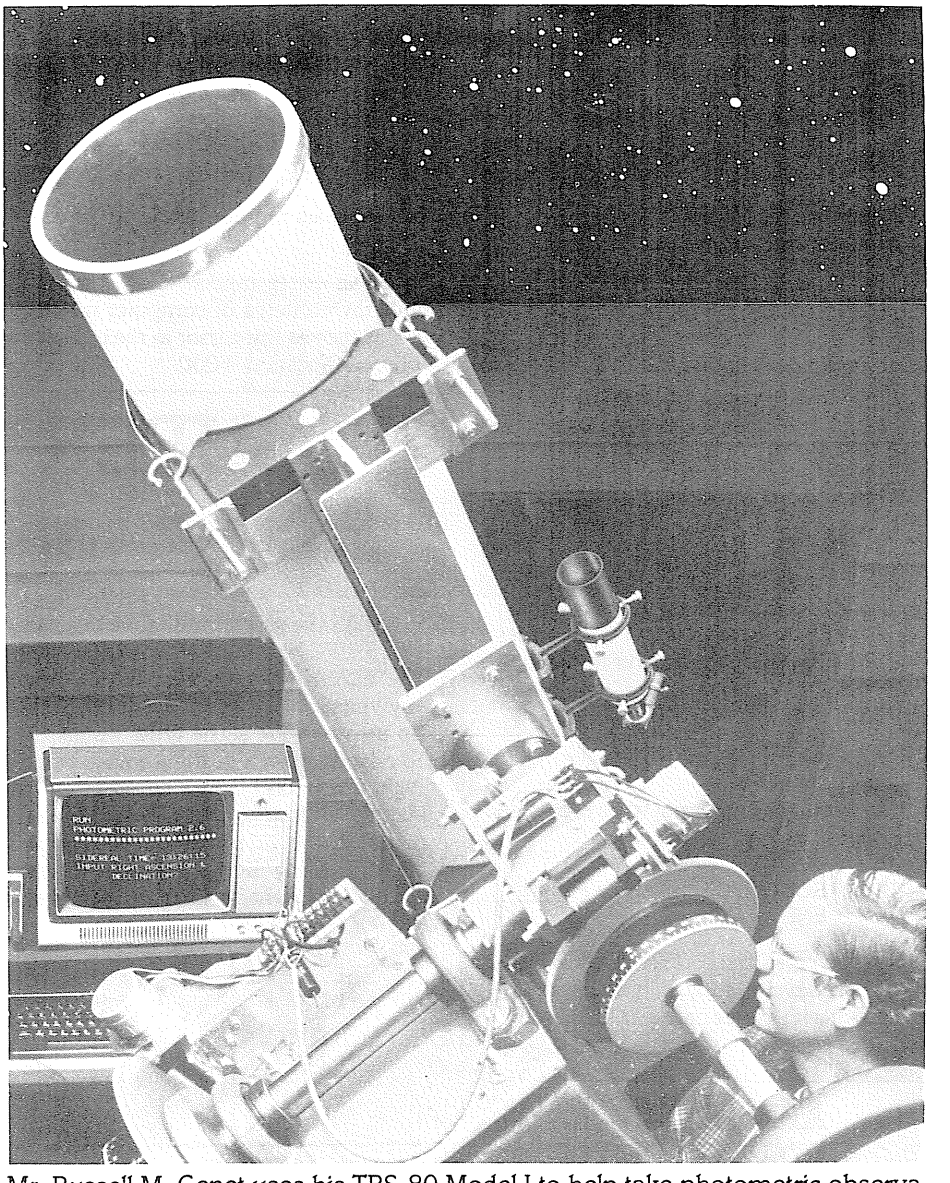
Software which has become available but which we have not yet put in the Product News Section includes:

Real Estate Volume IV	26-1574
Haunted House	26-1910
Tape Word Processor	26-1505
and	
Concrete Take-off	26-1557

NEWSLETTER INDEX

IN THIS ISSUE . . .

Model I Aids Investigation of Stars



Mr. Russell M. Genet uses his TRS-80 Model I to help take photometric observations of variable stars and lunar occultations. A recently completed interface allows Mr. Genet to send data directly from his telescope to the TRS-80.

Mr. Genet, an amateur astronomer, recently built his own telescope and observatory at his home in Ohio. His interest in astronomy and electronics led him to combine these interests by exploring stars by using electronics to measure the intensity of light from certain interesting stars.

(Continued on page 2)

MODEL II TRSDOS SUPERVISOR CALLS
— WHAT DO I DO NOW?

Let's try an example of selectively scrolling video (SVC 27). Power-up your Model II in the normal manner. When you are in TRSDOS command mode, type and 'ENTER':

DEBUG ON

The TRS-80 will respond with:

DEBUG IS NOW ON

Now type and 'ENTER':

DEBUG

This puts you in Model II's Debug program and will allow us to put a machine language routine into memory, then onto disk.

Press 'M' for Modify then 'F000' (do not type the single quote marks). This command sequence tells the computer that you wish to modify the contents of computer memory beginning at Hex location 'F000'. Press the 'F1' key. This moves the cursor to the top of the video and indicates that the computer is ready to modify location 'F000.'

Type the following sequence of Hex values (you do not use enter, simply type the values):

21 08 F0 E5 2A 03 28 E9
45 3E 1B CF C9

Check the numbers that appear on the top of the video and be certain that they match what is shown here. If they match, press the 'F2' key. This returns you to Debug's command mode. Now press 'S' to return to TRSDOS then 'ENTER':

DEBUG OFF

Be sure your diskette is not write protected and type and 'ENTER' this line:

DUMP SCROLL/CIM START = F000,
END = F010

When you press the 'ENTER' key, the computer will save a copy of your program onto Disk with the file name 'SCROLL/CIM'.

(Continued on page 4)

APPLICATION SOFTWARE NOTE

If for any reason you hit the 'BREAK' key, DO NOT use 'RUN' to restart the program. 'RUN' can cause some Application programs to 'bomb.' Instead of 'RUN,' use 'CONT.' The 'CONT' command allows the program to continue from the point at which you pressed 'BREAK.'

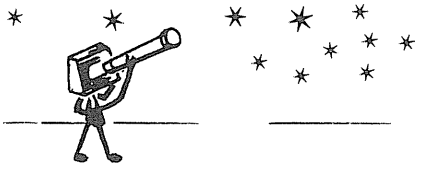
STARS

(from page 1)

The TRS-80 allows Mr. Genet to take as many as 1000 measurements each second, calculate necessary information, and still maintain an accuracy which is within .01 magnitude with respect to comparison stars!

Mr. Genet points out that his high school age son, Dave, was able to create the initial version of the spherical trigonometry program which they use in their calculations. Mr. Genet can be contacted by those interested in photometric astronomy at:

Fairborn Observatory
1247 Folk Rd.
Fairborn, OH 45324

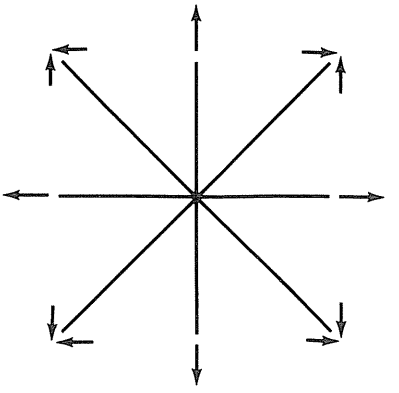


SUPER SKETCH

This program turns the video display of the Level II Model I TRS-80 into an electronic drawing board.

Instructions:

1. To CLEAR the screen and move the cursor to the upper left corner, press the ENTER key.
2. The SHIFT key used with ARROW keys erases lines previously drawn.
3. The FLASHING cursor does not draw lines, but allows you to position the cursor anywhere on the video. To get the flashing cursor, press the Left arrow, Right arrow and Up arrow at the same time.
4. To change from a flashing cursor to a SOLID cursor for drawing, press the Left arrow, Right arrow and Down arrow at the same time.
5. Holding all four arrows down at the same time will return the cursor to the upper left corner of the video without erasing what is on the screen.
6. In the drawing mode, lines will be drawn as long as an arrow key is held down. The arrow keys may be used in combination to draw diagonal lines.



(Continued on page 3)

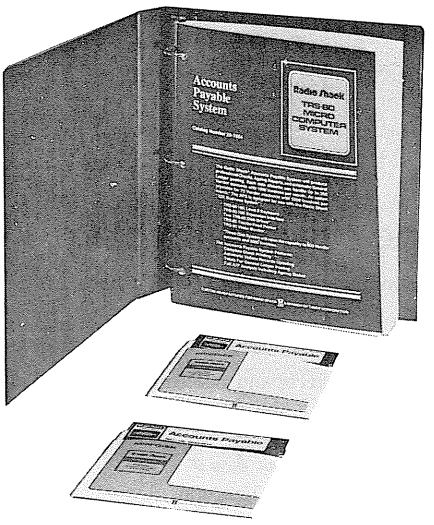
REAL ESTATE VOL. III (26-1573)

The VARIABLE INCOME ANALYSIS program has a line missing in many of the current volumes. The missing line distinguishes between beginning of period and end of period payments. If you have had problems with this, add line 6060 as follows:

6060 ON J GOTO 6070,6080

Be certain that you CSAVE a copy of the corrected program.

TRS-80 MODEL I ACCOUNTS PAYABLE SYSTEM



One of the most important tasks of any accounting department is monitoring the flow of cash into payable accounts. Some invoices should be paid immediately to take care of discounts. Other invoices may be held for longer periods of time. The Radio Shack Accounts Payable System (APS) will help you watch all vendor accounts and invoices, so that you may keep as much cash on hand as possible, while maintaining good credit.

FEATURES OF APS:

- Complete General Ledger Recap
- Prints Checks for Mailing
- Automatic Updating of Vendor Records
- Prints the following Reports:
  - Complete or Selected Vendor Files
  - Complete or Selected Invoice Listing
  - Complete or Selected Invoice Listing by Aging Status
  - Complete or Selected Posting Report
  - General Ledger Recap Report
  - Cash Requirement Report
  - Discounts Lost Report
- Provides totals for General Ledger Posting
- Easy Access to Vendor Accounts for:
  - Editing
  - Deleting
  - Printing

System Capacity

- Two Disk System
  - 75 Vendors and 1500 Invoices per month

  or
  - 200 Vendors and 1000 Invoices per month
- Three Disk System (48K)
  - 500 Vendors and 2000 Invoices per month

Minimum Hardware Requirements:

- 16K Level II Model I TRS-80
- 16K TRS-80 Expansion Interface
- Two TRS-80 Disk Drives
- Minimum 80 column printer such as our Line Printer I

Radio Shack®
A Division of Tandy Corporation

26-1554

$149.95

Most Accessory Items in Product News are Available Quickly on Special Order

Have you ever had information in your TRS-80 that someone else needed?

Hardcopy for the TRS-80 is now affordable! Expansion Interface IS NOT needed!

Line Printer II NEW LOW PRICE—$799 PLUS CABLE

The Line Printer II is FAST — 100 characters per second.

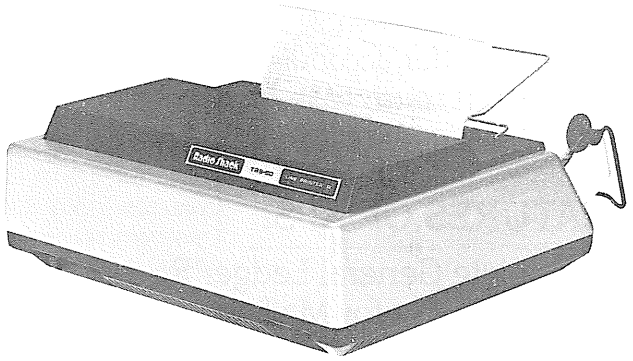
The Line Printer II is READABLE—the 7x7 dot matrix gives easy to read characters in both upper and lower case.

For special effects and headlines, the Line Printer II will print EXPANDED characters (40 characters per line) separately or in the same line with the regular 80 characters per line.

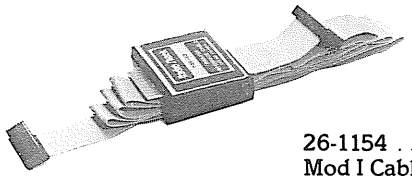
The Line Printer II is versatile — operates in both friction-feed and pin-feed modes. With friction feed you can print from roll paper (detachable rear bail included) or use single sheets. This allows you to use stationery, envelopes, letterhead, what ever you need.

In the pin feed mode the printer prints on continuous 9-1/2 inch wide forms (original and up to two copies). The pins ensure precise alignment and registration.

No Expansion Interface is needed when you use our Line Printer II Interface Cable, which is available separately.



Attach Line Printer II to Your Level II TRS-80 Bus without Expansion Interface

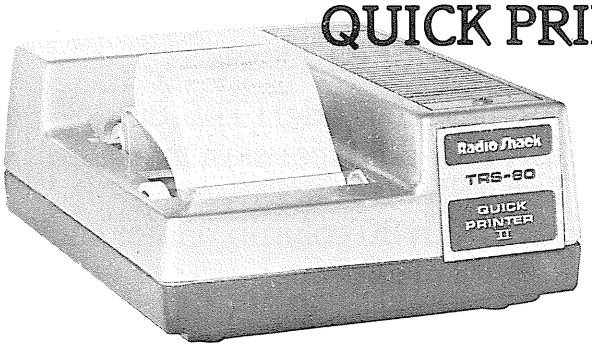


Line Printer II Interface Cable.
Interfaces with Line Printer II without using the Expansion Interface. Connects directly to TRS-80 bus connector.

26-1416 ..... **59.00**

26-1154 ..... **799.00**
Mod I Cable. 26-1415 ..... **29.00**
Mod II Cable. 26-4402 ..... **29.00**
Roll Paper. 26-1402 ..... **19.95**
Ribbons. 3-pack. 26-1413 ..... **18.95**
9-1/2x11" Fanfold Paper 26-1403 37.95

QUICK PRINTER II (26-1155 $219.00)



The Quick Printer II is an almost universal printer.

The Quick Printer II has its own microprocessor which allows software selection of print size (16 or 32 characters per line), upper and lower case characters, automatic "wrap-around" and your choice of three methods of input: **26-1155** **219.00**
Cable for Expansion Interface. 26-1406 ..... **19.95**
Paper. (2 rolls) 26-1412 ..... **3.95**

Input Mode 1: Direct from TRS-80 Model I Expansion Port, The Quick Printer II contains all of the printer logic needed to run by using the cable which is included with the printer.

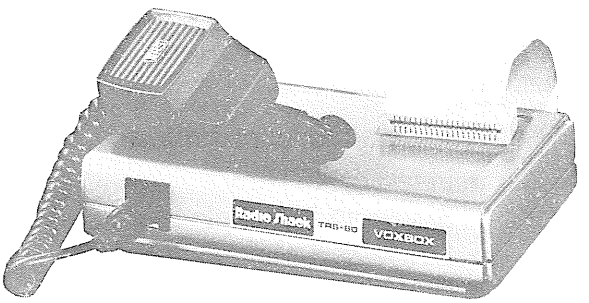
Input Mode 2: If you already have an Expansion Interface, you can use the Quick Printer II with the standard printer port by using an expansion interface printer cable (26-1406 — $19.95)

Input Mode 3: If you need to have a printer for one of your other applications, or if you are experimenting with Serial transmission, the Quick Printer II provides an RS-232 interface.

The Quick Printer II provides permanent copies using 2-3/8 inch aluminized paper.

Enter the World of Tomorrow Explore the Frontiers of Technology

VOICE RECOGNITION



VOXBOX
169.95

TRS-80 VOXBOX™

Experiment with "voice recognition" on your TRS-80 Model I. That's right, speak into a microphone attached to the VOX-BOX and you can program your TRS-80 to respond to your spoken words.

Computer voice recognition is a new field, and not fully developed, but here's your chance to experiment with this exciting new technology.
Level II required.
26-1181 . . . . . 169.95

SPEECH SYNTHESIS

Voice Synthesizer
399.00

Voice Synthesizer

Now you can program your TRS-80 to speak. It's not a pre-recorded human voice, but electronically "synthesized" speech projected through a built in speaker. It plugs into your TRS-80's bus connector on the keyboard or Expansion Interface. Programming spoken words is done by typing combinations of some 60 "phonemes" representing spoken sounds. Requires Level I or Level II—16K RAM preferred.
26-1180 . . . . . 399.00

PROFILE

26-1562

With Profile you can design your own video screens so information goes into storage the way you want it to. You can Enter, Delete, Find and Edit information with Profile as well as Print information to a line printer.

Profile gives you complete freedom to design your information and printer files. The printer format can be changed anytime your requirements change.

Minimum Hardware Requirements:

- 16K Level II Model I TRS-80
- Expansion Interface
- One TRS-80 Disk Drive
- Optional Printer

Profile Features Include:

- Variable Length Records
- Repeat Keys
- Add, Delete, or Edit Data
- Global Search
- Sort on any Field
- Sort in Ascending or Descending Order
- Data files can span up to four Disk Drives
- User Defined Video Screen
- User Defined and Changeable Printer Formats

$79.95

VERSAFILE

Versafile Features Include:

- Insertion of New Information
- Single and Multiple Word Search
- Single and Multiple Item Kills
- Global Search
- List Contents of all Files

Versafile is a sentence oriented Data Storage program which allows you to store and retrieve information by typing simple sentences and questions. You do not worry about formats, files or searches, all you have to do is type sentences or questions.

When you enter a sentence or question, Versafile will scan for a Key Word. When a Key Word is found, your information will be placed in or retrieved from that Key Word file.

Minimum Hardware Requirements:

- 16K Level II Model I TRS-80
- TRS-80 Expansion Interface
- One or more TRS-80 Disk Drives
- Optional Printer

26-1604

$29.95

TRS-80 CLASSROOM

BASIC Classroom #103

PRINT USING

The PRINT USING statement is a very powerful addition to your PRINT statements. With this statement you have the ability to format output using literals, alphanumeric variables and numeric variables.

We would like to examine one aspect of the PRINT USING statement which is frequently misunderstood. Specifically we are referring to the ### modifier.

Consider the following:

```
10 A=10.3:B=10.4
20 PRINT USING "###";A,B,A+B
```

Your output will be: 10 10 21

This is NOT an error on the part of the TRS-80. The ### modifier uses a method of rounding called 4/5 rounding. When you ask the computer to print a number with a decimal part in a print field which contains fewer decimal positions than your argument, rounding is automatic. In the above example, both A and B are printed as 10. Our print field does not have a decimal column. When rounding occurs, the computer notes that both .3 and .4 are less than .5 and truncates them. However, when we add A and B, the result is 20.7. Now when the computer rounds the value, it notes that .7 is greater than .5 and increases the ones digit by one, giving 21. In all three cases, the number printed on the display is the number CLOSEST to the actual value. If one of our values had been .5, the rules of 4/5 rounding would have added one in the ones column.

IMPORTANT NOTE FOR MODEL II USERS

After you have turned the power off to your Model II, wait AT LEAST 30 seconds before turning it back on. Failure to wait could eventually cause damage to the computer's circuitry.

Super Sketch (Cont. from 2)

This program was submitted by Jonothon Cone of Long Beach, California, and was modified by us to simplify certain operations.

```
 1 REM  **********************************
 2 REM  ***   SUPER SKETCH      ***
 3 REM  ***   BY J. CONE        ***
 4 REM  ***   LONG BEACH        ***
 5 REM  ***   CALIFORNIA        ***
 6 REM  **********************************
10 CLS: X=0: Y=0: Q=0
20 N=PEEK (14400)
30 IF PEEK (14448)=1 THEN 10
40 IF N=8 THEN Y=Y-1
50 IF N=16 THEN Y=Y+1
60 IF N=32 THEN X=X-1
70 IF N=64 THEN X=X+1
80 IF N=40 THEN X=X-1: Y=Y-1
90 IF N=48 THEN X=X-1: Y=Y+1
100 IF N=72 THEN X=X+1: Y=Y-1
110 IF N=80 THEN X=X+1: Y=Y+1
120 IF N=104 THEN Q=1
130 IF N=112 THEN Q=0
140 IF N=120 THEN X=0: Y=0
150 IF X<0 THEN X=0: GOTO 20
160 IF X>127 THEN X=127: GOTO 20
170 IF Y<0 THEN Y=0: GOTO 20
180 IF Y>47 THEN Y=47: GOTO 20
190 IF Q=1 THEN GOTO 250
200 IF PEEK (14464)=1 THEN GOTO
    230
210 SET (X,Y)
220 GOTO 20
230 RESET(X,Y)
240 GOTO 20
250 IF POINT(X,Y) THEN GOTO 310
260 FOR J= 0 TO 3
270       SET(X,Y)
280       RESET(X,Y)
290 NEXT J
300 GOTO 20
310 FOR J= 0 TO 3
320       RESET(X,Y)
330       SET(X,Y)
340 NEXT J
350 SET(X,Y)
360 GOTO 20
```

SINGLE DISK FORTRAN PROGRAMS FOR MODEL I

Instructions for creating FORTRAN programs using a single disk system.

Follow steps 1-5 for the sample session beginning on page 6 of the TRS-80 FORTRAN User's Manual.

STEP 6: Load and execute the program
To load the program into memory and execute it, put diskette #2 in the disk drive and type:

```
L80
```

This command tells TRSDOS to load and run LINK-80. When Link-80 has been loaded, the command prompt (an asterisk) will appear:

```
*
```

Now remove diskette #2, and re-insert diskette #1. Type the filename of your program:

```
TEMP
```

As soon as the object file has been loaded into the correct memory locations by LINK-80, the command prompt will reappear. Remove diskette #1 and insert diskette #2. Type the run command which is −G:

```
−G
```

LINK-80 will then search the system library to resolve any undefined references and execute the program. In this case, LINK-80 will not create a command file. Figure 3 shows a sample run.

STEP 7: Save the object code.
The object file, once it has been loaded by LINK-80 (see step six for correct procedure), is in a form that can be executed by the TRS-80 computer. To save a copy of this file, type:

```
−N,−E
```

after the prompt. This pair of commands creates a command file on diskette #2 which can be run directly under TRSDOS. −N tells LINK-80 to save the file using the filename provided with a default extension of /CMD. −E tells LINK-80 to exit to TRSDOS after searching the system library to satisfy any existing undefined globals.

Radio Shack®
MICROCOMPUTER NEWS
700 ONE TANDY CENTER
FORT WORTH, TEXAS 76102
ADDRESS CORRECTION REQUESTED

Supervisor Calls (Cont. from 2)

Now load BASIC, protecting memory for our routine:

BASIC –M:61400

When you are in BASIC, enter the following program:

```
 10 CLS
 20 DEFINT A-Z
 30 SYSTEM"LOAD SCROLL/CIM"
 40 DEFUSR=&HF000
 50 Z=0
 60 INPUT"HOW MANY LINES DO YOU
        WANT TO PROTECT (0-22)";N
 70 IF N>=0 AND N<23 THEN GOTO 90
 80 GOTO 10
 90 Z=USR0(N)
100 FOR I=2 TO 24
110       PRINT I
120 NEXT I
130 FOR J= 1 TO 3
140       FOR I= 1 TO 10
150             PRINT STRING$(I,"X")
160       NEXT I
170 NEXT J
180 GOTO 60
```

Save a copy of this program, then RUN it. You will be asked for the number of video lines to protect from scrolling. Next you will see that the lines have been protected and will be given a chance to protect a different number of lines.

How did we do this? We protected video lines from scrolling by using a TRSDOS Supervisor Call (SVC).

Two things should be noted about the BASIC program:

1. The DEFUSR statement told the computer the starting address of our machine language routine.
2. The USR0 statement 'passed' the number of lines to protect to the machine language routine by using the variable N.

Let's look at that short, but 'mysterious' machine language routine:

```
21 08 F0    LD      HL,0F008H
E5          PUSH    HL
2A 03 28    LD      HL,(2803H)
E9          JP      (HL)
45          LD      B,L
3E 1B       LD      A,1BH
CF          RST     8
C9          RET
```

The numbers on the left are the numbers we entered with DEBUG, and the text on the right is the Assembly Language equivalent. For All SVCs which you write to load at Hex F000, the first four lines will ALWAYS be the same when you are sending a value from BASIC. These lines take the integer value from your BASIC USR function and convert them for use by the routine. See BASIC Reference Manual pages 3/144 to 3/146 for additional information.

The next three lines actually set-up and call the SVC routine. Page 4/44 of the TRSDOS manual specifies that the number of lines to be protected goes into the 'B' register and Decimal 27 (Hex 1B) goes in the 'A' register. The 'RST 8' command executes the SVC.

The last line 'RET' allows the routine to return to BASIC.

The technique used for these programs will work with the other SVC routines. Study the TRSDOS manual for the entry and exit parameters for the SVC you want to use. Find the machine language values that do what you need to put the values in memory and DUMP a copy to disk.

PROGRAMMING TIP 80-1

ARRAYS

Implicity dimensioned arrays in Level II BASIC, Disk BASIC, and Model II BASIC are dimensioned to a maximum of eleven elements (0-10) in a maximum of THREE dimensions.

Radio Shack announces new additions to the BCL Package...

Radio Shack's BCL (BASIC COMPUTER LITERACY)™ package for use in schools has been expanded!

This expanded package contains:

BCL Algebra I, Level II
BCL Program World
BCL Student Guide (25 copies)
BCL Teacher Guide
Teacher Aide (26-1713)
and "My TRS-80 Likes Me..."

Teacher Aide (included free) is a program designed to help a teacher with grading, seating charts, etc.

"My TRS-80 Likes Me..." is an idea source book for teachers.

The suggested retail price for 26-1708 is $100.00.

COMPUTER SERVICES ADDRESS AND PHONE NUMBERS

Computer Services
900 Two Tandy Center
Ft. Worth, Texas 76102

1-800-433-1679 (WATS Except Texas)
1-800-772-5914 (WATS Inside Texas)
1-817-390-3583 (Switchboard)