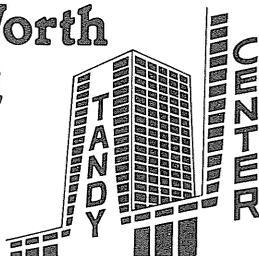


TRS-80TM Microcomputer NEWS

THE MICROCOMPUTER NEWSLETTER PUBLISHED FOR TRS-80 OWNERS

Volume 2 Issue 2

Fort Worth SCENE



WE HAVE A NEW LOOK!

The Microcomputer Newsletter has evolved to the Microcomputer News. Along with this change in name comes a new format and a new style of type. In short, a whole new image. We are excited about the new image and know that you will be too!

As always, the Microcomputer News exists as an open communications channel between Radio Shack and you, our customers. Our objective is to keep you informed. Information will come from internal sources as we make New-Product Announcements, and keep you informed on the status of our current products. Information will also come from you. As we have space, and when we find information which will benefit a large number of you, we will "pass it along." These programs, provided free by other TRS-80 owners, are made available to help you use your TRS-80 to its fullest without you having to "re-invent the wheel."



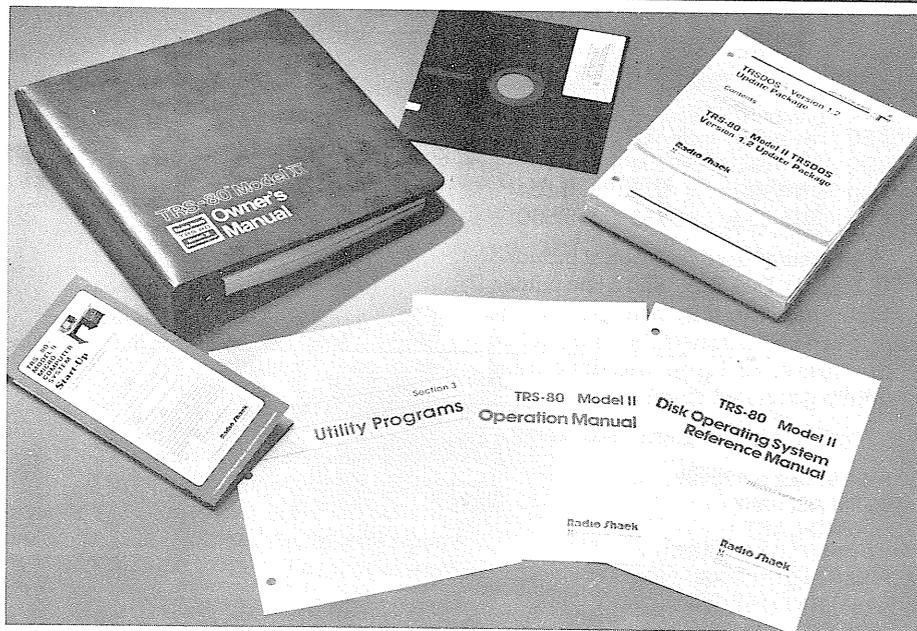
More Computer Clubs

In the last few weeks we have received information about the following new computer clubs:

80 — USERS OF HOUSTON CLUB
6900 S. Rice
Bellaire, TX 77401
(713) 664-5823

DELAWARE VALLEY COMPUTER SOCIETY
P.O. Box 651
Levittown, PA 19058
and

TRS-80 USERS GROUP
CSRA COMPUTER CLUB
P.O. Box 284
Augusta, GA 30903



New TRSDOSTM Programs for Model II Users Available Now

Radio Shack is currently distributing copies of the final Model II Owner's Manual, and copies of the new TRSDOS 1.2 to all Radio Shack Stores and Dealers who have recorded sales of TRS-80 Model II microcomputers.

If you have purchased a TRS-80 Model II, check with the store or dealer where you bought the computer. The store either has, or will soon receive, a FREE update package which includes your final copy of the Owners Manual, a TRSDOS 1.2 diskette, TRSDOS 1.2 manual update package, and the new Model II Quick Reference Card.

TRSDOS 1.2. We think you will be pleased with the new TRSDOS version 1.2. The new disk format allows much faster disk access. We fixed the few minor problems which were present in TRSDOS 1.1, and added five new utility programs to the disk.

TERMINAL. This is a new, full featured, terminal program which replaces the TERM program from TRSDOS 1.1. We should note that an error exists in this section. The section on the "P" option for printing material on a line printer indicates that you can print WHILE you are receiving data. This is incorrect. Use the instructions provided to save the text using the "R" option, then print it later using a combination of the "P" and "D" options.

(Continued on page 4)

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Sort Routines - LII and Disk BASIC

One factor which can hamper string operations is the "garbage collection" routine. This is a computer controlled operation which allows the TRS-80 to recover previously used string space in memory. If you are sorting a large number of strings, "garbage collection" can consume a significant portion of your sorting time.

We conducted a series of "benchmark" tests using three sort routines. The three routines were a standard bubble sort, a shell sort which exchanged strings, and a shell sort which exchanged pointers. To make things as equal as possible, we used the same basic program, changing only the method of sorting. Here are the results (times are in seconds):

Number of Strings	Bubble Time	Shell W/O VARPTR	Shell W/VARPTR
10	2	3	5
50	36	17	62
100	181	50	165
500	14396	978	1164
1000	—	9763	2560

The system used for this test included a 48K Model I, Disk Basic and a line printer. Each sort was run only one time, so the times given are indicative, but may not be representative. Each sort was done using randomly generated strings.

The skeleton program used was:

```

10 CLS: CLEAR22000
15 DIM A$(1000)
20 READ LAST
30 FOR I=1 TO LAST
40 A$(I)=STRING$(RND
(30),RND(26)+64)
50 NEXT
60 QQ=QQ+1
70 PRINT"TEST IN PROGRESS—
PASS";QQ;"OF 5."
99 A1$=TIMES:PRINT A1$
400 FOR I=1 TO LAST
410 PRINT A$(I)
420 NEXT
430 LPRINT "N="; LAST, A1$, A2$
440 GOTO20
1000 DATA 10,50,100,500,1000
    
```

The sort routines were entered beginning at line 100. The following three sort routines were used:

BUBBLE SORT:

```

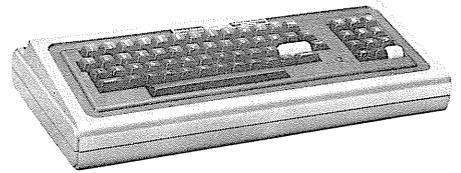
100 M=LAST
110 FOR I=1 TO M-1
120 FOR J=I+1 TO M
130 IF A$(I) <= A$(J) THEN 150
140 T$=A$(I): A$(I)=A$(J): A$(J)=T$
150 NEXT J
160 NEXT I
170 A2$=TIMES
    
```

SHELL SORT, swapping strings:

```

100 N=LAST
110 M=N
120 M=INT(M/2)
130 IF M=0 THEN A2$=TIMES: GOTO
400
140 J=1: K=N-M
150 I=J
160 L=I+M
    
```

(Continued on page 4)



KKKKeybounce ... Revisited

TRS-80 Model I microcomputers which are currently being delivered have a new style keyboard. We have gone to the new style because of supply problems with the previous keyboard. Please DO NOT attempt to remove the key caps and clean the contacts! We suggested this for the older style in our May 1979 Newsletter. This new keyboard does not have contacts in the same sense that the old one did, instead it uses a capacitive contact system which has eliminated the keybounce problem. If you attempt to remove the key caps you may damage the keyboard!

How can you be sure which keyboard you have? The older style keys have a shiny finish while the newer ones have a dull finish. Also, if you look at the keyboard from the side, the older style slopes in a straight stair-step while the newer style has a very definite curve. This curve helps to shorten the distance you have to reach to get to each key.

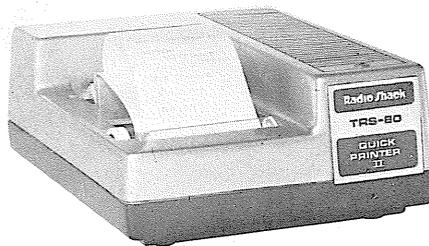
Base Conversion Program

The following program was suggested by one provided by Richard Collins of Belleville, Ill. The program allows you to convert a decimal number to base 16, and to convert a number in base 16 into decimal.

```

10 CLS
20 INPUT"1 FOR DEC -> HEX, 2 FOR
HEX -> DEC, 3 FOR END";A
30 ON A GOTO 50, 180, 330
40 GOTO 20
50 CLS
60 INPUT"ENTER DECIMAL NUMBER
TO BE CONVERTED TO HEX";A
70 FOR I=3 TO 0 STEP -1
80 B=INT(A/16)
90 A=A-B*(16)
100 IF B=0 THEN A$(I)="0": GOTO 140
110 IF B<10 THEN A$(I)=RIGHT$
(STR$(B),1): GOTO 140
120 B=INT(B-9)
125 IF B>6 THEN PRINT"INPUT
ERROR": GOTO 60
130 A$(I)=CHR$(64+B)
140 PRINT A$(I);
    
```

(Continued on page 3)



Quick Printer II HINTS

We have recently received four programs for outputting video information to the Quick Printer II (26-1155). We are reproducing two of them here. The other two are similar to these.

```

30000 S$=STRING$(32,"-")
30010 IF INP(255)=63
THEN ZZ$=CHR$(15): ZZ=2
ELSE ZZ$="": ZZ=1
30020 LPRINT S$;: C1=0: C2=31
30021 GOSUB 30050
30022 LPRINT S$;
30030 LPRINT:LPRINT:LPRINT S$;
30031 C1=32: C2=63
30032 GOSUB 30050
30033 LPRINT S$;
30040 RETURN
30050 FOR X=15360 TO 16359 STEP 64
30051 LPRINT ZZ$;
30052 A$=""
30060 FOR Y=C1 TO C2 STEP ZZ
30061 F=PEEK(X+Y)
30062 IF F >= 129 AND F <= 191
THEN F=127
30070 A$=A$+CHR$(F)
30071 NEXT Y
30072 LPRINT A$;
30073 NEXT X
30080 RETURN
    
```

This version, submitted by Gene Toye of Marshall, Tx., divides the video into two halves and prints each half separately. Two interesting features of the program are the use of INP in line 30010 to determine which character mode the video is in, and line 30062 which allows limited graphics to be printed.

(Continued on page 3)

Expand Your Model I System with Proven Accessories

Disk #0

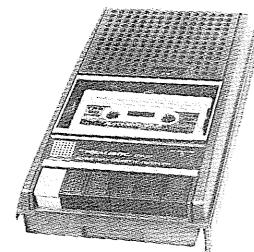
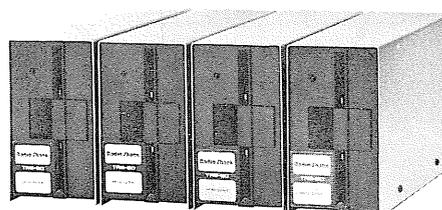
Your first drive comes with our latest TRSDOS, Manual and Disk Cable. This first drive will hold 57K bytes of data and programs. 16K Level II and Expansion Interface required.

26-1160 **499.00**

Disk #1-#3

Expand your Disk System! Add up to 3 more drives for 300K bytes total on-line storage. Each additional drive increases your storage by 81K bytes of programs and data.

26-1161 **499.00**

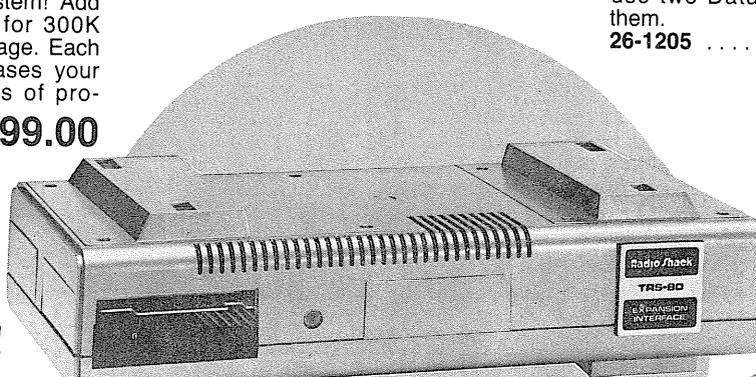


CTR-80 Data Recorder

The CTR-80 allows you to use Rewind and Fast Forward WITHOUT pulling the remote plug. The E/I gives you the ability to use two Data Recorders as you need them.

26-1205 **49.95**

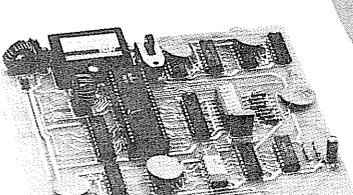
**Fast
Delivery on
Disk Drives!**



TRS-80 Expansion Interface

The Expansion Interface is the key to expanding your Level II TRS-80. It gives you the ability to add an additional 32K of memory (in 16K increments), add a second Data Recorder, up to four Disk Drives, RS-232, printers, and more.

26-1140 **299.00**



RS-232-C Serial Interface Board

The RS-232 board mounts inside your Expansion Interface. Once installed you have the capability of communicating with many serial devices including our Telephone Interface II.

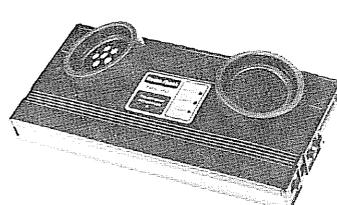
26-1145 **99.00**



Dual Section TRS-80 Power Line Filter

Limits AC power line interference to your Model I system. Includes dual isolated filters, one for the computer and one for accessories. Contains 8 outlets controlled by a single switch. U.L. Listed.

26-1451 **39.00**



Telephone Interface II

This is a full "originate/answer" acoustic coupler. This device allows you to send and receive programs and data over regular telephone lines. Requires RS-232 Serial Interface Card, Expansion Interface and 16K Level II.

26-1171 **199.00**



Line Printer II

This printer gives you 100 7x7 dot matrix characters per second in either upper or lower case. The printer will handle roll paper, single sheets (platen feed) or pin-feed forms. Print width is 80 characters (40 char. expanded width).

26-1154 **799.00**

Plus Cable

Radio Shack®

A Division of Tandy Corporation

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

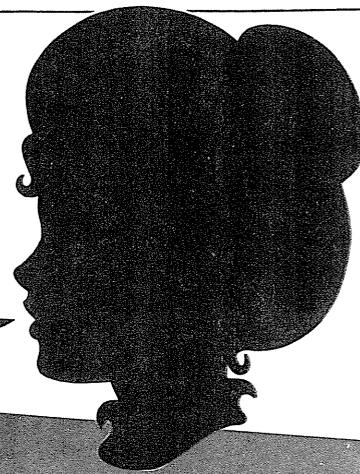
**On
SALE
in April**

Voice Synthesizer

Let your TRS-80 speak out! You can actually program your TRS-80 to produce electronically "synthesized" speech through the built-in speaker. It plugs into your TRS-80 bus connector on the keyboard or Expansion Interface. Uses 60 phonemes, under software control, to produce words. For Level I or II—16K preferred.

26-1180 399.00

*Tell
Me Your
Problems!*



The Amazing Eliza

Artificial "intelligence" program emulates a psychiatrist! It actually produces a conversational response "keyed" to the words you input! An excellent demonstration program! Connect the speech synthesizer and you can hear "Eliza" with the extra software included! 16K Level I or II.

26-1908 14.95



For Level I Only

Personal Finance

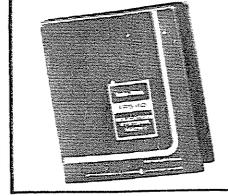
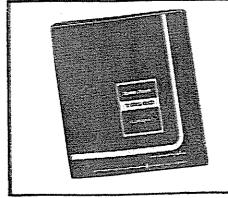
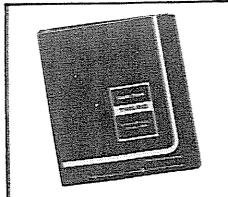
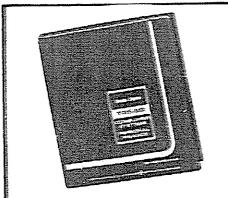
Expense management software. Helps you keep track of personal checking account income, expenses and budget accounts. Tracks up to 32 expense accounts and 100 total entries each month. Package contains check book initialization and balancing programs plus a monthly budget program. The budget summary provides you with a recap for quarterly or annual time periods listed by expense account and code number. Comes complete with 3-ring binder, program tapes and four blank data tapes. (4K)

26-1602 14.95

Algebra I

Versatile program designed to teach the basics of Algebra. It is ideal for use as a supplement to an existing course or as a refresher for those wanting to "brush-up" on the subject. Instruction is completely self-paced, so it can be taken at the speed most comfortable for the student. The course begins with definitions of variables, constants, terms, expressions and the use of parentheses. By the sixth lesson the student will learn to solve quadratic equations by factoring! School texts make an excellent complement to the course. (4K)

26-1702 19.95



Statistical Analysis

Surrounded by a "mountain" of figures? You don't need special training in mathematical statistics to do meaningful data analysis with your TRS-80! You can analyze numerical data used in business, education, government and many other fields. Package includes five programs for describing data sets and analysis plus two data utility programs. Programs include Random Sample, Histogram, T-Test, Correlation, Linear Regression and more! (4K)

26-1703 29.95

Math I

Specially designed for beginners or anyone who would benefit from a review of basic math operations. It is a highly structured approach that teaches the learner to understand and use math facts. It helps in the memorization and retention of facts and then shows the learner how to apply their use in other math situations. Emphasis is placed on repetition and review. The program provides total communication and feedback which incorporates individualized instruction either in a group with an instructor or on an individual basis. (4K)

26-1701 19.95

NEW! Coming soon . . .



... to your local Radio Shack store

Application Software Sourcebook

Radio Shack is currently compiling a Software Sourcebook. The purpose of the Sourcebook is to make available a list of existing software for the TRS-80, both Model I and Model II.

The Sourcebook will provide you with Titles, Descriptions, Authors and Prices for TRS-80 application software. Radio Shack will NOT review this software and will make no representations as to its value or applicability to your needs. We are simply providing authors of software with a vehicle for getting information to TRS-80 users, as well as providing users with a way of getting information on available programs.

If you find information in the Sourcebook about a program which interests you, you will contact the author or distributor directly. It will be YOUR responsibility to see that the program works, and does what you need.

We will accept listings for the Sourcebook from ANY source in the following eight categories: GAMES, EDUCATION — HOME,

EDUCATION — CLASSROOM, STATISTICS/MATH, BUSINESS/ACCOUNTING, BUSINESS/INVENTORY CONTROL, and HOME/PERSONAL USE. We will accept application programs written in any language. We will not accept programs for system software such as Operating Systems, etc.

If you are looking for programs, look for our Sourcebook. We hope to have it available in your local Radio Shack in JUNE. If you have a program you would like to list in the Sourcebook, fill in one or more of the attached Program Listing Forms, or copy one and send the information on the copy. This Sourcebook will be available through all Radio Shack stores and participating dealers, which will give your program descriptions one of the widest possible distributions.

More details will be provided on the availability and cost of the Sourcebook as they become available. The Sourcebook will be amended and updated as needed to maintain current information.



A DIVISION OF TANDY CORPORATION

TRS-80 APPLICATIONS SOFTWARE SOURCEBOOK

How To Obtain A Listing For Your Program

To obtain a listing in the TRS-80 Application Software Sourcebook for a period of one year, you must complete the attached form(s) and mail it with a \$10.00 check or money order to the address below. Make remittance payable to "Radio Shack."

Should you want one program listed under more than one category, separate listing forms and fees must be submitted for each listing.

The TRS-80 Applications Software Sourcebook will accept only listings for applications software. Requests to list systems software will be returned. Radio Shack reserves the right to reject any listing submitted by returning the payment to the sender. Further, all listings are accepted with the express understanding that Radio Shack shall have no liability for errors which may occur in the printed Software Sourcebook listing, including the failure to include a listing, and in no event shall Radio Shack be liable for damages to any person submitting listings in an amount greater than the listing fee (\$10.00).

The Sourcebook will be available at all Radio Shack stores and participating dealers in the U.S.A., and will be updated and reprinted periodically as needed. Listings must be resubmitted or renewed to be included for more than one year. Sorry, there are no "quantity discounts" for multiple listings.

TRS-80 Applications Sourcebook
Radio Shack Box 17400
Fort Worth, Texas 76102

The biggest name in little computers™

TRS-80 Model I

Tape Editor/Assembler

There's a whole new world of programming open to you if you've mastered BASIC. Now assembly-language programming comes to any 16K (and up) TRS-80! Once it's loaded you'll have the convenience of a powerful text editor. You can search for a particular string of characters anywhere in the text, renumber lines, scroll up or down and print to the line printer with

or without line numbers! The assembler features a complete set of "switches" that give you complete control of its operation. Error messages are displayed as complete phrases. System supports standard Zilog mnemonics. Package comes with 132-page manual and binder.

26-2002 **29.95**

Disk Editor/Assembler

Take advantage of the extra operation speed of machine-coded programs! Includes everything the experienced programmer needs to create, compile and execute Z-80 or 8080 Assembly Language programs. Minimum hardware required:

- TRS-80 16K Level II
- 16K Expansion Interface
- 1 Mini-disk Drive (2 preferred)

The DISK EDITOR/ASSEMBLER Package consists of:

- EDIT-80 software
- MACRO-80 compiler
- LINK-80 linking loader
- FORTRAN subroutine library
- CREF-80 cross reference software
- Z-80 instruction set, complete manual and binder.

26-2202 **99.95**

T-BUG System Monitor

Powerful, machine-language monitor designed to give you direct access to the Z-80 CPU, which is the heart of your TRS-80. T-BUG lets you:

- Create and modify machine-language programs.
- Debug machine-language programs through the use of "breakpoints."
- Examine and modify the contents of Z-80 registers.

- Save and load cassette machine-language programs.
 - Execute machine-language programs created using T-BUG.
- Package comes with manual and tape. For Level I or II.

26-2001 **14.95**

Double-Precision Subroutine

The double-precision package lets you obtain 15-digit accuracy with sine, cosine, arctangent, natural logarithm, exponential, and square root functions. The functions, together with Level II BASIC's "DEFDBL"

and "DEFINT" provide a high degree of precision for many applications.

26-1704 **9.95**

Level II Line Renumber

"RENUM" is a programming aid that permits you to renumber all or part of your BASIC program. All references to line numbers contained within the program

are updated to reflect the new numbers. The program even lets you re-increment the line numbers!

26-2004 **9.95**

Books

TRS-80 Assembly-Language Programming. Excellent book written specifically for the TRS-80 for use with our assembly-language software.

62-2006 **3.95**

TRS-80 Graphics. Learn how to really take advantage of the built-in graphics capability of your TRS-80!

62-2063 **5.95**

Understanding Digital Computers. "Walks" you through the architecture of modern digital computers. Recommended for anyone who wants to really know their TRS-80.

62-2027 **3.95**

TRS-80 Programs. Contains 32 useful programs. Subjects range from games to calculus.

62-2064 **5.95**

A
D
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N
C
E
D

P
R
O
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A
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S

Model II Inventory Management System

Capabilities

- 3000 Inventory Line Items
- 200 Vendors
- On-hand quantities up to 999999
- Maximum selling price of any item is \$9999.99

Equipment Required

- 64K Single Disk Model II
- Line Printer capable of 132 characters per line such as the TRS-80 Line Printer III.

Does more than just keep track of line items! Model II Inventory Management System provides inventory history, aging, turnover, profit margin and perpetual inventory status between physical counts!

IMS goes beyond most "traditional" inventory systems by projecting your reorder needs based on analysis of past performance sales trends. Optional capabilities, like coding of specific categories of goods for close tracking are part of the system.

Designed specifically for the first time user, it features many error trapping routines that help guide you through the program! After your system is "set up" you simply enter purchase orders, merchandise receipt information, sales and returns — the computer does the rest! Not only does it print the "basic" reports you need for management, it even prints physical inventory worksheets!

26-4502 199.00

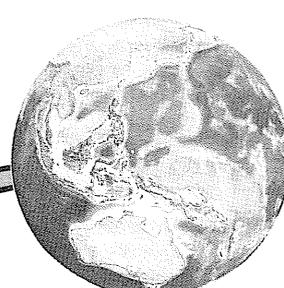
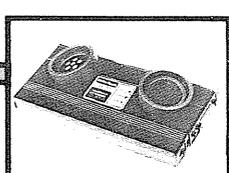
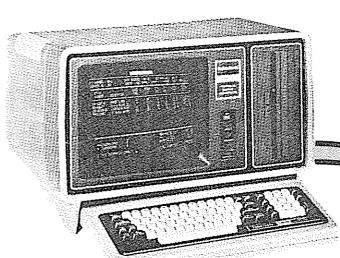


Reports Generated*

- Master Inventory List
- Vendor Listing
- Transaction Posting Report
- Suggested Order List
- Open Purchase Order List
- ABC Code Analysis
- Physical Inventory Worksheets
- Physical Inventory Error Report
- Inventory Performance Report Including:
 - ABC Code Performance Summary
 - ABC Code History Summary
 - Total Inventory Performance Summary

*In some cases there are several variations of the reports listed.

TRS-80 Model II Introduces You To the World!



Telephone Interface II

Use the phone lines to transmit and receive data! The built-in communications capability of the Model II TRSDOS and a telephone interface can be your "window" to the world! Telephone Interface II is a versatile originate/answer acoustic coupler that does not require a direct connection to the phone lines.

26-1171 199.00

New! Model II RS-232 Cable

Extra long five foot cable gives you plenty of length to reach devices such as the Telephone Interface II.

26-4403 39.95

TRS-80 CLASSROOM

BASIC Classroom #102

INPUT STATEMENT WITH PRINT@

Mr. W. R. Davis of Windsor, Calif., provides the following information which allows you to use more than one INPUT statement on each line of the video.

What Mr. Davis is able to do is input data in table form, with more than one item being input on each line of the video.

The method used is to combine three statements, PRINT@, INPUT, and FOR-NEXT. By using PRINT@ without an argument, you are able to position the cursor anywhere on the video you want it. The specific format for doing this is:

PRINT @ NN,;

You can then follow this with your INPUT statement. By using a FOR-NEXT statement, you can easily input information into an array. Mr. Davis' example routine simulates inputting data into a checkbook array.

```

10 REM MULTIPLE INPUTS ON ONE
   LINE
20 REM W.R. DAVIS WINDSOR,
   CALIF. 1/80
100 CLS
101 PRINT"TYPE 999 FOR CHECK #
   TO END LISTING"
102 FOR K= 1 TO 800: NEXT
110 N1=14: N3=2
111 DIM A(14,3,2)
112 PX=64: PS=21.333
120 GOSUB 900
121 FOR K=1 TO N3
122 FOR I=1 TO N1
130 PRINT@ PX,,: INPUT A(I,1,K)
131 IF A(I,1,K)=999 THEN 1000
140 PRINT@ PX+PS,,: INPUT A(I,2,K)
141 PRINT@ PX+2*PS,,: INPUT
   A(I,3,K)
150 IF I=N1 THEN INPUT"TO INPUT
   NEXT PAGE, PRESS 'ENTER' ";X
160 GOSUB 800
161 NEXT I
162 NEXT K
163 PRINT:PRINT"ASSIGNED
   MEMORY FULL"
164 PRINT"END": END
800 PX=PX+64
801 IF PX>959 THEN PX=64: CLS:
   GOSUB 900
810 RETURN
900 CLS
901 PRINT"CHECK #";TAB(21.333);
   "DATE";TAB(42.6)"AMOUNT"
902 RETURN
1000 PRINT"DATA ENTRY ENDED"
1010 END
    
```

Lines 100-164 print and input information, lines 800-810 calculate the location of the next line of input statements (PRINT@ values), and lines 900-902 print the column titles.

Variable N1 sets the number of lines to be input per page, N3 determines the number of pages to be input. Variable PX holds the initial print position in each line, and PS is the increment value across the video in one line.

Mr. Davis notes that line 1000 would contain a PRINT subroutine, and that lines 160-164 would normally exit you to another portion of your program.

One word of caution. You can use PRINT@ to position the cursor anywhere on the video. If you do not follow the statement with a semicolon, the line FOLLOWING the one you print in will be erased. If you use an INPUT statement following the PRINT@, as we are suggesting here, anything which might have been printed on the next video line WILL be erased. Be aware that you may lose information on the next line, and either print only on every other line, or reprint the information which is lost.

BASE CONVERSION (from page 2)

```

150 NEXT
160 PRINT
170 GOTO 20
180 CLS
190 PRINT"ENTER HEX HUMBER (UP
   TO 4 DIGITS) TO BE"
200 INPUT"CONVERTED TO DECIMAL
   ";H$
210 PRINT"THE DECIMAL EQUIVALENT
   IS:"
220 IF LEN(H$)>4 OR LEN(H$)=0 THEN
   GOTO 180
230 H=0
240 FOR I=1 TO LEN(H$)
250 A$=RIGHT$(H$,1)
260 IF A$>"F"
   THEN PRINT"INPUT ERROR":
   GOTO 20
270 IF A$>="A" AND A$<="F"
   THEN A=ASC(A$)-55
   ELSE A=VAL(A$)
280 H=H+A*16^(I-1)
290 H$=LEFT$(H$,LEN(H$)-1)
300 NEXT
310 PRINT H
320 GOTO 20
330 END
    
```

QUICK PRINTER II (from page 2)

The following routine, submitted by Thomas Rosenthal of Troy, Mich., allows you to type an entire video of alphanumeric characters in 32 column mode. As soon as video location 16320 becomes a character other than a blank, the entire video is automatically printed.

```

10 CLS
11 PRINT CHR$(14); CHR$(23)
20 PRINT INKEY$;
30 IF PEEK (16320) <> 32 THEN
   GOTO 50
40 GOTO 20
50 FOR X=15360 TO 16319 STEP 2
60 LPRINT CHR$(PEEK(X));
70 NEXT
80 GOTO 10
    
```

Our thanks to Edward Huang for a subroutine to print the video and to Stanley Schriever for a program which allows input of single 30 character lines and then prints them on the QP II.

Level II Calculator

Tom Moore of Houston, Tx. sent his four function calculator for use on a Level II or Disk Basic Model I TRS-80. We have made a few changes to make the program easier to print, and we added a test in line 10340 to trap division by zero errors.

Several modifications to this basic program could be made, the easiest being to add exponentiation. In Line 10011 simply add the "uparrow" symbol after the "slash (/)" for division. In Line 10200, after IF, add:

A\$="▲" OR

and then add a line 10335:

```

10335 IF A$="▲" THEN X=X▲B:
   GOTO 10100
    
```

Here is Mr. Moore's Calculator:

```

10000 CLS: X=0: B=0: B$="":
   A$=" "
10005 PRINT"CALCULATOR — NO
   NEED TO USE ##ENTER##
   KEY"
10010 PRINT
10011 PRINT"USE KEYS FOR + - * /
   (NO NEED TO SHIFT)"
10012 PRINT"USE @ KEY FOR
   RESULTS"
10015 PRINT"PRESS 'CLEAR' TO
   CLEAR ENTRY"
10017 PRINT
10020 PRINT"EXAMPLE — ";
10021 PRINT"ADD 5 PLUS 6,
   SUBTRACT 2, AND DIVIDE BY 3"
10022 PRINT" ENTER '5' THEN '+' KEY
   (NO SHIFT!)
10024 PRINT" ENTER '6' THEN '+' KEY
10026 PRINT" ENTER '2' THEN '-' KEY
10028 PRINT" ENTER '3' THEN '/' KEY
10030 PRINT" PRESS '@' KEY FOR
   RESULTS"
    
```

(Continued on page 4)

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SORT ROUTINES (from page 2)

```
170 IF AS(I) <= AS(L) THEN 220
180 TS = AS(I): AS(I) = AS(L): AS(L) = TS
190 I = I + 1
200 IF I < 1 THEN 220
210 GOTO 160
220 J = J + 1
230 IF J > K THEN 120
240 GOTO 150
```

SHELL SORT swapping pointers — for this sort, DELETE line 180 above and insert the following lines:

```
177 FOR Z = 0 TO 2
178 P = VARPTR(AS(I)) + Z: IF P > 32767 THEN P = -1*(65536 - P)
179 W = VARPTR(AS(L)) + Z: IF W > 32767 THEN W = -1*(65536 - W)
180 A1 = PEEK(P): A2 = PEEK(W)
181 IF Z = 0 AND A1 > LEN(AS(I)) THEN 200
182 IF Z = 0 AND A2 > LEN(AS(L)) THEN 200
183 POKE P, A2
184 POKE W, A1
185 NEXT Z
```

The effect of this last routine is to move string pointers rather than the strings themselves. This avoids the problem of creating new strings and avoids the "garbage collection" routine.

You will have noticed that, for our example, the VARPTR routine is actually slower for up to 500 strings. Above 500 the time advantages are very large.

Our thanks to L.H. Ruble of Battle Creek, Mich. for the above routine for sorting with VARPTR, and to R.B. Reyes for a similar suggestion.

TRSDOS PROGRAMS (from page 1)

XFERSYS. A program which upgrades your TRSDOS 1.1 diskettes to TRSDOS 1.2 diskettes without affecting your user files.

PATCH. This program allows you to make minor changes to a program or data file

directly, without having to recreate the entire file. One use for this will be making Radio Shack-supported modifications to TRSDOS. One such modification is included which allows you to bypass the Date and Time questions on Power-Up.

DATM. A machine language subroutine which calculates a new date based on a given date and a time span in days. Also, if given two dates the program will calculate the number of days between the dates. A program, EXDATM, is included which allows you access to DATM directly from the keyboard. Complete source and object code listings of DATM are provided.

HERZ50. This is a patch program which allows you to convert TRSDOS 1.2 for operation with a 50 hertz power source rather than the U.S. standard of 60 hertz.

L II CALCULATOR (from page 3)

```
10032 PRINT
10034 PRINT "PRESS '+' KEY AFTER A TOTAL TO RE-ENTER THE TOTAL"
10040 PRINT
10045 INPUT "HOW MANY DECIMAL PLACES (0 TO 5)"; D%
10046 IF D% < 0 OR D% > 5 THEN 10045
10048 CLS
10050 GS = "###,###,###." + STRING$(D%, "#")
10090 REM *** USE INKEY$ FUNCTION TO AVOID USING ENTER KEY
10100 AS = INKEY$: IF AS = "" THEN 10100
10105 REM *** CLEAR
10107 IF ASC(AS) = 31 THEN BS = "" : GOTO 10100
10110 IF AS = "0" OR VAL(AS) > 0 OR AS = "." THEN BS = BS + AS : GOTO 10100
10115 REM *** NEXT TWO STATEMENTS ELIMINATE SHIFTING
```

```
10120 IF AS = ":" THEN AS = ""
10130 IF AS = ";" THEN AS = "+"
10145 IF C% <> 0 OR X = 0 THEN GOTO 10200
10150 IF AS = "+" AND LEN(BS) = 0 THEN B = X: X = 0: GOTO 10300 ELSE X = 0
10200 IF AS = "+" OR AS = "-" OR AS = "*" OR AS = "/" THEN GOTO 10280
10210 IF AS <> "=" AND AS <> "@" THEN GOTO 10100
10220 PRINT STRING$(20, "=")
10230 PRINT USING GS; X
10240 C% = 0
10250 PRINT: PRINT
10260 GOTO 10100
10280 IF BS = "" THEN GOTO 10300
10290 B = VAL(BS)
10300 PRINT USING GS; B; BS = ""
10302 C% = C% + 1
10305 IF C% > 1 THEN PRINT TAB(20) AS ELSE PRINT
10310 IF AS = "+" THEN X = X + B: GOTO 10100
10320 IF AS = "-" THEN X = X - B: GOTO 10100
10330 IF AS = "*" THEN X = X * B: GOTO 10100
10340 IF B <> 0 THEN X = X / B: GOTO 10100
10345 PRINT "DIVISION BY ZERO ERROR"
10347 GOTO 10100
10350 REM *** CALCULATOR
10360 REM *** BY TOM MOORE
10370 REM *** HOUSTON, TX
10380 REM *** 1979
```

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