

**Radio
Shack®**

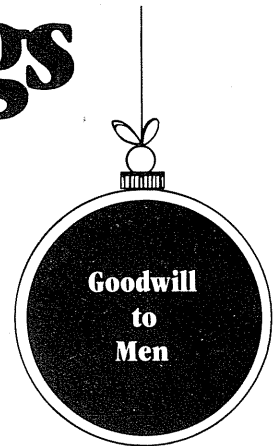
MICROCOMPUTER NEWSLETTER

700 One Tandy Center
Fort Worth, Texas 76102**DEC.
1979**

PRICES MAY VARY AT INDIVIDUAL STORES AND DEALERS

Seasons Greetings

from all of
us at
Radio Shack
to all of you!



Fort Worth Scene

As we come to the close of another year we would like to look back at some of the changes which have come about in this year.

One way these changes can be measured is by comparing this year's computer catalog RSC-3 with last year's, RSC-2. In RSC-2 we listed 11 business related programs, RSC-3 has 24. RSC-2 listed 4 utility programs, RSC-3 has 6. RSC-2 had 2 personal programs, RSC-3 has 5. RSC-2 listed 7 educational programs, we now list 9 with more just around the corner! RSC-2 had 11 games, RSC-3 has 13. Communications packages remained at one in both catalogs. These additions to the software line represent a 62% increase. Over 80% of the programs listed in RSC-3 are available NOW. The rest will become available over the next few months.

Hardware prices have dropped. Our 4K Level I (26-1051) dropped from \$599 to \$499, while our 16K Level II (26-1056) dropped from \$988 to \$849. We have added two new printers, Line Printer II (26-1154) and Line Printer III (26-1156). We also gave you the ability to run printers using a Level II computer without an Expansion Interface, a minimum savings of \$240 for those of you who do not plan on moving up to Disk systems.

We also introduced our all new Model II microcomputer in the last year. The Model II with a single 8" Disk drive and 32K memory is only \$3450. This gives you over 480 thousand bytes of disk storage at a very low price.

We look forward to the new year. We already know of new products which will be

available — products not mentioned in RSC-3. These include both hardware and software. We think you will like what is going to come out in 1980. And we look forward to writing a column like this next year, because there will be new products out which are not hinted at now. I can hardly wait...

Model II Users Note

Our Model I Double Precision Subroutine Package (26-1704, \$9.95) can give you double precision functions! No, you cannot load them from tape, but the manual contains source listings for the routines, which allow you to put them into your programs as subroutines. This is a fast, inexpensive solution for those of you who need double precision functions. Elsewhere in this Newsletter we describe the method of using this package to get double precision exponentiation.

Holiday Schedule

Computer Services will be OPEN for phone calls the Saturday prior to Christmas and the Saturday prior to New Years. They will be closed Christmas Eve, Dec. 24, 1979; Christmas Day, Dec. 25, 1979; New Years Eve, Dec. 31, 1979; and New Years Day, Jan. 1, 1980.

Note to Disk Payroll Users:

A diskette containing updated W-2 form and Earned Income Credit information for our Disk Payroll Program (26-1556) is available from National Parts. The Stock Number is ACT-0111 with a suggested retail price of \$9.50. This diskette can be ordered through any Radio Shack Store.

COMPUTER SERVICES ADDRESS AND PHONE NUMBERS

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

Computer Services
Phone Numbers:

1-800-433-1679 (WATS except
Texas)
1-800-772-5914 (WATS inside
Texas)
1-817-390-3583 (Switchboard)

All TRS-80 related calls and mail should be directed to the above address, or one of the above phone numbers. Computer Services is staffed with knowledgeable people who are there to answer your questions. If they do not have an immediate answer, they have the internal contacts to get the answers in a minimum amount of time. Questions sent to the Newsletter must be sent to Computer Services via internal mail, which delays your response.

Newsletter Index

VOLUME #1

ISSUE #10

Christmas Tree	2
Computer Services	1
Cumulative Index	3
Double Precision Exponentiation	4
Ft. Worth Scene	1
Holiday Schedule	1
Level II Manual, 2nd Edition	4
Model II User's Note	1
Note to Disk Payroll Users	1
Program Tip #5	4
Screen Print to Tape	2
Shell Sort Routine	4
Tension Breaker, Simplified	2

User Programs and Hints

Screen Print Routine, Revisited

Jay Reso of Metairie, La. suggests the following routine for printing the contents of the video display to a lineprinter:

```
1000 DIM S$(15)
1010 FOR T=0 TO 15
1020 S$(T)=" "
1030 POKE VARPTR(S$(T)),64
1040 POKE VARPTR(S$(T))+1,
      (T*64+15360) AND 255
1050 POKE VARPTR(S$(T))+2,
      (T*64+15360)/256
1060 NEXT T
1100 FOR T=0 TO 15:LPRINT S$(T):
      NEXT
```

Line 1020 establishes S\$(T) with a location in memory. Line 1030 sets the length of the string to 64 bytes. Lines 1040 and 1050 set the string pointer to the location of the first byte of a video line.

Once you have executed lines 1000-1060, you can execute 1100 at any time and you will get a printed copy of the screen. Remember that you cannot print graphic characters (See Nov. Newsletter for routines to print graphics) to a lineprinter. One other caution is that you may not ASSIGN values to the strings S\$(T). If you try to assign values to these strings, you will reset the pointers and you will have to rerun lines 1000-1060.

Screen Print to Tape

It has come to our attention that not all of you have lineprinters!! And, it seems, some of you would like to be able to save those wonderful video graphics even though you haven't saved quite enough for that printer (Santa Claus — are you listening?).

Jay Hass of Plano, Il. sent us the following routine which will save both alphanumeric and graphic information onto tape. His routine reads video memory, converts the information to string values and stores the strings on tape. This allows you to create a graphic design like a bar graph, include labels and comments on the screen and save them both onto tape at the same time!

```
30000 '** EDITOR/STRING DUMP
      ROUTINE **
30010 CLEAR 256
30020 FOR X= 15360 TO 16383
30030 G= PEEK(X)
30040 POKE X,191
30050 POKE X,G
30060 IF G=44 THEN POKE X,95 ELSE
      IF G=58 THEN
```

```
      POKE X,94
30070 NEXT X
30080 FOR T= 15360 TO 16256
      STEP 128
30090 FOR X=T TO (T+127)
30100 B$= B$+ CHR$( PEEK( X))
30110 POKE X,32
30120 NEXT X
30130 PRINT# -1,B$
30140 B$=" "
30150 NEXT T
30160 RETURN
30170 '*SCREEN IS NOW ON
      CASSETTE TAPE*

40000 '** REASSEMBLER/EDITOR
      ROUTINE **
40010 CLS
40020 FOR X=1 TO 8
40030 INPUT# -1,B$
40040 IF X=8 THEN PRINT LEFT$(B$,
      127); ELSE PRINT B$;
40050 NEXT
40060 FOR X=15360 TO 16383
40070 G= PEEK(X)
40080 POKE X,191
40090 POKE X,G
40100 IF G=95 THEN POKE X,44 ELSE
      IF G=94 THEN POKE X,58
40110 NEXT X
40120 RETURN
```

Lines 30020-30070 scan video memory converting commas to an underline and colons to a right arrow. This permits the program to store two lines of the video in each string variable. Lines 40060-40110 restore the commas and colons after you have reloaded the data from tape.

Christmas Tree

This program was submitted by Gary Akins, Jr. We made minor modifications to allow the program to run in either Level I or Level II. If you have Level I, change line 10 to read: 10CLS This is the only change that needs to be made. Have fun!

```
0 REM *****
1 REM * THIS PROGRAM PRINTS
      A GRAPHIC TREE ON THE
      SCREEN *
2 REM * AND FLASHES SOME
      STARS AND CHRISTMAS
      LIGHTS 7 *
3 REM * TIMES, WAITS, AND DOES
      IT AGAIN. *
4 REM *****
5 REM * P.S. THIS MAKES YOUR
      COMPUTER THE MOST
      EXPENSIVE *
6 REM * CHRISTMAS ORNAMENT IN
      THE HOUSE !!! *
7 REM *****
```

```
8 REM * WRITTEN BY GARY AKINS
      JUNIOR *
9 REM *****
10 DIM A(20):CLS
20 J=64:K=64
30 FOR S=1 TO 2
40 FOR Y=S TO 37
50 SET(J,Y):SET(K,Y)
60 J=J-1:K=K+1
70 NEXT Y
80 J=64:K=64
90 NEXT S
100 FOR X=27 TO 101: SET(X,38):
      NEXT X
110 FOR Y=39 TO 47: SET(54,Y):
      SET(74,Y): NEXT Y
120 FOR X=54 TO 74: SET(X,47):NEXT
      X
150 FOR D=1 TO 20
160 READ A(D)
180 NEXT D
190 DATA 50,57,65,96,41,94,54,74,63,36
200 DATA 87,89,79,87,74,48,56,97,73,60
210 FOR F=1 TO 7
220 D=0
230 FOR Y=20 TO 40
240 D=D+1
250 K=A(D)
260 SET(K,Y)
265 IF D=20 THEN 280
270 NEXT Y
280 D=0
290 FOR Y=1 TO 20
300 D=D+1
310 K=A(D)
320 SET(K,Y)
330 NEXT Y
340 D=0
350 FOR Y=1 TO 20
360 D=D+1
370 K=A(D)
380 RESET(K,Y):RESET(K,Y+10)
390 NEXT Y
400 D=0
410 FOR Y=20 TO 40
420 D=D+1
430 K=A(D)
440 RESET(K,Y)
445 IF D=20 THEN 460
450 NEXT Y
460 NEXT F
470 FOR X=1 TO 500:NEXT X
480 RESTORE:CLS:GOTO20
```



Teacher Aide

Teacher Aide is designed to reduce the burden of paperwork that is usually associated with the teaching profession. Teacher Aide will calculate student grades, assign classroom seats, keep track of absences, tardies, overdue books, and report cards. It will also maintain an up-to-date student personal information file.

Teacher Aide will store information on a per class basis. Up to 35 students per class can be filed on small, easy to use cassette tapes. To use Teacher Aide, you merely play back the student tape into the computer to display all the student class informa-

tion. You can then rearrange the classroom seating, enter raw scores, convert raw test scores into A, B, C, D, F grades, add grades to a cumulative total and then record (or save) all the new data back onto the cassette.

Teacher Aide provides a unique "percentile" grading feature that lets you see a student's standing, in terms of the percentage of individuals below the student. This feature allows you to compare classes to determine the student grade distribution in each class. For 16K, Level II. **26-1713** **29.95**

I. Q. Builder

**Looking for a New Job?
Trying to Get a Promotion?
Want to Get Into a Good College?
Tired of Not Understanding?**

Radio Shack does not have the magic key, but we can help. With more and more companies going to pre-employment tests, and batteries of tests for promotions, you need to feel comfortable taking multiple choice tests. You should also be aware of the types of questions you may be asked, as well as have a way of solving problems.

I.Q. Builder contains over 30 programs designed to build, or reinforce, an individual's vocabulary and problem solving skills. Most exercises are presented in a multiple choice format, as they are normally found on this type of test. The three problem

sets are Analogies, Number Series, and Vocabulary Builder.

Analogies are covered in six lessons with 27 different analogy types. A mastery test is included.

Number Series consists of eight programs designed to help you learn how to solve numeric patterns. Again, a final test is included to allow the individual to check on skill mastery.

Vocabulary Builder covers synonyms and antonyms. The Part I material is relatively easy. The Part II material contains significantly more difficult material.

IQ Builder includes tapes for both Level I and Level II 4K Model I TRS-80's. Level II programs may have fewer problems than corresponding Level I programs. The level and quality of the programs are the same, Level II just doesn't have as much memory available as Level I. **26-1706** **29.95**

Disk Editor/Assembler

Radio Shack's Model I TRS-80 DISK EDITOR/ASSEMBLER package includes everything the experienced Assembly language programmer needs to create, compile, and execute Z-80 or 8080 Assembly Language Programs.

The DISK EDITOR/ASSEMBLER PACKAGE consists of:

1. EDIT-80 (EDIT) and EDIT-80 User's Manual
2. MACRO-80 (M80) and MACRO-80 User's Manual
3. LINK-80 (L80) and LINK-80 User's Manual
4. FORTRAN Subroutine Library (FORLIB/REL)
5. CREF-80 (CREF80) Cross Reference Facility
6. Z-80 Instruction Set and Appendix

Format

The DISK EDITOR/ASSEMBLER Package comes complete in a deluxe three-ring binder with two program diskettes and all manuals.

Minimum Hardware Required

- Level II TRS-80 with 16K RAM
- Expansion Interface with 16K RAM
- One Disk Drive (two preferred)

Detailed Description

The DISK EDITOR/ASSEMBLER Package will allow the experienced Assembly Language Programmer to write programs using either Z-80 or 8080 mnemonics. Your Assembly language programs are created using the powerful EDIT-80 text editor. Object Code is compiled using MACRO-80. This powerful assembler creates absolute or relocatable code. MACRO-80 contains 25 pseudo-ops which allow a wide variety of assembly control, including conditional (IF-ELSE), numeric bases (RADIX) from 2 to 16, COMMON (memory blocks which are compatible with the FORTRAN COMMON statement), Z-80 or 8080 opcodes, and more. The LINK-80 Linking Loader is used to load object code, needed library routines and either execute your program, or create a TRSDOS executable file. The CREF-80 Cross Reference Facility provides you with a listing file in which each source statement contains a cross reference number. In addition an alphabetical listing of variable names with a list of line numbers which reference those variables is provided.

26-2202 **99.95**

Disk Payroll System

The TRS-80 Model I Disk Payroll System is designed to simplify the payroll process.

Payroll System Features

- Calculates and Prints payroll checks automatically
- Calculates all Federal Taxes in all States and the District of Columbia
- Calculates State Tax in all States and the District of Columbia
- Automatic Printing of W-2 forms at the end of the year
- Fourteen User-Defined Earnings and Deduction Categories
- Six User-Defined Workman's Compensation Classifications
- Up to 99 Employees
- Provision for Automatic Voluntary Deductions, such as Savings, Christmas Clubs, etc.
- Automatic Check Register before or after printing
- Easy Error correction and recovery
- Automatic Out-of-Balance detection
- Automatic Monthly, Quarterly, and Annual Journals

Minimum System Requirements

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

Our Disk Payroll System manual will take you, step by step, through the process of setting up the system to fit YOUR business. Once this is done, system maintenance is minimal. You can Add and Delete employees easily; make wage changes quickly; print any reports that may be needed; and prepare payroll checks in a fraction of the time it takes to prepare them by hand. You can print a check for a single employee or you can print all of the checks. The system will also allow you to hand write a check and then enter the information into the system at a later time. **26-1556 199.95**

Business Mailing List

The Radio Shack Business Mailing List System is a fast storage and retrieval system for names and addresses. The system provides two formats, compressed and expanded. Other features include:

- Automatically sorts records in alphabetical and zip code order
- Rapid access to any name on record
- Easy error correction and recovery
- Print listings and mailing labels
- Print your own return address labels
- Revise or update any information at any time

Minimum System Requirements:

- 16K Level II Computer System
- 16K Expansion Interface
- Two Model I Disk Drives
- TRS-80 Line Printer such as: Line Printer I or Line Printer III
- Appropriate Printer Cable

System Capacities:

COMPRESSED FORMAT

- 990 names with the minimum system
- 1980 names with 32K RAM and 3 Disk Drives
- 2970 names with 48K RAM and 4 Disk Drives

EXPANDED FORMAT

- 660 names with the minimum system
- 1320 names with 32K RAM and 3 Disk Drives
- 1980 names with 48K RAM and 4 Disk Drives

The Radio Shack Business Mailing List System permits you to define up to eight Categories for creation of selected mailing lists. Each Person in your list can belong to any number of these Categories, or none of them. These categories can be used one at a time, or together to give you lists which contain exactly the names you want. **26-1558 99.95**

Manufacturing Inventory Control

The Radio Shack Manufacturing Inventory Control System is designed to help reduce the time and expense of inventory control. This system will help control Raw Materials, Finished Goods, and assist in planning material requirements.

Minimum System Requirements

- 16K Level II Computer System
- 16K Expansion Interface
- Two Model I Disk Drives
- 132 Column Printer such as our Line Printer III
- Appropriate Printer Cable

With the minimum system, you can handle up to 1700 Raw Materials. With four disk drives and a 32K Expansion Interface, capacity increases to 5700 Raw Materials. Each Program Diskette can handle up to 20 Finished Goods. If you have more than 20 Finished Goods, you simply use multiple copies of the program diskette.

Reports and Lists Printed by the system include:

Raw Materials Inventory Report

- Bill of Materials
- Pull Sheets
- Finished Goods List
- Out-of-Stock Reports
- Inventory Worksheets
- Raw Materials Use Reports
- "Where Used" Reports

The Radio Shack Manufacturing Inventory Control System keeps track of stock numbers, descriptions, locations, units of measure, unit costs, and quantity of hand for each Raw Material item in your inventory. The system automatically keeps track of whether a Raw Material item is being used in the manufacture of a Finished Good. Of course you can add Raw Materials or delete inactive Raw Materials whenever you need to. Cost and quantity updates are very easy. Each Finished Good can be made from as many as 600 Raw Materials. The exact materials which make up a Finished Good can be changed as needed.

26-1559 199.95

BASIC Coding Form

Radio Shack

PROGRAMMER

COMMENTS

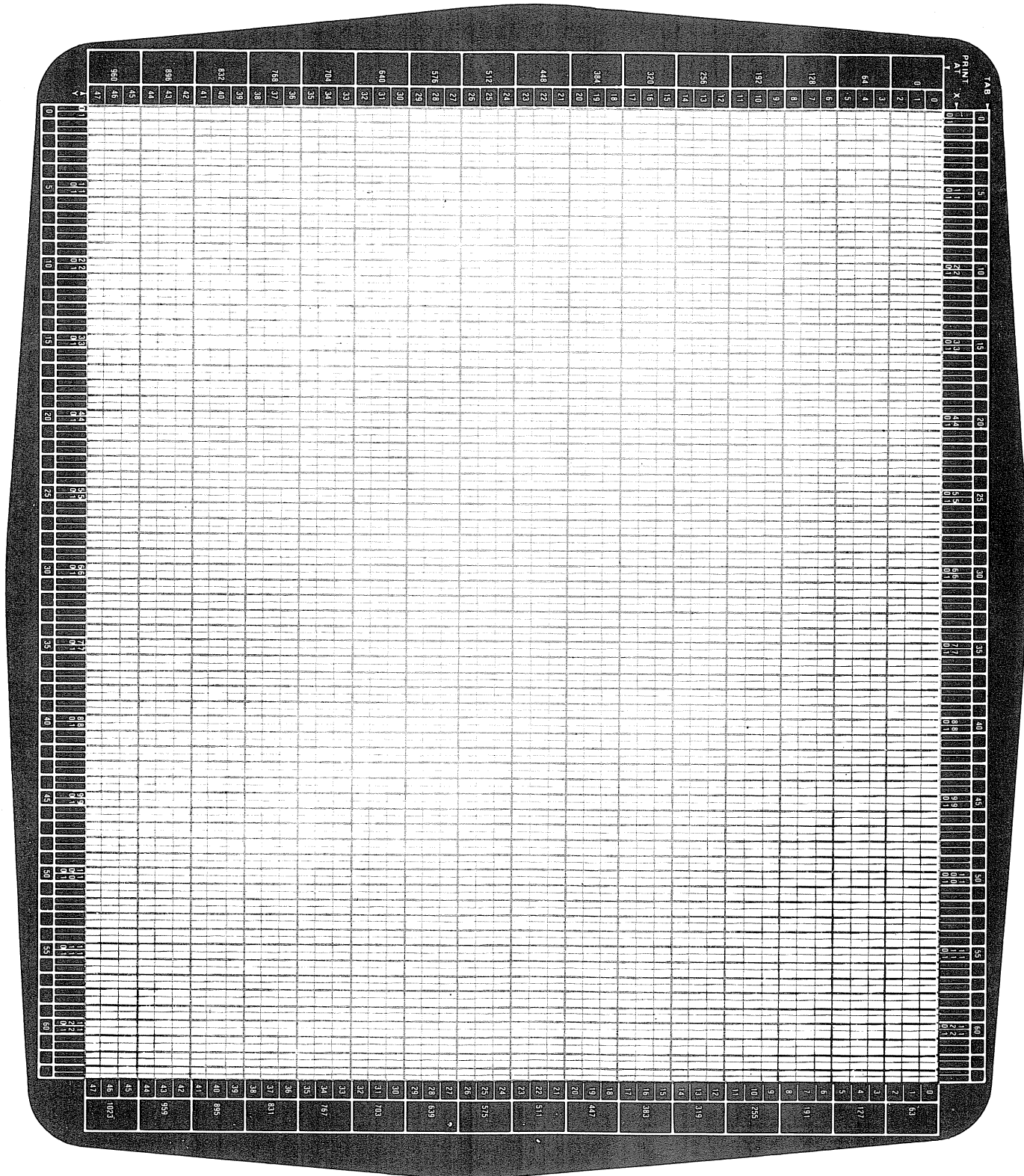
PAGE **OF**
VARIABLE LIST / COMMENTS

TRS-80™ PRODUCT NEWS

TRS-80 Video Display Worksheet

Radio Shack

TITLE _____ PROGRAMMER _____ PAGE ____ OF ____



TRS-80 Video/Programming Worksheets give you a Model I screen layout for designing graphics and finding print locations. The reverse side is a programming worksheet with space for variable names and comments. 100 sheets per package.

26-2105 2.95

Microcomputer Newsletter Cumulative Index

This cumulative index covers all Microcomputer Newsletters published from the first volume in 1977 to Volume 1, Number 10, December, 1979. Page numbers preceded by the letter A are advertising insert pages. These pages began in November, 1979.

SUBJECT	DATE	PG	SUBJECT	DATE	PG	SUBJECT	DATE	PG	SUBJECT	DATE	PG
14-841 CTR-41 REC	JAN 78	1	26-1601 HOME RECIPE	JAN 78	2	COMPUTER SERV CHNG	A/S 79	1	HINT	NOV 79	2
CTR-80 WARN	A/S 79	4	26-1602 PER. FINANC	JAN 78	2	CONVERT IN-MEM DATA	MAY 79	4	SOFTWARE	OCT 79	1
CTR-80 MODIF	NOV 79	1	26-1603 BUDGET MANA	OCT 79	2	CSAVE ROUTINE	DEC 79	2	USER NOTE	OCT 79	3
26-301 CERT C20 CAS	MAY 79	7		NOV 79	A4	CTR-41 RECORDER	JAN 78	1	MODERN DAY PIONEERS	VOL 1	1
26-405 3-PAK DISKET	MAY 79	7	26-1701 MATH I	JAN 78	2	CTR-80 CAUTION	JUL 79	2	NETWORK I	NOV 79	1
26-500 CARRY CASES	NOV 78	1	26-1702 ALGEBRA I	JAN 78	2	OWNERS!	A/S 79	4	NEW COMPUTER CLUB	NOV 79	1
26-501 SYSTEM COVER	A/S 79	2	26-1703 STAT ANALYS	JAN 78	2	CUMULATIVE INDEX	DEC 79	3	NEW PRINTER CABLE	MAY 79	2
26-502 DISK COVERS	A/S 79	2		JUL 79	2	DATA COMMUNICATIONS	NOV 78	2	NEW SOFTWARE ANNOUN	A/S 79	4
26-503 PRINTER CVRS	A/S 79	2	26-1704 DBL PREC SU	MAY 79	6	DATA SAVER PROGRAM	OCT 79	3	INFO	MAY 79	6
26-1001 4K LI	JAN 78	1		A/S 79	1	DELIVERY DELAYS	MAY 79	4	NEW TECHNICAL MANUA	NOV 78	3
26-1003 16K LI	JAN 78	1		DEC 79	1	DISCOUNTS AVAILABLE	MAY 79	7	NOTES ON PREV NLTRS	OCT 79	1
26-1004 4K LI	JAN 78	1		DEC 79	4	DISK ERRORS SOLVED	MAY 79	5		NOV 79	1
26-1006 16K LI	JAN 78	1	26-1705 ADV STAT AN	JUN 79	2	DISK INSTRUCTION CR	A/S 79	3	NOTICE TO EI OWNERS	MAY 79	5
26-1051 4K LI SYSTM	JUL 79	1	26-1706 I.Q. BUILD	A/S 79	4	DISK SPACE ALLOCATI	A/S 79	3	OPER. AND PROG. TIP	JUN 79	5
26-1053 16K LI SYST	JUL 79	1		DEC 79	A1	DISK STORAGE BOX	A/S 79	2	OTHER VENDOR COMPAT	MAY 79	7
26-1054 4K LI SYST	JUL 79	1	26-1713 TEACHER AID	A/S 79	4	DISKETTE CAUTION	JUL 79	2	OWNERS MANUAL ERROR	JAN 78	3
26-1056 16K LI SYS	JUL 79	1		DEC 79	A1	DOUBLE PREC CORRECT	A/S 79	1	PAPER FEED OPERATIO	JUN 79	7
26-1101 16K MEM KIT	JAN 78	1	26-1801 BCKGAM/BLKJ	JAN 78	2	DOUBLE YOUR PLEASUR	JUN 79	5	PAYROLL	VOL 1	2
	JUL 79	1	26-1802 QUICK WATSO	JAN 78	2	DOUBLE-PREC EXPONEN	DEC 79	4	26-1501	JAN 78	2
26-1102 16K EI MEM	JUL 79	1	26-1805 GAME PACK-1	NOV 78	2	NUMBERS	OCT 79	2	PROG ERROR	JAN 78	2
26-1120 LII ROM KIT	JAN 78	1	26-1806 CASINO GAME	A/S 79	4	SUBROUT	MAY 79	6	TAX TABLES	A/S 79	4
	JUL 79	1		NOV 79	A3	DUST COVER-DISK	A/S 79	2	WITHOLDING	JUL 79	2
26-1140 OK INTERFAC	JAN 78	1	26-1901 MICROCHESS	NOV 78	2	PRINTER	A/S 79	2	PERIPHERAL ORDERS	MAY 79	8
26-1141 16K INTRFAC	JUL 79	1	26-1902 MICROMUSIC	MAY 79	6	SYSTEM	A/S 79	2	PERSONAL FINANCE	VOL 1	2
26-1142 32K INTRFAC	JUL 79	1	26-1903 MICROMOVIE	JUN 79	2	EDGE CONNECTOR	VOL 1	4		JAN 78	2
26-1145 RS-232 BRD	NOV 78	2	26-1904 MICROMARQUEE	JUN 79	2	EDITOR/ASSEMBLER	JAN 78	2	ERROR	JAN 78	3
	MAY 79	4	26-1905 FLYING SAUC	JUN 79	4	EXPANSION INTERFACE	JAN 78	1	PRICE REDUCTIONS	JUL 79	1
26-1146 COMPAC	MAY 79	4		JUL 79	2	FAN KIT AVAILABLE	MAY 79	7	PRINT USING	JUN 79	5
26-1150 FRIC L PRTR	JAN 78	2		A/S 79	4	FINAL TRSDOS MANUAL	MAY 79	5			
	JUN 79	3	26-1906 INVASION FO	JUN 79	2	FLYING SAUCERS	JUN 79	4	PRINT@ IN LEVEL II	JUN 79	5
26-1151 SCREEN PRIN	JAN 78	2	26-1907 CHECKERS-80	NOV 79	A4		JUL 79	2	PRINTER LINE FEEDS	NOV 78	3
	MAY 79	1	26-1908 ELIZA	NOV 79	A4	FOR YOUR CONVENIENC	A/S 79	4	PRINTER STAND	NOV 78	4
	JUN 79	3	26-2001 T-BUG	JAN 78	2	FRIC LINE PRINTER	MAY 79	5	PROG TIP FOR DISK	NOV 78	3
26-1152 TRAC L PRTR	JUN 79	3	26-2002 EDIT/ASSEMB	JAN 78	2		JAN 78	2	PROTECT YOURSELF	JUL 79	1
	OCT 79	4	26-2003 LI COURSE	JAN 78	2	FT WORTH SCENE	JUN 79	3	PUT A LITTLE FUN IN	JUN 79	7
26-1153 QUICK PRTR	NOV 78	1		NOV 79	3		MAY 79	1	QUICK PRINTER	NOV 78	1
26-1154 LPRTR II	JUL 79	1	26-2004 LII RENUM	NOV 78	4		JUL 79	1	QUICK PRINTER II	JUN 79	1
	OCT 79	4	26-2005 LII PART I	NOV 79	3		OCT 79	1	UPDAT	MAY 79	2
26-1155 QUICKPRTR II	JUN 79	1	26-2006 LII PART II	JUN 79	2		NOV 79	1	QUICK WATSON	JAN 78	2
26-1156 LPRTR III	OCT 79	4		NOV 79	3	GAME PACK-1	NOV 78	2	REAL ESTATE I	A/S 79	1
	NOV 79	A1	26-2007 DISK INST C	A/S 79	3	GENERAL LEDGER I	NOV 78	2	REAL ESTATE II	A/S 79	1
26-1160 MINI DISK	JAN 78	2	26-2102 LEVEL II MA	A/S 79	4	GL POSTING ERRORS	A/S 79	3	REAL ESTATE III	A/S 79	1
26-1170 TEL INT I	NOV 78	2		DEC 79	4	GOT A QUESTION?	JUL 79	4	REAL TIME CLOCK	NOV 78	4
	MAY 79	4	26-2103 TECH MANUAL	NOV 78	3	GRAPHICS TO LPRINTR	A/S 79	1	RENUM PROGRAM	NOV 78	4
26-1171 TEL INT II	MAY 79	4	26-2104 TRSDOS MANU	MAY 79	5		NOV 79	2	RENUMBER PROG LINES	NOV 79	4
26-1180 VOICE SYNTH	MAY 79	7	26-2105 VID WORKSHT	MAY 79	6	HELP	NOV 79	3	REVKEY PROGRAM	A/S 79	3
	NOV 79	A4	26-2201 FORTRAN	NOV 79	A3	HOLIDAY SCHEDULE	NOV 78	3	SCREEN PRINT ROUTIN	DEC 79	2
26-1181 VOXBOX	NOV 79	A4	26-2202 DISK ED/ASS	DEC 79	A1		DEC 79	1	TO TAPE	DEC 79	2
26-1201 VID DISPLAY	JAN 78	1	26-4001 32K MODII	JUN 79	8	HOME RECIPE PROGRAM	DEC 79	2	SCREEN PRINTER	JAN 78	2
26-1210 NETWORK I	NOV 79	1		JUL 79	3	IN-MEMORY INFORMATI	JAN 78	2	SALE	MAY 79	1
26-1301 SYSTEM DESK	NOV 78	4	26-4002 64K MODII	JUN 79	8	INFORMATION GUIDE	JAN 78	2	SERIOUS QUESTIONS	VOL 1	1
26-1302 PRTR STAND	NOV 78	4		JUL 79	3	INFORMATION GUIDE	JUN 79	4	SERVICE CONTRACTS	MAY 79	5
26-1303 FAN KIT	MAY 79	7	26-4102 32K RAM EXP	JUL 79	3	INVASION FORCE	JUN 79	4		JUN 79	1
26-1304 SPACSAV DSK	JUN 79	4	26-4160 1 DSK EXP	JUL 79	3	INVENTORY CONTROL	JUN 79	4	SOME BUGS CORRECTED	JAN 78	3
26-1401 QP I CABLE	NOV 78	1	26-4161 2 DSK EXP	JUL 79	3	IRS REGULATION CHNG	OCT 79	4	SORT-SHELL/METZNER	DEC 79	4
	NOV 79	A1	26-4162 3 DSK EXP	JUL 79	3	JUST FOR FUN	A/S 79	4	SPACE-SAVER DESK	JUN 79	4
26-1403 9 1/2 PAPER	NOV 79	A1	26-4163 DISK ONLY	JUL 79	3	KBFIX	MAY 79	2	SPEED CASSETTE I/O	JUL 79	4
26-1404 MAIL LABELS	NOV 79	A1	26-4401 PRTR CABLE	NOV 79	A1	KBFIX/SCRN PRINTER	MAY 79	8	STATIC ELECTRICITY	MAY 79	4
26-1411 PRTR CABLE	MAY 79	2	26-4501 GEN LEDGER	OCT 79	1	KEYBOARD DEBOUNCE	NOV 78	1	STATISTICAL ANALYSI	JAN 78	2
	A/S 79	2		NOV 79	A2	KKKKEYBOUNCE	MAY 79	2		JUL 79	2
26-1412 QP II PAPER	JUN 79	1	26-4502 INV CONTROL	OCT 79	1	LEVEL I 16K	JAN 78	1	SUB-HUNT	NOV 79	3
26-1414 RIBBON CART	NOV 79	A1	26-4503 PAYROLL	OCT 79	1	4K	JAN 78	1	SYSTEM DESK	NOV 78	4
26-1416 LPII CABLE	A/S 79	2	26-4504 ACCT RECEIV	OCT 79	1	ARRAYS	JUL 79	1	T-BUG	JAN 78	2
26-1417 14" PAPER	NOV 79	A1	26-4506 MAILING LST	OCT 79	1	BASIC COURS	JAN 78	2	TAPE MAILING IMPROV	MAY 79	2
26-1450 DISK STR/BX	A/S 79	2		OCT 79	1	DATA STATMN	JAN 78	3	TEL INTERFACE I	NOV 78	2
26-1501 LI PAYROLL	JAN 78	2	26-4905 8" DISKETTE	JUL 79	3	"INT" FUNCT	JAN 78	3		MAY 79	4
	MAY 79	6	26-4906 10 8" DISKE	JUL 79	3	LEVEL II 16K	JAN 78	3	TEL INTERFACE II	MAY 79	4
26-1502 IN-MEM INFO	JAN 78	2	62-2006 ASSEMBLY LA	JUN 79	4	4K	JAN 78	1	TENSION BREAKER	A/S 79	4
26-1503 TAPE MAILIN	NOV 78	2	ACP-0001 SP I PAPER	MAY 79	1	AVAIL MAR.	JAN 78	4	TENSION B. SIMPLIFI	DEC 79	2
26-1504 TAPE PAYROL	A/S 79	4		JUN 79	3	MAN. ERROR	A/S 79	4	TIP #1 REWIND TAPES	NOV 78	4
26-1505 WRD PROC CA	A/S 79	4	ACT-0073 IN-MEM DAT	MAY 79	4	MAN. ERROR	DEC 79	4	TIP #2 SCREEN PRINT	NOV 78	4
26-1506 CAS PORTFOL	A/S 79	4	ACT-0111 EARNED INC	DEC 79	1	ROM KIT	JAN 78	1	TIP #3 PRTR READY?	NOV 78	4
26-1507 STAND/POORS	A/S 79	4	ACT-0131 TRANS DSK	OCT 79	4	LI-LII COMPATIBILIT	MAY 79	6	TIP #4 SYSTEM/20992	NOV 78	4
26-1551 DISK MAILIN	NOV 78	2	ACT-0300 KBFIX	MAY 79	2		JUN 79	4	TIP #5 PRNTR TO VID	DEC 79	4
26-1552 GEN LEDG I	NOV 78	2	AW-2340 BUFF CABLE	MAY 79	1	PAYROLL CONV	MAY 79	6	TRANSFER MI-MII	OCT 79	4
	JUL 79	1	AW-2440 TRANS CABLE	OCT 79	4	PROG CONVERS	MAY 79	6	TRS-80 CLASSROOM	JUN 79	6
POST ERRORS	A/S 79	3	ADDENDUMS	JUL 79	2	LII BASIC PART II	JUN 79	2		OCT 79	2
26-1553 ICS I	OCT 79	4	ADV. STAT. ANALYSIS	JUN 79	2	LII CASSETTE MODIFI	MAY 79	3	NOV 79	3	
26-1554 ACCTS PAYAB	A/S 79	4	ALGEBRA I 26-1702	JAN 78	2	LINE PRINTER CABLES	A/S 79	2	TRS-80 MODEL II	JUL 79	3
26-1555 ACCTS RECEI	A/S 79	4	AMATEUR RADIO NETS	JUN 79	7	LINE PRINTER II	JUL 79	1	TRSDOS 2.1 PATCH	MAY 79	5
			ARRAYS-PROG. TECHN	JAN 78	3	LISTER/BAS 2.0	NOV 79	2	TRSDOS 2.2 COMING	MAY 79	6
SUBJECT	DATE	PG	ASSEMBLY LANGUAGE	JUN 79	4	LIVE KEYBOARD ROUTI	MAY 79	3	IS HERE	JUN 79	1
26-1556 DISK PAYROL	DEC 79	1	ATTENTION 48K USERS	MAY 79	5	LOWER CASE TO UPPER	A/S 79	1	AVAILABL	A/S 79	4
	DEC 79	A2	BACK ISSUES NOT AVA	A/S 79	4	MAILING LIST SYSTEM	NOV 78	2	INDEX	OCT 79	1
26-1557 CONCRETE	A/S 79	4	BACKGAMMON/BLACKJAC	JAN 78	2	MAINLINE SORT DRIVE	NOV 78	3	TRSDOS 2.3	NOV 79	1
26-1558 BUS MAIL LS	A/S 79	4	BASIC CMDS IN PROGS	JUN 79	6	MATH I	VOL 1	2	USER PROG & HINTS	OCT 79	3
	DEC 79	A2	BUDGET MAN. -PRTR	OCT 79	1	MEMORY KIT 16K	JAN 78	2		NOV 79	3
26-1559 MANU INVENT	A/S 79	4	BUFF CABL SCR N PT I	MAY 79	1	MEMORY MANAGEMENT	JUN 79	7	VARIABLE NAMES-LII	JUN 79	5
	DEC 79	A2	BUG DEPARTMENT	A/S 79	4	MERGE CASSETTE PROG	JUL 79	2	VERIFY YOUR CASSETT	JUN 79	7
26-1560 FXD ASS ACC	A/S 79	4	CARRYING CASES	NOV 78	1	MICROCHESS	NOV 78	3	VIDEO DISPLAY	JAN 78	1
26-1561 TIME ACCTNG	A/S 79	4	CAUTION TO DISK OWN	MAY 79	5	MICROMARQUEE	VOL 1	2	VIDEO TO PRINTER	JUL 79	2
26-1563 DSK WRD PRO	A/S 79	4	CAUTION-CUSTOMIZERS	MAY 79	8	MICROMOVIE	JUN 79	2		DEC 79	2
26-1571 REAL ES I	A/S 79	1	CHRISTMAS TREE	DEC 79	2	MICROMUSIC	MAY 79	6	VOICE/PROG WORKSHT	MAY 79	6
26-1572 REAL ES II	A/S 79	1	CLOAD TWO PROGRAMS	JUL 79	2	MINI DISK DRIVE O	JAN 78	2	WHATS BEEN HAPPENIN	MAY 79	7
26-1573 REAL ES III	A/S 79	1	COMM. SOFTWARE PKG.	MAY 79	4	MODEL II ANNOUNCED	JUN 79	8		NOV 78	1
26-1574 REAL ES IV	A/S 79	4	COMPUTER HOTLINE	MAY 79	1	CORNER	NOV 79	1			
26-1575 REAL ES V	A/S 79	4	COMPUTER SERVICES	OCT 79	1						
26-1576 REAL ES VI	A/S 79	4		NOV 79	1						
				DEC 79	1						

Double Precision Exponentiation

If you work with double precision numbers, you have probably wished that exponentiation were a double precision function. You can easily make it one using our Double Precision Subroutine Program (26-1704, \$9.95).

The Double Precision Subroutine Program provides you with Natural Logarithm and Exponential functions. Using these functions and the following formula will give you double precision exponentiation:

B# is the base number
P# is the power

$\text{EXP}(\text{LOG}(B\#) * P\#)$ IS THE RESULT

If $B\# = 5$ and $P\# = 5$ then
 $\text{EXP}(\text{LOG}(B\#) * P\#) = 3125$, which is 5 raised to the 5th power.

Likewise, if $B\# = 3125$ and $P\# = .2$ then
 $\text{EXP}(\text{LOG}(B\#) * P\#) = 5$. The following subroutine used with our Double Precision Subroutine Program will give double precision exponentiation:

```
1000 DEFDBL Z
1010 INPUT "BASE NUMBER";B#
1020 INPUT "POWER"      ";P#
1030 Z=B#
1040 GOSUB 40100
1050 Z=Z2 * P#
1060 GOSUB 40200
1070 PRINT "THE RESULT IS";Z2
1080 RETURN
```

You should remember two things while using this subroutine. First, the more accurate you make B# and P#, the more accurate your results will be. Second, make the correction to line 40100 in the Double Precision Subroutine Package. This line should read:

```
40100 Z2=LOG(Z): I0=0: IF Z<1 THEN
      I2= - 1: Z=1/Z ELSE I2=1
```

Note to Level I Users:

The Level I Users Manual contains similar routines in Appendix A.

Shell Sort Routine

If you have been using our MAINLINE SORTING DRIVER from the November 1978 Newsletter, or some other form of ripple, bubble sort, you should find this sort to be much faster. This version of the Shell-Metzner sort will work in either Level II or DISK BASIC. For Level II operation, delete lines 500-540.

Our thanks to Emil Raabe of Arlington, TX who submitted a similar program.

```
10 CLOSE:CLS:CLEAR 12000 :REM
  CHANGE CLEAR TO FIT MEMORY
  SIZE
20 DIM A$(1000):REM CHANGE DIM
  TO FIT MEMORY. A$( ) HOLDS
  STRINGS TO BE SORTED.
30 LAST=1
40 PRINT LAST;:INPUT A$(LAST):
  REM INPUT STRINGS TO BE
  SORTED
50 IF A$(LAST)=" " THEN 100
60 LAST=LAST+1
70 GOTO 40
100 M=LAST
120 M=INT(M/2)
130 IF M=0 THEN 400
140 J=1:K=LAST-M
150 I=J
160 L=I+M
170 IF A$(I)<=A$(L) THEN 220
175 PRINT@ 200,I,L,M
180 T$=A$(I):A$(I)=A$(L):A$(L)=T$
190 I=I-M
200 IF I<1 THEN 220
210 GOTO 160
220 J=J+1
230 IF J>K THEN 120
240 GOTO 150
400 FOR I=1 TO LAST
410 PRINT A$(I)
420 NEXT
500 OPEN "0",1,"SORTLIST"
510 FOR I=1 TO LAST
520 PRINT#1,A$(I)
530 NEXT
540 CLOSE
550 END
```

Level II Manual, Second Edition

The Level II manual, Second Edition, is now being shipped with new computers, and may be available in some stores. As with most publications, there are a few errors, some of them carried forward from the First Edition. If you have a Second Edition manual, please make note of the following pages and errors.

- 3/6 Assuming each line on the page is numbered, the following errors exist:
line 3 — Second quote mark should come after the pound signs (#) and before the comma.
line 10 — A blank should be included after 12.12 and before the period.
line 14 — Delete the space between asterisk and 12.
line 20 — change period to a comma.
last line on page — ADD another line reading ABCD
- 3/12 In the Special Note, third line, the word PRINT left out.
- 4/17 line 20 of example program: first colon should be a semi-colon.
- A/7 The comma field specifier is missing.
- A/16 In the list of RESERVED WORDS, RUN and SYSTEM are missing.

Programming Tip #5

Jay Reso reminded us that with the Model I TRS-80, you can "direct" your outputs. If you want everything which is supposed to go to the lineprinter to be sent to the video, execute the following:

POKE 16422, 88:POKE 16423, 4

To restore the lineprinter use:

POKE 16422, 141:POKE 16423, 5

If you want everything which is supposed to go to the video sent to the lineprinter, use:

POKE 16414, 141: POKE 16415, 5

To restore the video use:

POKE 16414, 88: POKE 16415, 4