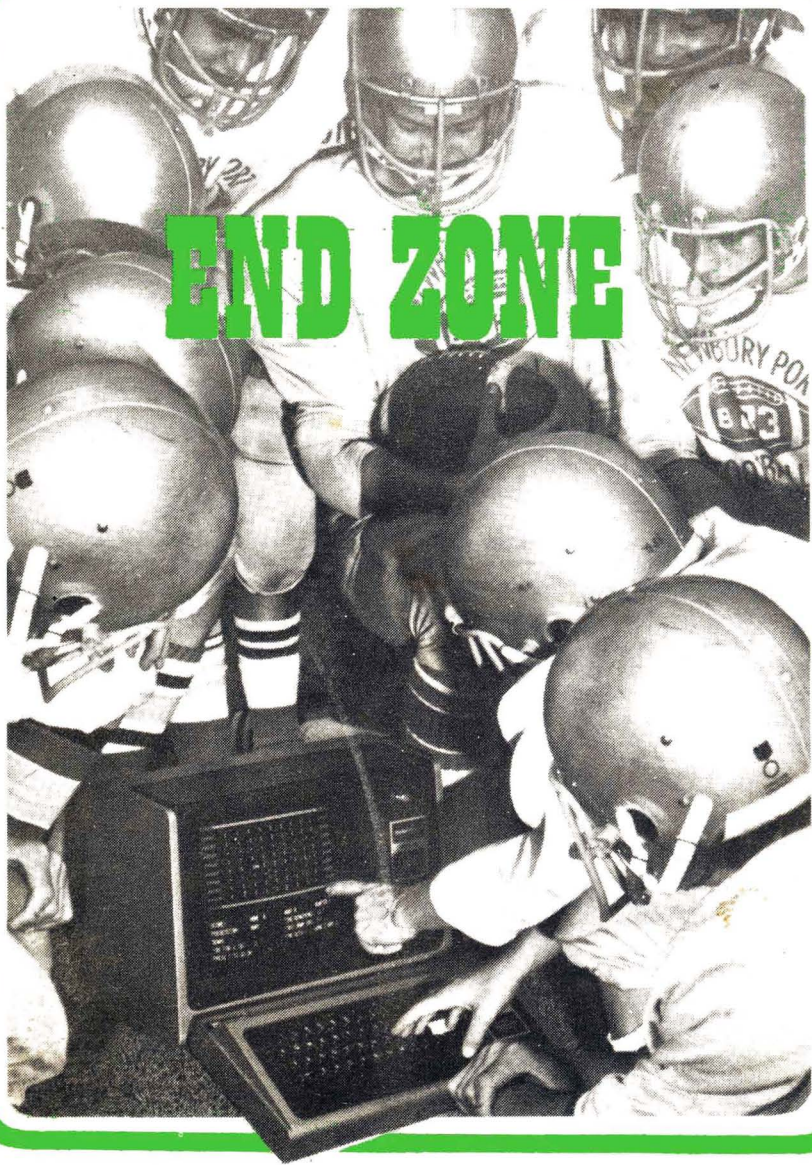# SoftSide™

"your BASIC software magazine"

END ZONE

X-WING FIGHTER

The Death Star Space Station, under the command of **Darth Vader**, is the mos powerful weapon the universe has ever known. A frontal attack by any othe craft would be absolute suicide. However, intelligence delivered to Republi headquarters by the androids R2D2 and C3PO gives a faint hope of ; successful attack by a small 1- or 2-passenger X-wing fighter.

There is a small unshielded exhaust port on the surface of the **Death Star** tha leads directly to the main reactor. Since it is an emergency thermal port in cas< the reactor overheats, it could not be shielded. If you can slip your small fighter past the Death Star's defenses and make a direct hit on the thermal exhaust port with a torpedo, there is a chance the torpedo will penetrate the main reactor and start a chain reaction, destroying the Death Star. It is a slim chance, but it is the only one the Republic has. Obi-Wan Kenobi gave his life to get the message here; so he considered it very important.
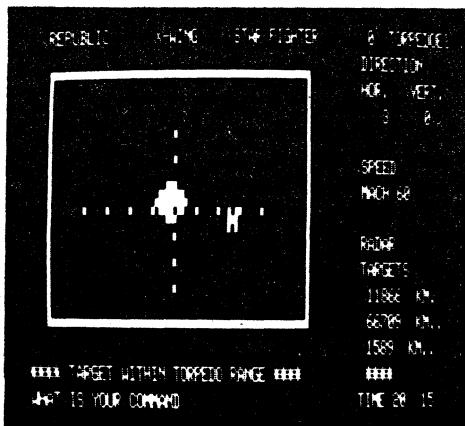
The X-wing fighter is a small 1- or 2-passenger rocket that is, quite frankly, obsolete. It is armed only with a laser cannon and 3 torpedoes. Use the laser cannon to fight off any imperial fighters, and save the torpedoes for the Death Star.

```
EACH AREA OF YOUR KEYBOARD CONTROLS YOUR SHIP, AS FOLLOWS"
  (SLOWER)                              (FASTER)"
    1  2  3  4  5  6  7  8  9"
                    (UP)"
    Q  W  E       R  T  Y  U          I  O  P"
  (LEFT)       (CANNON) (TORPEDO)       (RIGHT)"
  A  S  D       F  G     H  J          K  L  ;"
    Z  X  C       V  B  N          M  ,  . ˙
                    (DOWN)"
```

The target acquisition radar can detect targets in excess of 100,000 km away but can only display targets within 20,000 km. Therefore, you will be warned o approaching targets on the right side of your control panel before they ar< displayed in the radar screen.

Available on Digital Cassette for the
Level II 16 K Microcomputer — $7.95

TRS-80 Software Exchange
17 Briar Cliff Drive
Milford, New Hampshire 03055

Small Business Accounting

This is a program designed to serve the small businessman with few employees. The process begins with the entering of last week's receipts. First, load the tape file. A complete chart of all 42 expenses areas will be on display as you enter your checking activity. After entering, you are given a review of your entries and permitted to change any incorrect data. The activity is then posted to the respective account areas. Reports for the year to date, year to last week, and this week are now available for your review. One of the special features of this program is that it gives the user the ability to customize account areas. If all or some of the areas specified do not suit your business, or if other accounts would be more useful to your particular business, the user can alter a few of the data statements, re-record and everything will function as before. The process ends by transferring the newly-created data file to cassette for use next week.

RPT TO LAST WEEK					
PURCHASES	33.71	ACCOUNTING	43.31	ADVERTISING	49.26
AUTO EXP	97.09	PACKAGING	50.02	CONTRIBL	30.56
DELIVERY	36.65	ELECTRICITY	16.81	ENTERTAIN	63.65
FREIGHT	60.09	HEAT	87.75	INSURANCE	81.73
INTEREST	91.36	LAUNDRY	81.08	LEGAL	81.02
LICENSES	71.47	MISC EXP	68.82	OFFICE EXP	91.13
POSTAGE	86.86	RENT	89.12	REPAIRS	68.67
SHOP EXP	86.28	TX SOC SEC	87.63	TAX-STATE	11.18
TAX-OTHER	96.46	SELLING EXP	11.02	SUPPLIES	87.6
TELEPHONE	37.61	TRADE DUES	18.69	TRAVEL EX	8.28
WAGES&COM	2.98	SPEC#1	41.8	SPEC#2	92.79
SPEC#3	69.39	SPEC#4	41.93	NOTES PAYBL	28.58
FEDERAL INC	69.15	LOANS PAYBL	84.17	LOANS RECEV	48.55
PERSONAL	44.2	FIXED ASST	83.06	SPEC#5	98.84
TOTAL	2478.35		PRESS ENTER TO GO ON?_		

The program runs in Level I or II 16K, or Level I 4K. Sorry, but there just was not enough room in the Level II 4K to house the information. If you are using Level I 4K, do not post more than 30 checks per batch. Written to run in parallel with the nationally known **Dome Bookkeeping System**, the journal is available when ordering this program for an additional $7.00.

When we mailed the October issue of **SoftSide** last month, we really had no idea of what to expect. It's just as well, because the rousing reception and attention our first issue received surely exceeded our wildest dreams.

About forty percent of those who subscribed took the time to let us know what they thought. In general, you told us what you liked about the magazine and let us know what you would like to see in future issues.

Many sought a better understanding of the differences between Level I and Level II programs. We've included two articles in this issue that are sure to help in that regard.

The number and variety of programs available to us for publication is growing daily. In order to get a clearer picture of where your general interests lie, we've included a brief questionnaire on page 60. Your answers will be published in a forthcoming issue and are sure to have a tremendous impact on future programming.

The forty percent figure mentioned earlier is an extremely high rate of return for a new publication, and is indicative of a high level of involvement among our readers. We thank you, not only for endorsing **SoftSide**'s beginning, but for taking the time to help shape its future.

SoftSide ™

"your BASIC software magazine"

November 1978

CONTENTS

DID YOU ?

We're not into "Pie in the Sky" promises, we just happen to be the best vehicle in existence for writers of personal software, and to our way of thinking, offer the best plan for remuneration as well. On the face of it, that seems like a pretty big statement, but we're willing to put our money where our mouth is.

With **SoftSide**, you have your choice of "one time" publication rights, listing in the Market Basket section of the magazine, or just plain letting us sell your software for you. In any case, you retain the rights to the programs that you worked so hard to write. If your programs don't sell, you don't make money, so why tie up your software with an exclusive contract? With **SoftSide**, you're free to market through us, and still sell your own programs privately or through other non-exclusive arrangements. We prefer to let our performance be the only "tie that binds."

For more details, write:
The TRS-80 Software Exchange
17 Briar Cliff Drive
Milford, New Hampshire 03055

COULD YOU ?

"Round the Horn"? "Flight to the Moon"? "Chromatic Composer"? What do all these titles have in common? They're all ideas that are waiting for some talented software artist to turn them into living, breathing programs. Imagine a simulated trip around the Cape of Good Hope in an 18th century trading ship, or a trip to the moon, from lift-off to lunar landing — and back again. Music programs have been written for the TRS-80, but need much improvement. Could someone you know get some enjoyment out of composing tunes on the TRS-80, and hearing them played back through an inexpensive AM radio? We would, and if you've already written programs such as these, or if you feel up to tackling one or two, we'd like to hear from you. Just call or write:

Roger Robitaille, Software Editor
17 Briar Cliff Drive
Milford, New Hampshire 03055

6

YOUR
PROGRAM
HERE

(get the point?)

INVENTORY MANAGEMENT SOFTWARE

INVENTORY FP

This is a Front Panel approach to Inventory management. Available only for Level II machines, it is for those who never want to type LIST. It handles up to 100 stock items with primary and backup vendor and allows for stock on order and date last shipment received information. The major difference between this system and the **Modular** system is that all information including character strings, is contained in subscripts and thus recordable separately from the program.

If your inventory exceeds 100 stock items, it should be a simple matter to segregate stock into logical subdivisions with separate data files. Two programs are included on one cassette (Initialization & Maintenance).

```
INVENTORY FILE NAME? MICROPROCESSORS
QUANTITY IDENTIFIER? 125
(1) SUPPLIER?
(2) SUPPLIER? RADIO SHACK
DATE OF LAST SHIPMENT? 1-6-78
LAST PRICE PER UNIT? 399.95
*********************************
QUANTITY ON HAND? 18
QUANTITY SHIPPED? 5
QUANTITY RECIEVED? 15
*********************************
ADJUSTED INVENTORY BALANCE: 28
AT COST: 7999

IS THIS DATA ALL CORRECT? _
```

Above, Inventory FP by M. Kelleher

INVENTORY SUPER PAC

This inventory program makes maximum use of available memory. It is especially useful in a real time 'amount on hand' environment, and will yield only the count. If your purposes require such features as automatic reordering and on line supplier information, we suggest that you look at one of the other inventory management programs. A good example of use would be a retail tire business where the ability to quickly determine the stock level of a certain type tire and to change it a sales occur and shipments arrive, is a necessity

VERSION I 1500 items stored in quantities of up to 999
VERSION II 2200 items stored in quantities of up to 99
VERSION III 6000 items stored in quantities of up to 9
VERSION IV 750 items stored in quantities of up to 99 and price information of up to four digits

NOTE: Items are callable by code number. A separate log is required to keep track of what the code calls represent.

8

INVENTORY [MODULAR]

This inventory program runs on Level I or II TRS-80 Microcomputers. Its construction permits the user to create subroutines customized to his own purpose. One of the main features of this program allows for the inclusion of Alphabetic information and a Data Index Code in the form of data statements within the program. The result is performance and flexibility unmatched by our other Inventory Software. All versions include;

1. **Reports**-user specifies up to three numeric and either or both alpha informations to be listed and can be vendor specific
2. **Cost/value Summary**-searches all stock areas and reports Cost/value Quantity, Total Value by line item and Grand Total
3. **Reorder Search**-compares current stock level against specified reorder point and displays on screen all line items in need of reorder, along with tentative reorder information
4. **Index**-uses arbitrary file numbers reflecting the order in which the data codes are stored. Index will reveal the file names and file numbers in groups of 24 for use in other data calls.
5. **Detailed Rept**-every stock file is callable by file number to reveal all memory information regarding that item
6. **Read and Write File**-stores and reenters data from day to day
7. **Data Change**-updates Data Base

Runs on Level I and II.
REQUIRES 16K (SPECIFY VERSION WHEN ORDERING)

VERSION I 240 stock items can be contained using the full 8 data areas and two pieces of Alpha information

VERSION II 290 stock items can be contained using 6 data areas and two pieces of Alpha information.

VERSION III 450 stock items, Simplified report with no reorder search, allows one piece of Alpha information (description) and three data areas (quantity on hand, cost price, sales history)

SUMMARY

INVENTORY SUPER PAC	LEVEL I	4K	$10
INVENTORY MODULAR	LEVEL I & II	16K	$20
INVENTORY FP	LEVEL II	16K	$25

Order from:

THE TRS-80 SOFTWARE EXCHANGE
17 Briar Cliff Dr.   Milford, NH 03055

Converting Your Programs From Level I to Level II In Radio Shack BASIC

The most frustrating moment of computer ownership for many purchasers of the Radio Shack TRS-80 comes shortly after they have brought home their newly converted Level II Computer. They pick up the data conversion tape, pop it into the tape recorder and type CLOAD. After experiencing a failure to load the tape, they open the little instruction booklet that came with the program, and four hours of frustration later, make an outraged telephone call to the local Shack.

As a theology student, I have studied ancient Greek for five years. I found that exercise in Masochism helpful in dealing with the obscure language of this little booklet. After a careful comparison of the User Instruction Manual with a replica of the Rosetta Stone in the Carnegie Museum, I succeeded, not only in translating the booklet into English, but also in converting my programs. The translation is here published for the first time, along with a few magical incantations that seemed helpful in completing the process.

Magical Incantation Number One

If you do not have 16K of memory in your computer, say to yourself: "It can't be done." Then give up and go do something else. The data conversion program takes up so much room in the computer and is so difficult to use that you would be ahead of the game to start over and enter your programs from the keyboard.

Magical Act Number One

Clean the head on your tape recorder. A dirty pickup head can wreak havoc with the understandability of your program to the computer. You can buy a kit to do this from Radio Shack for $1.39, or you can go up to the medicine closet, get a bottle of Isopropyl Alcohol and a Q-tip, then dip the Q-tip into the alcohol and rub it across the head a few times.

Magic Talisman Number One

Get an AM radio and place it beside your computer keyboard (on the side opposite the tape recorder, so that it doesn't get in the way). Tune it to a spot in between stations and turn the volume down low enough so that it isn't too annoying. This will help you keep track of what is going on inside the computer when you are loading from tape. If there is little or no sound, you are either listening to a blank tape, or the volume is too low for the computer to pick up the information. If you get an interrupted buzzing, the volume is either too loud or too soft. Turn the volume (on the tape recorder, not the radio) so that there is a steady tone. Then, rewind the tape and start over. If you get a steady tone, the volume is approximately (unfortunately, only approximately) correct.

Magic Act Number Two

Unplug the miniature gray jack from your tape recorder. (The larger one is the miniture; the little one is a subminiature jack.) This eliminates the likelihood of interference from a ground loop hum. (I don't want to explain that now, but a ground loop can make your tape into gibberish for the computer).

Magical Incantations 2 through 12

There is a number before each of the following steps. Say the number out loud before each step, then take the steps in order. This way, if a stray demon wants to drive you crazy, he

Level I to Level II Conversion

will hear you counting and realize you are already crazy.

1. Place the PROGRAM CONVERSION tape in your recorder. Make sure it says PROGRAM CONVERSION, not DATA CONVERSION. Make sure it says 16K, not 4K. If you do not know why this is so, go back to magical incantation number one.
2. Set the volume adjustment on the tape recorder to 5, and press the PLAY button. Make sure the black plug is in the earphone jack, and the remote plug is in the remote jack.
3. If your computer is on, turn it off with the little black button beside the input/output jacks to the power supply, recorder and monitor. Turn it on again. If is says, READY, the repairman forgot to install your Level II ROM, and you don't need to convert your tapes. If it says:

   MEMORY SIZE? —

   You answer by typing: 31477 and pressing ENTER.

   This way, if you ever do get the tape loaded, you will be able to use it more than once.
4. Type SYSTEM, and press ENTER
5. Type CONV and press ENTER

   Your tape recorder should start playing. Monitor the tape by listening to Magic Talisman Number One (the radio).
   Several things could happen here. Look at the upper right hand part of your screen and select the appropriate line below.

   ** (both steady) Watch for ten seconds, then experiment with the

volume control on the recorder and listen to the effect on the radio. Your volume is probably too loud (not necessarily — it could be too low) so try a slightly different volume setting. Rewind the tape and go back to step 3.

*(steady) Same as above, except chances are that the volume is too low. (Again, it could be too high) Try same actions.

C or C* (steady) Your volume is very close to being correct. Experiment by moving it a hair each way until it loads properly. Most likely, it is too low by about one-tenth of one number on the voulume dial. Go back to step 3.

** (right one flashing) or C* (* flashing) Say a prayer. It seems to be working. Note the volume setting on the recorder right here _____ for future reference (to the nearest tenth).

6. If the computer comes back with *? _ Type:

   /31478

   If the computer displays:
   MEMORY SIZE? —
   The tape did not load properly. Adjust volume ever so little, and go back to the middle of step 3.
7. If the computer says LOAD TAPE AND PRESS ENTER? _ Set the volume on your tape recorder to 8 (or whatever you have found successful with Level I tapes.) I find it helpful to keep a drop of bright nail polish on the most frequently used volume setting (See **Magic Talisman Number Two**)
8. Take the conversion tape out of your recorder and put in your Level I program.
9. Press PLAY on the recorder.
10. Press ENTER on the computer. Again, monitor the tape by listening to the radio.

   If the recorder stops and the

Level I to Level II Conversion

computer prints PROGRAM TOO LONG, borrow a friend's Level I computer, and delete about 3K Bytes of unnecessary trivia from your program. Do not turn off your computer — you can reuse the conversion program simply by:

Typing SYSTEM,pressing ENTER and then typing /31478, whenever it says READY

11. If the program loads, the computer will display PRESS ENTER TO BEGIN? __ Press ENTER and the computer will spend about two minutes converting the program you just loaded. When it is done, it will display PRESS ENTER TO CONTINUE ? __ Press ENTER again and the computer will display READY. LIST your program to be sure it loaded properly. Then RUN it to discover if it works. You will probably have several bugs. Some of them are listed in the next section.

Debugging Your Converted Programs

The conversion program is supposed to convert all abbreviations to full Level II statements, and all PRINT AT statements to PRINT@. Mine sometimes misses PRINT AT, which does not stop the program, but results in a misplaced statement and and a mysterious variable, usually a 0, as the computer considers AT a two letter variable.

There are some things that the conversion program will not do:

Level II requires a comma after PRINT @ while Level I takes a semi-colon. See **Example A.**

Since Level II allows two letters or a letter and a number in a variable, spaces are required in some statements. See **Example B.**

If you used the array A() with more than ten variables, you will need a DIM statement. If your program has a GOTO statement that causes it to start over, you will have to put the DIM statement before the line the program goes to, as the computer will only allow a variable to be dimensioned once. See **Example C.**

If you use the POINT function, Level II returns a —1 if the coordinates are SET instead of the 1 in Level I. See **Example D.** A negative argument remains 0.

The logical operators * and + in Level I have been changed to AND and OR in Level II, and a new one has been added, NOT. See **Example E.**

If you used a letter as input to a numerical value, as in answering questions with Y for yes and N for no. Level II will not accept a letter in a numerical variable. See **Example F.**

If you used A$ and B$ without quotes in Level I, you will need quotes in Level II. See **Example G.** □

— Rev. George Blank

	LEVEL I	LEVEL II	LEVEL II MANUAL
A.	PRINT AT;	PRINT @	3/2
B.	FORATOB	FOR A TO B	
C.	F.A=OTO12:A(A)=O:N.A	DIM A(12)	4/3
D.	IF POINT THEN 50	IF POINT=—1 THEN 50	8/2
E.	IF (A=1*(B=1)+(C=1) D=1	IF (A=1)AND(B=1)OR(C=1) D=1	8/10,1/6
F.	10 Y=0:N=1	10 INPUT X$	
	20 INPUT X	20 IF LEFT$(X$,1)="N" THEN 50	
	30 IF X=1 THEN 50		
G.	A$=SAM II	A$="SAM II"	5/6

12

TAROT

TWO of CUPS

ACE

KING of SWORDS
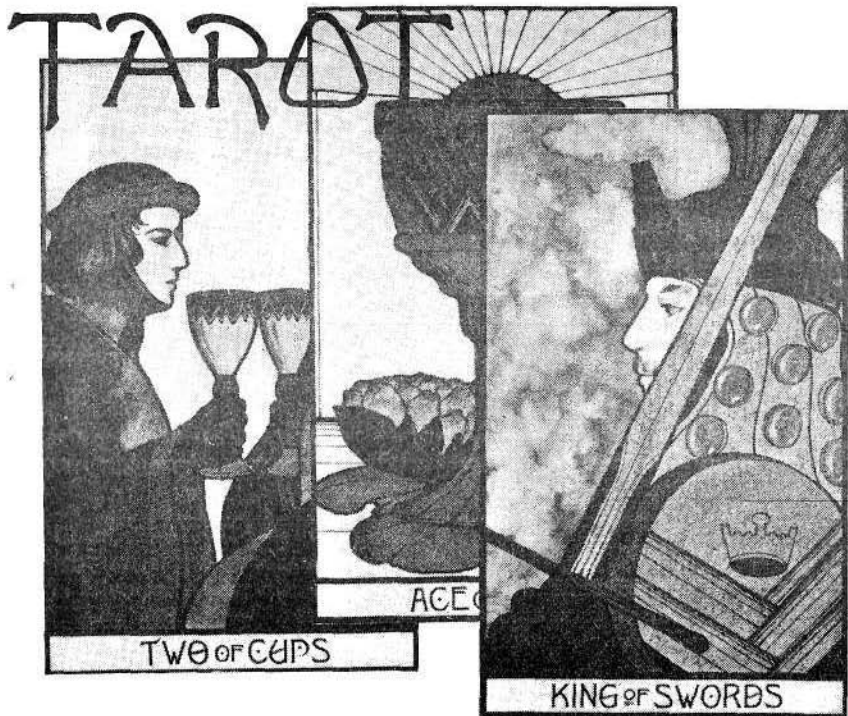
Since the dawn of civilization man has sought a better explanation of the mysterious forces that seem to govern our lives. Learn the secrets of ancient Egypt. Benefit from the special knowledge once reserved for High Priests and Conquering Kings. Or better yet, if you don't believe in any of that, just bring it out the next time someone you know says, ''Gee, it's a nice-looking computer. What does it do?''

Available on prerecorded Audio Cassette for the Level I or II 16K TRS-80 Microcomputer — $9.95

THE TRS-80 SOFTWARE EXCHANGE
17 Briar Cliff Drive
Milford, New Hampshire 03055

TRS-80
PROGRAMMING HINT

Here's a subroutine that can provide a handy reference of block characters for graphic displays. The program simply prints a chart of TRS-80 2 by 3 graphic chararcter structures, and their respective values.


```
20000 CLS:X=129
20005 FORI=1TO7:FORJ=1TO2:GOSUB20010:X=X+5:NEXTJ:FORK=1TO64:PRINT"-";:NEXTK:NEXTI
20007 INPUT"PRESS ENTER TO RETURN";A$
20010 PRINTCHR$(X);X;CHR$(X+1);X+1;CHR$(X+2);X+2;CHR$(X+3);X+3;CHR$(X+4);X+4,
20015 IFX=189 GOTO20007 ELSE RETURN
```

BAD CODE

Here's a little puzzle that should have even the most experienced of exterminators scratching their heads. Can you find the bug ? We'll publish the answer in our December issue. **Good Luck !**

```
100 REM : PROGRAM BUG FOUND BY
120 REM : LANCE MICKLUS.
140 REM : WINOOSKI, VERMONT 05404
160 REM : . .  . . . . . . . . . .
180 REM
200 REM  CAN YOU FIGURE OUT WHY THIS
220 REM  PROGRAM GIVES A "NF" ERROR.
240 REM
260 INPUT"ENTER NUMBER FROM 1 TO 47";N
280 IF N < 1 OR N > 47 OR N <> INT(N) THEN 260
300 CLS

320 FOR Y=0 TO 47
340 FOR X=0 TO 127
360 SET(X,Y)
380 NEXT X
400 IF Y=N THEN 440
420 NEXT Y
440 FOR X=3 TO 123 STEP 5
460 FOR Y=0 TO 47
480 RESET(X,Y)
500 NEXT Y
520 NEXT X
540 GOTO 540
```

CORRECTION

CALCULATOR

In trying to get the first issue of **SoftSide** in circulation as quickly as possible, we neglected to include the Level I to Level II conversion information for **CALCULATOR**. Fortunately, we remembered. Unfortunately, not until all of the first printing had been mailed ....

After a suitable period of mourning, we resigned ourselves to the fact that about all we could do at that point was include the conversion information in the next issue and hope our "sin of omission" hadn't caused any undue hardships. We had no way of knowing the devastating consequences of our misdeed.

We got a call from a fellow out in Wisconsin. It seems that he was trying to convince his wife that his shiny, new 16K Level II TRS-80 was capable of performing practical, useful tasks. His wife, who up to then had only seen this technological marvel zap Klingons, was somewhat skeptical.

Well, he had just received his first issue of **SoftSide** in the afternoon mail, and seeing the **CALCULATOR** program on page 39, he seized upon the opportunity to make his point with the Mrs. We can only imagine what happened from there.

Our sincere apologies.

Here's the cure:

```
30 PRINT "FUNCTION" :: INPUT F$
31 IF F$ = "A" F=1: GOTO 40
32 IF F$ = "S" F=2: GOTO 40
33 IF F$ = "X" F=3: GOTO 40
34 IF F$ = "D" F=4: GOTO 40
35 IF F$ = "M" GOSUB 140
36 IF F$ = "R" GOSUB 150
37 IF F$ = "K" GOSUB 160
38 IF F$ = "T" GOSUB 170
39 GOTO 55
50 ON F GOSUB 100, 110, 120, 130
320 PRINT@, "X", "MULTIPLY",
"S=", "DIVIDE"
```

PROJECT DEATH STAR
For Level II

As listed on pages 33-36 of the October issue, **PROJECT DEATH STAR** is a Level I program only.

Those who read the article will recall that the CLEAR key was used as in interrupt while in EXECUTE mode — a function that the Level II machine will not tolerate.

The same effect can be accomplished in Level II by using the INKEY function. For **PROJECT DEATH STAR** conversion to Level II, just substitute the following lines:

```
55 Delete
210 C$ = INKEY $: IF C$ = ""
GOTO 212
305 S = S - 1: IF S = 0 GOTO 500
```

TROLL'S GOLD

Trolls never have done very well in public opinion polls, probably because of their penchant for eating any unsuspecting traveler who strays their way. The "miscreant muncher" in this particular game is no exception in that regard, but the fact that he's sitting on enough gold to underwrite the national debt could well make the trip worth your while. One word of caution: reaching the gold is only half the battle — he'll be doing everything he can to prevent you from getting it back out again.

```
 5 DIM A(110)
10 REM * TROLLSGOLD *
20 REM * JULY 17 1978 *
25 REM * COPYRIGHT 1978 GEORGE BLANK, LEECHBURG PA *
30 GOSUB 6000
50 G=0:P=1:T=36
80 GOSUB2000
90 GOTO1000
100 REM * DRAW GRID *
105 CLS
110 FORX=0TO120
115    IF X<10 THEN130
120    SET(X,0)
130    SET(X,6)
140    SET(X,12)
150    SET(X,18)
160    SET(X,24)
170    SET(X,30)
180    SET(X,36)
190 NEXTX
200 FORY=1TO35
210    SET(0,Y)
220    SET(20,Y)
230    SET(40,Y)
240    SET(60,Y)
```
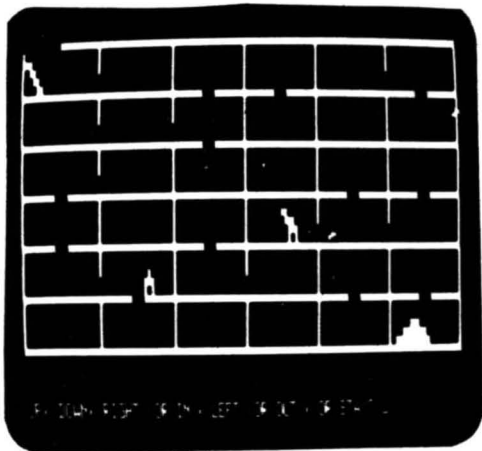
```
250   SET(80,Y)
260   SET(100,Y)
270   SET(120,Y)
280  NEXTY
290  SET(0,1):SET(0,2):SET(1,2):SET(2,2):SET(2,3):SET(3,3)
300  SET(3,4):SET(4,4):SET(4,5):SET(5,5)
310  IF G=1 THEN490
320  FORX=102TO112
330   SET(X,35)
340  NEXTX
350  FORX=104TO110
360   SET(X,34)
370  NEXTX
380  FORX=106TO108
390   SET(X,33)
400  NEXTX
410  GOSUB5000
420  GOSUB5200
490  RETURN
1000 REM * MASTER ROUTINE *
1010 IF POINT(15,36)=0 GOSUB100
1020 GOSUB2700
1100 GOSUB5300
1200 GOSUB3300
1910 GOSUB2000
1990 GOTO1000
2000 REM * DOORS *
2010 FORA=1TO110
2020  A(A)=0
2030 NEXTA
2040 FORA=7TO36
2050  A(A)=1
2060 NEXTA
2070 FORA=52TO56
2080  A(A)=1
2090  A(A+6)=1
2100  A(A+12)=1
2110  A(A+18)=1
2120  A(A+24)=1
```

18

```
2130    A(A+30)=1
2140  NEXTA
2150  RETURN
2200  REM * Y COORDINATE OF DOOR * IN. D * OUT. Y *
2210  IF D>49 THEN2280
2220  IF D<13 Y=6:GOTO2390
2230  IF D<19 Y=12:GOTO2390
2240  IF D<25 Y=18:GOTO2390
2250  IF D<31 Y=24:GOTO2390
2260  IF D>36 Y=36:GOTO2390
2270  Y=30:GOTO2390
2280  IF D<57 Y=5:GOTO2390
2290  IF D<63 Y=11:GOTO2390
2300  IF D<69 Y=17:GOTO2390
2310  IF D<75 Y=23:GOTO2390
2320  IF D<81 Y=29:GOTO2390
2330  Y=35
2390  RETURN
2400  REM * X COORDINATE OF DOOR * IN. D * OUT. X *
2410  Z=D
2420  IF Z>49 THEN2530
2430  Z=Z-6
2440  IF Z>6 THEN2430
2450  Z=INT(Z+.2)
2460  IF Z=1 X=10
2470  IF Z=2 X=30
2480  IF Z=3 X=50
2490  IF Z=4 X=70
2500  IF Z=5 X=90
2510  IF Z=6 X=110
2520  GOTO2590
2530  Z=D-44
2540  Z=Z-6
2550  IFZ>6 THEN2540
2555  Z=INT(Z+.2)
2560  IF Z=2 X=20
2565  IF Z=3 X=40
2570  IF Z=4 X=60
2575  IF Z=5 X=80
2580  IF Z=6 X=100
```

```
2590  RETURN
2600  REM * SELECT DOORS *
2610  D=RND(80)+6
2620  IFA(D)<>1 THEN2610
2630  A(D)=2
2640  GOSUB2200
2650  GOSUB2400
2690  RETURN
2700  REM * WHICH DOORS ARE OPEN? *
2710  FORB=90TO110
2720    GOSUB2600
2730    A(B)=D
2740    RESET(X, Y)
2750      IF D<40 RESET(X-1, Y):RESET(X+1, Y)
2755      IF D>40 RESET(X, Y-1)
2760  NEXTB
2770  PRINT@832,
2790  RETURN
2800  REM * CLOSE DOORS *
2810  FORA=90TO110
2820    D=A(A)
2830    A(A)=0
2840    A(D)=1
2850    GOSUB2200
2860    GOSUB2400
2870    SET(X, Y)
2880    IF D<40 SET(X-1, Y):SET(X+1, Y)
2885    IF D>40 SET(X, Y-1)
2890  NEXTA
2895  RETURN
3000  REM * LOCATE TROLL *
3010  D=T+6
3020  GOSUB2200
3030  GOSUB2400
3040  X=X+3
3050  Y=Y-3
3060  RETURN
3100  REM * RESET TROLL *
3110  RESET(X-3, Y-1):RESET(X-2, Y-1)
3120  RESET(X-2, Y):RESET(X-1, Y):RESET(X, Y)
```

```
3130    RESET(X-1, Y+1):RESET(X, Y+1).RESET(X+1, Y+1)
3140    RESET(X-1, Y+2):RESET(X+1, Y+2)
3190    RETURN
3200    REM * SET TROLL *
3210    SET(X-3, Y-1):SET(X-2, Y-1)
3220    SET(X-2, Y):SET(X-1, Y):SET(X, Y)
3230    SET(X-1, Y+1):SET(X, Y+1):SET(X+1, Y+1)
3240    SET(X-1, Y+2):SET(X+1, Y+2)
3290    RETURN
3300    REM * CONTROL TROLL *
3310    GOSUB3000
3320    GOSUB3100
3330    C=T-P
3340    IFC<0 THEN3370
3360    GOTO3400
3370    C=ABS(C)
3380    IFC<6 THEN3600
3390    GOTO3700
3400    REM * MOVE TROLL UP *
3410    IF T<7 THEN3500
3420    IFA(T)=2 T=T-6
3430    IF T=P THEN4000
3500    REM * MOVE TROLL OUT *
3510    IF T=1 THEN3600
3520    IF A(T+50)=2 T=T-1
3530    IF T=P THEN4000
3540    IF A(T)=2 THENT=T-6
3550    GOTO3800
3600    REM * MOVE TROLL IN *
3610    IF A(T+51)=2 T=T+1:GOTO3730
3700    REM * MOVE TROLL DOWN *
3710    IF T>30 THEN3800
3730    IF T=P THEN4000
3740    IF A(T+6)=2 T=T+6
3800    REM * END TROLL TURN *
3810    IF T=P THEN4000
3820    GOSUB3000
3830    GOSUB3200
3890    RETURN
```

```
4000  REM * EATEN BY TROLL *
4010  CLS
4020  PRINT@ 458,"SOME PEOPLE NEVER LEARN!"
4030  PRINT
4040  PRINT"THE SIGN AT THE ENTRANCE TO THE CAVE SAID:"
4050  PRINT"   * PLEASE DON'T FEED THE TROLL *"
4060  PRINT
4070  PRINT"  THE TROLL JUST ATE YOU FOR DINNER!"
4080  PRINT
4090  PRINT"   * * *  Y O U   L O S E !  * * *"
4100  PRINT
4110  INPUT"PRESS ENTER FOR NEW GAME";B$
4120  GOTO50
4500  REM * GAME WON *
4510  CLS
4520  PRINT:PRINT:PRINT:PRINT
4530  PRINT"  * * * *  Y O U   W I N   * * * *"
4540  PRINT
4550  PRINT" YOU ARE VERY RICH!!!!!!!!!!!"
4560  PRINT
4570  FORA=1TO1000:NEXTA
4580  PRINT"BY THE WAY...."
4590  PRINT
4600  FORA=1TO1000:NEXTA
4610  PRINT"CAN YOU LOAN ME A FEW THOUSAND?"
4620  FORA=1TO1000:NEXTA
4630  PRINT
4640  GOTO4110
5000  REM * PLAYER LOCATION *
5010  D=P+6
5020  GOSUB2200
5030  GOSUB2400
5040  X=X+3
5050  Y=Y-2
5090  RETURN
5100  REM * RESET PLAYER *
5110  RESET(X,Y-1)
5120  RESET(X-1,Y):RESET(X,Y):RESET(X+1,Y)
5130  RESET(X-1,Y+1):RESET(X+1,Y+1)
5140  IFG=1 RESET(X+2,Y-1):RESET(X+2,Y):RESET(X+3,Y-1):RESET(X+3,Y)
```

22

```
5190  RETURN
5200  REM * SET PLAYER *
5210  SET(X,Y-1)
5220  SET(X-1,Y):SET(X,Y):SET(X+1,Y)
5230  SET(X-1,Y+1):SET(X+1,Y+1)
5240  IFG=1 SET(X+2,Y-1):SET(X+2,Y):SET(X+3,Y-1):SET(X+3,Y)
5290  RETURN
5300  REM * CONTROL PLAYER *
5305  IF(A(P)<2)*(A(P+6)<2)*(A(P+50)<2)*(A(P+51)<2) THEN5490
5310  INPUT"UP, DOWN, RIGHT (OR IN), LEFT (OR OUT),
      OR STAY";D$:E=0:E$=LEFT$(D$,1):IFE$="U" THEN E=-6
5315  IF E$="D" THEN E=6
5320  IF E$="R" OR E$="I" THEN E=1
5325  IF E$="L" OR E$="O" THEN E=-1
5330  J=0:PRINT@ 832,
5340  IF(E<0)AND(P=1)AND(G=1) THEN4500
5350  IF(E=-6)*(A(P)=2) J=E
5360  IF(E=6)*(A(P+6)=2) J=E
5370  IF(E=1)*(A(P+51)=2) J=E
5380  IF(E=-1)*(A(P+50)=2) J=E
5390  IF J=0 THEN5490
5400  GOSUB5000
5410  GOSUB5100
5420  P=P+J
5430  IF P=36 THEN5500
5440  GOSUB5000
5450  GOSUB5200
5460  IF T=P THEN4000
5470  GOTO5300
5490  RETURN
5500  REM * TAKE GOLD *
5510  GOSUB5000
5520  G=1
5530  GOSUB5200
5540  GOSUB5700
5590  GOTO5300
5700  REM * RESET GOLD *
5710  FORX=102TO111
5720    RESET(X,35)
5730  NEXTX
```

23

```
5740  FORX=104T0110
5750    RESET(X,34)
5760  NEXTX
5770  FORX=106T0108
5780    RESET(X,33)
5790  NEXTX
5795  RETURN
6000  CLS
6010  PRINT
6020  PRINT CHR$(23)
6030  PRINT"TROLLSGOLD"
6040  PRINT
6050  PRINT"IF YOU ARE FOOLHARDY ENOUGH TO"
6060  PRINT"DESCEND TO THE LOWEST & INMOST"
6070  PRINT"REACHES OF A CAVE INHABITED"
6080  PRINT"BY A NASTY TROLL,  JUST TO"
6090  PRINT"STEAL HIS GOLD..."
6100  PRINT
6110  INPUT"PRESS ENTER";A$
6120  CLS
6130  PRINT:PRINT CHR$(23)
6140  PRINT"PLEASE DON'T FEED THE TROLL"
6150  FOR A=1T0300:NEXT A
6160  RETURN
9999  GOTO9999
```

RADIO SHACK
COMPUTER OWNERS

TRS-80 MONTHLY
NEWSLETTER

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SHOPPING LIST

"Oh, good, you're back!"

"Yup, the groceries came to $46.20 this week. These prices are really getting out of hand."

"Sure are. Did you get the cheese?"

"Cheese? That wasn't on the shopping list!"

"I know, but how are we going to have a cheese souffle tonight without it? If you hurry up, you can still catch Duffy's Variety before it closes."

"But..."

"C'mon, hon, really, Duffy's is going to close in 15 minutes!"

"Lucky Duffy."

As presented, this program is intended to serve as a 'memory jogger' when it comes time to make out your weekly shopping list. In fact, it can be used to call up for review just about anything you want, from nuts and bolts to baseball cards, and then list your selections when you're finished.

We've included a list of commonly purchased (and some not so commonly purchased) foodstuffs for your convenience. Just type them in in the manner shown in the DATA statements (lines 1000, 1010, 1020(. Once your data statements are composed, count them and alter line 5 so that X = the total number of entries to be listed. If you are a Level I owner, eliminate the DIM statement on line 5. Use this program as a final check before taking off for the supermarket next time, and who knows ... you may get home before Mr. Duffy.

```
5 X=50:DIMA(200)
10 S=0:B=0
20 CLS
90 PRINTTAB(23):"SELECTIONS
100 FORI=1TOXSTEP2
```

This is a Level II program. To make this program run in Level I machines, change all PRINT@ to P.AT and delete the DIM statement on line 10.

```
110 READA$, B$
120 PRINTI; A$, I+1; B$,
130 B=B+1 : IFB>=24B=0 : GOSUB200
140 NEXTI : RESTORE : GOSUB200 : GOTO300
200 PRINT@832, : INPUT"ENTER THE # OF THE ITEM DESIRED (0 IF DONE)";P
205 IFP>XPRINT"ENTRY ERROR"; : GOTO200
210 IFP=0CLS : PRINTTAB(23); "SELECTIONS" : RETURN
220 A(S)=P : S=S+1 : GOTO200
300 PRINT@19, "SHOPPING LIST" : PRINT
305 FORI=0TOS-1
310 FORJ=1TOX
315 READA$ : IFA(I)=JPRINTA$, : J=X
320 NEXTJ : RESTORE : NEXTI
330 GOTO330
1000 DATA#1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, #17, #18
1010 DATA#19, #20, #21, #22, #23, #24, #25, #26, #27, #28, #29, #30, #31, #32, #33, #34
1020 DATA#35, #36, #37, #38, #39, #40, #41, #42, #43, #44, #45, #46, #47, #48, #49, #50
```

FISH
Cod
Flounder
Haddock
Pollock
Halibut
Salmon
Tuna

PORK
Bacon
Chops
Ribs
Loin Roast
Blade Steak
Boneless Canned Ham
Ham Roll
Picnic Shoulder
Ham Slice
Salt Pork
Sausage
Smoked Ham
Crown Roast

VARIETY MEATS
Kidney
Heart
Brains
Tongue
Liver

DRIED FOODS
Apples
Apricots
Figs
Peaches
Prunes
Pears
Peas
Lentils
Kidney Beans
Pea Beans
Soybeans
Pinto Beans
Navy Beans
Milk

LAMB
Lamb Chops
Leg of Lamb
Rib Roast
Loin Roast
Lamb Shoulder
Ribs

BEVERAGES
Hot Chocolate
Cocoa
Milk
Coffee
Tea
Powdered fruit drink
Bottled Fruit Drink
Orange Juice
Lemonade
Limeade
Soda
Wine
Cider
Eggnog

ANIMAL FOOD

Cat — dry
Cat — wet
Dog — dry
Dog — wet
Dog Biscuits
Catnip
Kitty Litter

FRUIT

Apples
Tomatoes
Oranges
Lemons
Limes
Grapefruit
Kumquats
Tangerines
Peaches
Apricots
Cherries
Grapes
Pears
Plums
Rhubarb
Bananas
Melon
Avocadoes
Pineapple
Strawberries
Blueberries
Raspberries
Coconuts
Canteloupe
Prunes
Watermelon

FROZEN FOODS

Vegetables
Fruits
Breads
Pizza
Main Dishes
Desserts
Juice
Fish
Meat Pies

BREADS

White
Rye
Wheat
Oatmeal
Brown
Corn
Raisin
Bisquits
Coffee Cake
Doughnuts
Muffins
French
Italian
Breadsticks
Rolls
Hamburg Rolls
Hot Dog Rolls
English Muffins
Stuffing
Pancake Mix
Waffle Mix

CHEESE

American
Blue
Cheddar
Cream
Jarlsberg
Swiss
Parmesan
Camembert
Brie
Gruyere
Cottage
Ricotta
Roquefort

SEAFOOD

Shrimp
Crab
Oysters
Scallops
Lobster
Clams

BAKING

Cake Mix
Pie Mix
Chocolate Chips
Nut meats
Raisins
Brown Sugar
Granulated Sugar
Confectionary Sugar
Baking Soda
Baking Powder
Cherries
Flour White
Flour Wheat
Flour Rye
Vegetable Shortening
Vegetable Oil
Lard
Flavored Extracts
Spices
Cream of Tartar
Food Coloring
Cocoa
Unsweetened Chocolate
Corn Syrup
Molasses
Candied Fruits
Coconut
Salt
Corn Starch
Dates
Pie Filling
Brownie Mix
Honey
Toothpicks
Candy
Marshmallows

CANNED GOODS

Soup
Gravy
Vegetables
Fruit
Drinks
Tomatoes
Tomato Paste

MISCELLANEOUS

Popcorn
Cornmeal
Oatmeal
Mayonaise
Pickles
Ketchup
Mustard
Salad Dressing (bottle)
Salad Dressing (mix)
Jam
Jelly
Peanut Butter
Worcestershire Sauce
Tabasco Sauce
Steak Sauce
Horseradish
White Vinegar
Cider vinegar
Wine Vinegar
Olive Oil
Wheat Germ
White Rice
Brown Rice
Noodles
Spaghetti
Macaroni
Gelatin
Jello
Pudding
Cereal
Cookies
Crackers

DAIRY

Butter
Eggs
Yogurt
Sour Cream
Light Cream
Heavy Cream
Half & Half
Cool Whip
Milk — whole
Skim Milk
Ice Cream
Evaporated Milk

POULTRY

Chicken
Cornish Hen
Duck
Goose
Pheasant
Squab
Turkey

VEAL

Shoulder
Blade Roast
Ground Veal
Leg
Veal Chops
Rump Roast
Sirloin Roast

HOUSEHOLD

Paper Towels
Toilet Paper
Paper Napkins
Dish Detergent
Laundry Detergent
Fabric Softener
Bleach
Steel Wool Pads
Ammonia
Oven Cleaner
Window Cleaner
Floor Cleaners
Floor Wax
Silver Polish
Copper Polish
Aluminum Foil
Waxed Paper
Plastic Wrap
Plastic Bags
Garbage Bags
Rubber Gloves
Matches
Bubble Bath
Pectin
Sure-Jell

VEGETABLES

Potatoes
Sweet Potatoes
Onions
Lettuce
Cabbage
Celery
Asparagus
Carrots
Beets
Radishes
Broccoli
Peppers
Cucumbers
Turnip
Brussel Sprouts
Mushrooms
Spinach
Corn
Peas
Pumpkin
Acorn Squash
Summer Squash
Zucchini
Winter Squash
Beans
Soybeans
Sprouts
Eggplant
Shallots
Chutney
Parsley
Chives
Cauliflower

BEEF

Pot Roast
Chuck Roast
Sirloin Roast
Ribs
Club Steak
Corned Beef
Flank Steak
Hamburger
Rib Eye Roast
Sirloin Steak
T-Bone Steak
Frankfurters

BASIC STATISTICS

This powerful set of procedures is of use to students, instuctors, behavioral and research scientists, statisticians — anyone using these statistical formulas for practical or research applications:

RANK-ORDER DATA A simple program utilizing a Shell-Metzner sorting routine to rank data in an ascending manner.

CENTRAL TENDENCY Given a set of raw data, this program ranks and displays raw data (optional), N, X, X , variance, standard deviation, the Median, and the Mean.

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENT Given N pair (X,Y) of data, the program computes mean, standard deviation for S and Y, and R. An option is available to utilize a regression equation to predict Y given any value of X.

CHI-SQUARE Given raw data for any number of rows and column, the program will optionally display a raw data printout with observed and expected values; row, column, and grand totals; and gives the used CHI and DF.

FISHER T-TEST Given 2 sets of raw data for either equal or unequal N, the program computes and displays N, mean, standard deviation and standard error of the mean for both data samples as well as T and DF.

SIMPLE ANALYSIS OF VARIANCE Given raw data for any number of conditions, the program computes and displays N, Mean and Standard Deviation for each condition as well as SSbg, SSwg, SStot, DFbg, DFwg, DFtot, MSbg, MSwg, and the F.

Z-SCORES AND STANDARD SCORES Given N scores, the program computes a Z-score for each N. The user has an available option to compute a standard score for each N given the desired Population Mean and S.D.

RANDOM NUMBER GENERATOR Given the upper and lower limits, this program produces a list of N random numbers useful in research and experimental design.

NOTE: The basic formulas for these major statistical procedures were derived from the textbook, "Elementary Statistics", by Janet T. Spencer, Benton J. Underwood, Carl P. Duncan, and John W. Cotton. Appleton - Century - Crofts Psychology Series, New York, 1968.

Available on Digital Audio Cassette for the **Level II TRS-80** **Microcomputer - $20.00**

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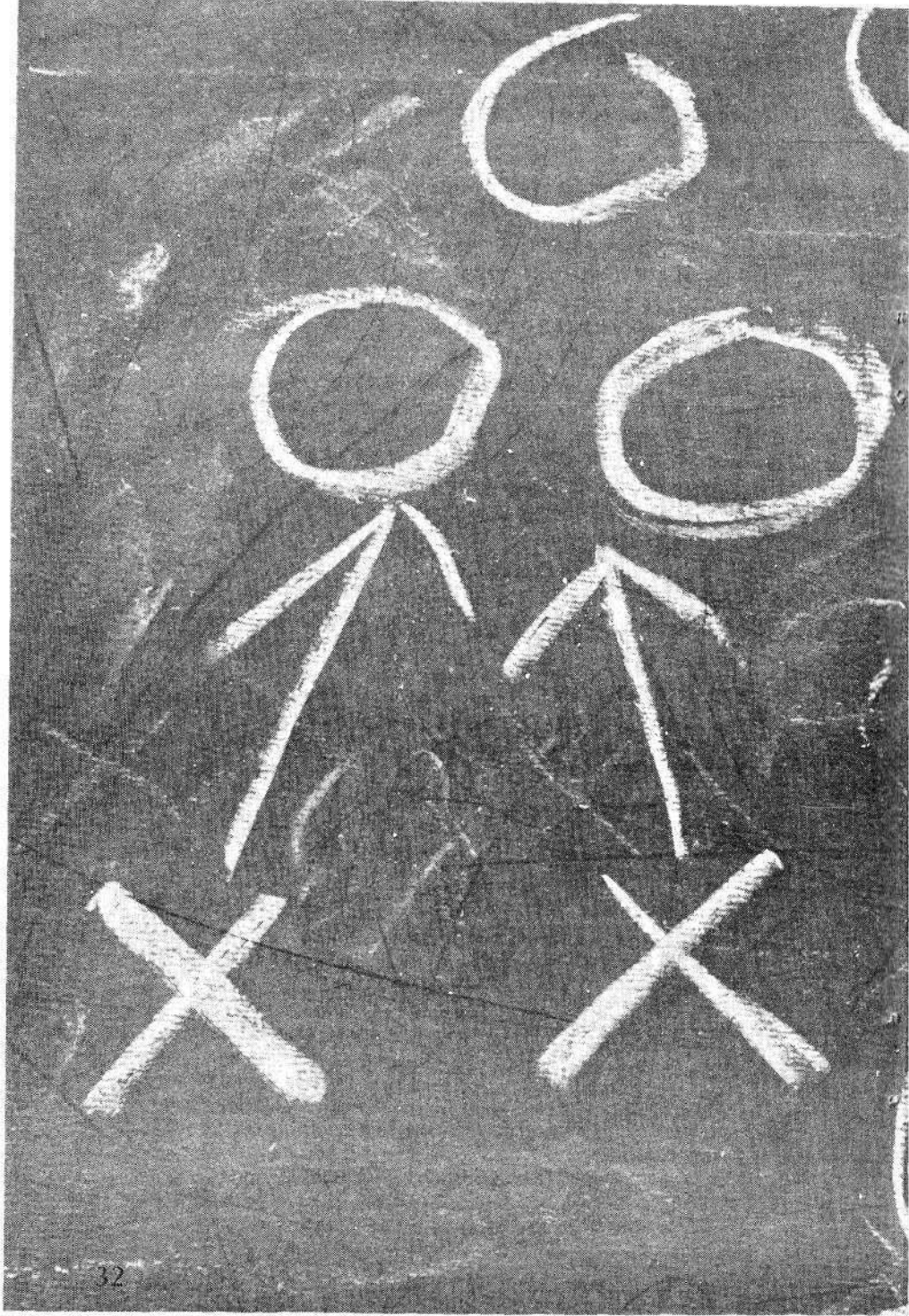
END ZONE
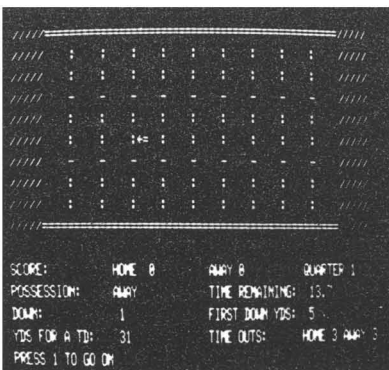
It's Autumn again, and around this part of the country, trees are changing color and roadside stands are stocked to capacity with this year's crop of apple cider. The nights are getting colder, there's no denying that, but Fall isn't the only thing that's in the air.

With the exception of Thanksgiving, and all its attendant visiting and overeating, the game of Football must might be the biggest thing that ever happened to the month of November. No matter where you go, "Monday morning quarterbacks" and linebacker alike are watching, talking or playing this cool-weather sport. Now, with the help of your computer, you can participate in this bone-crunching pastime any time of the year, day or night, regardless of your physical condition. All you need is a little time at the keyboard and a willing opponent. SoftSide presents **END ZONE**.

The game begins, appropriately enough, with the toss of a coin (computer currency, of course). Once the receiving team has been determined, the "kickoff" is initiated by a keyboard input, and the game is on. Anything is possible. The ball may be caught and run back for some fantastic yardage, or you may find yourself 7 yards into the end zone for a touchback.

The next prompts you'll see ask both teams if there are any offensive or defensive time maneuvers. If delaying tactics are desired, simply press 1 and ENTER The offensive team's options include: time out, quick huddle, or slow down, while the defensive team may opt for either the slow down, or time out. If none of these maneuvers are desired by either team, any keyboard input other than 1 will return you to the game.

A quick glance beneath the playing field, which is shown at the top of the screen will reveal the game's statistics. At this point in the game, an average display might be:


```
/////======================================/////
/////  :  :  :  :  :  :  :  :  :  :  /////
/////  :  :  :  :  :  :  :  :  :  :  /////
/////  -  -  -  -  -  -  -  -  -  -  /////
/////  :  :  :  :  :  :  :  :  :  :  /////
/////  :  : !<= :  :  :  :  :  :  :  /////
/////  -  -  -  -  -  -  -  -  -  -  /////
/////  :  :  :  :  :  :  :  :  :  :  /////
/////  :  :  :  :  :  :  :  :  :  :  /////
/////======================================/////

SCORE:         HOME  0      AWAY 0          QUARTER 1
POSSESSION:    AWAY          TIME REMAINING: 13.7
DOWN:            1           FIRST DOWN YDS: 5
YDS FOR A TD:   31           TIME OUTS:    HOME 3 AWAY 3
PRESS 1 TO GO ON
```

Note the time clock. Yes, there really are four 15-minute quarters — complete with the "two minute warning" at the end of the game.

After pressing 1 and ENTER to continue, a list of offensive options are displayed beneath the playing field; run weak side, run strong side, sweep, delayed run, run up the middle, short pass, medium pass, long pass, punt, field goal, and that play so familiar to any back lot touch football player — the old "razzle dazzle." Before making your selection, ask your opponent to get you a cup of coffee, or maybe have him look for that pencil you dropped under the table.

34

The important thing is that he not view your offensive play selection. After all, when was the last time you saw a player from the defending team saunter over to an offensive huddle? If you're known for a "poker face", now might be a good time to use it!

Once you've made your selection, the computer displays a list of possible defensive alignments; blitz, prevent, stacked, balanced, keyed short pass, keyed medium pass, keyed long pass, keyed long run, keyed sweep, and goal line. As in the real game, the amount of yardage the offensive team can expect to make depends on the defensive team's influence on the offensive play.

When both teams have made their choice, the computer prints both teams' strategy, and the ball is put in motion. From this point on, the number and variety of play situations that can occur far exceed the space available in this magazine.

If you selected a passing play, and the computer didn't deem your pass "uncatchable," you just might connect for some exciting passing and running yardage, or you might just as easily get sacked, and lose some of that precious turf. If you did manage to get the ball off, there's always the chance that you might have thrown right into an interception. Or, maybe your receiver caught the ball, only to fumble a yard or so down field. Then again, he just may recover the ball, avoiding a potentially dangerous run back.

If you chose a running play, you might find that the handoff was successful, the runner cleared the line, then the defensive linemen, then the linebackers, only to be tackled by a safety a split second later.

Whether running or passing, both teams are subject to the ever-present penalty flags of the referees; offsides, encroachment, illegal formation, false start, holding, personal foul. It's no use arguing, they don't miss a trick.

After a few plays, and barring any fumbles or interceptions, you should find yourself somewhat further down the field. Keep an eye on the number of yards to the first down. What do you do if you're fourth down and 65 to go? Why, punt! Defense has the choice of whether to cover the return or attempt to block. There's even a provision for calling a "fair catch".

To sum it all up, this simulation comes about as close to the real game of football as you can get, without getting your clothes dirty. It falls under the general category of "computer games", but clearly it is a game of and for people.

Now, I want you to go out there and win. Play clean, and play hard ... and say, while you're at it, someone please win one for the Gipper.

```
1 REM  *********************************
2 REM  **    SOFTSIDE PRESENTS     **
3 REM  **        END ZONE          **
4 REM  **      COPYRIGHT 1977      **
5 REM  **     ROGER ROBITAILLE     **
6 REM  *********************************
9 T=600:A(1)=3:A(2)=3:M=0:N=0:A(3)=3:CLS
10 F=10:P=0:D=1:G=1:L=65
11 IFT=600:GOTO20
12 CLS:PRINT@530, "SECOND HALF BEGINS":GOSUB5300:GOSUB2000
13 G=A(0):A(1)=3:A(2)=3:GOTO1100
20 PRINT@192,
21 PRINT"00000 0   0 0000     00000 000  0   0 00000
22 PRINT"0     00  0 0   0     0   0 0  00  0 0
23 PRINT"000   0 0 0 0   0     0   0 0   0 0 0 000
24 PRINT"0     0  00 0   0     0   0 0   00 00 0
25 PRINT"00000 0   0 0000     00000 000  0   0 00000
26 GOSUB5200:PRINT"INSTRUCTIONS
27 PRINT"   THIS VERSION OF FOOTBALL CLOSELY FOLLOWS THE PRINCIPAL RULES"
28 PRINT"OF AMERICAN FOOTBALL. AS PLAYED ON THE TRS-80, THE OFFENSIVE
29 PRINT"PLAYER SHOULD ASK THAT THE DEFENDING PLAYER NOT VIEW THE"
```

```
30 PRINT"OFFENSIVE PLAY SELECTION
31 INPUT"WHO IS THE HOME TEAM";A$:INPUT"WHO IS THE VISITING TEAM";B$
35 GOSUB2000:PRINT@780,"COIN TOSS".GOSUB5100:A=RND(2):IFA=1PRINTB$,:GOTO37
36 PRINTA$;
37 PRINT" WILL RECEIVE THE BALL":FORI=1TO1500:NEXTI:GOSUB5000:G=A:A(0)=A
38 A(0)=A(0)+1.IFA(0)>2A(0)=1
39 GOTO1100
800 L=L-H:D=D+1:F=F-H:IFL<1GOTO820
801 GOSUB5200:GOSUB5000
802 IFL<1GOTO820
803 IFF<1GOTO845
804 IFD>4GOTO840
805 GOTO850
820 PRINT:PRINT"TOUCHDOWN":PRINT:GOSUB902
821 GOTO1100
825 CLS:GOSUB1600:GOTO850
830 PRINT:PRINTTAB(20);"SAFETY":GOSUB5300:GOSUB1600:GOSUB901:GOSUB1600
834 INPUT"PRESS 1 WHEN READY FOR FREE KICK";A:L=80:A=RND(30):L=L-30-A
835 GOSUB1600:GOTO850
840 PRINT.PRINTTAB(15);"BALL LOST ON DOWNS":GOSUB5300:GOSUB1600:GOTO850
845 PRINT:PRINTTAB(20);"FIRST DOWN":F=10:GOSUB5300
846 D=1
850 GOSUB1550:GOSUB5000:GOSUB1500:GOSUB2000:GOSUB1610
851 PRINT"SCORE:",A$;M,B$;N,"QUARTER";X
852 PRINT"POSSESSION:",:IFG=1PRINTA$,:GOTO854
853 PRINTB$,
854 IF(T=300)*(A(3)=1)GOTO10
855 PRINT"TIME REMAINING:",:IFT>450PRINT(T-450)/10:GOTO859
856 IFT>300PRINT(T-300)/10:GOTO859
857 IFT>150PRINT(T-150)/10:GOTO859
858 PRINTT/10
859 PRINT"DOWN:",D,
860 PRINT"FIRST DOWN YDS:",F
865 PRINT"YDS FOR A TD:",L,"TIME OUTS:","HOME";A(1);"AWAY";A(2)
867 PRINT"PRESS 1 TO GO ON":PRINT@893,"";:INPUTA:GOSUB5000:GOTO3000
900 S=3:GOTO910
901 S=2:GOTO910
902 S=6:INPUT"EXTRA POINT ATT 1";Q
903 A=RND(10):IFA=9THEN906
```

```
904 S=S+1:PRINT"EXTRA POINT GOOD":GOTO910
906 PRINT"EXTRA POINT NO GOOD"
910 GOSUB5300:GOSUB919
911 IFG=1GOTO915
913 N=N+S:RETURN
915 H=H+S
916 RETURN
919 GOSUB5000
920 PRINT@650,"000000 000000 000000 00000  000000
921 PRINTTAB(10);"00     00      00 00 00  00 00
922 PRINTTAB(10);"000000 00      00 00 00000  00000
923 PRINTTAB(10);"    00 00      00 00 00 0   00
924 PRINTTAB(10);"000000 000000 000000 00 00  000000";
925 GOSUB5300:RETURN
1100 GOSUB5000:L=65:A=RND(12):INPUT"PRESS 1 WHEN READY FOR KICKOFF";B
1102 E=2:H=10:C=0:L=L-56-A
1103 GOSUB5000:IFL>=0GOTO1120
1104 GOTO1108
1105 PRINT"BALL RECIEVED ON THE";100-L;"AND RUN BACK";H;"YARDS"
1106 L=L+H
1107 GOSUB5200:GOSUB5000:GOSUB1600:GOTO850
1108 PRINT"BALL CAUGHT IN THE END ZONE"
1109 INPUT"PRESS 1 TO ACCEPT TOUCHBACK";B:IFB<>1GOTO1120
1110 L=20:PRINT"TOUCHBACK":GOTO1107
1120 A=RND(10):IFA<3GOTO1105
1121 B=RND(10):H=H+B:A=RND(10):IFA<6GOTO1105
1122 A=RND(10):H=H+A:B=RND(10):IFB<7GOTO1105
1123 C=C+1:IFC<4GOTO1122
1124 A=RND(20):H=H+A:B=RND(10):IFB<4GOTO1105
1125 PRINT"LONG GAIN":C=C+1:IFC<6GOTO1124
1126 H=L:PRINT"RUN-BACK FOR A TOUCHDOWN"
1127 GOSUB5300:GOSUB1600:H=L:E=3:GOTO800
1140 PRINT"RETURNER DECKED IMMEDIATELY":H=0:GOTO1105
1200 E=2:A=RND(20):A=A+B:GOSUB5000:IFA>19GOTO1220
1201 A=RND(20):IFA<4GOTO1230
1202 A=RND(15):H=35+A:PRINT@845,"PUNT GOES";H;"YARDS":L=L-H:GOSUB5100
1203 GOTO1260
1204 A=RND(10):IFA<4GOTO1240
1205 H=0:C=0
```

```
1206 A=RND(9):IFA-8K4GOTO1214
1207 A=RND(8):H=H+A:C=C+1:PRINT@@45,"BREAKS TACKLE":GOSUB5100:IFC<3GOTO1206
1208 PRINT@@45,"BREAKING AWAY":GOSUB5100
1209 A=RND(9):IFAK6GOTO1214
1210 A=RND(15):H=H+A:C=C+1:IFH>LGOTO800
1211 IFC<6GOTO1209
1212 A=RND(25):H=H+A:B=RND(2):IFB=2GOTO1214
1213 H=L:GOTO800
1214 PRINT@@45,"TACKLED":GOSUB5100:A=RND(15):IFA=8GOTO1243
1215 PRINT@@45,"PUNT RETURNED";H;"YARDS TO THE";L-H:GOSUB5300
1216 L=L-H:GOTO850
1220 PRINT@@45,"PUNT BLOCKED":H=-RND(20)+5:GOSUB5100
1221 PRINT@@45,"BALL RECOVERED ON";100-L-H:GOSUB5100
1222 GOSUB1600:GOTO850
1230 A=RND(25):H=10+A:PRINT@@45,"BAD PUNT OF";H;"YARDS - NO RUNBACK
1231 GOSUB5100:GOTO1222
1240 PRINT@@45,"PUNT COVERAGE VERY GOOD!":GOSUB5100
1241 INPUT"SIGNAL FOR FAIR CATCH (Y/N)";A:GOSUB5100:GOTO1250
1242 PRINT@@45,"TACKLED IMMEDIATELY":H=0:A=RND(5):GOSUB5100:IFAK5GOTO1215
1243 GOTO3600
1245 PRINT@@45,FAIR CATCH CALLED":H=0:GOS.5100
1246 GOTO1215
1250 IFA=YGOTO1245
1251 A=RND(10):IFA>6GOTO1206
1252 GOTO1242
1260 IFL<1GOTO1110
1261 GOSUB1600
1262 GOTO1204
1300 A=RND(20):H=INT(L/10)+1:IFA=20GOTO1360
1301 ONHGOTO1310,1310,1320,1330,1340,1350,1350,1350,1350,1350,1350
1310 IFA>16GOTO1370
1311 GOTO1380
1320 IFA>14GOTO1370
1321 GOTO1380
1330 IFA>11GOTO1370
1331 GOTO1380
1340 IFA>5GOTO1370
1341 GOTO1380
1350 GOTO1378
```

```
1360 PRINT"FIELD GOAL BLOCKED":H=RND(30)-10
1361 PRINT"BALL RECOVERED ON THE";L-H:IFL-H>0GOTO1370
1362 GOTO1110
1370 PRINT"FG NO GOOD":GOSUB1600
1371 GOTO850
1380 PRINT"FG GOOD":GOSUB900
1381 GOTO1100
1400 A=RND(10):ONAGOTO1410,1415,1420,1425,1430,1435,1440,1450,1460,1470
1410 PRINT"OFFSIDES OFF ";:Q=-5:GOTO1480
1415 PRINT"OFF HOLDING ";:Q=-10:GOTO1480
1420 PRINT"DEF HOLDING ";:Q=-10:GOTO1480
1425 PRINT"ILLEGAL FORMATION OFF ";:H=-5:GOTO1480
1430 PRINT"OFFSIDES DEF ";:Q=5:GOTO1480
1435 PRINT"FALSE START OFF ";:Q=-5:GOTO1480
1440 PRINT"PERSONAL FOUL DEF ";:Q=15:GOTO1480
1450 PRINT"PERSONAL FOUL OFF ";:Q=-15:GOTO1480
1460 PRINT"ILLEGAL PROCEDURE OFF ";:Q=-5:GOTO1480
1470 PRINT"HOLDING OFF ";:Q=-10
1480 C=1:IFQ<0THENIFL-Q<L+((100-L)/2)GOTO1485
1481 IFQ>0THENIFL-Q<L/2Q=INT(L/2):RETURN
1482 RETURN
1485 Q=(100-L)/2:RETURN
1500 REM TIME CLOCK
1505 T=T-E:IF(T<300)*(A(3)=2)THENT=300:A(3)=1:GOTO1516
1506 IF(T<320)*(A(3)=3)THENA(3)=2:T=320:GOTO1519
1507 IF(T<20)*(A(3)=1)THENA(3)=0:T=20:GOTO1519
1510 IFT<=0GOTO1515
1512 RETURN
1515 PRINT"GAME HAS ENDED":END
1516 GOSUB5000:PRINT@045,"THE HALF HAS ENDED":GOSUB5300:RETURN
1517 IFT<290GOTO1502
1518 T=289:GOTO1516
1519 GOSUB5000:PRINT@045,"TWO MINUTE WARNING":GOSUB5300:RETURN
1550 INPUT"IF THERE ARE ANY OFFENSIVE TIME MANEUVERS PRESS 1";A
1551 IFA<>1GOTO1560
1552 GOSUB5000:PRINT"1-TIME OUT":PRINT"2-QUICK HUDDLE":PRINT"3-SLOWDOWN
1553 INPUT"WHAT IS YOUR STRATEGY";B:IF(B=1)*(A(G)>0)THENE=1:A(G)=A(G)-1:RETURN
1554 IFB=2THENE=E-2:RETURN
1555 IFB=3THENE=E+2:RETURN
```

```
1556 GOTO1558
1560  GOSUB5000:INPUT"IF THERE ARE ANY DEFENSIVE TIME MANEUVERS PRESS 1";A
1561 IFA<>1RETURN
1565 GOSUB5000:PRINT"TIME OUT     - 1":PRINT"SLOW DOWN    - 2
1566 INPUT"WHAT IS YOUR SELECTION";A:IFA>2RETURN
1570 IFA=2THENE=E+1:RETURN
1575 IFA>2RETURN
1580 IF(G=1)*(A(2)>0)THENA(2)=A(2)-1:E=1:RETURN
1585 IFA(1)>0THENA(1)=A(1)-1:E=1:RETURN
1590 PRINT"YOU ARE OUT OF TIME OUTS!":RETURN
1600 L=100-L:D=1:F=10:IFG=1GOTO1605
1603 G=1:GOTO1606
1605 G=2:RETURN
1606 RETURN
1610 X=INT(T/150)+1:IFX=4X=1:RETURN
1611 IFX=3X=2:RETURN
1612 IFX=2X=3:RETURN
1613 X=4:RETURN
2000 CLS:PRINT@0,"";
2005 FORQ=1TO10:ONQGOSUB2010,2015,2015,2020,2015,2015,2020,2015,2015,2010
2006 NEXTQ:GOSUB2007:PRINT@640,:RETURN
2007 IFG=1PRINT@259+50-(L/2),"=^";:RETURN
2008 PRINT@325+L/2,"}=";:RETURN
2010 PRINT"/////==============================/////
2011 RETURN
2015 PRINT"/////   :   :   :   :   :   :   :   :   :   /////
2016 RETURN
2020 PRINT"/////   -   -   -   -   -   -   -   -   -   /////
2021 RETURN
2050 IFG=1PRINT@259+50+INT(H/2)-(L/2),"=^";:RETURN
2051 PRINT@325+(L/2)-INT(H/2),"}=";:RETURN
2999 REM NEW PLAY AREA
3000 U=0:V=0:W=0:X=0:Y=1:Z=0:I=1:J=1
3010 PRINT@655,"THESE ARE YOUR OFFENSIVE PLAYS
3011 PRINT"RUN WEAK SIDE - 1  RUN UP MIDDLE   - 5 LONG PASS    - 9
3012 PRINT"RUN STRONG SIDE 2  RAZZLE DAZZLE   - 6 PUNT        - 10
3013 PRINT"SWEEP          - 3  SHORT PASS      - 7 FIELD GOAL  - 11
3014 PRINT"DELAY          - 4  MEDIUM PASS     - 8
3020 PRINT"WHAT PLAY DO YOU SELECT?";:PRINT@955,"";:INPUTP
```

```
3022 GOSUB5000
3025 ONPGOSUB3100, 3105, 3110, 3115, 3120, 3125, 3130, 3135, 3140, 3145, 3150, 3155
3026 IFP=10GOTO3036
3030 PRINT@655,"DEFENSIVE PLAYER CHOOSE YOUR DEFENSE
3031 PRINT"BLITZ    - 1  BALANCED        - 4  KEYED LINE RUN - 8
3032 PRINT"PREVENT  - 2  KEYED SHORT PASS - 5  KEYED SWEEP    - 9
3033 PRINT"STACKED  - 3  KEYED MEDIUM PASS- 6  GOAL LINE      - 10
3034 PRINT@910,"KEYED LONG PASS  - 7":PRINT"   WHAT IS YOUR DEFENSE?";
3035 PRINT@953," ";:INPUTK:GOTO3040
3036 PRINT"PUNT STRATEGY":PRINT"COVER RETURN 11":PRINT"ATTEMPT TO BLOCK 12"
3037 INPUT"WHAT IS YOUR PUNT DEFENSE";A:B=2:IFA=12GOTO1200
3038 B=0:GOTO1200
3040 ONKGOSUB3200, 3205, 3210, 3215, 3220, 3225, 3230, 3235, 3240, 3245, 3250, 3255
3044 GOSUB5000:PRINT"OFFENSIVE PLAY  "
3045 ONPGOSUB3300, 3305, 3310, 3315, 3320, 3325, 3330, 3335, 3340, 3345, 3350, 3355
3049 PRINT"DEFENSIVE ALIGNMENT IS",
3050 ONKGOSUB3400, 3405, 3410, 3415, 3420, 3425, 3430, 3435, 3440, 3445, 3450, 3455
3051 GOSUB5300:H=0
3053 A=RND(15):C=0:IFA=7C=1
3055 IFP<7GOTO3500
3060 IFP<10GOTO4000
3100 V=V+1:X=X-1:W=W-1:Y=Y-1:RETURN
3105 V=V-1:W=W-1:Y=Y-1:RETURN
3110 U=U+1:V=V+1:W=W-1:X=X-1:Y=Y-1:RETURN
3115 V=V-2:W=W+1:X=X+2:RETURN
3120 V=V-1:W=W-1:X=X+1:Y=Y+1:RETURN
3125 U=U+2:V=V+1:W=W-2:X=X-1:RETURN
3130 Z=Z-3:I=I-1:RETURN
3135 RETURN
3140 Z=Z+2:I=I+1
3145 RETURN
3150 GOTO1300
3200 U=U+1:W=W-1:X=X-2:Z=Z+2:I=I-1:J=J-1:RETURN
3205 U=U-1:Z=Z-2:I=I+2:J=J+2:RETURN
3210 V=V+3:W=W+2:X=X-2:Y=Y-2:Z=Z-2:I=I+1:RETURN
3215 RETURN
3220 W=W+1:X=X+1:Y=Y-2:Z=Z-1:I=I+3:J=J-1:RETURN
3225 X=X-1:Y=Y-1:I=I+2:J=J+1:RETURN
3230 V=V-1:W=W-1:X=X-1:Y=Y+1:Z=Z+1:I=I+2:RETURN
3235 U=U+1:V=V+1:W=W+1:X=X+1:Y=Y+1:Z=Z-1:I=I-1:J=J-1:RETURN
```

```
3240 V=V+2:W=W+1:X=X-1:Y=Y+2:Z=Z-1:I=I-1:RETURN
3245 U=U+1:V=V+3:W=W+3:X=X-2:Y=Y-2:J=J-3:RETURN
3300 PRINT"RUN WEAK SIDE":RETURN
3305 PRINT"RUN STRONG SIDE":RETURN
3310 PRINT"RUN SWEEP":RETURN
3315 PRINT"DELAY RUN":RETURN
3320 PRINT"RUN UP MIDDLE":RETURN
3325 -PRINT"RAZZLE DAZZLE":RETURN
3330 PRINT"SHORT PASS":RETURN
3335 PRINT"MEDIUM PASS":RETURN
3340 PRINT"LONG PASS":RETURN
3345 PRINT"PUNT":RETURN
3350 PRINT"FIELD GOAL":RETURN
3400 PRINT"BLITZ":RETURN
3405 PRINT"PREVENT":RETURN
3410 PRINT"STACKED":RETURN
3415 PRINT"BALANCED":RETURN
3420 PRINT"KEYED SP":RETURN
3425 PRINT"KEYED MP":RETURN
3430 PRINT"KEYED LP":RETURN
3435 PRINT"KEYED LINE RUN":RETURN
3440 PRINT"KEYED SWEEP":RETURN
3445 PRINT"GOAL LINE":RETURN
3500 GOSUB5000:U=U+3:A=RND(100):IFA<UGOTO3550
3501 H=-2
3505 PRINT@045,"HANDOFF SUCCESSFUL":A=RND(10):V=V+2:GOSUB5100:IFA<VGOTO3560
3506 H=0
3510 PRINT@045,"CLEARED LINE":A=RND(10):W=W+5:GOSUB5100:IFA<WGOTO3570
3511 H=2
3515 PRINT@045,"CLEARS DEFENSIVE LINEMEN":A=RND(10):X=X+7:GOSUB5100
3516 IFA<XGOTO3580
3517 H=4
3520 PRINT@045,"CLEARS LINEBACKERS":A=RND(10):V=V+7:GOSUB5100:IFA<VGOTO3585
3521 H=6
3525 PRINT@045,"BREAKS TACKLE":B=10:GOSUB5100:A=RND(2):IFA=1GOTO3590
3526 H=10
3530 PRINT@045,"BREAKS TACKLE":B=B+10:H=B:IFL<HGOTO3540
3531 A=RND(10):IFA<4GOTO3590
3532 H=H+10:GOSUB5100:GOTO3530
3540 IFH>2H=H-1:GOSUB5100
```

```
3541 PRINT@045,"RUNNING PLAY GAINED";H;"YARDS":E=2:IFC<>1THENE=5:GOTO800
3542 PRINT@908," ";:GOSUB1400
3545 PRINT@;"YARD PENALTY AGAINST ";:IF((G=1)*(Q<0))+((G=2)*(Q>0))THENPRINTA$
3546 IF((G=2)*(Q<0))+((G=1)*(Q>0))THENPRINTB$
3547 GOSUB5300:PRINT@787,"";:INPUT"TO ACCEPT PENALTY PRESS 1";X:IFX<>1GOTO800
3548 H=Q:D=D-1:GOTO800
3550 PRINT@045,"RUNNER HIT IMMEDIATELY AFTER HANDOFF":A=RND(3):IFA=1GOTO3600
3551 H=-RND(7):GOTO3540
3560 PRINT@045,"RUNNER HIT APPROACHING THE LINE":A=RND(20):IFA=1GOTO3600
3561 A=RND(5):H=A-2:GOTO3540
3570 PRINT@045,"RUNNER HIT AT LINE":A=RND(20):IFA=9GOTO3600
3571 A=RND(3):H=1+A:GOTO3540
3580 PRINT@045,"TACKLED BY LINEBACKER":A=RND(25):IFA=9GOTO3600
3581 A=RND(5):H=A+3:GOTO3540
3585 PRINT@045,"TACKLED BY SAFETY":A=RND(35):IFA=8GOTO3600
3586 A=RND(10):H=6+A:GOTO3540
3590 PRINT@045,"TACKLED BY CORNER BACK":A=RND(35):IFA=6GOTO3600
3591 A=RND(10):H=B+5+A:GOTO3540
3600 PRINT@045,"FUMBLE":GOSUB5100:GOSUB1600
3601 A=RND(10):IFA>3PRINT@045,"BALL RECOVERED ON THE";L:GOSUB5100:GOT(
3602 A=RND(10):PRINT@045,"BALL RECOVERED ON THE";L:L=L-A:GOTO850
4000 GOSUB5000:ONP-6GOTO4001,4010,4020
4001 A=RND(20):Z=Z+1:IFA<ZGOTO4050
4002 A=RND(10):IFA>ZGOTO4030
4003 PRINT@045,"PASS UNCATCHABLE":GOSUB5100:H=0:E=1:GOTO4090
4010 A=RND(10):Z=Z+1:IFA<ZGOTO4050
4011 A=RND(8):IFA>ZGOTO4031
4012 GOTO4003
4020 A=RND(8):IFA<ZGOTO4050
4021 A=RND(6):IFA>ZGOTO4032
4022 GOTO4003
4030 H=RND(7):H=H-2:GOTO4033
4031 H=RND(8)+7:GOTO4033
4032 H=RND(15)+15
4033 A=RND(10):IFA=3GOTO4100
4034 A=RND(10):I=I+3:IFA<IGOTO4060
4035 IFL-H<K-10PRINT"BALL CAUGHT OUT OF THE END ZONE":GOTO4003
4036 REM TOUCHDOWN PASS
4037 PRINT@045,"BALL CAUGHT ON THE";L-H;" YARD LINE":GOSUB5100
```

```
4040 A=RND(10):J=J+5:IFAKJGOTO4045
4041 PRINT@045,"TACKLE BROKEN":H=H+10:GOSUB5100:E=7:IFL-HK0GOTO800
4042 A=RND(10):IFA>5GOTO4041
4045 PRINT@045,"RECEIVER TACKLED":E=6:A=RND(6):H=H+A:GOSUB5100:GOTO4090
4050 PRINT@045,"SACKED":A=RND(10):H=-A:E=5:GOSUB5100:GOTO4090
4060 PRINT@045,"RECEIVER DROPPED THE BALL":E=1:H=0:GOSUB5100:GOTO4090
4090 IFH<>0GOTO4092
4091 A=RND(20):IF(A=4)*(H>0)GOTO3600
4092 PRINT@045,"PASS GAINED";H;"YARDS":GOSUB5100:IFC<>1GOTO800
4093 GOTO3541
4100 E=3:PRINT"INTERCEPTED AT THE";L-H:H=0:GOSUB1600
4101 A=RND(10):B=RND(10):IFAK6GOTO4110
4102 H=H+B:GOTO4101
4110 PRINT"RAN BACK";H;"YARDS":GOTO850
5000 PRINT@640," ":PRINT:PRINT:PRINT:PRINT:PRINT" "," "," "," "
5001 PRINT@640,"":RETURN
5100 GOSUB2050:FORO=1TO500:NEXTO:PRINT@045,"
5105 FORO=1TO300:NEXTO:RETURN
5200 FORO=1TO2000:NEXTO:RETURN
5300 FORO=1TO1000:NEXTO:RETURN
```

Although it is our intention to publish programs in line listing form for our readers' transcription, we realize that the actual keyboarding may require more time than some are able to devote.
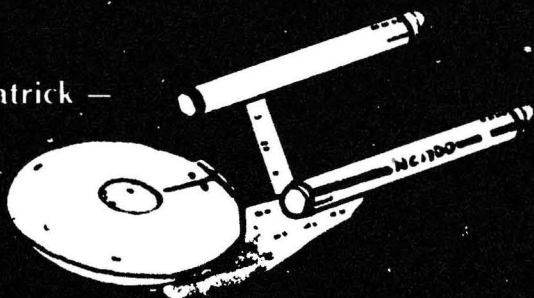
To better serve our readers, prerecorded digital cassettes of this program are being made available for substantially reduced rates from the TRS-80 Software Exchange.

If the "prerecorded" route is best for you, simply check the appropriate box on the order form in the TRS-80 Software Exchange Market Basket section of this magazine.

What They Never Told You About Level II

At long last Radio Shack's TRS-80 Level II is being shipped. Many people now own Level I machines, and most will be converting to Level II. No doubt you will be reading lots of stuff about all of the features Level II has to offer. But there are a lot of things Radio Shack didn't tell you about Level II. And that's what this article is all about.

If you don't know it by now, let me tell you about a Radio Shack first. Radio Shack is the first company in the world to make a real time clock that requires a disk drive to operate it. Does the disk drive motor wind the clock? Well, of course not. The truth of the matter is that there is no clock. In the expansion interface there is a timer which creates an interrupt every 25 milliseconds. When Disk Basic is loaded in memory, this interrupt is enabled, causing a subroutine to add one to a counter every 25 milliseconds. By reading ths counter correctly, which TIME$ does, you can make the computer keep track of time.

Then there is the SYSTEM command. This lets you load and run Z—80 machine language programs. What the book doesn't tell you is this: if the first character is a slash "/", then the command is treated like a jump instruction. If other characters follow the slash, they are used as a jump address in decimal. If no characters follow, then the address currently stored at memory address 40DF—40E0 is used as the jump address. If the first character is not a slash, then the instruction is treated as a load from tape instruction with the typed characters as the file name.

While on the subject of machine language, here's another address to write down. It's 1A19 (hex). If you write any machine language programs, and want to get back to BASIC, jump to that address. That's also a good way to exit T—BUG.

The verify command CLOAD? is a nice feature. But, if you run with two cassette machines, always verify on cassette #1. It seems that CLOAD? #-2 doesn't work. CLOAD and CSAVE can be directed to cassette machine #2, however, just like the book says.

There is also a bug in the FOR-NEXT loop. The following line works fine in Level I, but causes a syntax error in Level II:

100 FOR A(89)=1 TO 100

A(89) is an element of a dimensioned array. Seems that the counter in a FOR-NEXT loop cannot be an array element.

If you're used to Level I, the print commands can seem to work rather strangely. In Level I, a simple print clears the current line to the end, then skips to the next line. In Level II, no clear takes place. If you want to clear a line, use PRINT CHR$(30). PRINTUSING can also do some rather strange things by erasing the next line below it. If you run into this problem, add a comma to the end of your PRINTUSING name list.

Level II BASIC uses the words OR and AND. Also, you enclose each condition without parentheses. While it is better to use the Level II method, the old Level I version still works. What that really means is that if you're converting a Level I program to Level II, don't go killing yourself changing this:

100 IF (A=B)+ (A=C) THEN 350

to this:

100 IF A=B OR A=C THEN 350

just to satisfy Level II. Either will work.

Certainly, one of the big features of Level II basic is its ability to handle string characters. There is one problem here that you should know about. Let's say you have the following lines in your program:

100 B$="LANCE MICKLUS, WINOOSKI,VERMONT"

110 PRINT #—1, B$

Fine, so you wrote "LANCE MICKLUS, WINOOSKI,VERMONT" on tape. Or did you? Read the tape back and guess what you get. You get LANCE MICKLUS and that's all. The quotes don't go on the tape. Worse yet, the comma terminates the read and doesn't give you any errors like ?EXTRA IGNORED.

Both versions of Radio Shack BASIC usually do not require THEN following an IF statement. But sometimes this will get you into trouble. When in doubt, use THEN. But here's a better rule. Instead of THEN, use any logical BASIC word. For example:

100 IF A=B THEN B=B+3
110 IF A=B LET B=B+3
120 IF A=B B=B+3

Using line 120 could get you into trouble. You're safe with line 100 by using THEN. But line 110 follows my rule, since LET is a BASIC word. Also, LET better explains what the statement is and is better programming. See, there is a good use for LET. RETURN, END, CLS, and PRINT are all BASIC words and do not require THEN before them. However, you must always use THEN when you are also going to use ELSE.

What about that down arrow or line feed? What that will do is force a line feed, or series of line feeds when the program is listed. You can use this to really clean up the appearance of your programs when they're listed, especially in a remark.

What about those nice Level I short hand commands, like P. for PRINT. Well, they're alive and well, and living in your ROM. The difference is that the computer does the short hand conversion for you, but converts it back when you list the line. If you are now using a Level II, here's an experiment. Type NEW, then type the following:

10 PRINT"HELLO"

Now type PRINT MEM and see how much memory is left. Then type this:

10 PRENT"HELLO"

Followed by PRINT MEM again. Guess what. PRENT"HELLO" uses 4 more bytes of memory than PRINT"HELLO" even though both lines use exactly the same number of characters. The reason is that BASIC knows the word PRINT and converts it to a single character, which it stores in memory in place of the word PRINT. Since PRENT is not a BASIC word, there is no short hand for it, so all 5 letters must be stored, thus using more memory.

Some final advice to anyone moving up to Level II. Anytime you start using a new computer, whether it's a TRS-80 or a SIGMA/VII time-sharing system, the first thing to learn is the editor. Forget about everything else and master the editor first. Only after you know the editor inside out, should you begin to learn all of the other stuff. It's time that more than pays for itself when you start programming

— **Lance Micklus** □

TRS-80 SOFTWARE EXCHANGE
Market Basket Catalog

RENUMBER -by Lance Micklus
Can renumber a 12K program in just 32 seconds. Complete user control with respect to which lines are renumbered, and how, including all GOSUB's and GOTO's. Runs in 1300 bytes of high memory regardless of program size. Specity 4, 16, 32, or 48K version. Compatible with Disk BASIC. For the Level II TRS-80 Microcomputer.

ACCOUNTS RECEIVABLE -by M.D. Kelleher
Allows for the creation of up to 200 files with account name, invoice number, payment date and balance. Updates files and stores to tape. Offers complete aging data and reveals delinquent accounts. Level II 16K

BREAKAWAY-by Lance Micklus
A challenging "real time" action game of skill and dexterity. All the excitement of the traditional Pinball machine-without the expense! You control the speed and direction of the ball as you try to "Breakaway" the playing field. Easy to play? You bet! Easy to win? Better start practicing.

MOVING SIGNBOARD -by Circle Enterprises
This machine language program is designed to use the TRS-80 as a display device. The user may type-in up to a full screen of text, store it in memory and then cause it to crawl across the screen in the fashion of an electronic marquee.

TRS-80 SLOT MACHINE -by Circle Enterprises
This program simulates (with full graphics) a typical 3-reel casino slot machine with 10 payoff combinations ranging from $2 to $200.

PETALS AROUND THE ROSE -by Circle Enterprises
This is a TRS-80 implementation of the dice game/puzzle described in the Sep/OCT 1977 issue of **Personal Computing Magazine**. The game is both challenging and frustrating for most people.

SCI-FI SAMPLER -by Tim Quinlan
Three science fiction games in one program: Lunar Lander, Star Monster and Space Battle. Instructions are part of the program along with graphic displays.

CONCENTRATION by Lance Micklus
Back in the sixty's, one of the most popular TV game shows in modern history appeared on the air, entertaining millions for years. "Win campers or boxes of nails, win gifts, but take the chance on forfeiting them later in the game." Most of all, concentrate on where these items appear on the play board. This program runs in 16K on either Level I or II ROM, and assures hours of enjoyment—just like you used to!

FILE HANDLING -by Circle Enterprises
A must for file handling in BASIC. Will list names in file, search/edit file, record file on cassette. One use would be to record names and phone numbers, either one callable by the other. Level II 16K

X-WING FIGHTER -by Rev. George Blank
Looking for more realism in "TREK" type programming? Put yourself in the cockpit of this X-wing fighter. Extensive use of the INKEY function puts all of the ship's controls at your ringertips without hitting the ENTER key. Long range sensors warn you of approaching aircraft in advance of a visual sighting. When they are close enough to be seen, they will become larger as they get closer. (see advertisement elsewhere in magazine) Level II 16K

THREE D TIC TAC TOE
Everyone knows the game, but how about a 4x4x4 version. This program offers three skill levels for computer competition, and the author warns you to practice before you take on the computer's third skill level. You can also play your easy-to-beat friend, of course. LEVEL I & II 16K.

SMALL BUSINESS BOOKKEEPING-by Roger Robitaille
For scores of years, National Distributing Company has been selling the "Dome Bookkeeping Journal" through stationery and discount stores nationwide. Our Small Business Bookkeeping program is designed to be compatible with that bookkeeping journal.   As is appropriate with any business application, we assume no liability whatsoever in regards to the use of this program. The user is expected to assess it based upon its performance as observed. It's not that we don't believe in it, it's just that the conceivable libility for its use (or misuse) is so staggering that you just plain use it at your own risk, or don't use it.

BANKO-by Lance Micklus
Banko is a game similar to Blackjack in principal; however, the game is not conducted in a simple "win/loss" manner. The maximum point is eleven, and the winner wins according to the point difference between the two players. Thus, the game is not over when one player "busts". It is for the other player to maximize his gains by increasing his count toward 11, without going over. Suitable for Level I or II 4K systems.

TIME BOMB -by David Bohlke
Somewhere inside a towering skyscraper, a time bomb is ticking away. In this game, your mission is to locate the explosive device (no easy task in such a large, maze-like structure) and disarm it within a given time. Level I or II 16K

BLACK JACK-by Milan Chepko
Yes, I know you all have one, but if you are willing to forsake the graphics, many more of the Las Vegas type options are available with this Level I program.

TAROT CARDS-by Frank Rowlett
This is probably the best future gazing type program I have seen. Unlike many programs in the field, whose appeal wear out quickly, the combination of the graphics and the presenation leads to continuing use—try it, you'll like it.

BASIC STATISTICS - by Steve Reisser
This powerful set of procedures is of use to students, instructors, behavioral and research scientist, statisticians — anyone using rand order, central tendency, Pearson product-movement correlation coefficient, chi-square, Fisher T test, sample analysis of variance, Z-scores and standard scores, with a random number generator built in to simulate data.

CRIBBAGE by Roger Robitaille, Sr.
Here it is — the October **SoftSide** feature program on digital cassette. It's a "you vs. computer" Cribbage, played by the standard rules. The computer shuffles, deals, keeps score and wins ...unless you're careful! Suitable for 16K machines.

END ZONE - by Roger Robitaille
The October cover program on cassette, to take some of the strain off your fingers. It's 16K TRS-80 football, right down to the 2-minute warning, played in four 15-minute quarters. A 2-player game, Level I or II 16K

STAR TREK III -by Lance Micklus
One of the most advanced Star Trek games ever written. Object is to explore as much of the galaxy as possible, destroy the 20 Klingons and locate the 5 class M planets. Thus, the exploration part of the Enterprise's mission has been added to the game, giving it a whole new dimension. Speaking of dimension, the galaxy is 3 dimensional, not flat like in other versions. Extensive use of graphics is made. During a Klingon battle, you will see the Enterprise fire its phasers, the phasers hit the Klingon and the Klingon explode. And before you go charging off, you must be careful of the large stars and black holes, as well as the pulsar. But there's more; the pulsar makes space noise in adjacent quadrants. The only way to find a Klingon in those quadrants is to explore them. And you never can tell in which one of them a Klingon might be hiding. Also, when you dock at a Star Base, you must control you speed. Otherwise, you'll have a collision but won't dock. At the end of the game, you return to Star Fleet Headquarters, where the data you've been gathering in your ship's computer will be evaluated and your performance rated. 16K Level II only. Takes about 2 hours to play a game.

PILLBOX by Gene Perkins
This program simulates an artillery battle between two fixed implacements. A two-player game, each player controls the angle of fire and the muzzle velocity of the shell. The game places a mountain between the warring batteries and lets the laws of physics take over. A really good game, easily fitting a 4K machine.

8080 TO Z-80 CONVERSION-by M. Kelher
What can we say! For you machine language buffs, here is a program which permits you to enter 8080 codings and the program will return the Z-80 equivalent. It will also store these equivalents in the order in which they were entered, for later review.

BIORHYTHM-by James Penny
There is a theory that everyone is subject to a group of life cycles which, together, effect our daily life. The rates of those cycles are mathematically fixed and lend themselves to computer analysis. This program unravels those interrelated formulas into a meaningful graphic presentation. Runs in 4K Level I.

BINGO CALLING PROGRAM -by Tim Quinlan
This is a great program for the family or small groups. It picks a number and displays it in screen size characters. It then displays a table of all the calls up to that time. When someone has a bingo, there's a number checking routine at the end.

OTHELLO III -by Tim Quinlan
A strategy game played on an 8 x 8 board. The object of the game is to capture as many of the squares as possible. You can play against the computer, a friend or have the computer play against itself. Has an interesting graphics display.

GALACTIC BLOCKADE RUNNNER -by Tim Quinlan
You are the captain of a federation starship battle cruiser. Your mission is to run an enemy blockade and to deliver vital supplies to federation forces under siege on Planet M/5. You control your ship's course and speed along with the firing of its weapons. You will have to fight battle after battle successfully to reach your destination. Besides the enemy, you will have to cope with ship malfunctions and ion storms.

GAMES/GROUP I -by Tim Quinlan
There are four games in this package, starting off with an old favorite (for computerists, that is) Hammurabi. The other games are Concentration I, which is based on the TV game, Russian Roulette, play with the computer or a friend, and UFO, a space war game.

REMAINDER by Lance Micklus
A real good way to show off your TRS-80. It's a "find my number" game for people with 64K of head space. **Warning:** Don't leave this game loaded in your computer and walk away. Or, when you return, you'll find a crowd playing thes game. (Worse yet, they won't let you have your machine back.)

TREASURE HUNT by Lance Micklus

This is a challenge, so don't cheat and read the program listing. Use your imagination. You are exploring caves and trying to find 20 treasures. Some are easy to get, others are very difficult because you have to figure out how. When you first play, you will probably make a lot of mistakes. The more you play this game, the more secrets you will discover, and thus, the more treasure you will find. All 20 treasures can be found in about an hour of play if you know what you're doing. Your first problem is to draw a map of the caves. However, to save you time, a map is enclosed. Good luck, you're gonna need it.

CHECKERS by Don McAllister

A Level 1 machine with 4K of memory is all you need to have a checkers partner on call whenever you're in the mood. The program is written in BASIC, but is suprisingly fast and competitive for such a small program.

TEST FOR INDEPENDENT VARIABLES -by Steven Hebbler

Computes for Mean, Standard Deviation, N, Degrees of Freedom, and probability of occurrence. Level II 4K

METRIC/ENGLISH CONVERTER -by Steven Hebbler

Conversion of length, weight, volume, temperature, and area are all provided for in this Level I or II 4K program.

HANGMAN, 2-PLAYER OR SOLITARY -by Robert Harkins

The game of Hangman just the way you remember playing it. Excellent graphics. Level II 4K

PORK BARREL -by Rev. George Blank

"The game that Congressmen never stop playing ... re-election". So begins this 16K Level II masterpiece by the author of the December SoftSide's cover program, **Santa Paravia en Fiumaccio**. Put yourself in the shoes of an aspiring Congressman. Given a breakdown of your constituency by percentages; white collar, retired, farm worker, unemployed, welfare, blue collar, elderly, and many more, how would you vote on various sensitive issues? In **PORK BARREL**, you get to put your vote where your mouth is. Don't worry, the voters in your district will let you know how they feel!

TROLL'S GOLD -by Rev. George Blank

A chase game for children of all ages. The troll is deep within the caves. Your goal is to descend to his gold-filled lair and escape with the booty without him catching you. Level II 16K

MASTERMIND II-by Lance Micklus

Lots of people have written digital MASTERMIND programs that create the code and give you the clues. This one will also let you make the code and give the clues. You can play either way or take turns with the computer. 10 rounds make up a game, and at the end of each round, player averages are displayed. Because this is a machine language program, it takes the computer 3 seconds or less to come up with a guess. Both Levels I and II versions are supplied. Level I loads with the CLOAD command, and Level II with the SYSTEM command (file name MSTR). Loads into memory addresses 5000 to 7FF0 and thus requires 16K of memory.

GAMES

Star Trek III	14.95	II	16K
X-Wing Fighter	7.95	II	16K
Concentration	7.95	I&II	16K
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Santa Paravia & Fiumaccio	9.95	II	16K
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PERSONAL

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Tarot	9.95	I&II	16K
Personal Finance Pkg.	9.95	I&II	4K

HANGMAN [Level I]-by Roger Robitaille

The age old pencil game has been tamed in Level I. For those who don't know the game, it is the original "guess my word in X number of tries" game. Originally in two versions, improvements have permitted this Program to play both a solitary and a two-player version. To be acceptable to Level I BASIC, the words must be coded in numeric equivalents, but the ever available conversion chart lessens the confusion. The displays are alphabetic.

PERSONAL FINANCE PACKAGE -by Tim Quinlan

This package contains 3 programs to aid you in handling your personal finances. The first is a Checking Account Program to help you keep track of checks, deposits, interest, charges, transfers, etc., along with computing your balance. It has a lot of nice features, including a fast method of data retrieval. The second program helps you keep track of your Budget and the final program computes interest on loans, mortgages and charge accounts.

To order any of the programs shown on the preceding pages, simply fill out the order form provided below, enclose check or money order and mail to:

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SOFTWARE ORDER FORM

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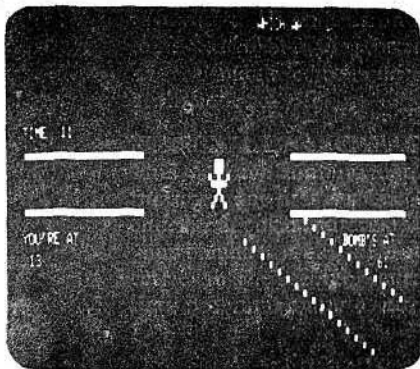
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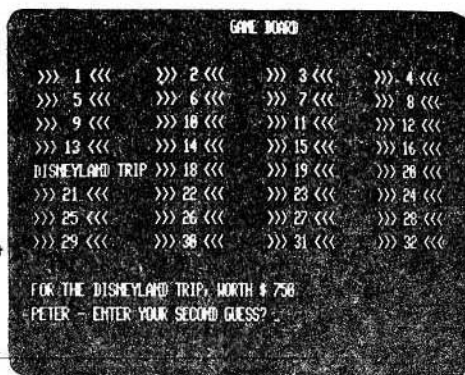
SURVEY QUESTIONS

Do you presently own a TRS-80?   If so, please describe (Level I or II, 4 or 16K)

If you own a system other than TRS-80, what kind?

If you own a Level I machine, are you planning to purchase Level II in the future?

Do you have Disk Drive?   Are you planning to purchase?

Do you have a Line Printer?   Screen Printer?   Are you planning to purchase?

Have you keyboarded programs from **SoftSide**?
Which ones?

Would you be interested in seeing all of the **SoftSide** programs available on cassette for about $60 per year ? (remember, that's about 60 programs, or a buck apiece!)

In general, what kinds of programs would you like to see in **SoftSide** — (business, games, etc.) ?

Any one program in particular you would like to see written?

Do you receive any other computer publications?   If so, which ones?

OCTAL TO HEX

Here's a simple program that can take some of the drudgery out of converting those Octal codings to Hexadecimal notation. Just enter the number to be changed (e.g. 0,3,5) hit ENTER, and Voila; Instant Hex!

```
1 REM  ==================================
2 REM  OCTAL TO HEX CONVERSION PROGRAM
3 REM  BY LANCE MICKLUS, WINOOSKI, VT.
4 REM  TRS-80 LEVEL 1 & 2 / 4K
5 REM  VERSION 1.1 - JULY 1978
6 REM  ==================================
90 CLS
100 INPUT"ENTER OCTAL NUMBER (SEPARATED BY COMMAS)";H,M,L
110 N = (64 * H) + (8 * M) + L
120 IF (N > 255) + (H > 3) + (M > 7) + (L > 7) THEN 310
130 C = INT(N/16)
140 RESTORE
150 READ D, A$
160 IF D <> C THEN 150
170 RESTORE
180 READ D, B$
190 IF D <> N - (16 * C) THEN 180
200 PRINT "HEX VALUE: ";A$;B$
210 PRINT
220 GOTO 100
300 REM -- ERROR --
310 PRINT "??? ERROR ???"
320 GOTO 210
999 END
1000 DATA 0,"0",1,"1",2,"2",3,"3",4,"4",5,"5",6,"6"
1010 DATA 7,"7",8,"8",9,"9",10,"A",11,"B",12,"C",13,"D"
1020 DATA 14,"E",15,"F"
```

TRS-80 PROGRAMMING HINTS
GOT A VARIABLE?

Probably, but it's often hard to remember which ones right off the bat. This handy little subroutine can provide some quick answers when tacked on to the end of a program. As shown below in the listing and sample run, the program simply asks for and lists the variable values.

Unused variables will usually show .5 or —.5 value.

```
30000 PRINT"A";A,"B";B,"C";C,"D";D,"E";E,"F";F,"G";G,"H";H,"I";I,
30010 PRINT"J";J,"K";K,"L";L,"M";M,"N";N,"O";O,"P";P,"Q";Q,"R";R,
30020 PRINT"S";S,"T";T,"U";U,"V";V,"W";W,"X";X,,"Y";Y,"Z";Z
30030 PRINT "A$";A$,"B$";B$,
```

SAMPLE RUN

A .5	B-.5	C 4	D 0
E 7	F .5	G 3	H-.5
I .5	J .49915	K 23	L 12
M-.5	N 2	O .5	P 0
Q 26	R-.5	S .184	T .5
U .5	V 43	W .5	X 0
Y 2	Z 18	A$ ALAN	B$ MONDAY

In the next issue .....

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