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YOUR BASIC SOFTWARE MAGAZINE VOL.2, NO. 7

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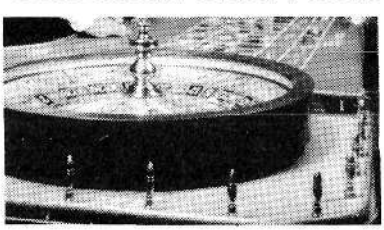
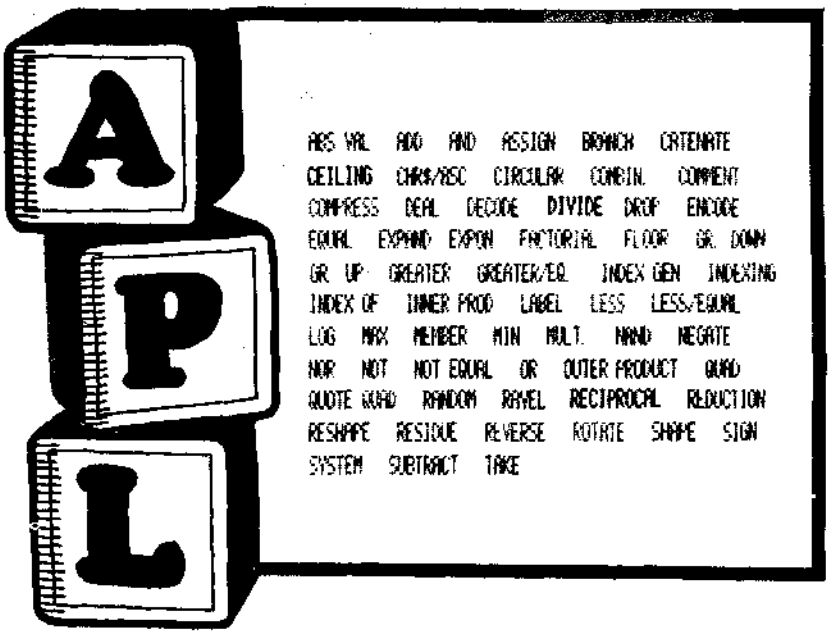


The cover of our special Casino Games issue shows the roulette table at the Dunes Hotel and Country Club in Las Vegas, Nevada.



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SoftSide is published monthly by SoftSide Publications, 6 South St., Milford, NH 03055. Subscription rates: USA bulk rate -- $18 per year. USA first class, APO, FPO, Canada, Mexico, overseas surface mail --$25 per year. Overseas airmail -- $30 per year. All remittances must be in U.S. funds. Mail subscription inquiries to: SoftSide Subscriptions, PO Box 68, Milford, NH 03055. Entire contents copyright • 1979 by SoftSide Publications. All rights reserved.

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OUTGOING MAIL

I'd like to begin this month with a word of appreciation to **The Dunes Hotel and Country Club** for providing pictures for this issue, including our cover.

Gambling fever seems to have struck our magazine this month. Perhaps it is the aftereffects of the Las Vegas Consumer Electronics Show, or possibly the risky environment for microcomputer related businesses this year. Shakeouts are nothing new for the personal computer market, as we have seen even some of the leading companies of a few years ago go under. But momentous events are upon us.

One feature of the year is significant new computers. Your editor (and indeed not only most of the staff, but even former staff members) has fallen in love with a new machine, The **Atari 800**. (Yes, we do sell it! Ask HardSide about a trade in.) We expect to launch **SoftSide: Atari** this summer, and we are eagerly looking for programs. If you want to move up to high resolution graphics and color, investigate this computer. We saw a demonstration of a space game **Atari** is preparing that was so good I won't even try to describe it.

Another new computer scheduled for the immediate future is the **Video Genie**, the much rumored **TRZ-80** from Hong Kong with our own familiar Level II BASIC, TRS-80 compatible tapes, and even an S-100 backplane for expansion. We saw the prototype in Las Vegas and were suitably impressed.

Of course, we also have the persistant rumor of the TRS-80 **color**. As **Radio Shack** interviewed some of our programmers for sweet jobs at the Tandy Counter, they asked questions about programming experience with the 6502. My prediction is a lesser imitation of the **Atari** with a price of $800 to be introduced in June at the New York show. This time they will probably have some good games at the time of introduction, as a color computer is more game oriented. I suspect that they will try to keep a compatible BASIC and cassette format. Since **Tandy** is a marketing company instead of a computer company, they could probably make a lot of money out of a pile of junk. But we will hope for good things.

One computer that seems out of the running is the **Texas Instruments** 99/4. It has the weakest graphics, the weakest BASIC, and the heftiest price in its category. Their eastern distributor came to the same conclusion and dropped the product to sell the **Atari**. With the 990 processor and products like the Speak and Spell, **T.I.** still has the ability to build a great computer, but I suspect they don't want any threats to their minicomputers.

Impressive printers are also appearing for the personal computer. Hardside will be selling the **Centronics** 737 with nice print, lower case and proportional spacing for less than a thousand dollars, and the **Eaton LRC**, with plain paper, ordinary (cheap!) ribbons, and software selectable

20, 32, 40, and 64 characters per line and incredible durability for around $400. In addition, **Radio Shack** demonstrated a nice, quiet daisy wheel printer at the San Francisco Computer Faire.

The Computer Faire was a good show this year, with SoftSide authors Scott Adams, Will Hagenbuch, Art Canfield, Harvard Pennington, Douglas Carlston, and others coming by the booth. We sold well over 1,000 SoftSides and close to 1,000 tapes at the Faire.

It was good to meet with the staff of other computer magazines. Byte, Creative Computing, Compute, 80-US, The S-80 Bulletin, and Computronics were among the exhibitors. Apparently Microcomputing could not afford to exhibit, as Wayne Green's last industry mewsletter complained of show losses. Roger and I had a delightful evening with Mike Schmidt and Terry Dettmann of 80-US.

That's probably enough comments to keep the mail coming in this month! We especially want to hear from people who have translated SoftSide programs for the **Atari**, **APPLE**, and other computers.

gwb

3 2 9 8 7 4 5

JANE

NUMEROLOGY

by John T. Phillipp

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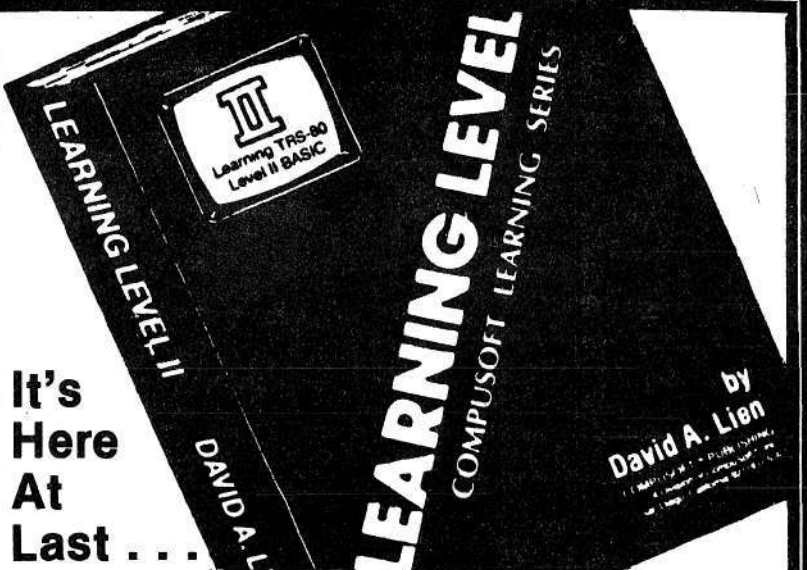

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by Harvard C. Pennington

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plus $1.00 shipping and handling.

LITTLE BOOK OF BASIC STYLE

John M. Nevison

Ideal reference for BASIC programmer, junior high to research scientist. Indexed, illustrated, 151 pages.

$6.95 plus $1.00 shipping and handling

TRS-80 ASSEMBLY LANGUAGE PROGRAMMING

William Barden, Jr.

Covers Z-80, an introduction to Assembly Language, the Radio Shack Shack Editor/Assembler and T-Bug, and debugging methods; also explains how to move data, the use of arithmetic, compare, logic, and bit operations, shifts, strings, tables, input and output, and 12 commonly used subroutines. Well indexed and illustrated.

$3.95 plus $1.00 shipping and handling

TRS-80 INTERFACING

by Jonathan A. Titus.

This valuable reference book for the hardware enthusiast with an understanding of Assembly language programming includes the schematic, printed circuit board artwork, and instructions for building a TRS-80 breadboard, plus 18 experiments to give a solid understanding of interfacing to the TRS-80. **$8.95**

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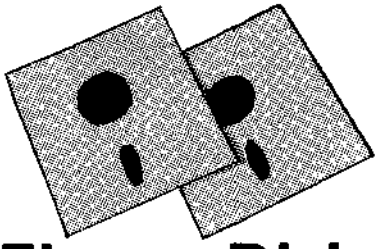

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by Dave Stambaugh

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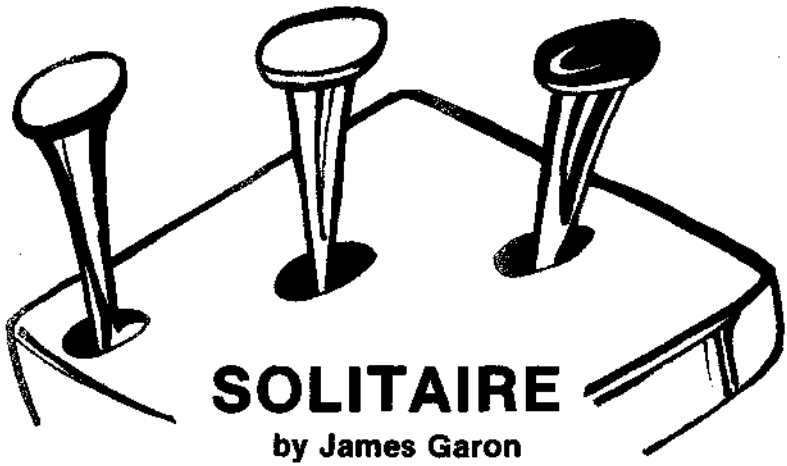

SOLITAIRE

by James Garon

Solitaire simulates a familiar peg puzzle called Hi-Q. The object is to remove as many pegs as possible by jumping horizontally or vertically over a peg, into a vacant hole, removing the jumped peg in the process.

Proficient players will leave only one piece. Very proficient players will leave only one piece, in the center hole. Real hotshots will "mark" a piece at the beginning of the game, and end with that piece alone in the center hole.

Adding to the excitement are the famous James Garon sound effects!

```
0 '***  SOLITARE WITH: SOUND  ***
  ***     BY JAMES GARON     ***
  ***  NASHUA, NEW HAMPSHIRE ***

2 CLS:GOTO10
5 H=1:PRINT@932,"@ ";
10 GOSUB3000:PRINT@0,CHR$(23):DEFSTRA-G:DEFINTI-Z:P=344:R=1:S=3:
V=15360:A=CHR$(143):D=CHR$(141):E=" ":C=CHR$(143)+E+CHR$(143)+E+
CHR$(143)+E:G="?
15 IFH=0GOSUB8888
20 FORI=342TO406STEP64:PRINT@I,E;C;:NEXT:FORI=462TO590STEP64:PRI
NT@I,E;C;CHR$(143)E;:NEXT:FORI=662TO726STEP64:PRINT@I,E;C;:NEXT
:PRINT@540,E;
30 B(1)="A PERFECT SCORE IS 31":B(0)=CHR$(30):PRINT@0,TAB(9)"P U
 Z Z L E"B(0):DIMZ(7,7):FORI=1TO7:L=USR(5E3):L=USR(2E4):U=1-U:PR
INT@72,B(U);:FORJ=1TO7:Z(I,J)=1:NEXT:NEXT:FORI=1TO2:FORJ=1TO2:Z(
I,J)=2:Z(I,8-J)=2:Z(8-I,J)=2:Z(8-I,8-J)=2:NEXT:NEXT
40 Z(4,4)=0:PRINT@0,"SELECT (";:FORI=91TO94:PRINTCHR$(I)" ";:NEX
T:PRINTCHR$(8)") PIECE TO MARK
```

```
(TRY TO END WITH IT IN CENTER)
     THEN PRESS =ENTER=";
 65 F=CHR$(PEEK(V+P)):I=0
 70 GOSUB600:POKE16444,0:PRINT@P,D;:L=USR(1023-17*I):PRINT@P,F;:B
=INKEY$:IFB=""THEN70ELSEV=ASC(B)
 73 IFV=8IFS>1IFZ(R,S-1)<2THENS=S-1:P=P-4:GOTO65
 75 IFV=9IFS<7IFZ(R,S+1)<2THENS=S+1:P=P+4:GOTO65
 77 IFV=91IFR>1IFZ(R-1,S)<2THENR=R-1:P=P-64:GOTO65
 80 IFV=10IFR<7IFZ(R+1,S)<2THENR=R+1:P=P+64:GOTO65
 85 IFV=13THEN70ELSEIFZ(R,S)PRINT@P,D;ELSE70
88 PRINT@916,"SCORE = 0
   (PRESS S TO START OVER)";
 90 P=344:R=1:S=3:GOSUB9999
100 F=CHR$(PEEK(V+P))
110 POKE16444,0:PRINT@P,G;:L=USR(4095-5*T):L=USR(L-64):PRINT@P,F
,:FORI=1TO10:B=INKEY$:IFB=""THENNEXT:GOTO110ELSEV=ASC(B)
115 IFV=83THENFORI=3071-5*TTO30715TEP5:L=USR(I):NEXT:RUN5
120 IFV=8IFS>1IFZ(R,S-1)<2THENS=S-1:P=P-4:GOTO100
130 IFV=9IFS<7IFZ(R,S+1)<2THENS=S+1:P=P+4:GOTO100
140 IFV=91IFR>1IFZ(R-1,S)<2THENR=R-1:P=P-64:GOTO100
150 IFV=10IFR<7IFZ(R+1,S)<2THENR=R+1:P=P+64:GOTO100
160 IFV=13THEN110ELSEIFZ(R,S)=1THENPRINT@P,G;:PRINT@0,"DIRECTION
 TO JUMP ([ ] \ ^) ?"ELSE110
200 B=INKEY$:IFB=""THEN200ELSEV=ASC(B)
210 IFV=8IFS>2IFZ(R,S-1)=1IFZ(R,S-2)=0THENZ(R,S)=0:Z(R,S-1)=0:Z(
R,S-2)=1:PRINT@P,E;:PRINT@P-4,E;:PRINT@P-8,A;:P=P-8:S=S-2:GOTO28
0
220 IFV=9IFS<7IFZ(R,S+1)=1IFZ(R,S+2)=0THENZ(R,S)=0:Z(R,S+1)=0:Z(
R,S+2)=1:PRINT@P,E;:PRINT@P+4,E;:PRINT@P+8,A;:P=P+8:S=S+2:GOTO28
0
230 IFV=91IFR>2IFZ(R-1,S)=1IFZ(R-2,S)=0THENZ(R,S)=0:Z(R-1,S)=0:Z
(R-2,S)=1:PRINT@P,E;:PRINT@P-64,E;:PRINT@P-128,A;:P=P-128:R=R-2:
GOTO280
240 IFV=10IFR<7IFZ(R+1,S)=1IFZ(R+2,S)=0THENZ(R,S)=0:Z(R+1,S)=0:Z
(R+2,S)=1:PRINT@P,E;:PRINT@P+64,E;:PRINT@P+128,A;:P=P+128:R=R+2:
GOTO280
250 GOTO290
260 T=T+1:PRINT@930,T;
290 GOSUB9999:GOTO110
600 I=I+1:IFI=13THENI=0:RETURNELSERETURN
```

```
3000 M$="HERE'S WHERE THE SOUND GOES"
3010 I=VARPTR(M$):J=PEEK(I+1)+256*PEEK(I+2)
3020 FORK=JTOJ+26:READX:POKEK,X:NEXT
3030 IFPEEK(16396)=201POKE16526,PEEK(I+1):POKE16527,PEEK(I+2)ELS
ECMD"T":DEFUSR0=PEEK(I+1)+256*PEEK(I+2):POKE14308,0
3040 RETURN
3050 DATA205,127,10,77,68,62,10,105,
 211,255,45,32,253,61,105,
 211,255,45,32,253,64,16,
 238,61,211,255,201
8888 B=STRING$(4,143):FORI=268TO820STEP64:PRINT@I,STRING$(17,191
 ):NEXT:PRINT@278,STRING$(7,143);:PRINT@398,B;:PRINT@420,B;:RETUR
N
9999 PRINT@0,CHR$(30)"SELECT PIECE TO MOVE (";:FORI=91TO94:PRINT
CHR$(I)" ";:NEXT:PRINTCHR$(8)")
      THEN PRESS =ENTER=":RETURN
```

TAKE A PART

Solitaire

by James Garon

Those four funny symbols in line 160 are supposed to be the four arrows. Most printers cannot print arrows but instead will substitute the symbols you see. That explains what you see, but that's not the problem. The problem is that three of the arrows cannot by typed from the keyboard! So HOW and WHY did I write the line that way???

To answer the WHY first, I am a compulsive "byte-miser". I resent having to use the five byte "CHR$(92)" when it is possible to have a one-byte "↓"!

Now for the HOW. Begin typing the line. When you get to the place where the arrows go, do the following:

1)With your left hand, hold down both the I and the Y keys.

2)With your right hand, one at a time, (and still holding down I and Y) press K, L, M and then N. In addition to the K, L, M & N, you will get the arrows!

3)ENTER the line, EDIT out the unwanted letters, but leave the arrows; then

4)Finish typing the line.

By the way, you might someday have a use for the result of following step 1 above, while you press the letter "O" . . .

Remember the Good Old Days? . . .
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Level I in Level II

by APPARAT

Level I BASIC interpreter loads in top 4K of any 16K Level II TRS-80. Allows unmodified load, run, and CSAVE of Level I programs — no conversion hassles! Great for teaching beginners, young and old, to program in BASIC.

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by George Blank

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IMPORTANT: This program requires the following minimum system:

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by Microcomputer Specialists

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• Dog Star Adventure • Awari • Letter Crunch • Math • Super Sub

JUNE
• Atlantic Ballon Crossing • German Word Quiz • Nim • Home Appliance Record System • Entrapment

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• All Star Baseball • Yahtzee • Tank • Spelling Bee • Collision

AUGUST
• Nuclear Reactor • Storybook • Cryptogram • Shooting Gallery • Morse Code Tutor

SEPTEMBER
• Engineer • Treasure Dungeon • Hangman • Pyramids

OCTOBER
• Aptitude Test • Reaction Time • Battleship • Westward 1847 • Tug-O-War

NOVEMBER
• Everest • Isolate • Energy Cost • Picture Puzzles • Doodle Pad

DECEMBER
• Oil Baron • Drag Race • Show and Tell • Towers of Hanoi • Slalom

1980

JANUARY
• Moving Maze • Bomber • Reflection • Dante's Inferno • Duck Hunter

FEBRUARY
Scott Adam's Backgammon • Parachute • Deadstick • Play It Again, Sam • Deep Six

MARCH
• Broadway • Sonic Torpedoes • System Emulator • Line Four • Add

HOPE IT DOESN'T WORK!

by Ron Potkin

You have just spent four hours typing in a program from "SoftSide", you have SAVED it, and now, in exhausted anticipation, you type RUN... Ah, well; you didn't really expect it to work first time, did you? It's funny but very few people can expect to type a thousand characters or more without making several errors.

But really, if you are an amateur programmer and keen to learn all you can about your TRS-80*, then your motto should be "HOPE IT DOESN'T WORK". You may find it frustrating, but you can learn a great deal from programs written by other people. This is particularly true if you are compelled to examine the various routines closely in order to remove a typing bug.

I can promise you that the time will be well spent. You will discover ways to make your own programs more efficient and learn how to save some of that precious memory space. Many of us tend to use a subset of the instructions available to us. Here is a way to help us get a better command of the language.

These are a few of the things I have learned by studying various programs; usually forced on me because they didn't work properly first time:

(1) It does not appear to be necessary to use the semi-colon when using TAB or CHR$ in a PRINT statement, e.g.

```
PRINTCHR$(134)CHR$(65)
      CHR$(173)
```

(2) Put routines that are used often at the beginning of the program. The computer searches for line numbers starting from the beginning.

(3) Don't use PRINT STRING$ (64,"") to clear a line. Use PRINTCHR$(38) instead. We tend to overlook the control characters but they are fast and save space.

(4) Dealing a pack of cards. I think this is a very clever routine. I know I would never have thought of it myself:

```
DIM(52)
FORI=1T052
C(I)=I:NEXT
FORI=1TO52
A=RND(I):B=C(I)
C(I)=C(A):C(A)=B:NEXT
```

It is very simple but very efficient.

(5) Boolean logic is sometimes easier to read and more direct than "IF" or "ON....GOTO" statements e.g.

```
A=20*(B=1)-37*(B=2)-77*(B=3)
```

If B is not equal to 1, 2 or 3 then A equals zero.

(6) Alternatively, you can sometimes avoid complicated calculations by setting up a matrix of common values when initializing the program. Suppose you wish to access a print position according to the value of a variable B; then use

POSITION=MATRIX(B)

This will speed up your graphics.

(7) Did you know that MEMORY SIZE is obtained by

PEEK(16598)+PEEK (16599*256+2

This means that you can check it to ensure the User has left you sufficient room for any machine language routines. Better still, the size need not be precise. Provided it is enough for both BASIC and machine language, it can be any number, and you can enter your routine into MEMORY SIZE+1 using POKE, PEEK and VARPTR.

(8) The STEP function has more uses than you may realize. Suppose you wish to draw two lines one at X=10, Y=5 and one at X=10, y=29. Use:

X=10:FORY=5T029STEP24..... NEXT

There are many others. One last point: read your LEVEL II manual regularly. It is surprising how much one forgets. Have you ever seen a program using POS(0)? Perhaps everybody has forgotten that one.

PROGRAMMING HINT

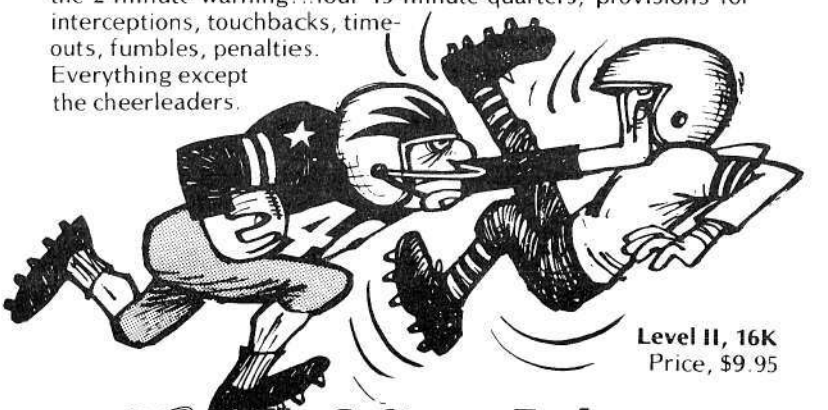
To reset the line counter on your printer so it can count pages correctly on a new listing, use POKE 16425,1.

To change the number of lines per page, add 1 to the number and POKE it into Location 16424.

NEW! END ZONE II

by Roger W. Robitaille, Sr.

Rough and tumble gridiron action, from the toss of the coin to the 2-minute warning...four 15-minute quarters, provisions for interceptions, touchbacks, time-outs, fumbles, penalties. Everything except the cheerleaders.



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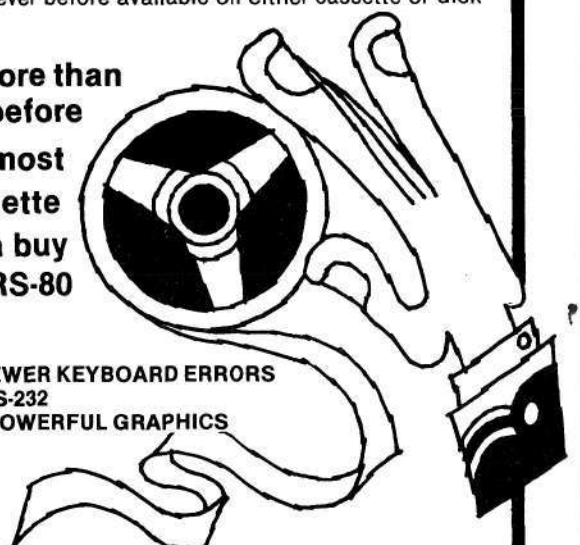

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By George Blank

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KVP

Keyboard, Video, and Printer Enhancements by Lance Micklus

★900 byte machine language program allows you to use a serial printer with the TRS-80. You may specify acceptance of linefeeds, lines per page, characters per line, and printer handshake.

★If you have the Radio Shack™ , Electric Pencil™ , or one of the other published lower case hardware conversions installed in your keyboard unit, KVP contains the software driver routines to enable the conversion.

★Includes adjustable keyboard debounce routine. Another feature is direct entry of graphic and control characters from the keyboard.

Requires 16K Level II or Disk Basic.
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KVP 232, a special version for the small systems hardware TRS-232 interface, is available upon request at the same prices.

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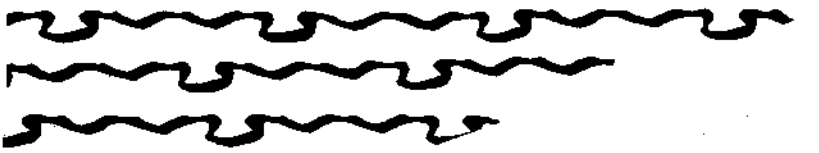

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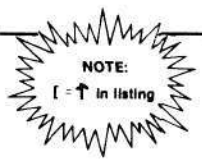
ICBM by Rod Fitzgerald

RED ALERT! You are the radar controller at a surface-to-air (SAM) missile installation guarding Strategic Area Command Area Headquarters. You have just picked up a Russian ICBM heading your way! The alarms are screaming and as the jets scramble, you must launch a surface-to-air missile to intercept and destroy the ICBM.

You control the SAM's direction of travel by the inputting of the proper compass bearing. With each new radar scan you are advised of the new positions of the ICBM and the SAM, and as the distance narrows, you make the necessary adjustments in direction so as to intercept the ICBM.

You may destroy the ICBM by coming within 1.5 miles of it, at which point the SAM's on-board computers will direct it to its target. If you overshoot the ICBM, you can turn the SAM around and chase the ICBM back towards your base. In the unlikely event the ICBM survives the detonation of the first SAM, you can launch another. But, you MUST succeed! Good Luck!




```
1 ' **********
    *  I. C. B. M.  *
    **********
2 '  VERSION 12/02/79 (1 @ 10:10)
4 '  COPYRIGHTS RESERVED--UNAUTHORIZED REPRODUCTION PROHIBITED
6 '  *=BRANCH LINE
1000 RANDOM:CLEAR50:CLS:PRINTCHR$(23):PRINT@398,"**** I. C. B. M. *
***":PRINT@710,"WRITTEN FOR THE TRS-80 BY":PRINT@786,"ROD FITZGE
RALD":PRINT@842,"DALLAS, TEXAS":FORL%=1TO4000:NEXTL%
1010 CLS:PRINT@448,"";:INPUT"DO YOU NEED THE PLAYING INSTRUCTION
S (1=YES)";ANS%:CLS:IFANS%=1GOSUB8000
1020 CLEAR50:RESTORE:MEW=RND(19)+70+RND(0):SEW=0.01:MNS=RND(19)+
66+RND(0):SNS=0.01:MALT=SQR(MEW^2+MNS^2)+RND(41)-21:MSPEED=RND(0
)+3:SSPEED=MSPEED*1.25:RADS=57.2958:S1$="     ":S2$=STRING$(17,"
"):ROUND=0.05:VS%=86:HS%=90:MD=0.01:'*
1030 DIR%=RND(4):FORL%=1TODIR%:READD1$,D2$,D3$,D4$,X%,Y%,K1%,K2%
,K3%:NEXTL%
1040 GOSUB5000:G=SQR(MEW^2+MNS^2):FORL%=15360TO16256STEP64:POKEL
%,191:NEXTL%:FORL%=16257TO16300:POKEL%,176:NEXTL%:FORL%=16301TO1
5405STEP-64:POKEL%,191:NEXTL%:FORL%=15404TO15361STEP-1:POKEL%,13
```

```
1:NEXTL%:'*
1050 PRINT@K1%,CHR$(K2%);:PRINT@K1%+1,CHR$(K3%);
1060 PRINT@ 47,"*** I C B M ***";
1070 PRINT@111,"MI. ";D1$;"=";
1080 PRINT@175,"MI. ";D2$;"=";
1090 PRINT@239,"ALTITUDE =";
1100 PRINT@367,"***  S A M  ***";
1110 PRINT@431,"MI. ";D1$;"=";
1120 PRINT@495,"MI. ";D2$;"=";
1130 PRINT@559,"ALTITUDE =";
1140 PRINT@752,D3$;"   ";D4$;"   A ";
1150 IF MEW=0 AND MNS=0 CLS:PRINTCHR$(23):PRINT@448,"YOU HAVE JU
ST BEEN ANNIHILATED!!":GOSUB4000:CLS:GOTO1020:'*
1160 PRINT@122,S1$;:PRINT@186,S1$;:PRINT@250,S1$;:PRINT@442,S1$;
:PRINT@506,S1$;:PRINT@570,S1$;:PRINT@686,S2$;:PRINT@815,S2$;
1170 PRINT@121,INT((MNS+ROUND)*10)/10;:PRINT@185,INT((MEW+ROUND)
*10)/10;:PRINT@249,INT((MALT+ROUND)*10)/10;:PRINT@441,INT((SNS+R
OUND)*10)/10;:PRINT@505,INT((SEW+ROUND)*10)/10;:PRINT@569,INT((S
ALT+ROUND)*10)/10;
1180 PRINT@686,INT((ED+ROUND)*10)/10;"MI. APART!";
1190 PRINT@815,STR$(P1%);"%";:PRINT@820,STR$(P2%);"%";:PRINT@825
,STR$(P3%);"%";
1200 IFFT%>0RESET(C1%,C2%)
1210 C1%=ABS(MEW+X%):C2%=ABS(MNS/2-Y%):SET(C1%,C2%)
1220 IFFT%>2RESET(C3%,C4%)
1230 C3%=ABS(SEW+X%):C4%=ABS(SNS/2-Y%):SET(C3%,C4%)
1240 IFFT%=0GOTO1260
1250 GOSUB2000:IFI$=""GOTO1330
1260 PRINT@942,S2$;:PRINT@944,"";:INPUT"BNG:";SVEC:PRINT@944,"";
:INPUT"ANGC";SUPDN:'*
1270 PRINT@961,"RADAR SCALE=";VS%;"NORTH/SOUTH BY";HS%;"EAST/WES
T";
1280 IFSVEC<1THENSVEC=1
1290 IFSVEC>360THENSVEC=360
1300 IFSUPDN<-90THENSUPDN=-90
1310 IFSUPDN>90THENSUPDN=90
1320 I$="":SVEC=SVEC/RADS:SUPDN=SUPDN/RADS
1330 IFSUPDN=0THENSGSPD=SSPEED:GOTO1370:'*
1340 SALT=SALT+(SSPEED*SIN(SUPDN)):IFSALT<1THENSALT=1
```

```
1350 SGSPD=ABS(SSPEED*COS(SUPDN))
1360 GOSUB2000
1370 ONDIR%GOSUB3000,3020,3040,3060:'*
1380 IFSQR(MEW[2+MNS[2)>MSPEEDGOTO1400
1390 MEW=0:MNS=0:GOTO1150
1400 MUPDN=ATN(MALT/G):MALT=MALT-MSPEED*SIN(MUPDN):MGSPD=ABS(MSP
EED*COS(MUPDN)):'*
1410 RDEV=SQR(MEW[2+MNS[2)/10000:MVEC=ATN(MNS/MEW)
1420 MEW=MEW-MGSPD*COS(MVEC)+RND(20)*RDEV:MNS=MNS-MGSPD*SIN(MVEC
)+RND(20)*RDEV
1430 GOSUB5000:G=SQR(MEW[2+MNS[2)
1440 GOSUB2000
1450 P1%=SNS/MNS*100+0.5:IFP1%>999THENP1%=999
1460 P2%=SEW/MEW*100+0.5:IFP2%>999THENP2%=999
1470 P3%=SALT/MALT*100+0.5:IFP3%>999THENP3%=999
1480 FT%=FT%+1:IFED>1.5GOTO1150
1490 CLS:PRINTCHR$(23):PRINT@200,"!! TARGET ACQUISITION !!":GOSU
B4000:PRINT@400,"!! DETONATION !!":GOSUB4000:L%=RND(10)
1500 IFL%>2THENPRINT@582,"!! ENEMY ICBM DESTROYED !!":GOSUB4000:
CLS:GOTO1020
1510 PRINT@580,"!! ICBM STILL FUNCTIONAL !!":GOSUB4000:CLS:FT%=0
:P1%=0:P2%=0:P3%=0:SEW=0:SNS=0:SALT=0:GOTO1040
2000 I$=INKEY$:FORP0%=16438TO16445:POKEP0%,0:NEXTP0%:'*
2010 RETURN
3000 SEW=SEW+SGSPD*SIN(SVEC):SNS=SNS+SGSPD*COS(SVEC):GOSUB3500:'
*
3010 RETURN
3020 SEW=SEW-SGSPD*SIN(SVEC):SNS=SNS+SGSPD*COS(SVEC):GOSUB3500:'
*
3030 RETURN
3040 SEW=SEW+SGSPD*SIN(SVEC):SNS=SNS-SGSPD*COS(SVEC):GOSUB3500:'
*
3050 RETURN
3060 SEW=SEW-SGSPD*SIN(SVEC):SNS=SNS-SGSPD*COS(SVEC):GOSUB3500:'
*
3070 RETURN
3500 IFSEW<MDTHENSEW=MD:'*
3510 IFSEW>HS%THENSEW=HS%
3520 IFSNS<MDTHENSNS=MD
```

```
3530 IFSNS>VS%THENSNS=VS%
3540 RETURN
4000 FORL%=1TO1500:NEXTL%:'*
4010 RETURN
5000 GD=SQR((MEW-SEW)*(MEW-SEW)+(MNS-SNS)*(MNS-SNS)):AD=ABS(MALT
-SALT):ED=SQR((GD*GD)+(AD*AD)):'*
5010 RETURN
8000 CLS:PRINT"  YOU ARE THE RADAR CONTROLLER AT A SURFACE-TO-AI
R (SAM) MISSILE";:PRINT"INSTALLATION GUARDING A STRATEGIC AIR CO
MMAND AREA HEADQUARTERS.";:PRINT"YOU HAVE JUST PICKED UP A RUSSI
AN ICBM HEADING YOUR WAY AND YOU":'*
8010 PRINT"LAUNCH A SURFACE-TO-AIR MISSILE TO INTERCEPT AND DEST
ROY IT.":PRINT:PRINT"  YOU CONTROL THE SAM'S DIRECTION OF TRAVEL
 BY THE INPUTTING OF":PRINT"THE PROPER COMPASS BEARING (1 TO 360
 DEGREES) AND THE ANGLE OF"
8020 PRINT"CLIMB OR DIVE (1 TO 90 DEGREES OR -1 TO -90 DEGREES).
":PRINT
8030 PRINT"  WITH EACH NEW RADAR SCAN YOU ARE ADVISED OF THE NEW
 POSITIONS":PRINT"OF THE ICBM AND THE SAM, AND THE PERCENTILE RA
TIO OF THE SAM'S":PRINT"POSITION TO THE ICBM'S.  AS THE DISTANCE
 NARROWS, YOU MAKE THE"
8040 PRINT"NECESSARY ADJUSTMENTS IN DIRECTION SO AS TO INTERCEPT
 THE ICBM.":PRINT"JUST HOLD DOWN THE SPACE BAR WHEN YOU WANT TO
ENTER A NEW":PRINT"BEARING OR ANGLE FOR THE SAM."
8050 PRINTTAB(20);:INPUT"HIT ENTER TO CONTINUE";MEW:CLS
8060 PRINT"  YOU MAY DESTROY THE ICBM BY COMING WITHIN 1.5 MILES
 OF IT, AT":PRINT"WHICH POINT THE SAM'S ON-BOARD COMPUTERS WILL
DIRECT IT TO ITS":PRINT"TARGET.  IF YOU OVERSHOOT THE ICBM, YOU
CAN TURN THE SAM AROUND"
8070 PRINT"AND CHASE THE ICBM BACK TOWARDS YOUR BASE.":PRINT:PRI
NT"  IN THE UNLIKELY EVENT THAT THE ICBM SURVIVES THE DETONATION
":PRINT"OF THE FIRST SAM, YOU CAN LAUNCH ANOTHER!  BUT..."
8080 PRINT@541,"360/1":PRINT@601,"315   +    45":PRINT@660,"270
 + + + 0 + + +   90":PRINT@729,"225   +   135":PRINT@798,"180":P
RINT@960,"";:INPUT"IF YOU'RE READY HIT ENTER TO BEGIN";MEW:CLS
8090 RETURN
9000 DATA"NORTH","EAST ","N. ","E. ",1,44,897,191,188
9010 DATA"NORTH","WEST ","N. ","W. ",-92,44,939,188,191
9020 DATA"SOUTH","EAST ","S. ","E. ",1,0,1,191,143
9030 DATA"SOUTH","WEST ","S. ","W. ",-92,0,43,143,191
```

$ DOME $ BOOKEEPING

for small business

by Roger Robitaille, Sr.

Based on the famous Dome Bookkeeping System, this program is designed to serve the small business with few employees. Uses the same chart of accounts as the Dome journal, with instructions on how to customize to your own needs. Presents data year to last week, this week, and year to date. Enter checks and deposits; receive screen or printed reports — account summary, check register, deposits, and profit & loss. *Manual provided.*

Tape version, Level II, 16K	**(without Dome Journal)**	**$24.95**
	(with Dome Journal)	**$31.95**
Disk version, 32K	**(without Dome Journal**	**$29.95**
	(with Dome Journal)	**$36.95**

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from Lance Micklus

RX (Disk Version) 32K,1 Disk Systems, on Disk $24.95

XREF (Level II Version) Level II, on cassette $19.95

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NOTE: ST-80 is a trademark of Lance Micklus, Inc.

by Lance Micklus

The ST-80 family of smart terminal packages

Now you can have the right terminal package for your communication needs! From ST-80 UC — the simple, pre-set, inexpensive terminal program designed for users of THE SOURCE, MICRONET, and FORUM 80 — to the power and sophistication of ST-80 III, The Software Exchange has the package for you.

All four programs include the ability to use an unmodified TRS-80 keyboard to produce RUB, ESC, and other control characters for time sharing, software control of the RS-232-C board, repeat key, bell, software support for the three most common upper/lower case hardware conversions, and line printer output.

ST-80 UC 4K Level II cassette, $24.95

This universal communicator program is an easy-to-use timesharing program for the beginner. Special features include preset parity, word length, and baud rate (regardless of switch settings on the RS-232-C board) for THE SOURCE, MICRONET, and FORUM 80, automatic testing of the RS-232-C board, and even spooling of prepared messages on tape directly into FORUM 80 using a basic program supplied as a line listing.

ST-80 4K Level II cassette $49.95

The original smart terminal program for the TRS-80, ST-80 lets you reprogram your RS-232-C board from the keyboard, and run at different baud rates. Does not have auto testing of RS-232-C or tape spooling.

ST-80 D 32K disk program, $79.95

Special features include connection time clock, option of user-created translation tables for keyboard, gathering and pre-formatting data to be sent directly from disk to host computer, spooling of received files to disk or printer, editing of received files, and auto logon. If you use it with VTOS 3.1, you also get device driven I/O, job logging, and chaining.

ST-80 III 32K disk program, $150.00

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by Cindy and Andrew Bartorillo

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32K, disk only Specify language **$19.95 each**

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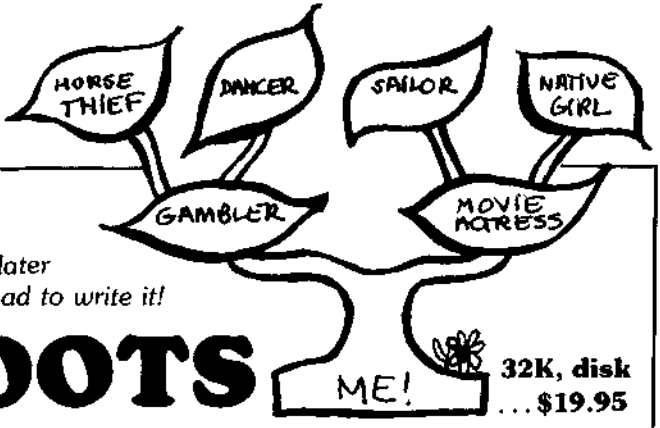

Sooner or later someone had to write it!

ROOTS

32K, disk ... $19.95

Genealogy has become an enormously popular pastime (as well as a lucrative profession for some) in the last few years.

The fascination is endless. Once you've come across your first amazing revelation — that you have a colorful ancestor who was a famous Indian Chief, or an advisor to an English King, or what-have-you — you're hooked, my friend, and as these people who were your progenitors come alive for you, like characters in a play, so does history itself light up like a stage.

ROOTS is an indispensable aid for all genealogists, whether amateur or professional. Up to nine generations of data may be placed into memory per file. Allows display of known data concerning a given individual; display of four-generation pedigree; searches for specific information within a given category (finds all "Smith" last names, or all births in the 1890's, for example); sorts by any selected category; gives printed reports.

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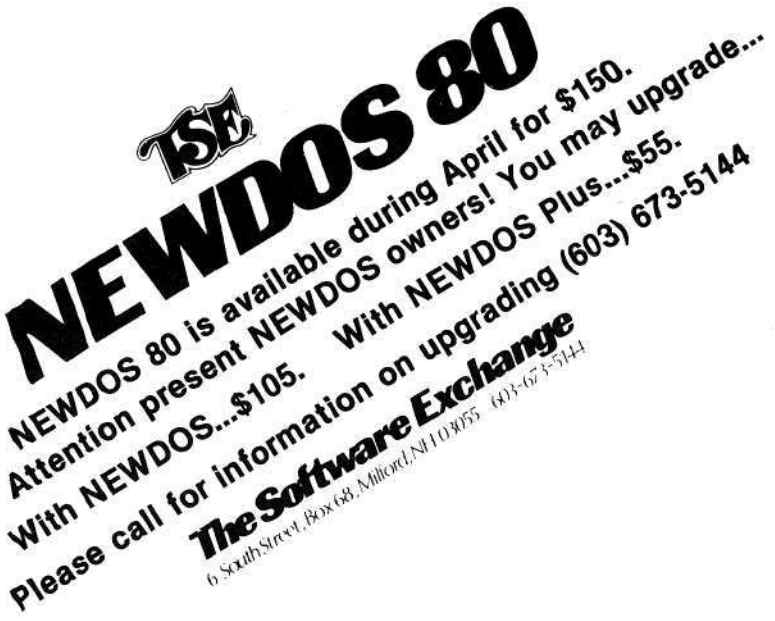
Bug Report

The instructions for OIL BARON in the December '79 issue were incomplete. The following criteria must be met in order to become an Oil Baron:

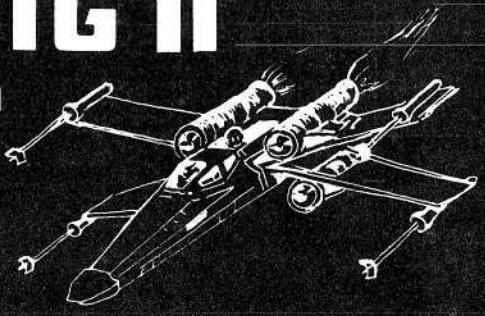
1) Cash reserves of at least $10,000,000
2) At least 31 refinery units
3) At least 20 Class "B" stations
4) At least 15 Class "A" stations
5) At least $150,000 spent on foreign lobby
6) At least $75,000 spent on domestic lobby
7) A crude to refined gas percentage of at least 90%
8) At least 80% of your refinery units must have smog equipment in good working order
9) AT least 20 domestic oil wells.

(These are the MINIMUM requirements and do not guarantee a win. Aim for at least 50% above what is listed, to be safe.)



X-WING II

by Chris Freund



For the thousands who have enjoyed X-Wing Fighter, X-Wing II presents a totally new element in the game!

You are Pilot of an X-Wing fighter ...

Your Mission, Destroy the Death Star!

Where X-Wing I left Death Star looming on the screen, **X-Wing II** lets you guide your fighter into the trench, find the exhaust port, aim and fire — all the while avoiding enemy fighters. Excellent graphics, 12 levels of play, and extensive INKEY$ commands make this one of our most exciting "real-time" games.

Level II, 16K — $9.95

The Software Exchange

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TYPING TUTOR by Roy Groth

You probably have often thought that it would be a lot easier if you didn't have to "hunt and peck" at the typewriter or computer keyboard. If you could only double your typing speed, the job would be done in half the time! And, with increased speed and confidence comes increased accuracy.

Level II, 16K — $19.95

Typing Tutor is a set of programs designed to teach you touch typing — from the basics of learning where the keys are, to practice drills at speeds that would make a Selectric shudder! Each lesson is displayed on the screen, including, at the early stages, a keyboard diagram. You are quizzed and graded, and you progress at your own pace. When you have mastered a lesson, the computer advances to the next, using CAI (computer aided instruction). Progress is fast, painless, and even fun as you keep pushing to break your own record.

So, whether you're going back to school or just want to enter programs from **SoftSide** that much faster, **Typing Tutor** can help.

Order a copy today and be a better typist by next week.

TSE

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Programming Problem? Question about a TSE Program?

Try our Hotline...

You can call our programmers direct on Tuesday nights from 7 to 10 PM, (EST)

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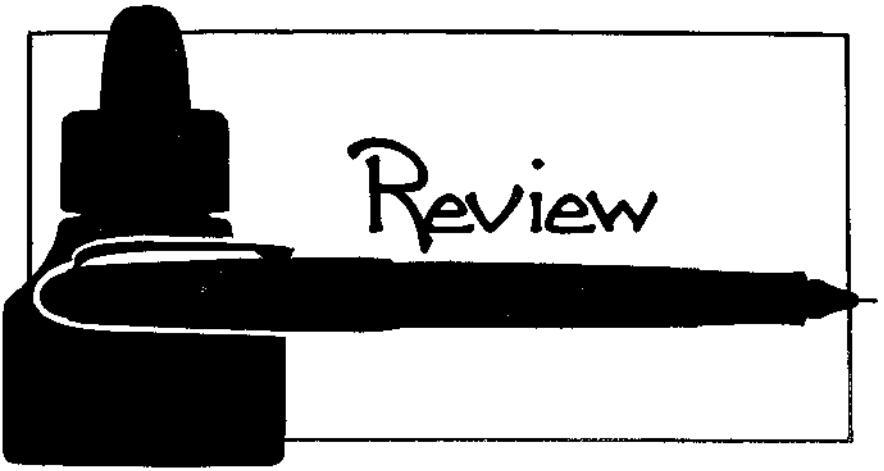

PROGRAMMING MADE EASY IN 580 BYTES

A Product Review by Sherry M. Taylor

What's worth its weight in gold, resides in 850 bytes of low memory, and is God's gift to Level II programmers? Well, if God is Web Associates, the gift is T-SHORT: a neat little package that takes the hard work out of copying SOFTSIDE programs.

T-SHORT gives the Level II TRS-80 shorthand capabilities. It works on the assumption that you have not made an upper/lower case modification or can switch it off at will. With T-SHORT loaded, a single shifted key will print on the screen an entire word or expression. It virtually eliminates syntax errors caused by misspelling or omitted parentheses.

Even if you are a bad typist, this program could save up to 50% of your programming time that could be better used developing your program idea or debugging same. You will find however, that with fewer mistakes in often used commands and statements, you will even spend less time debugging a program. (Of course, if your favorite game is DEBUGGING III.6, you may not want fewer mistakes.)

A very useful feature is the KUSTOM key. The KUSTOM key is user programmed to do anything your heart desires. It can be changed at any time, so if your heart's desire changes a lot, there's no real problem. I usually use the KUSTOM key for the PRINT statement. Since I get most of my programs from SOFTSIDE line listings, I like the PRINT statement spelled out to match the spacing as it is given in the listing. Another good idea is to program a self-entering RUN command for

use while debugging. Or, if working on a troublesome section, a GOTO ### might be in order. (There is already a provision for a GOTO 10 command.)

You will find this program especially useful in the case of graphics strings. The old M$=CHR$(###)+CHR$(###)+ etc. type of programming is unnerving if you forget the ASCII code number before you can get all that preceding stuff typed. There are two ways to get around this with T-SHORT. One is to program KUSTOM to print an entire line such as this: CHR$(nnn)+CHR$(nnn)+CHR$(nnn). Then go back and edit in the numbers. Since the graphics strings are usually programmed together in the utilities section, you can change your KUSTOM key when you've finished and let it do something else. If you need only a few of those CHR$'s throughout the program, the second way is to use the shifted "C" to print the entire expression "CHR$(". Now all you have to remember is the ASCII code and the closing parenthesis.

There are 42 keys that will have a special shifted function with T-SHORT. So for those of us who have memories even more static than TRS-80's RAM, the program is supplied with decals to install on the keys indicating what the shifted version will produce. They are designed with white printing on clear plastic to give the nice, expensive "factory" look.

The program is provided on digital cassette with Level II on one side and DOS on the other. There are two passes of each. Included are 4 pages of detailed instructions. The genius responsible for T-SHORT is Ron Wirth and it is produced by Web Associates. It is available through The Software Exchange for $9.95.

As far as I am concerned, no Level II TRS-80 should be without this program. I've often wondered how I lived so long without it. And, for those who don't need the other features of Level III*, T-SHORT is the only way to go.

* Trademark of Microsoft

see advertisement on page 37...

A REVIEW OF WORD CHALLENGE

by Scott Adams

Word Challenge written by Richard Taylor and published by 80-US is a software sleeper which has too long lain on the shelf. It is a fun-filled, lyrical game which is very, very addicting!

Challenge is written in BASIC and pokes its own machine language routines as needed. It will run as easily on disk as on a 16K Level II. The program first starts off with a very clever sight and sound sequence which is reminiscent of the newer electronic pinball machines found in todays modern arcades. It then allows you to select either the one or two player option.

The basic rules to Challenge are simple, the player must guess a hidden phrase one letter at a time. The value of the phrase starts at 50

points. For each incorrect consonant guessed 2 points are deducted and for each wrong vowel 10 points are knocked off! The phrases may be supplied by the computer or in the case of two players, by each of the opponents.

Richard Taylor (who is well known for his TRS-80 Opera selections) has outdone himself in both sound and sight simulations. Besides being fun to play this program is also fun to watch! Unlike other word games this one is easy to learn and simple to play! Here at Adventure Computer Center we find this program is an instant crowd attractor.

Word Challenge is destined to become a true classic, and is one program I can readily recommend for all age groups from 9 to 90! But don't take my word for it, go out and buy yourself a copy today! (And have an "Adventure" with it!)

To order from The Software Exchange see advertisement this page...

Richard Taylor's Magical Sound

TRS-80 Opera Theatre

The finest musical program we have seen for the TRS-80. It deserves a quality amplifier. Amazing sound! Richard Taylor is an opera singer with a magnificent ear!
Selections:

- WILLIAM TELL OVERTURE
- MUSETTA'S WALTZ
- SEMPRE LIBERA
- QUEEN OF THE NIGHT
- LA DONNA E' MOBILE

Challenge

"Didn't want to stop — nearly died laughing" - Scott Adams

Word guessing game with sound effects, one or two players. Truly challenging and competitive.

Separately on cassette ..... $9.95 (each program)
Both programs on disk ..... $19.95 (two programs)

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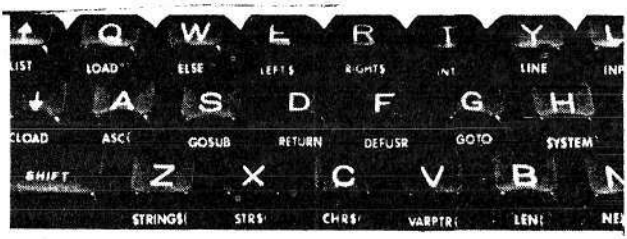

T-SHORT™

SHORTHAND for LEVEL II and DISK BASIC

- TSHORT™ lets you type LEVEL II and/or DISK BASIC more quickly and accurately than ever before. Save up to 90% programming time and achieve 100% accuracy.
- 31 programming statement keys.
- KUSTOM™ key, up to 64 characters - changeable anytime.
- 42 key decals (see picture). 10 area different for DISK users.
- A single, shifted-key entry types entire statement on screen.
- Fast, efficient machine language.
- Uses 580 bytes of LOW memory, i.e.: No MEM SIZE req'd.
- Comes on cassettes, one side LEVEL II, the other for DOS.
- Compatible with DOS 2.1, 2.2, 2.3, NEWDOS, KBFIX, etc.
- DOS version loads to and executes from disk via TAPEDISK.
- Features self-entering commands: CONT; GOTO10: KUSTOM™ (Self-enter optional)
- TSHORT™ W/4 page instruction manual **$9.95**

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Outstanding Utilities from RACET Computes

INFINITE BASIC

Adds more than 70 commands to BASIC that can be merged in any combination to make efficient use of memory. Includes matrix read, inverse, transpose, identity, simultaneous equations, scalar, vector, and multidimensional array arithmetic, dynamically reshape, expand, and delete arrays, change arrays in mid program, read and write arrays on tape, copy elements, zero and move arrays. String functions include left and right justify, truncate, rotate, text justification, string centering, delete and insert substring, pack string, convert upper and lower case, translate characters, reverse strings, verify function, test number of occurences, masked string searches, encrypt and decrypt string, compress and uncompress string characters. High speed sort routines for strings and arrays, including multikey sorts, are also part of this package.

For business users, an add on package includes multiple precision packed decimal arithmetic, with up to 127 digits of accuracy, binary search of sorted arrays, insert elements in sorted arrays, automatic page headings, footings, and pagination including forced end of page, and automatic hash for record retrieval. **Infinite BASIC $49.95. Infinite business (add on) $29.95**

COMPROC COMMAND PROCESSOR

Chain multiple steps in disk BASIC upon power up, relocatable key debounce, allows pauses for data entry at specified steps during execution (on cassette for disk systems only) for **$19.95.**

DOSORT

BASIC control program with high speed machine language sort for disk users. Merge and sort files on more than one disk if you have 2 or more drives. Self prompting with manual. Specify 32K or 48K version **$34.95.**

GSF GENERALIZED SUBROUTINE FACILITY

18 machine language subroutines with easy access for BASIC users. Sort 1000 element arrays in 9 seconds, read and write arrays to tape, compress and uncompress data, move arrays in memory, duplicate memory, fast horizontal and vertical lines, 5 routines for screen control. Specify 16K, 32K, or 48K version, for **$24.95.**

REMODEL PROLOAD

BASIC program utility allows you to renumber portions of a program, move portions from one location to another, delete, merge, save and verify combined and changed programs, and create your own library of programs, subroutines, and even data statements. Works on tape or disk systems. Two programs on one tape. Specify 16K, 32K, or 48K (unspecified orders receive 16K) tape **$34.95**

TIMSER

Time series analysis program fits data to 9 different 1st, 2nd, and 3rd order curves. Goodness of fit data, tables, projected data, confidence limits, curve fit, variance, correction factor, seasonal and cyclical variations, inflation corrections are all implemented. Detailed user manual with illustrated examples. Order tape at **$14.95.**

Y-YBAR

Optical system design program allows manipulation of ray heights at lens surfaces using Y-Y Bar diagram method. With documentation on tape for **$14.95.**

DISK SORT/MERGE

DSM IS POWERFUL!!!!!!

- Sorts large multiple diskette files on a minimum two drive Mod-I disk system.
- All records are physically rearranged — no key files are required.
- Sorts random files created by BASIC, including files containing sub-records spanning sectors.
- Sorts on one or more fields in ascending or descending order. Fields may be character, binary integer, or floating point.
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- Sort commands can be saved for reuse in production applications.
- Single sort, merge, or mixed sort/merge operations may be performed in a single DSM application.
- Sorted output may be written to a new file, or replace the original input file.

DSM IS FAST!!!!

DSM is written entirely in machine language for fast sorting. **$75.00**

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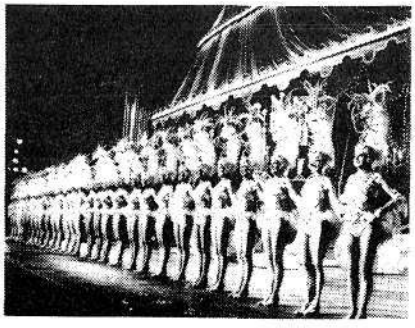


SPECIAL CASINO GAMES SECTION
pages 40 - 62

SLOT MACHINE

by James A. Hagani

At the machine next to you is a little old lady in red tennis shoes, dropping one silver dollar after another into her machine. Each time she pulls the handle, 15 more silver dollars come cascading out and right into a bulging paper bag.

Tentatively, you turn to your own one-armed-bandit and drop the first silver dollar in the slot. You pull the lever—the wheels spin—and you get: a Lemon, an Orange and a Prune.

6 hours, $493.00 and 986 prunes later, you decide to give up. You mutter angrily, "There's got to be an easier way to make a living!"

"There is", says the little old lady as you pass by. "Do what I do. Get a job working for the management of this casino. You get to stand in front of one of these 'special'

machines and encourage the genuine customers by winning all day long! Well, sonny, it's time for my nap.", and she moves slowly off, down the rows of shiny slot machines.

You look around. Has anyone heard? Did anyone see? It appears safe. You sidle up to her "special" machine, and slip in one of your last remaining silver dollars. As the wheels come to rest, you wait expectantly for your first payoff. What you see are: an Orange, a Potato and another Prune.

The little old lady calls back over her shoulder, "By the way, sonny, when you work for them, they even give you "special" silver dollars to feed the "special" machines!"

```
10 RANDOM
20 CLEAR 1000
30 C$=STRING$(12," ")
40  CLS
50 '                    ************************
60 '                    *   COMPU-SLOT MACHINE  *
70 '                    *   BY JAMES A. HAGANI  *
80 '                    *  FOR LEVEL II TRS-80  *
90 '                    *   WITH 16K OF MEMORY  *
100 '                    *  & AN A.M. RADIO FOR  *
110 '                    *REALISTIC SOUND EFFECTS*
120 '                    ************************
130 GOSUB1120
140 CLS: FOR X=96 TO 99: FORY=2 TO 19: SET(X,Y):NEXT Y: NEXT X
150 FOR X=0 TO 91:SET(X,1):SET(X,46) NEXTX
160  FOR X = 92 TO 96 : SET(X,19) : NEXT X
170  FOR Y=1 TO 46:SET(0,Y) : SET(91,Y) : NEXT Y
180  FOR Y=4 TO 22 : FOR X=2 TO 62 STEP 30
190  SET(X,Y) : NEXT X : NEXT Y
200 FOR Y=5 TO 21:FOR X=29 TO 89 STEP 30:SET(X,Y)
210  NEXT X : NEXT Y
220  FOR X=2 TO 29 : SET(X,4) : SET(X,22) : NEXT X
230  FOR X=32 TO 59 : SET(X,4) : SET(X,22) : NEXT X
240  FOR X=62 TO 89 : SET(X,4) : SET(X,22) : NEXT X
250  FOR X=54 TO 85 : SET(X,40) : SET(X,45) : NEXT X
260  FOR Y=40 TO 45 : SET(54,Y) : SET(85,Y) : NEXT Y
270  LET J=0 : LET G=0
280 PRINT@261,"COMPU-";:PRINT@277,"SLOT";
290 PRINT@290,"MACHINE";
```

```
300 GOSUB1870
310 IF MA$="Q" THEN MA=.25:MA$="QUARTERS":GOTO330
320 MA=1:MA$="DOLLARS"
330 GOTO370
340  PRINT @ 558, "THAT'S TOO MUCH";
350  PRINT @ 622, "THE LIMIT'S $100";
360 PRINT@943,"                    ";
370 PRINT@687,"HOW MANY";:PRINT@751,MA$;" DO",:PRINT@815,"YOU WI
SH TO";:PRINT@879,"BET (1-5)";
380 PRINT@924,"PAY-OFF WINDOW";
390 PRINT@943,"OR 6=END ?";
400 PRINT@954," ";
410 Z$=INKEY$:IF Z$="" THEN 410  ELSE Z=VAL(Z$):IF Z>6 OR Z=0 TH
EN 410  ELSE PRINT@953,Z;
420 IF Z=6 THEN 2040
430 ZZ=Z:Z=Z*MA
440 '
450 GOSUB2160
460  FOR Y=2 TO 18 : FOR X=96 TO 99 : RESET(X,Y) : NEXT X : NEXT
 Y
470  FOR Y=18 TO 2 STEP -1 : FOR X=96 TO 99 : SET(X,Y) : NEXT X
480  NEXT Y
490  FOR B=0 TO 8
500 FORC=130 TO 160 STEP 15:PRINT@C,"~~~~~~~~~~~~~~";:PRINT@C,"
        ";:NEXTC
510 FOR C=194 TO 224 STEP 15
520 PRINT@C,"~~~~~~~~~~~~~~";
530 PRINT@C,"              ";:NEXTC
540 FOR C=258 TO 288 STEP 15
550 PRINT@C,"~~~~~~~~~~~~~~";
560 PRINT@C,"              ";:NEXTC
570 FOR C=322 TO 352 STEP 15
580 PRINT@C,"~~~~~~~~~~~~~~";
590 PRINT@C,"              ";:NEXTC
600 FOR C=386 TO 416 STEP 15:PRINT@C,"~~~~~~~~~~~~~~";:PRINT@C,"
        ";:NEXTC
610  NEXT B
620 FOR D=0 TO 2
630 GOSUB1410
```

```
640 IF D<>0 THEN FOR XX=1 TO 75:NEXTXX
650 GOTO750
660 FOR XS=1 TO 7
670 FOR XX=1 TO 12:READQ:A$(XS)=A$(XS)+CHR$(Q+100):NEXTXX
680 FOR XX=1 TO 12:READQ:AA$(XS)=AA$(XS)+CHR$(Q+100):NEXTXX
690 FOR XX=1 TO 12:READQ:AB$(XS)=AB$(XS)+CHR$(Q+100):NEXTXX
700 FOR XX=1 TO 12:READQ:AC$(XS)=AC$(XS)+CHR$(Q+100):NEXTXX
710 FOR XX=1 TO 12:READQ:AD$(XS)=AD$(XS)+CHR$(Q+100):NEXTXX
720 NEXTXS
730 GOSUB1640
740 RETURN
750 XT=D*15
760 PRINT@130+XT,A$(A(D));:PRINT@194+XT,AA$(A(D));
770 PRINT@258+XT,AB$(A(D));:PRINT@322+XT,AC$(A(D));
780 PRINT@386+XT,AD$(A(D));
790 NEXTD
800 'PAYOFFS
810 PA=-1
820 IF A(0)=5 THEN PA=1
830 IF A(0)=5 AND A(1)=5 THEN PA=4
840 IF A(0)=A(1) AND A(1)=A(2) AND A(1)>=3 AND A(1)<=7 THEN PA=7
850 IF A(0)=A(1) AND (A(0)=1 OR A(0)=2) THEN PA=15
860 IF A(0)=2 AND A(1)=2 AND A(2)=2 THEN PA=29
870 IF A(0)=1 AND A(1)=1 AND A(2)=1 THEN PA=49
880 IF PA>0 THEN GOSUB1770:GOSUB2300:GOTO1000
890 G=G+(Z*PA)
900  LET J=J+1
910 PRINT@243,"YOU ARE NOW";:PRINT@371,"          ";
920 IF G<0 THEN PRINT@309," LOSING";:PRINT@371,"$";ABS(G);
930 IF G=0 THEN PRINT@309,"  EVEN   ";:PRINT@371,"   WITH ME";
940 IF G>0 THEN PRINT@309,"WINNING";:PRINT@371,"$";G;
950 PRINT@499,"TIMES PLAYED";:PRINT@566,J;
960  GOTO 370
970  LET F=100:GOTO 1000
980  LET F=5 : GOTO 1000
990  LET F=2
1000 FOR H=0 TO 2
1010 PRINT@924,"              ";
1020  PRINT @ 927, "PAY-OFF";
```

```
1030  FOR QQ=0 TO 100 : NEXT QQ
1040  PRINT @ 927, "YOU WIN";
1050  FOR QQ=0 TO 100 : NEXT QQ
1060  PRINT @ 927, "       ";
1070  PRINT @ 926, "$", 2*(PA+1);
1080  FOR QQ=0 TO 100 : NEXT QQ
1090  PRINT @ 926, "         ";
1100  NEXT H : GOTO 890
1110 END
1120 PRINTCHR$(23);
1130 PRINT@404,"COMPU-SLOT":PRINT@458,"SOUNDING SLOT MACHINE":PR
INT
1140 PRINT" FOR TRUE SOUND EFFECTS, PLACE":PRINT"AN A.M. RADIO N
EAR THE KEYBOARD.":PRINT"           -WORKING-"
1150 GOSUB660
1160 PRINT:PRINT"DO YOU WISH TO PLAY A QUARTER":PRINT"OR A DOLLA
R MACHINE (Q/D)? ";
1170 MA$=INKEY$:IF MA$="" THEN 1170 ELSE PRINTMA$
1180 FOR XX=1TO20:NEXT:CLS:RETURN
1190 '3 LINES OF DATA FOR EACH:BAR-BELL-8BALL-APPLE-CHERRY-MELON
-STAR
1200 DATA 43,43,42,43,41,43,43,42,43,41,43,43,91,31,71,48,68,51
1210 DATA 71,48,78,51,31,89,91,40,74,45,91,40,40,91,70,89,56,35
1220 DATA 91,76,86,33,91,28,28,91,78,49,39,80,88,88,72,88,56,88,
88,72,88,56,88,88
1230 DATA 28,28,28,84,91,91,91,91,80,28,28,28,28,28,70,91,91,91
1240 DATA 91,91,91,49,28,28,28,28,91,91,-34,-31,-24,-24,91,91,28
,28,28,84,91,91,91,91
1250 DATA 91,91,91,91,80,28,58,31,31,28,28,86,81,28,28,31,31,73
1260 DATA 28,28,76,52,40,40,40,40,64,44,28,28,52,34,29,28,28,28
1270 DATA 28,76,76,78,37,64,49,28,28,28,28,28,70,91,-44,91,49,70
1280 DATA 37,64,44,-34,-35,-24,-24,30,31,63,52,34,28,28,30,37,40
,40,40,40,34,28,28,28
1290 DATA 28,28,60,76,44,70,49,60,76,44,28,28,60,90,91,91,91,90
1300 DATA 89,91,91,91,89,44,91,91,91,-35,-20,-20,-24,-31,91,91,9
1,91
1310 DATA 39,91,91,91,91,91,91,91,91,91,91,35,28,30,75,91,91,91,
91,91,91,59,29,28
1320 DATA 28,28,31,40,85,82,-33,-28,-31,-18,-18,-11,28,28,28,28,
```

```
76,75,81,28,28,28,28,28
1330 DATA 28,28,52,31,28,70,46,73,44,28,28,28,60,88,89,44,28,84
1340 DATA 89,80,39,80,28,28,39,91,91,35,30,75,91,59,29,30,29,28
1350 DATA 60,90,91,91,91,91,91,91,31,31,80,28,90,91,91,91,91,91
1360 DATA 59,29,-42,-66,30,73,91,-23,-31,-24,-21,-22,49,-42,-56,
-41,-61,70
1370 DATA 75,91,91,91,91,91,89,44,-66,-54,60,58,30,75,91,91,91,9
1,91,91,76,76,35,28
1380 DATA 71,83,76,88,56,80,76,28,28,28,76,76,70,91,26,72,49,91,
91,67,55,51,56,74
1390 DATA 70,91,86,91,89,88,91,68,48,81,79,86,70,51,31,28,28,31,
31,43,43,43,31,31
1400 DATA 70,49,28,28,28,28,28,28,28,28,28,28
1410 'WHEELS 1-3
1420 A(D)=RND(11):ON D+1 GOTO 1440 ,1510 ,1590
1430 'WHEEL 1
1440 IF A(0)=1 OR A(0)=2 THEN RETURN
1450 IF A(0)=3 OR A(0)=4 THEN A(0)=3:RETURN
1460 IF A(0)=5 OR A(0)=6 OR A(0)=11 THEN A(0)=4:RETURN
1470 IF A(0)=7 OR A(0)=8 THEN A(0)=5.RETURN
1480 IF A(0)=9 THEN A(0)=6:RETURN
1490 A(0)=7:RETURN
1500 'WHEEL 2
1510 IF A(1)=1 THEN A(1)=1:RETURN
1520 IF A(1)=2 OR A(1)=3 THEN A(1)=2.RETURN
1530 IF A(1)>=4 AND A(1)<=5 THEN A(1)=3:RETURN
1540 IF A(1)=6 THEN A(1)=4.RETURN
1550 IF A(1)=7 THEN A(1)=5:RETURN
1560 IF A(1)=8 OR A(1)=9 THEN A(1)=6.RETURN
1570 A(1)=7:RETURN
1580 'WHEEL 3
1590 IF A(2)>=1 AND A(2)<=4 THEN RETURN
1600 IF A(2)=5 THEN A(2)=4:RETURN
1610 IF A(2)=6 OR A(2)=7 THEN A(2)=5:RETURN
1620 IF A(2)=8 OR A(2)=9 THEN A(2)=6.RETURN
1630 A(2)=7:RETURN
1640 RESTORE:FOR XS=1 TO 7
1650 FOR XX=1 TO 12:READQ:IF Q<0 THEN Q=119-Q
1660 B$(XS)=B$(XS)+CHR$(219-Q).NEXTXX
```

```
1670 FOR XX=1 TO 12:READQ:IF Q<0 THEN Q=119-Q
1680 BA$(XS)=BA$(XS)+CHR$(219-Q):NEXTXX
1690 FOR XX=1 TO 12:READQ.IF Q<0 THEN Q=119-Q
1700 BB$(XS)=BB$(XS)+CHR$(219-Q):NEXTXX
1710 FOR XX=1 TO 12.READQ:IF Q<0 THEN Q=119-Q
1720 BC$(XS)=BC$(XS)+CHR$(219-Q):NEXTXX
1730 FOR XX=1 TO 12:READQ:IF Q<0 THEN Q=119-Q
1740 BD$(XS)=BD$(XS)+CHR$(219-Q).NEXTXX
1750 NEXTXS
1760 RETURN
1770 FOR DZ=1 TO 5:FOR D=0 TO 2:XT=D*15
1780 PRINT@130+XT,B$(A(D)); :PRINT@194+XT,BA$(A(D));
1790 PRINT@258+XT,BB$(A(D)), :PRINT@322+XT,BC$(A(D)),
1800 PRINT@386+XT,BD$(A(D)),
1810 PRINT@130+XT,C$; :PRINT@194+XT,C$; .PRINT@258+XT,C$; :PRINT@32
2+XT,C$; :PRINT@386+XT,C$;
1820 PRINT@130+XT,A$(A(D)); :PRINT@194+XT,AA$(A(D)),
1830 PRINT@258+XT,AB$(A(D)), :PRINT@322+XT,AC$(A(D)),
1840 PRINT@386+XT,AD$(A(D));
1850 NEXTD:NEXTDZ
1860 RETURN
1870 'PRINT PAYOFF COMBINATIONS ON SLOT MACHINE
1880 PRINT@513,"        PAYOFFS           FLAG FLAG FLAG...8",
1890 PRINT@577,"CHERRY ------ ------..2   BELL BELL ----..16",
1900 PRINT@641,"CHERRY CHERRY ------ .5   BAR  BAR  ---...16";
1910 PRINT@705,"CHERRY CHERRY CHERRY..8   BELL BELL BELL..30";
1920 PRINT@769,"8-BALL 8-BALL 8-BALL..8   BAR  BAR  BAR...50";
1930 PRINT@833,"APPLE  APPLE  APPLE...8";
1940 PRINT@897,"MELON  MELON  MELON...8",
1950 'SET UP SCORE BOARDS
1960 PRINT@116,"* SCORES *";
1970 FOR X=101 TO 126:SET(X,7).SET(X,19).SET(X,27):NEXT
1980 FOR Y=7 TO 27:SET(101,Y).SET(126,Y):NEXT
1990 FOR Y=20 TO 27:SET(101,Y):SET(126,Y):NEXT
2000 'SET UP COIN SLOT
2010 FOR X=120 TO 125.SET(X,29).SET(X,46):NEXT
2020 FOR Y=29TO46:SET(120,Y):SET(125,Y).NEXT
2030 RETURN
2040 'FINISH PLAY & DETERMINE OUTCOMING SCORE
```

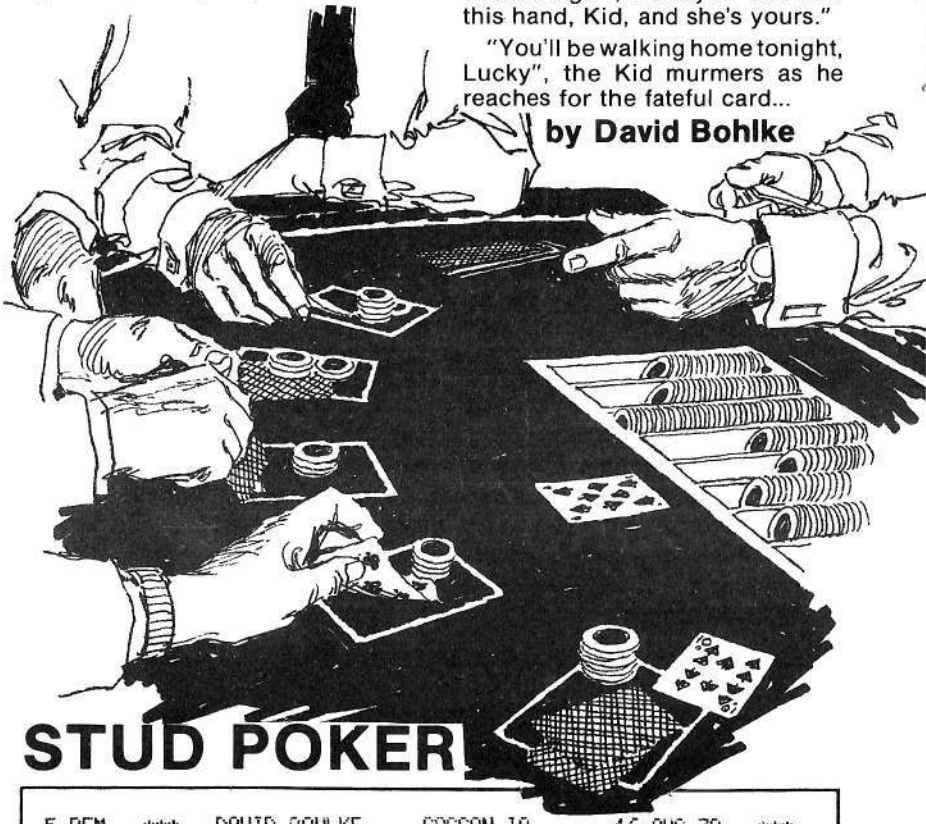
```
2050 CLS:PRINTCHR$(23);
2060 PRINTTAB(10);"COMPU-SLOT"
2070 PRINT@258,"AFTER PLAYING THE COMPU-SLOT"
2080 PRINT"MACHINE";J;"TIMES, YOU FINISHED"
2090 IF G<0 THEN PRINT"LOSING";ABS(G);"DOLLARS!!":PRINT"TOO BAD
CHUM BUT YOUR"
2100 IF G=0 THEN PRINT"WITH AS MUCH AS YOU CAME WITH!!":PRINT"YO
U WERE LUCKY BECAUSE YOUR"
2110 IF G>0 THEN PRINT"WINNING";G;"DOLLARS!!!!!":PRINT"YOU ARE V
ERY LUCKY BECAUSE YOUR"
2120 IF J>0 THEN PRINT"AVERAGE PER PLAY WAS";G/J;"!!!"
2130 IF J=0 THEN PRINT"AVERAGE WAS A BIG '0' PER PLAY!":PRINT"YO
U REALLY KNOW HOW TO GAMBLE!!"
2140 PRINT"WHY DON'T YOU NOW TRY THE WHEEL":PRINT"OF FORTUNE? I
HEAR THE MONEY":PRINT"REALLY MOVES OVER THERE!! BYE!!"
2150 END
2160 'INSERTION OF COINS INTO COIN SLOT
2170 FOR XX=1TO22
2180 PRINT@701,"C";:PRINT@765,"L";:PRINT@829,"I";:PRINT@893,"C";
:PRINT@957,"K";
2190 FOR XS=1TO100:NEXTXS
2200 FOR X=701 TO 957 STEP 64:PRINT@X," ";:NEXT
2210 FOR XS=1TO100:NEXTXS
2220 NEXTXX
2230 RETURN
2300 'WINNING TUNE
2310 FORK=1TO100:::REM/////////////////////
2320 NEXT
2330 FORK=1TO100:::REM//////////////
2340 NEXT
2350 FORK=1TO100::REM//////////
2360 NEXT
2370 FORK=1TO120:REM//////
2380 NEXT
2390 FORK=1TO120::REM//////////
2400 NEXT
2410 FORK=1TO250:REM//////
2420 NEXT
2430 RETURN
```

It is 2 a.m. in the smoke-filled room. The Cincinnati Kid has an Ace in the hole — an Ace and 2 Kings showing. Louisville Lucky has a Seven in the hole and another Seven showing. The Kid speaks softly but with an undercurrent of confidence in his voice, "I'll see your $50.00 and raise you $100.00".

Lucky is down to his last $50.00 chip. He tosses it into the pot. "I paid $70.00 for my horse, 'Old Saddlebags'", he says. "You win this hand, Kid, and she's yours."

"You'll be walking home tonight, Lucky", the Kid murmers as he reaches for the fateful card...

by David Bohlke



STUD POKER

```
 5 REM   ***   DAVID BOHLKE      COGGON, IA        16 AUG 79   ***
 6 REM   ***   FIVE CARD STUD   ***
 20 CLEAR300
 22 DEFINTA-Z:DIM D(51)
 50 GOSUB1000
 55 GOSUB5000
 60 FORI=1TO5:M(I)=200:NEXT
 70 CLS:PRINT"F I V E    C A R D    S T U D":PRINT:PRINT
 71 PRINT@256,"( 0 MEANS THE COMPUTER WILL PLAY ALL FIVE HANDS )"
```

```
:PRINT@192,"";
72 INPUT"HOW MANY PLAYERS (0-4) ";NP:IFNP<0ORNP>4,RUN
73 IFNP=0,P$(5)="LAST":GOTO98
74 PRINT:FORI=1TONP:PRINT"<ENTER> NAME OF PLAYER # ";I;
76 INPUTP$(6-I):P$(6-I)=LEFT$(P$(6-I),7):NEXT
98 EG=15+RND(5)
99 REM   ***   MAIN GAME LOOP   ***
100 FOR GM=1 TO EG:CLS:PT=0:DP(0)=5
102 PRINT@53,"DEAL #";GM;
110 FORI=0TO51:D(I)=0:NEXT
138 PRINT@960,"ANTE =  $10";
140 FORI=1TO5:M(I)=M(I)-10:PT=PT+10:PRINT@I*192-192,P$(I)
142 PRINT"$";M(I),:GOSUB1500:DP(I)=0:B(I)=0:NEXT
160 FORI=1TO5
165 PRINT@I*192-64,STRING$(51,140);:NEXT:PRINT@896,CHR$(31);
199 REM   ***   CYCLE FOR FIVE CARDS   ***
200 FOR CD=1 TO 5
202 PRINT@896,CHR$(31);
210 BT=0:FORI=1TO5:PD(I)=0:NEXT
249 REM   ***   CYCLE FOR FIVE PLAYERS   ***
250 FORPL=1TO5
252 IFDP(PL)>0,275
260 GOSUB1100:REM  GET NEW CARD
265 IFCD=1,PRINT@PL*192-192+CD*9,"? ";S$(0);:GOTO275
270 PRINT@PL*192-192+CD*9,N$," ";S$(S(PL,CD));
275 NEXT:IFCD<2,400
290 PRINT@960,"JUST A SECOND WHILE I CHECK MY CARDS . . .";
299 REM   ***   EVALUATE CARDS SHOWING   ***
300 A=2:GOSUB2000
310 NB=N:IFV(N)<200,NB=NH
315 IFCD=5,A=1:GOSUB2000
320 PL=NB:PR=0:FR=0
329 REM   ***   BETTING SEQUENCE   ***
330 IFDP(PL)>0,390
340 IFPL<6-NP GOSUB 4000:GOTO390
350 GOSUB3000
390 PL=PL+1:IFPL=6,PL=1
391 IFFR=0,FR=BT
392 IFPL<>NB,330
```

```
393 P1=PL+1:IFP1=6,P1=5
394 IFFR=BT AND PD(P1)=BT,400
395 IFPR=0,PR=1:PL=NB:GOTO330
400 NEXTCD
510 PRINT@896,CHR$(31);
512 PRINT@960,"FINAL TALLY . . .";
520 FORI=1TO5:IFDP(I)>0,530
522 PL=I:CD=1:GOSUB1120:PRINT@192*I-192+9,N$," ";S$(S(I,1));
530 NEXT
535 CD=5:A=1:GOSUB2000
536 IFV(N)<200,N=NH
538 IFV(N)<200,N=NH
540 PRINT@910,P$(N);" WINS THE $";PT;
550 M(N)=M(N)+PT:PRINT@N*192-128,M(N);
560 FORI=1TO999:NEXT
880 IFNP=0,900
890 PRINT@960,"<ENTER> FOR NEXT HAND ";:INPUTA$
900 NEXT GM
910 PRINT@896,CHR$(31);
920 PRINT@960,"PRESS <ENTER> FOR ANOTHER GAME ";:INPUTA$:RUN
999 REM   ***   PRINT STRINGS   ***
1000 P$(1)="TRS":P$(2)="KID":P$(3)="DOC":P$(4)="BALK"
1005 D$=CHR$(26)+STRING$(4,24)
1010 A$=CHR$(151)+CHR$(179)+CHR$(147)+CHR$(149)+D$+CHR$(141)
1012 S$(0)=A$+STRING$(2,140)+CHR$(133)
1020 A$=CHR$(176)+CHR$(159)+CHR$(181)+CHR$(144)+D$+CHR$(131)
1022 S$(1)=A$+CHR$(137)+CHR$(131)+CHR$(129)
1030 A$=CHR$(160)+CHR$(190)+CHR$(180)+" "+D$+" "
1032 S$(2)=A$+CHR$(139)+CHR$(129)+" "
1040 A$=CHR$(166)+CHR$(137)+CHR$(163)+CHR$(132)+D$+" "
1042 S$(3)=A$+CHR$(137)+CHR$(129)+" "
1050 A$=CHR$(160)+CHR$(158)+CHR$(180)+" "+D$+CHR$(131)
1052 S$(4)=A$+CHR$(138)+CHR$(130)+CHR$(129)
1060 B$="      "+D$+STRING$(2,24)+"       "
1070 RETURN
1099 REM   ***   PRINT CARD SUITS   ***
1100 R=RND(52)-1:IFD(R)>0,1100ELSED(R)=2
1110 S(PL,CD)=INT(R/13)+1:N(PL,CD)=R-INT(R/13)*13
1120 N=N(PL,CD)
1125 IFN<8,N$=RIGHT$(STR$(N+2),1):RETURN
```

```
1130 IFN=8,N$="T"ELSEIFN=9,N$="J"ELSEIFN=10,N$="Q"
1140 IFN=11,N$="K"ELSEIFN=12,N$="A"
1150 RETURN
1499 REM   ***   POT BAR GRAPH   ***
1500 FORII=1TO10:PRINT@II*64+121,(11-II)*42;:NEXT
1505 PRINT@890,"POT";
1510 J=INT(PT/42):K=PT-J*42:IFJ=0,1550
1515 IFJ>12,J=12
1520 FORII=1TOJ:PRINT@(13-II)*64+56,STRING$(7,191);:NEXT
1550 X=112:IFJ=0,Y=38ELSEY=(12-J)*3+2
1560 FORII=1TOK:SET(X,Y):X=X+1:IFX>125,X=112,Y=Y-1
1570 NEXT:RETURN
1600 RETURN
1999 REM   ***   ASSIGN POINT VALUE TO HANDS   ***
2000 FORI=1TO5:V(I)=0:VH(I)=0:NEXT
2020 N=0:HC=0:FORI=ATOCD
2030 FORJ=1TO5:IFN(J,I)>HC,HC=N(J,I):N=J
2040 NEXTJ,I:VH(N)=VH(N)+CD
2200 IFCD<3,2900
2210 FORJ=1TO5:B=A
2220 FORI=ATOCD:IFB=I,2250
2230 IFN(J,I)=N(J,B),V(J)=V(J)+N(J,I)+100
2250 NEXT:B=B+1:IFB<CD+1,2220
2260 NEXT
2400 IFCD<4,2900
2410 FORJ=1TO5:X=0:FORI=ATOCD-1
2420 IFS(J,I)=S(J,I+1),2430ELSEX=1
2430 NEXT
2540 IFCD=4 AND X=0,V(J)=50
2550 IFCD=5 AND X=0,V(J)=90:IFA=2,B(J)=1
2560 NEXT
2600 FORJ=1TO5:X=0:B=A
2605 FORI=ATOCD
2610 IFABS(N(J,I)-N(J,B))<5,2620ELSEX=1
2620 NEXT:B=B+1:IFB<CD+1,2605
2670 IFCD=4 AND X=0 AND V(J)<190,V(J)=40
2680 IFCD=5 AND X=0 AND V(J)<190,V(J)=70:IFA=2,B(J)=1
2690 NEXT
2695 IFCD<5,2900
```

```
2700 FORI=1TO5:IFV(I)>159 AND V(I)<170,V(I)=1300
2704 X=0:FORJ=1TO5:IFN(I,J)>X,X=N(I,J)
2706 NEXT
2707 IFV(I)=70 AND A=1,V(I)=680+X
2708 IFV(I)=90 AND A=1,V(I)=700+X
2710 NEXT
2900 HC=0:N=0:FORJ=1TO5:IFDP(J)>0,V(J)=0
2905 IFV(J)>HC,N=J:HC=V(J)
2910 NEXT
2920 HC=0:NH=0:FORJ=1TO5:IFDP(J)>0,VH(J)=0
2925 IFVH(J)>HC,NH=J:HC=V(J)
2930 NEXT:RETURN
2999 REM   ***   HUMAN BETTING SEQUENCE   ***
3000 PRINT@896,CHR$(31);
3002 A$=INKEY$
3010 PRINT@896,"OPTIONS :  ";
3020 PRINT"R=RAISE  C=CALL  D=DROP  X=CHECK";
3030 PRINT"  Y=SEE DOWN CARD";
3035 PRINT@960,"$";BT-PD(PL);"TO . . .  ";
3040 PRINT"< ";P$(PL);" >  : CHOICE ?";
3100 C$=INKEY$:IFC$="",3100ELSEPRINTC$;
3110 IFC$="C",3200
3120 IFC$="R",3300
3130 IFC$="D",3400
3140 IFC$="X",3500
3150 IFC$="Y",3600
3160 PRINT@1005,"ILLEGAL ENTRY";
3170 FORII=1TO1000:NEXT:GOTO3000
3200 B=BT-PD(PL):IFB=0,RETURN
3210 M(PL)=M(PL)-B:PT=PT+B:PD(PL)=PD(PL)+B:GOSUB1500
3215 PRINT@PL*192-128,"$";M(PL);
3220 RETURN
3300 PRINT@896,CHR$(31);
3302 IFPR=1PRINT@960,"NO RAISE THIS ROUND !?":GOTO3170
3310 PRINT@896,"O.K.  ";P$(PL),", HOW MUCH OF A RAISE (1-9) ? ";
3320 C$=INKEY$:IFC$="",3320ELSEPRINTC$:R=VAL(C$)
3322 IFR<1 OR R>9,3300
3325 B=BT-PD(PL):BT=BT+R
3330 PT=PT+R+B:M(PL)=M(PL)-R-B:PD(PL)=PD(PL)+R+B:GOSUB1500
3340 GOTO3215
```

```
3400 DP(PL)=1:FORI=1TO5:PRINT@192*PL-192+3*I,B$;:NEXT:RETURN
3500 IFBT-PD(PL)<>0,3160
3510 RETURN
3600 PRINT@896,CHR$(31);
3610 PRINT@896,"ANY OTHER HUMAN PLAYERS SHOULD TURN AWAY, AND YO
U CAN"
3620 PRINT"SLIGHTLY COVER YOUR DOWN CARD WHILE IT IS DISPLAYED."
;
3625 CE=CD:CD=1.GOSUB1120:CD=CE
3630 PRINT@192*PL-192+9,N$;" ";S$(S(PL,1));:FORII=1TO999:NEXT
3640 PRINT@192*PL-192+9,"? ",S$(0);:GOTO3000
3999 REM   ***   COMPUTER BETTING SEQUENCE   ***
4000 T=V(PL):PRINT@896,CHR$(31);:IFT=0,T=VH(PL)
4005 PRINT@960,P$(PL);" '5  TURN . . .";
4006 FORI=1TO999:NEXT:REM  ADD GUESS REMS HERE
4010 DA=0.DB=0:FORI=1TO5.IFI=PL,4020
4012 IFT-V(I)>DA,DA=T-V(I)
4014 IFV(I)-T>DB,DB=V(I)-T
4020 NEXT.IFDB>0,DA=0
4030 B=BT-PD(PL)
4090 IFDA=DB,DB=1:DA=0
4100 IFPR=1,4300
4104 IFCD>3 AND (T>30 AND T<99),R=RND(3)+3.GOTO4600
4105 IFDA>300,R=RND(3)+6:GOTO4600
4106 IF B(PL)=1,R=RND(3)+3:GOTO4600
4110 IFDA>190,R=RND(3)+3:GOTO4600
4120 IFDA>0,R=RND(9):GOTO4600
4130 IFCD<4 AND BT>0 AND BT<5 AND RND(4)=1,R=RND(3).GOTO4600
4140 IFDB<20 AND CD<4 AND BT=0 AND RND(2)=1,R=RND(3):GOTO4600
4135 IFPL=NB,R=RND(3)+2:GOTO4600
4200 IFCD<5 AND M(PL)>400 AND RND(2)=1,R=RND(3):GOTO4600
4300 IF BT=0 OR B=0,4800
4310 IFCD=5 AND PL=NB,4500
4320 IF BT<10 AND CD<4,4500
4330 IFPR=1 AND B<6 AND DB<200 AND CD<5,4500
4350 IFDB>200 AND CD>3 AND RND(2)=1,4700
4360 IFDB>0 AND A=1 AND RND(3)=1,4700
4370 IFDB>300,4700
4380 IFBT>13 AND V(PL)<40 AND CD>3,4700
```

```
4390 IFDB>14 AND CD=5 AND V(PL)<40,4700
4400 IF B>0,4500
4490 GOTO4800
4500 PRINT@960,"I'LL SEE THAT $";BT-PD(PL),", AND CALL.";
4510 FORI=1TO999:NEXT:B=BT-PD(PL):GOTO3210
4600 IFBT-PD(PL)=0,4650
4610 PRINT@696,"I'LL SEE THE $";BT-PD(PL)," AND ";
4620 FORI=1TO999:NEXT:B=BT-PD(PL)
4650 PRINT@960,"I'LL  RAISE IT BY  $",R
4660 FORI=1TO999:NEXT:BT=BT+R:GOTO3330
4700 PRINT@960,"I'LL   D R O P !";:FORI=1TO1000:NEXT
4710 GOTO3400
4800 PRINT@960,"I'LL  JUST  CHECK . . .";
4810 FORI=1TO999:NEXT:RETURN
4999 REM   ***   DIRECTIONS   ***
5000 CLS:PRINT"F I V E    C A R D    S T U D":PRINT
5010 PRINT"     THIS POKER GAME IS FOR 0-4 PLAYERS.  EACH GAME W
ILL HAVE"
5020 PRINT"FIVE PLAYERS - THE COMPUTER WILL PLAY ANY HANDS NOT P
LAYED BY"
5030 PRINT"HUMANS.  ONE CARD WILL BE DEALT DOWN, AND THE REMAINI
NG FOUR"
5040 PRINT"CARDS WILL BE DEALT UP.  YOU MAY HAVE ONE BET (OR RAI
SE) ON"
5050 PRINT"EACH CARD TURNED UP."
5100 PRINT"     EACH GAME WILL CONSIST OF 15-20 DEALT HANDS.  EV
ERY"
5110 PRINT"PLAYER WILL START WITH $200, AND THERE IS A $10 ANTE
FOR EACH"
5120 PRINT"HAND.  IF THERE IS A TIE HAND, THE PLAYER FIRST RECEI
VING THE"
5130 PRINT"TIE CARDS WILL WIN THE POT.  HUMAN PLAYERS WILL HAVE
TO AGREE"
5140 PRINT"ON A METHOD TO LOOK AT THEIR DOWN CARD SO THE OTHER P
LAYERS"
5150 PRINT"CAN'T SEE IT.  THE WINNER IS THE PLAYER WITH THE MOST
 MONEY"
5160 PRINT"AT THE END OF THE GAME.":PRINT
5200 PRINT"<ENTER> TO CONTINUE . . .";:INPUTA$:RETURN
```

DRAW POKER

by Lee Blumenthal and Joel Williard

The cute chorus girl by his side had been bringing him luck all evening. He felt sure that the combination of his skill and her lucky brown eyes was responsible for the sizable pile of chips before him on the green table. All he needed was to win one more big pot and he could buy that farm he had always wanted. He could settle down there — maybe with this very girl — and never touch a deck of cards again.

He looked at his hand: the Ace, King, Jack and Ten of Hearts, and the Three of Clubs.

He looked at the brown-eyed girl, and the smile she gave him

was all he needed. He threw down the Three, turned to the dealer and said, "I'll just take one".

The new card slid silently across the table. He picked it up but did not look at it yet. Instead, he turned to the brown-eyed girl and asked, "So what's your name, honey?".

"Queenie Hart", she replied with a loving look.

With difficulty, he tore his gaze from her eyes and looked at his hand...

```
D R A W   P O K E R

1 CLS:PRINT@17,"F I V E    C A R D    D R A W";:PRINT@128,"YOU A
ND THE COMPUTER ARE GIVEN STAKES OF $1000 EACH.  YOU CAN ";:PRINT
@192,"BET BEFORE CARDS ARE DRAWN AND AFTER CARDS ARE DRAWN."
2 PRINT@256,"THE COMPUTER WILL ANTE $5 FOR EACH OF YOU BEFORE TH
E HAND IS ";:PRINT@320,"DEALT.  THE MAXIMUM BET IS $100.":GOSUB
6000:PRINT "PRESS 'P' TO START  ":GOSUB 3000:CLEAR 700
3 A3=1000:B3=1000:DIM F$(52):DI$=CHR$(160)+CHR$(134)+CHR$(164)+C
HR$(26)+STRING$(2,24)+CHR$(137)+CHR$(129):HE$=CHR$(168)+CHR$(137
)+CHR$(169)+CHR$(26)+STRING$(2,24)+CHR$(137)+CHR$(129)
4 A$="SHDC":A1$="E23456789ABCD":A8$="TJQKA":SP$=CHR$(160)+CHR$(1
34)+CHR$(164)+CHR$(26)+STRING$(3,24)+CHR$(130)+CHR$(139)+CHR$(13
1):CL$=CHR$(160)+CHR$(158)+CHR$(180)+CHR$(26)+STRING$(2,24)+CHR$
(138):CB$=STRING$(4,176):CC$=CHR$(26)+CHR$(24)+CHR$(24):GOSUB 16
5 K9=5:E=0:U=0:U1=0:U3=0
6 I=1:FOR F=1 TO 4:FOR F1=1 TO 13:F$(I)=MID$(A1$,F1,1)
7 F$(I)=LEFT$(F$(I),1)+MID$(A$,F,1):I=I+1:NEXT F1,F:PRINT"*";
9 F=0:FOR F8=1 TO 9 STEP 2:GOSUB 5430:H$=LEFT$(H$,F8-1)+F$(F)+RI
GHT$(H$,10-(F8+1)):F$(F)=" ":NEXT F8:L=0:GOSUB 5390:GOSUB 5340:P
2$=H$:P$=Q$:K9=5:P1$=X$:PRINT"*";
10 GOSUB 5000:C1$=X$:C$=Q$:C2$=H$:C9=K9:E=1
15 CLS:PRINT@18,"F I V E    C A R D    D R A W";:PRINT@128,CA$,C
A$;CA$;CA$;CA$;"    ";CA$;CA$;CA$;CA$;CA$;:GOSUB 500:GOTO 20
16 CC$=CC$+CHR$(24)+CHR$(24)+CHR$(24)+CHR$(24):CF$=STRING$(5,27)
:CZ$=CHR$(128)+CHR$(128)+CHR$(128)+CHR$(26)+STRING$(3,24)+CHR$(1
28)+CHR$(128)+CHR$(128)
17 CD$=STRING$(4,128):CE$=STRING$(4,131):CA$=CHR$(160)+CB$+CHR$(
144)+CC$+CHR$(170)+CD$+CHR$(149)+CC$+CHR$(170)+CD$+CHR$(149)+CC$
+CHR$(170)+CD$+CHR$(149)+CC$+CHR$(170)+CD$+CHR$(149)+CC$+CHR$(13
0)+CE$+CHR$(129)+CF$:RETURN
18 REM          'FIVE CARD DRAW'
```

```
            PROGRAMMED  BY  LEE BLUMENTHAL
                 AND  JOEL WILLARD
                      4/79
20 H1=0:A1=0:K=0:C1=0:A3=A3-5:B3=B3-5:B1=INT(RND(0)*3+1):ON B1 G
OTO 49,149,249
49 GOSUB 885:GOTO 60
50 GOSUB 880:IF H1=0THEN 650 ELSE IF H1<>B1 THEN 53 ELSE A3=A3-H
1
52 GOSUB 840:GOTO 54
53 GOSUB 700:GOTO 50
54 IF A1=0 THEN 620
60 IF A1<>0 THEN 62 ELSE IF K>0 THEN 600
62 IF D<3 THEN 65 ELSE IF K>1 THEN 600 ELSE GOTO 70
65 IF A1>40 THEN 750 ELSE IF D=1 THEN 66 ELSE GOTO 600
66 IF A1>15 THEN 750 ELSE GOTO 600
70 IF D<4 THEN 110 ELSE B1=INT(RND(0)*30+20)
90 GOSUB 850:PRINTB1:B3=B3-B1-A1:GOTO 115
110 GOSUB 850:B1=INT(RND(0)*10+10):PRINTB1:B3=B3-B1-A1:
115 GOSUB 870:GOTO 50
149 GOSUB 885:GOTO 160
150 GOSUB 880:IF H1=0 THEN 650 ELSE IF H1<>B1 THEN 153 ELSE A3=A
3-H1
152 GOSUB 840:GOTO 154
153 GOSUB 700:GOTO 150
154 IF A1=0 THEN 620
160 IF A1<>0 THEN 180 ELSE IFK>0 THEN 600 ELSE IF D<2 THEN 600
180 IF K>1 THEN 600 ELSE IF D<3 THEN 182 ELSE GOTO 185
182 IF A1>45 THEN 750 ELSE IF D=1 THEN 183 ELSE GOTO 600
183 IF A1>15 THEN 750 ELSE GOTO 600
185 IF D<5 THEN 210
205 GOSUB 850.PRINT23:B1=23:B3=B3-B1-A1 GOTO 215
210 B1=INT(RND(0)*30+20) GOSUB 850.PRINTB1:B3=B3-B1-A1
215 GOSUB 870:GOTO 150
249 GOSUB 885:GOTO 255
250 GOSUB 880.IF A1=0 THEN 650 ELSE IF H1<>B1 THEN 253 ELSE A3=A
3-H1
252 GOSUB 840.IF A1=0 THEN 620 ELSE GOTO 255
253 GOSUB 700:GOTO 250
255 IF D>5 THEN 270 ELSE IF K>2 THEN 600 ELSE IF D>2 THEN 280 EL
SE IF A1>5 THEN 750 ELSE IF K>0 THEN 600 ELSE GOTO 280
```

```
270 GOSUB 850:PRINT36,B1=36:B3=B3-B1-A1:GOTO 285
280 GOSUB 850:B1=INT(RND(0)*10+10):PRINTB1:B3=B3-B1-A1
285 GOSUB 870:GOTO 250
500 PRINT@64,"YOUR HAND";TAB(33),"COMPUTER'S HAND";
520 U3=1:U1=387:U=193:Q2$=P$:GOSUB 550:PRINT:RETURN
550 S$="      ":FOR J=1 TO 17 STEP 4:S$=MID$(Q2$,J,1):IF S$="T" T
HEN S$="10"ELSE S$=S$+" "
552 PRINT@U,S$;:PRINT@U1,S$;:U=U+6:U1=U1+6:NEXT J:IF U3=0 THEN U
=290 ELSE U=257
555 FOR J=3 TO 19 STEP 4:S$=MID$(Q2$,J,1):IF S$="H" THEN S$=HE$
ELSE IF S$="C" THEN S$=CL$ ELSE IF S$="S" THEN S$=SP$ ELSE IF S$
="D" THEN S$=DI$
560 PRINT@U,C2$;:PRINT@U,S$;:U=U+6:NEXT J:U=290
565 IF U3=0 THEN RETURN ELSE TR$="TRS"+CHR$(26)+CHR$(24)+CHR$(24
)+CHR$(24)+" 80":FOR J=1 TO 5:PRINT@U,TR$;:U=U+6:NEXT J:PRINTCHR
$(26);CHR$(26);:RETURN
570 PRINT@512,CHR$(30);:J=28:NEXT J:GOTO 613
600 B3=B3-A1:A1=A1*2:C1=C1+H1+A1:PRINT"COMPUTER CHECKS.  THE POT
 IS $";C1+10
612 PRINT@576,"WHICH CARDS TO KEEP?     ON '1' - 1=YES   2=NO
    '*'=AGAIN";:K9=5:H$=P2$
613 K9=5:H$="          ":B8=1:I=0:FOR J=3 TO 28 STEP 6:PRINT@512
,TAB(J);CHR$(91);
614 S4$=INKEY$:IF S4$="1" OR S4$="2" THEN 615 ELSE IF S4$="*" TH
EN 570 ELSE 614
615 IF S4$<>"1" THEN 616 ELSE I=I+2:K9=K9-1:H$=LEFT$(H$,I-2)+MID
$(P2$,B8,2)+RIGHT$(H$,10-I)
616 B8=B8+2:NEXT J:PRINT@512,CHR$(30);:Q$=P$:P9=K9
617 IF P9=5 THEN 630 ELSE IF P9=4 THEN 640 ELSE GOTO 660
618 P$=Q$:H$=C2$:K9=P9:GOSUB 5000:GOSUB 5390:PRINT@512,TAB(33),"
COMPUTER DRAWS ";C9:IF C9=0 THEN 800 ELSE C$=Q$:C1$=X$:K9=5:GOTO
 800
620 PRINT" OK YOU CHECKED.  NOW DRAW YOUR CARDS":C1=C1+H1+A1:PR
INT"       THE POT IS $",C1+10:GOTO 612
630 PRINT@640,CHR$(31);"YOU MAY NOT DRAW 5 CARDS - DRAW AGAIN";:
GOTO 612
640 IF MID$(P2$,1,1)="E" THEN 655 ELSE PRINT@640,CHR$(31);"YOU M
AY ONLY DRAW 4 CARDS IF YOU HAVE AN 'ACE' - DRAW AGAIN";:GOTO 61
2
```

NOTE: The "^" in line listings should be ↑

```
650 PRINT " YOU FOLD":B3=C1+B3+10:IF RND(0)<.3 THEN 652 ELSE GOT
O 1030
652 IF C1<250 THEN 1030 ELSE PRINT@644,CHR$(30);"*** WHAT A BLUF
F ***":GOTO 1030
655 IF MID$(H$,1,1)<>"E" THEN PRINT@640,CHR$(31);"NO...NO  YOU
MUST KEEP YOUR 'ACE'.";:GOTO612
660 GOSUB 5000:L=0:GOSUB 5390:GOSUB 5340:U3=1:U1=387:U=193:B2$=0
$:GOSUB 550:P1$=X$:GOTO 618
700 PRINT@832,CHR$(31);"YOU HAVE ENTERED AND INCORRECT BID.  YOU
R 'SEE' MUST = THE".PRINT"COMPUTER'S RAISE.  BID AGAIN!" RETURN
750 C1=C1+A1+H1:PRINT"THE COMPUTER FOLDS  ": A3=C1+A3+10:GOTO 1
030
800 IF C9<>4 THEN 805 ELSE PRINT@512,"THE COMPUTER HAS AN 'ACE'"
805 D=VAL(MID$(C1$,1,1)):PRINT@576,"CONTINUE BETTING - WATCH YOU
R BANK!":K=0:H1=0:A1=0:IF D=1 THEN 900
810 IF D>4 THEN 950 ELSE IF D>2 THEN 925 ELSE IF MID$(C1$,2,1)<"
7" THEN 900 ELSE IF P9>4 THEN 822 ELSE K=K+2
820 IF RND(0)<.15 THEN 925 ELSE K=0
822 GOSUB 885:GOTO 832
825 GOSUB 880:IF H1=0 THEN 650 ELSE IF H1<>B1 THEN 830 ELSE A3=A
3-H1
828 GOSUB 845:GOTO 832
830 GOSUB 700:GOTO 825
831 B1=65:GOTO 836
832 IF A1<>0 THEN 834 ELSE IF K<1 THEN 834 ELSE GOTO 1010
833 IF P9<4 THEN 750 ELSE GOTO 1000
834 IF A1>35 THEN 833 ELSE IF MID$(C1$,2,1)>"9" THEN 835 ELSE IF
 A1<25 THEN 835 ELSE IF K>=0 THEN 1000
835 IF K>0 THEN 1000 ELSE B1=22:IF A1>5 THEN 836 ELSE IF RND(0)<
 2 THEN 831
836 GOSUB 850:PRINTB1:B2=B3-B1-A1
838 GOSUB 870:GOTO 825
840 PRINT@832,CHR$(31);:INPUT "AND RAISE (CHECK=$0) $";A1:IF A1>
100 OR A1<0 THEN 840 ELSE A3=A3-A1:RETURN
845 PRINT@832,CHR$(31);:INPUT "AND RAISE (CALL=$0) $";A1:IF A1>1
00 OR A1<0 THEN 845 ELSE A3=A3-A1:RETURN
850 PRINT@704,CHR$(31);:PRINT"COMPUTER WILL SEE YOUR BET AND RAI
SE $";:RETURN
870 C1=H1+B1+C1+2*A1:K=K+1:RETURN
```

```
880 PRINT@768,CHR$(30);:INPUT "DO YOU WANT TO SEE THAT BET (FOLD
=$0) $";A1:IF A1>100 OR A1<0 THEN 880 ELSE RETURN
885 PRINT@640,CHR$(31);: INPUT "WHAT IS YOUR BET $";A1:IF A1>100
OR A1<0 THEN 885 ELSE A3=A3-A1: RETURN
900 GOSUB 885:IF D=1 THEN 903 ELSE IF A1>19 THEN 750 ELSE GOTO 1
000
903 IF A1>8 THEN 750 ELSE 1000
925 GOSUB 865:GOTO 932
927 GOSUB 880:IF A1=0 THEN 650 ELSE IF A1<>81 THEN 931 ELSE A3=A
3-A1
929 GOSUB 845:GOTO 932
931 GOSUB 700:GOTO 927
932 IF P9=0 THEN 933 ELSE IF A1<>0 THEN 934 ELSE IF K<1 THEN 934
 ELSE GOTO 1010
933 IF A1<25 THEN 1000 ELSE GOTO 750
934 IF A1>45 THEN 1000 ELSE IF K>2 THEN 1000 ELSE B1=INT(RND(0)*
20+30):IF RND(0)<.19 THEN 936 ELSE GOTO 940
936 B1=85
940 GOSUB 850:PRINTB1:B3=B3-B1-A1
942 GOSUB 870:GOTO 927
950 GOSUB 885:GOTO 960
955 GOSUB 880:IF A1=0 THEN 650 ELSE IF A1<>81 THEN 959 ELSE A3=A
3-A1
956 GOSUB 845:GOTO 960
959 GOSUB 700:GOTO 955
960 IF A1<>0 THEN 962 ELSE IF K<1 THEN 962 ELSE GOTO 1010
962 IF K>3 THEN 1000 ELSE B1=INT(RND(0)*30+10):IF B1<20 THEN 962
 ELSE GOTO 964
963 B1=85
964 GOSUB 850:PRINTB1:B3=B3-B1-A1
966 GOSUB 870:GOTO 955
1000 PRINT"COMPUTER CALLS":B3=B3-A1:A1=2*A1:GOTO 1015
1010 PRINT"YOU CALLED"
1015 U3=0:U1=420:U=226.02$=C$: GOSUB 550:C1=C1+A1+A1
1020 PRINT@576,CHR$(31);"THE POT WAS $";C1+10
1025 IF P1$<C1$ THEN 1027 ELSE PRINTTAB(25);"YOU WIN":A3=A3+C1+1
0:GOTO 1030
1027 PRINTTAB(25);"COMPUTER WINS":B3=B3+C1+10
1030 PRINT"YOU HAVE $";A3;"      COMPUTER HAS $";B3
```

```
1040 IF B3<1 THEN 1070 ELSE IF A3<1 THEN 1060 ELSE GOTO 5
1060 PRINT TAB(20);" $$$$$$ COMPUTER WINS $$$$$$".GOTO 1080
1070 PRINTTAB (20);" %%%%%%%%%% YOU WIN %%%%%%%%%%"
1080 INPUT "DO YOU WANT TO PLAY AGAIN",A1$:IF LEFT$(A1$,1)="Y" T
HEN 1 ELSE PRINT"SO LONG!!":STOP
3000 Y$=INKEY$:IF Y$="P" THEN 3050
3010 J=RND(0):GOTO 3000
3050 PRINT"THE COMPUTER IS SHUFFLING & DEALING THE CARDS":RETURN
5000 IF K9<>0 THEN 5010 ELSE GOTO 5020
5010 FOR J=9 TO 11-2*K9 STEP -2:GOSUB 5430:H$=LEFT$(H$,J-1)+F$(F
)+RIGHT$(H$,10-(J+1)):F$(F)=" ":NEXT J
5020 L=1:Q=1:T=1:H=0:GOSUB 5390:FOR J=2 TO 10 STEP 2
5030 IF MID$(H$,J,1)<>MID$(H$,6,1) THEN 5040 ELSE H=H+1
5040 NEXT J:L=0:GOSUB 5390
5050 FOR J=1 TO 7 STEP 2:IF MID$(H$,J,1)<>MID$(H$,J+2,1) THEN 50
60 ELSE Q=Q+1:Y=J:GOTO 5070
5060 IF Q=1 THEN 5070 ELSE J=9
5070 NEXT J:D=8:IF Q=1 THEN 5110 ELSE FOR J=Y+2 TO 7 STEP 2
5080 IF MID$(H$,J,1)<>MID$(H$,J+2,1) THEN 5090 ELSE T=T+1
5090 NEXT J
5100 ON (Q-1) GOTO 5140,5150,5160
5110 G$=H$:F=0:FOR J=1 TO 9 STEP 2:IF MID$(G$,J,1)<"A" THEN 5115
ELSE G5=ASC(MID$(G$,J,1)):G5=G5-7:G$=LEFT$(G$,J-1)+CHR$(G5)+RIGH
T$(G$,10-(J))
5115 NEXT J:G1$=G$:FOR J=1 TO 7 STEP 2:G5=ASC(MID$(G$,J,1)):G5=G
5-1:G$=LEFT$(G$,J-1)+CHR$(G5)+RIGHT$(G$,10-(J)):IF MID$(G$,J,1)<
>MID$(G1$,J+2,1) THEN 5130 ELSE F=F+J
5120 NEXT J:D=5:IF H<5 THEN 5160 ELSE D=9:GOTO 5160
5130 J=7:NEXT J:D=1:IF H<5 THEN 5160 ELSE D=6:GOTO 5160
5140 D=2:IF T=1 THEN 5160 ELSE D=3:IF T=2 THEN 5160 ELSE D=7:GOT
O 5160
5150 D=4:IF T=1 THEN 5160 ELSE D=7
5160 K9=0:G$=H$:X$=STR$(D):X$=RIGHT$(X$,1):ON D GOTO 5170,5230,5
250,5280,5330,5330,5310,5320,5330
5170 IF E=1 THEN 5330 ELSE J=0:K=0 K9=1:G$=H$:IF H<4 THEN 5210
5180 L=1.GOSUB 5390:IF MID$(H$,2,1)=MID$(H$,6,1) THEN 5330
5190 G$=MID$(H$,3,8):H$=RIGHT$(H$,8)+LEFT$(H$,2):GOTO 5330
5210 IF F=9 THEN 5330 ELSE IF F=15 THEN 5190
5220 K9=4:IF MID$(H$,1,1)>"D" THEN 5330 ELSE K9=3:GOTO 5330
```

```
5230 I=5:K9=3:FOR J=1 TO 9 STEP 2:IF J=Y THEN 5240 ELSE H$=LEFT$
(H$,I-1)+MID$(G$,J,2)+RIGHT$(H$,10-(I+1)):I=I+2:NEXT J:IF RND(0)
<.15 THEN 5235 ELSE GOTO 5330
5235 K9=2:GOTO 5330
5240 H$=MID$(G$,J,4)+RIGHT$(H$,6):J=J+2:NEXT J:GOTO 5330
5250 K9=1:IF MID$(H$,9,1)<>MID$(H$,7,1) THEN 5330 ELSE IF MID$(H
$,1,1)<>MID$(H$,3,1) THEN 5270
5260 H$=LEFT$(H$,4)+MID$(G$,7,4)+MID$(G$,5,2):GOTO 5330
5270 H$=MID$(G$,3,8)+MID$(G$,1,2):IF RND(0)<.7 THEN 5275 ELSE GO
TO 5330
5275 K9=0:GOTO 5330
5280 K9=2:IF MID$(H$,1,1)=MID$(H$,3,1) THEN 5330 ELSE IF MID$(H$
,7,1)=MID$(H$,9,1) THEN 5300
5290 H$=MID$(G$,3,6)+MID$(G$,1,2)+RIGHT$(H$,2):GOTO 5330
5300 H$=MID$(G$,5,6)+MID$(G$,1,4):GOTO 5330
5310 IF MID$(H$,3,1)=MID$(H$,5,1) THEN 5330 ELSE 5300
5312 K9=1:IF MID$(H$,1,1)=MID$(H$,3,1) THEN 5330 ELSE H$=MID$(G$
,3,8)+MID$(G$,1,2)
5320 K9=1:IF MID$(H$,1,1)=MID$(H$,3,1) THEN 5330 ELSE H$=MID$(G$
,3,8)+MID$(G$,1,2)
5330 FOR J=1 TO 9 STEP 2:X$=LEFT$(X$,(J+1)/2)+MID$(H$,J,1):NEXT
J
5340 FOR J=1 TO 17 STEP 4:Q$=LEFT$(Q$,J-1)+MID$(H$,(J+1)/2,1)+"-
"+MID$(H$,(J+3)/2,1)+" "
5350 IF MID$(Q$,J,1)<"A" THEN 5380 ELSE S$=MID$(Q$,J,1)
5360 IF S$="A" THEN K=1 ELSE IF S$="B" THEN K=2 ELSE IF S$="C" T
HEN K=3 ELSE IF S$="D" THEN K=4 ELSE IF S$="E" THEN K=5
5370 Q$=LEFT$(Q$,J-1)+MID$(A8$,K,1)+RIGHT$(Q$,3)
5380 NEXT J:RETURN
5390 FOR I=1 TO 7 STEP 2:FOR J=I+2 TO 9 STEP 2
5400 IF MID$(H$,I+L,1)>=MID$(H$,J+L,1) THEN 5420 ELSE G$=MID$(H$
,I,2)
5410 H$=LEFT$(H$,I-1)+MID$(H$,J,2)+RIGHT$(H$,10-(I+1)):H$=LEFT$(
H$,J-1)+G$+RIGHT$(H$,10-(J+1))
5420 NEXT J:NEXT I:RETURN
5430 F=INT(RND(0)*52+1):IF F$(F)=" " THEN 5430 ELSE RETURN
6000 PRINT"YOU MAY DRAW NO MORE THEN  3  CARDS UNLESS YOU HAVE A
N 'ACE'.":PRINT"THEN YOU MAY DRAW  4  CARDS.":RETURN
```

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C	check system tape
D FIRST(0) LAST(FFFF)	dump hex
E FIRST(0)	edit memory
F FIRST LAST VALUE	find byte
G BRKPTS (3 max.)	set breakpoints, continue
H FIRST LAST VALUE	find word
I PORT	read port
K	keyboard echo
L	load system tape
L SECTOR MEMORY COUNT(1)	load from disk
M FIRST LAST BLOCK	move memory
N	display symbol table
N 0	symbol table to tape
N VALUE	define value for symbol table
N FIRST 0	define start symbol table
O PORT VALUE	write to port
P	Initialize memory blocks
P ENTRY	write memory blocks and start
P FIRST LAST	define a memory block
Q FIRST LAST	calculate checksum
R	display / modify registers
S FIRST LAST OPTION(0)	disassembler
T COUNT OPTION(6)	trace instructions
U FIRST COUNT OPTION(0)	unformatted tape I/O
V FIRST LAST BLOCK	verify memory
W SECTOR MEMORY COUNT(1)	write to disk
X FIRST LAST BLOCK	exchange memory
Z FIRST LAST VALUE(0)	zero memory

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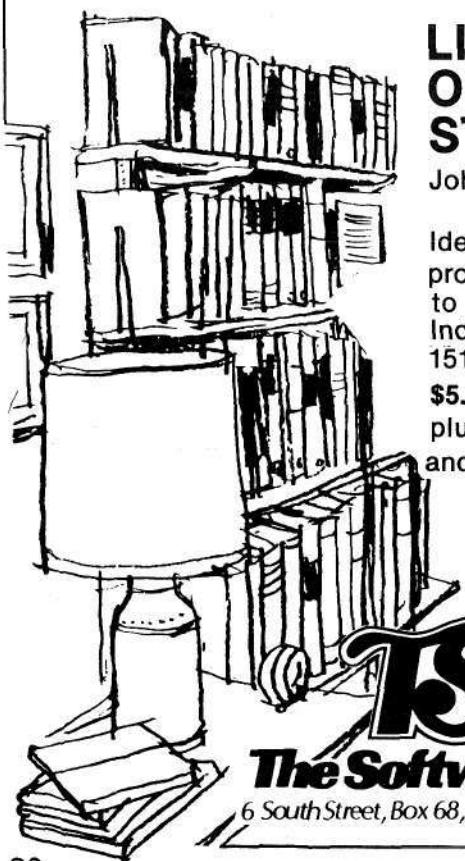

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by Dave Stambaugh

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PROGRAMMING HINTS

To perform a "cold start" of the TRS-80, it is not necessary to switch off and then on again. It can be performed with a SYSTEM command, followed by /0 to enter at address 0.

If you don't have an assembler, you may have to resort to the POKE statement in BASIC to enter short routines in machine language. The procedure can be tedious since POKE requires the operands in decimal while machine code is usually written in hexadecimal. The conversion is, however, very easy to perform in BASIC, allowing easy entry of machine code. The following lines can be used:

```
10 CLEAR 100:DEFINT D,I,V:DEFSTR A,H
20 READ A: IF A="END" THEN END ELSE P=0
30 FOR I=1 TO 4:GOSUB 100:P=P*16+D:NEXT
40 I=1:READ A
50 GOSUB 100:IF H <>" " THEN V=D*16:I=I+1:
   GOSUB 100:V=V+D:POKE P,V:P=P+1
60 I=I+1:IF I < LEN(A) THEN 50 ELSE 20
100 H=MID$(A,I,1):D=ASC(H)-48+7*(H>"9")
110 RETURN
```

The machine code is then entered as a series of DATA statements, with the address followed by the instructions — with spaces allowed to separate the bytes. For example:

```
200 DATA 408E,007F
210 DATA 7F00,2A2040,DA9A04 DD7E05 B7 2801 77 79 FE20 DA0605
C37D04
220 DATA END
```

This is much easier to enter and to read than the corresponding decimal values.

As can be seen from the above (Line 100), conditional expressions can be used in calculations. If True, the value -1 will be returned, else 0. This can also be used, for example, to convert values between 0 and 15 to hexadecimal. The expression will perform the conversion on the decimal value D. Locations in memory can thus easily be displayed in hexadecimal form.

For short, one-time assembler language routines, the end of the I/O area (16870 to 17126) can be used. This area is used for LIST, EDIT, keyboard entry and cassette I/O, so be careful with this if any of these are used. I have found it useful for one-time routines such as initialization of addresses etc, especially if you tend to forget to answer the MEMORY SIZE question on power up.

Arne Rohde
Denmark

ON ERROR GOTO

When you have an error trapping routine for a particular section of the program, and you don't want an error in the rest of the program to send you to that location, you can turn off the ON ERROR GOTO function with ON ERROR GOTO 0. Assuming that you do not have a line zero, this will return you to normal error messages with a stop in the execution of the program. See section 4/11 of your Level II User's Manual.

LINE PRINTER test funtion

The status of the line printer is indicated by location 14312 (decimal) in memory. If that location contains 255, the printer is turned off. If it contains a different number, the printer is on.

```
10 REM * PRINTER TEST ROUTINE *
20 IF PEEK(14312)=255 THEN PRINT"PRINTER IS OFF" ELSE PRINT "PRI
NTER IS TURNED ON"
```

LINE PRINTER OUTPUT SUBROUTINES

Here are three ways to add class to your programming when you are using output to a line printer. Example 1 allows you to skip several lines smoothly. Example 2 tells you how to use the top of form command. Example 3 gives a status check to see if the line printer is turned on and ready to print. Using it, you avoid a lockup in a system that is not connected to a printer. One final hint; connect a space to the end of a printed string variable, as in LPRINT A$;" " so that your printer does a linefeed even with a null string. The Centronics printers ignore null strings completely.

```
5  REM * SKIP LINES IN PRINTER OUTPUT *
10 INPUT"HOW MANY LINES DO YOU WISH TO SKIP";A
20 LPRINT STRING$(A,138)
```

```
5 REM * TOP OF FORM (NEW PAGE) ON PRINTER *
10 INPUT"PRESS ENTER FOR NEXT PAGE";A$
20 LPRINT CHR$(11)
```

```
5 REM * DETERMINE PRINTER STATUS *
10 CLS:PRINT"PRINTER STATUS CHECK"
20 PRINT:PRINT"TURN PRINTER ON AND OFF TO DEMONSTRATE PROGRAM"
30 IF PEEK(14312)=255 THEN PRINT@ 448,"<< PRINTER IS TURNED OFF
>>":GOTO30
40 IF PEEK(14312)=63 THEN PRINT@448,"<< PRINTER IS READY TO PRIN
T >>":GOTO30
50 PRINT@448,"<< PRINTER ON BUT NOT READY >>":GOTO30
```

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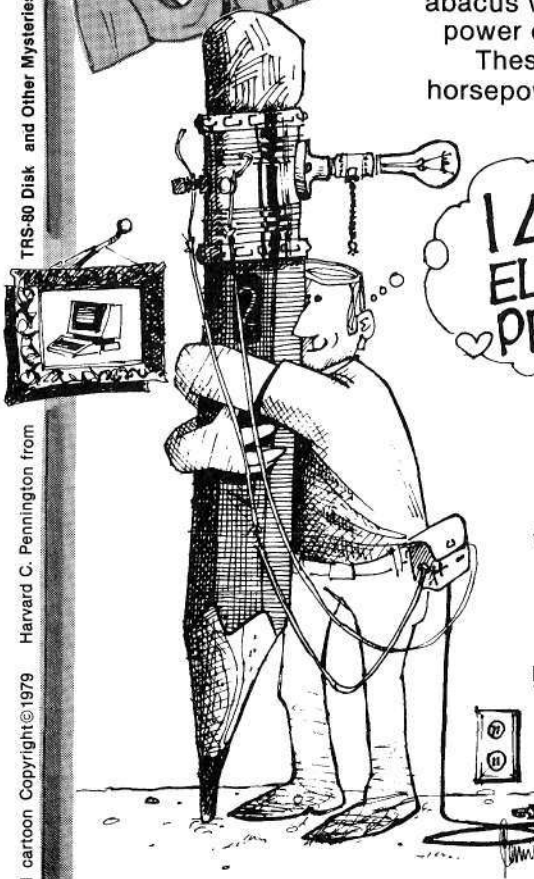

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