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IM-1 in a MILLION  
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June 1983

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Have you heard the one about the programmer that went to heaven. They sent him back because his name wasn't in the COMPUTER.

After that we can only get better. This months issue will be made up mostly of programs submitted by the members. By the time you get this we should be back from our vacation.

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hey folks, I have a question for you.

In one of the programs in this months letter (HANOI), the programmer refers to the ability to do RECURSIVE programming and I hate to say it but that is a new one on me and if somebody out there could write and give me some of their knowledge on it I would appreciate it.

STUMPED

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For those out there with DISC'S.

I have been having 2 problems with my Floppies and I think I've resolved them and it might help you.

1. Fragmentation of data files when updating &/ adding data to a FILE on a FLOPPY with multiple FILES or PROGRAMS.
2. Destruction of DATA files on FLOPPY when mixing programs on same FLOPPY.

POSSIBLE SOLUTION:: Now when I want a data file on the FLOPPY I write a simple program to build a blank file on the FLOPPY that is the maximum size I think I will ever need.

This will keep it from fragmenting the data and so far I have not had any problems with mixing the DATA and PROGRAM FILES.

HERE IS A SIMPLE PROGRAM TO USE TO BUILD FILE.

```
10 DIM A$(299),FN$(6)
20 FOR I = 1 TO 299: A$(I)=" ":NEXT
90 FN$=" "
100 INPUT "NAME OF YOUR DATA FILE",FN$
110 INPUT "NUMBER OF RECORDS WANTED",L
120 INPUT "INSERT DATA DISC AND HIT RETURN",Z
130 OPEN #FN$
200 FOR I = 0 TO L
210 PRINT #0;A$(0),A$(100),A$(200)
220 NEXT I
230 INPUT "DO IT AGAIN",A$(0)
240 IF A$(0)="Y" THEN CLOSE #0:GOTO 90
250 STOP
```

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Info from STACY PROWELL

Here is the way to get QUOTATIONS to print without using the CHR\$(34)...

Ex: to print PRESS "RETURN" you can type  
10 PRINT "PRESS "RETURN"?"

Also you can use a period in a variable name. Ex: A. is different from A or AA.

THANKS STACY

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 call box call box

Here are some corrections for the APF Disassembler for those machine language programmers out there that are working with it.

Line 1005 change TEP to TAP  
 Line 1240 Change LDAA, STAB, EORA, ADCA to LDAB, STAB, EORB, ADCB...

This should eliminate some of the confusion with the program. Thanks to all of the MEMBERS that sent in the changes.

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 Basic Box Basic Box

Hey folks here is a reprint of some info from last years issue along with somemore. These formulas are for SIN, COS, TAN, ARCSIN, ARCCOS, ARCTAN..

SIN(S)=S/1-S^3/3!+S^5/5!-S^7/7!  
 COS(S)=1-S^2/2!+S^4/4!-S^6/6!+S^8/8!  
 TAN(S)=S+S^3/3+2\*S^5/15+17\*S^7/315  
 ARCTAN(X)=X-X^3/3+X^5/5-X^7/7 IF X^2<1  
 ARCTAN(X)=3.1416/2-1/X+1/3\*X^2-1/5\*X^4+1/7\*X^6 IFX1  
 ARCTAN(X)=-3.1416/2-1//X+1/3\*X^2-1/5\*X^4+1/7\*X^6 IF X<-1  
 ARCCOT(X)=3.1416/2-X+X^3/3-X^5/5+X^7/7 IF X^2<1  
 ARCSIN(X)=X+X^3/2\*3+(1\*3/2\*4\*5)\*X^5+(1\*3\*5/2\*4\*6\*7)\*X^7  
 IF X^2<1

ARCCOS(X)=3.1416/2-(X+X^3/2\*3+(1\*3/2\*4\*5)\*X^5+(1\*3\*5/2\*4\*6\*7)\*X^7

The funny little teepee in the formulas means EXPONETIATION.. I hope that these help some of you that have been needing them. If you want more of these you can find them is just about any of the Mathematical Tables books that can be found in the BOOKSTORES.

Gops almost forgot to tell you what ! means. It is called FACTORIAL and here is what it does. If you have 3! this is the same as 3! = 1\*2\*3 = 6.

Also 0! = 1...

I think I strained my brain again....

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 From Alan S Yost

Alan would like to have a complete list of the CALLS, PEEKS&POKES for the machine.

Right now I don't have a complete list of them now but if the members would be willing to send me copies of what they know and have I will compile them into a good list and make it available to all of the members.

Here is a program Alan sent in to allow you to test your game controllers.

```

10 DIM A$(1),B$(1)
20 LET A#=KEY$(2):LET B#=KEY$(1)
25 IF A#="" THEN IF B#="" THEN 20
30 PRINT A$,B#:GOTO 2
```

#####Thanks for the program alan#####  
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```

1  REM MAGIC SQUARES ..BY D OM SCHWIDT 9/5/82
2  REM ODD NUMBERS USE DE LA LOUBERE METHOD
3  REM EVEN NUMBERS USE SNAP METHOD
95  REM MATRIX IS LIMITED BY SCREEN SIZE
100 DIM M(8,8)
105 REM GENERATE SEED VALUE
110 VB= INT ( RND (9)815):V=VB
115 REM  REM GET USERS NUMBER
120 INPUT "WHAT SIZE -(3 TO 8)",N
125 IF N>8 THEN 120
130 IF N/2= INT (N/2) THEN 300: REM EVEN NBR
135 REM SET START ROW AND COLUMN
140 R=1:C= INT (N/2)+1
150 V=V+1:M(R,C)=V
155 REM EXIT WHEN MATRIX FULL
160 IF V=N^2+VB THEN 220
165 REM IF V IS INT GER MULTIPLE OF N GO DOWN
170 IF (V-VB)/N= INT ((V-VB)/N) THEN R=R+1: GOTO 150
175 REM MOV MOVE RIGHT AND UP WHEN POSSIBLE
180 C=C+1
185 REM WRAP AROUND IF REQ'D
190 IF C>N THEN C=1:R=R-1: GOTO 150
200 R=R-1: IF R>0 THEN 150
210 R=N: GOTO 150
215 :
220 CALL 17046
225 REM CALC THE MAGIC NUMBER
230 T=((N^3+N)/2)+(VB*N)
240 PRINT "THE MAGIC NUMBER IS ",T: PRINT
245 REM PRINT THE MATRIX
250 FOR R=1 TO N
260 PRINT USING 290,M(R,1),M(R,2),M(R,3),M(R,4),M(R,5),M(R,6),M(R,7),M(R,8)
270 NEXT R: INPUT "HIT RETURN TO DO AGAIN",R: RUM
290 :00 00 00 00 00 00 00 00
295 :
300 REM GENERATE EVEN BASE MATRIX
310 FOR R=1 TO N
320 FOR C=1 TO N
330 V=V+1:M(R,C)=V
340 NEXT C: NEXT R
345 :
350 REM SNAP DIAS ON AL.
360 LIMIT=N/2:C=N
370 FOR R=1 TO LIMIT
380 T=M(R,R):M(R,R)=M(C,C):M(C,C)=T
390 T=M(C,R):M(C,R)=M(R,C):M(R,C)=T
400 C=C-1: NEXT R
410 IF N=4 THEN 220: REM 4X4 D OM E
415 :
420 R=2:X=N: IF N=8 THEN 480
430 REM 4X6 INT ERNAL SNAP (HOR + VER)
440 FOR C=1 TO LIMIT
450 T=M(R,C):M(R,C)=M(R,X):M(R,X)=T
460 T=M(C,R):M(C,R)=M(X,R):M(X,R)=T
470 R=R+2:X=X-1: NEXT C: GOTO 220: REM 6X6 D OM E
480 C=1:Z=N-1
490 FOR I=1 TO LIMIT
500 IF I=LIMIT THEN R=R-2:Z=Z+2
510 T=M(R,C):M(R,C)=M(R,X):M(R,X)=T
520 T=M(Z,C):M(Z,C)=M(Z,X):M(Z,X)=T

```

```

10 CALL 17046
20 POKE 24570,32
21 PRINT "          CASH REGISTER          ": PRINT : PRINT : PRINT : PRINT : PRINT : PRINT "          BY
22 PRINT : PRINT : PRINT : PRINT "          J. ALEX DRAUGHON          "
23 FOR I=1 TO 500: NEXT I
24 CALL 17046: GOSUB 2000
25 I=0
26 CALL 17046
27 C=0:T=0
30 DIM A(12)
40 A(0)=500.00
50 A(1)=100.00
60 A(2)=50.00
70 A(3)=20.00
80 A(4)=10.00
90 A(5)=5.00
100 A(6)=2.00
110 A(7)=1.00
120 A(8)=.50
130 A(9)=.25
140 A(10)=.10
150 A(11)=.05
160 A(12)=.01
161 PRINT "          CASH REGISTER          ": PRINT : PRINT : PRINT : PRINT : PRINT
165 PRINT "PRESS AMOUNT TWICE TO GET TOTAL"
166 PRINT : PRINT : PRINT : PRINT : PRINT : PRINT : PRINT : PRINT : PRINT : PRINT
170 INPUT "AMOUNT OF PURCHASE",P
171 MUSIC "42"
175 CALL 17046
180 IF P=0 GOTO 199
190 T=T+P
192 L=0
195 GOTO 170
199 CALL 17046
200 PRINT USING "SUBTOTAL = 000000.00",T
201 TAI=T/25
202 D=TAX*TAI
203 M=INT(D)
204 O=D-M: IF O>.49 THEN L=.01
205 TAI=(M/100)+L
206 T=T+TAX
207 PRINT USING "SALES TAX = 000000.00",TAX
208 MUSIC "450415"
209 PRINT USING "GRAND TOTAL = 000000.00",T
210 INPUT "ENTER AMOUNT TENDERED",B
220 IF B<T GOTO 500
230 IF B=T PRINT "THANK YOU FOR GIVING THE EXACT CHANGE!": GOTO 1000
240 C=B-T
250 PRINT USING "YOUR CHANGE IS 000000.00 .",C
255 MUSIC "86"
260 PRINT
270 IF C(A1) THEN I=I+1
275 IF I>12 THEN GOTO 400
276 MUSIC "87"
280 IF C>A(I) THEN PRINT USING "00000.00",A(I):C=C-A(I)
290 GOTO 270
400 PRINT "THANK YOU FOR YOUR PATRONAGE!"
450 INPUT "ANOTHER PURCHASE (0=YES)1=NO)",Z
451 IF Z=0 THEN GOTO 25
452 GOTO 1010
500 T=T-B
505 MUSIC "/7/1"
510 PRINT USING "YOU STILL OWE 00000.00 .",T: GOTO 210
1000 GOTO 450
1010 PRINT "Y'ALL COME BACK AN' SEE US AGAIN"
1020 IF S=50 GOTO 2000
1021 S=S+1: GOTO 1010
2000 COLOR =4: SHAPE =15
2005 HLIN 10,21,3
2010 COLOR =7
2015 HLIN 9,22,2: HLIN 9,22,4: PLOT 9,3: PLOT 22,3
2020 COLOR =3: HLIN 10,23,1: HLIN 11,24,0: VLIN 1,10,23: VLIN 0,9,24
2025 VLIN 5,11,22: VLIN 6,12,21: VLIN 7,13,20
2030 VLIN 9,14,19: VLIN 10,15,18
2035 COLOR =1
2036 VLIN 13,15,4
2037 VLIN 13,15,3
2040 HLIN 5,17,15: HLIN 5,17,14: HLIN 5,17,13
2045 COLOR =5
2050 HLIN 8,21,5: HLIN 7,20,6
2055 HLIN 6,19,7: HLIN 6,19,8: HLIN 5,18,9
2060 HLIN 4,17,10: HLIN 4,17,11: HLIN 4,17,12
2065 COLOR =3: VLIN 13,13,17
2070 POKE 618,36
2072 POKE 620,13
2075 POKE 622,15
2080 POKE 624,14
2085 POKE 626,5
2090 POKE 628,25
2100 FOR Q=619 TO 629 STEP 2
2200 POKE Q,42
2300 NEXT Q
2340 FOR I=1 TO 2
2350 MUSIC "30500340500"
2352 MUSIC " "
2355 MUSIC "30500340500"
2360 MUSIC " 130030010020010020010030010010020010000"
2370 MUSIC " "
2400 NEXT I
2450 IF S=50 GOTO 2600
2500 RETURN
2600 GOTO 2340

```

```

10 REM ***MUNCH MAN***
15 REM ***BY RICKITY***
20 REM ***INITIALIZATION***
40 POKE 24570,30: POKE 40994,27
60 DIM A$(1),M$(34),N$(30),B(5)
70 WINNER=0:GAME=0:M0="7/50 75/4/2/500/3/2/5/40 13/60/20/40 16/5/6 14/20"
80 GOTO 1000
100 REM ***GOODIES SUBROUTINE***
110 CALL 17046
115 IF GLIMPSE>4 THEN 6000
120 FOR X=1 TO 4
140 IF GLIMPSE<>0 THEN 100
160 G(X)=INT ( RND (0)*512)+512
180 POKE G(X),239: MUSIC "07/107"
182 NEXT X
184 GLIMPSE=GLIMPSE+1
190 FOR Z=0 TO 1000: NEXT Z
192 CALL 17046
195 RETURN
1000 REM ***PROGRAM SET UP AND INSTRUCTIONS***
1020 THE=INT ( RND (0)*512)+512:KEEPER=182
1040 MUNCH=INT ( RND (0)*512)+512:MAN=158
1080 COUNTY=0:KOUNT=4:GLIMPSE=0
1100 IF WINNER=1 THEN 1260
1200 CALL 17046
1220 INPUT "WHO ARE YOU",N$
1240 PRINT : PRINT "MOVE THE MUNCH MAN WITH THE LEFT JOY STICK"
1250 PRINT : PRINT "SPY ON THE REMAINING GOODIES WITH THE CL(EAR) BUTTON."
1255 PRINT : PRINT "TRY TO EAT ALL THE GOODIES"
1257 PRINT : PRINT "DON'T TAKE TOO LONG DON'T SPY TOO OFTEN"
1260 PRINT "READY ";N$;"?"
1270 PRINT "PRESS THE RETURN KEY TO SEE THE GOODIES": PRINT
1275 INPUT "DON'T FORGET WHERE THEY ARE!";I
1280 MUSIC M$
1300 GOSUB 100
1500 REM ***MOVE THE KEEPER***
1505 FOR WARN=0 TO 15: PRINT "BEWARE: THE KEEPER": MUSIC "8+7": NEXT WARN
1507 CALL 17046
1508 POKE MUNCH,MAN
1510 X=INT ( RND (0)*4)+1
1520 Y=INT ( RND (0)*10)+1
1530 ON X GOTO 1540,1550,1560,1570
1540 THE=THE-32*Y: GOTO 1580
1550 THE=THE+Y: GOTO 1580
1560 THE=THE-Y: GOTO 1580
1570 THE=THE+32*Y
1580 IF THE<512 THEN THE=THE+512
1590 IF THE>1023 THEN THE=THE-512
1600 POKE THE,KEEPER
1700 FOR RANGE=-1 TO 1 STEP 2
1720 IF THE+RANGE=MUNCH THEN 5000
1740 IF THE+RANGE*32=MUNCH THEN 5000
1760 IF THE+RANGE*32+RANGE=MUNCH THEN 5000
1770 IF THE+RANGE*32-RANGE=MUNCH THEN 5000
1780 NEXT RANGE
1800 IF THE=MUNCH THEN 5000
2000 REM ***MUNCH MAN MOVEMENT***
2010 A0=KEY$(2): IF A0="" THEN 1510
2020 IF A0="?" THEN GOSUB 100
2040 IF A0="N" THEN MUNCH=MUNCH-32:MAN=(51

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2060 IF A$="E" THEN MUNCH=MUNCH+1:MAN=158
2080 IF A$="M" THEN MUNCH=MUNCH-1:MAN=157
2100 IF A$="S" THEN MUNCH=MUNCH+32:MAN=157
2120 IF MUNCH<512 THEN MUNCH=MUNCH+512: MUSIC "201"
2140 IF MUNCH>1023 THEN MUNCH=MUNCH-512: MUSIC "102"
2160 POKE MUNCH,223
2170 CALL 17006
2180 CALL 17046
2190 POKE MUNCH,MAN
2200 REM ***CHECK FOR GOODIES***
2210 FOR X=1 TO 4
2220 IF MUNCH=6(X) THEN GOSUB 4000
2240 NEXT X
2300 COUNT=COUNT+1
2400 IF COUNT>80 THEN 6000
2500 GOTO 2010
3000 REM ***WINNER ROUTINE***
3020 CALL 17046
3025 WINNER=1
3030 PRINT "THANK YOU ";N0
3040 PRINT : PRINT "THOSE WERE VERY GOOD GOODIES..."
3060 FOR LINE=0 TO 10: PRINT : NEXT LINE
3080 GAME=GAME+1: PRINT "YOU HAVE WON ";GAME;" GAMES"
3090 INPUT "PRESS RETURN FOR ANOTHER GAME",I
3100 GOTO 1000
4000 REM ***MUNCH,MUNCH,MUNCH SUBROUTINE***
4020 G(X)=6(X)-515
4040 PRINT "MUNCH MUNCH MUNCH"
4060 MUSIC "7001 7001 7001"
4080 FOR Z=0 TO 300: NEXT Z
4100 PRINT "BEEELLLLLLCH"
4120 MUSIC "-/1000000000000000"
4140 FOR Z=0 TO 300: NEXT Z
4160 MUSIC M0
4180 KOUNT=KOUNT-1
4200 IF KOUNT=0 THEN 3000
4220 CALL 17046
4300 RETURN
5000 REM ***GOTCHA ROUTINE***
5020 PRINT "GOTCHA ";N0;"!"
5040 MUSIC M0
5060 PRINT : PRINT "MUNCH MEN"
5080 PRINT : PRINT "ARE NO MATCH FOR THE KEEPER"
5100 PRINT : PRINT TAB (10);"THESE ARE"
5140 FOR Z=0 TO 300: NEXT Z
5160 MUSIC M0
5200 CALL 17046: COLOR = INT ( RND (0)*8): SHAPE =15
5220 VLIN 4,10,2: VLIN 4,10,3
5240 FOR MY=4 TO 9: PLOT MY,MY+1: NEXT MY
5260 UP=9
5280 FOR MY=10 TO 14: PLOT MY,UP:UP=UP-1: NEXT MY
5300 VLIN 4,10,15: VLIN 4,10,16
5320 FOR MY=20 TO 23: PLOT MY,MY-16: NEXT MY
5340 VLIN 8,10,24: VLIN 8,10,25
5360 PLOT 26,7: PLOT 27,6: PLOT 28,5: PLOT 29,4
5380 PRINT TAB (13);"GOODIES"
5400 PRINT : PRINT : GOTO 7000
6000 REM ***LOSER'S ROUTINE***
6020 PRINT "YOU LOSE ";N0
6040 PRINT "THE MUNCH MAN SAYS:" PRINT "WOODOOOOOOOOO IS ME!": PRINT : PRINT
6060 PRINT "I COULD HAVE EATEN "
6070 IF KOUNT=1 THEN PRINT KOUNT;" MORE GOODY!": GOTO 6100
6080 PRINT KOUNT;" MORE GOODIES!"
6100 MUSIC M0
6120 PRINT : PRINT "WON'T YOU LET SOMEONE ELSE PLAY NOW.....?"
6140 PRINT : PRINT : PRINT "GOODBYE"
6160 PRINT : PRINT
7000 INPUT "PRESS RETURN FOR ANOTHER MEAL",I
7100 RUN
8000 REM ***COPYRIGHT 1981 / 1983
8100 REM ***RICK THOMAS THUES***

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0 POKE 24578,38: CALL 17046: DIM M(1),F(2): SHAPE =15: GOTO 100
1 COLOR =3: PLOT Z,8: PLOT Z+1,8: SHAPE =1: COLOR =0: PLOT Z,7: SHAPE =15: RETURN
2 COLOR =3: GOSUB 7: COLOR =0: SHAPE =2: PLOT Z,6: SHAPE =15: RETURN
3 COLOR =1: VLIN 7,9,Z: PLOT Z-1,8: PLOT Z+1,8: SHAPE =7: PLOT Z-1,7: SHAPE =11: PLOT Z+1,7: SHAPE =13: PLOT Z-1,9: SHAPE =14: PLOT
Z+1,9: SHAPE =15: RETURN
4 COLOR =7: GOSUB 7: RETURN
5 COLOR =1: GOSUB 8: SHAPE =13: PLOT Z-2,6: SHAPE =7: PLOT Z-2,10: SHAPE =12: HLINE Z-1,Z,10: SHAPE =3: HLINE Z-1,Z,6: SHAPE =15
6 PLOT Z-1,10: PLOT Z-1,6: RETURN
7 PLOT Z-2,8: PLOT Z+2,8: SHAPE =7: PLOT Z-2,7: SHAPE =11: PLOT Z+2,7: SHAPE =13: PLOT Z-2,9: SHAPE =14: PLOT Z+2,9: SHAPE =15
8 VLINE 7,9,Z-1: VLINE 7,9,Z: VLINE 7,9,Z+1: RETURN
100 PRINT : PRINT "SCORING IS SIMPLE; 3 ORANGES,  LEMONS, OR BANANAS EARN $10."
110 PRINT : PRINT "3 CHERRIES EARN $90.": GOSUB 810
120 CALL 17046: PRINT : PRINT "IF THE FIRST FRUIT IS AN APPLE YOU EARN $2."
130 PRINT : PRINT "IF THE FIRST AND SECOND ARE  APPLES, YOU EARN $3.": GOSUB 810
140 CALL 17046: PRINT : PRINT "IF THE LAST FRUIT IS A CHERRY,  AND THE OTHER 2 ARE THE SAME (BUT NOT APPLES), YOU EARN $10."
160 PRINT : PRINT "EACH TURN COST $1."
165 PRINT "    GOOD LUCK BOZO"
166 PRINT "    -----": GOSUB 810
167 PRINT : PRINT "USING THE RIGHT JOYSTICK, PRESS 'FIRE' OR 'EM' TO CONTINUE, OR 'CL' OR ANY NUMBER TO STOP."
168 R= RND (0): IF KEY$ (1)="" THEN 168
170 CALL 17046: J=0
180 PRINT : FOR K=0 TO 2:F(K)= INT ( RND (0)*5+1): NEXT
340 IF F(0)=1 THEN 380
350 IF F(0)=2 THEN 420
360 IF F(0)=F(1) THEN 440
370 GOTO 460
380 IF F(0)=F(1) THEN 480
390 GOTO 460
400 IF F(1)=F(2) THEN 480
410 GOTO 460
420 IF F(0)=F(1) THEN 500
430 GOTO 520
440 IF F(1)=F(2) THEN 500
450 IF F(2)=1 THEN 540
460 J=J-1: GOTO 550
480 J=J+89: GOTO 550
500 J=J+2: GOTO 550
520 J=J+1: GOTO 550
540 J=J+9
550 PRINT
560 FOR K=0 TO 2:X=F(K):Z=(K+1)*0: ON X GOSUB 1,2,3,4,5: NEXT
565 POKE 40961,192
570 PRINT SPC (8);"YOU NOW HAVE $";J
730 M0= KEY$ (1): IF M0="" THEN 730
750 IF M0="!" THEN CALL 17046: GOTO 180
755 PRINT "-----"
760 PRINT "ONE-ARM BANDIT SAYS GOOD-BYE "
765 PRINT "-----"
770 STOP
810 MUSIC "100/51/51230001000"
820 MUSIC "400410203000000"
822 MUSIC "100/51/512300010"
825 MUSIC "33302020302000000"
830 RETURN

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1 REM AAAAAAAAAAAAAA (SEE INSTR AT END OF PGM)
2 :
3 :TOWERS OF HANOI (V3.1)
4 :
5 GOTO 1000: REM BR TO MAIN
6 :
18 :
19 :SET ADDITIVES FOR ANY DSK
20 ON D GOSUB 21,21,22,22,23,23,24,24: RETURN
21 A=1: RETURN : REM DSK 1,2
22 A=2: RETURN : REM DSK 3,4
23 A=3: RETURN : REM DSK 5,6
24 A=4: RETURN : REM DSK 7,8
25 :
39 :SET SC-EC FOR ANY DSK ON ANY BASE
40 ON B GOSUB 41,42,43: RETURN
41 SC=05-A:EC=05+A: RETURN : REM BASE A
42 SC=15-A:EC=15+A: RETURN : REM BASE B
43 SC=25-A:EC=25+A: RETURN : REM BASE C
44 :
50 :SET R FOR DSK D ON BASE B
52 R=T+1: IF B=2 THEN R=R+3
54 RETURN
56 :
60 :PUT MIXED SHAPE (D=1,3,5,7) ON BASE
62 SHAPE =S1: PLOT SC,R: SHAPE =S0: NLINE SC+1,EC-1,R: SHAPE =S2: PLOT EC,R: RETURN
63 :
64 :PUT FIXED SHAPE (D=2,4,6,8)
66 SHAPE =S0: NLINE SC,EC,R: RETURN
67 :
69 :
70 : OUTPUT (MOVES DISK)
71 :
72 :RRMV DSK D FROM B(FB)
74 :SETB,D:GET A:SC-EC:R:RMVD
76 B=FB:T=BA(B,0): IF T<B THEN T=T+1
78 D=BA(B,T): GOSUB 20: GOSUB 40: GOSUB 52
80 X=512+(R*32)+SC:EX=X+D+1
82 FOR P=X TO EX: POKE P,128: NEXT
84 :UPDT BASE FB POINTERS
86 BA(B,T)=0:BA(B,0)=T
87 :
88 M=M+1: GOSUB 720: REM PUT NR MVE
90 :PREVENT D(FB)>D(TB) ((SELF PLAY ONLY))
92 IF OB<0 THEN Y=BA(TB,0): IF T<B THEN T=T+1
93 IF BA(TB,T)<>0 IF D>BA(TB,T) THEN CALL 17007:TB=FB
94 :
95 :PUT DSK D ON B(TB)
96 :SET B: (A & D SET), GET SC-EC: R: PUT D
98 B=TB:T=BA(B,0): GOSUB 40: GOSUB 52: COLOR =D-1
100 ON D GOSUB 62,66,62,66,62,66,62,66
102 :UPDT BASE TB POINTERS
104 BA(B,T)=D: IF T>B THEN T=T-1
106 BA(B,0)=T: RETURN
107 :
108 :
500 : HANOI MOVEMENT STACK
501 :
520 :SAVE (PSH) ND, FB, TB, OB
522 HA(1,H)=FB:HA(2,H)=TB

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524 HA(3,H)=OB:HA(0,H)=ND
526 IF H>0 THEN H=H-1
528 RETURN
529 :
530 :RESTOR (PUL) ND, FB, TB, OB
532 IF H<B THEN H=H+1
534 FB=HA(1,H):TB=HA(2,H)
536 OB=HA(3,H):ND=HA(0,H)
538 RETURN
539 :
540 : HANOI EDIT CHECKS
542 IF TB=OB CALL 17008: GOTO 1001
544 IF FB=OB CALL 17008: GOTO 1001
549 :
550 :HERE'S HANOI
552 IF ND=1 THEN 72: REM OUTPUT
554 GOSUB 522: REM SAVE
556 ND=ND-1:XB=OB:OB=TB:TB=FB
558 :REM CALL HANOI (ND-1, FB, OB, TB)
560 GOSUB 552
562 GOSUB 532: REM RESTOR
564 GOSUB 72: REM OUTPUT
566 GOSUB 522: REM SAVE
568 ND=ND-1:XB=FB:FB=OB:OB=TB
570 : REM CALL HANOI (ND-1, OB, TB, FB)
572 GOSUB 552
574 GOSUB 532: REM RESTORE
576 RETURN
578 :
580 :
700 : MESSAGES DURING PLAY
701 :
702 :
710 POKE 40960,3: POKE 40961,192
712 INPUT "MOVE FROM BASE - TO BASE - ",B$
714 FB= ASC (B$)-64:TB= ASC (B$(1))-64:OB= ASC (B$(2))-64: RETURN
716 :
720 POKE 40960,3: POKE 40961,118
722 PRINT "MOVE ";M: POKE 40961,149
724 PRINT "FH TO ": POKE 920,FB: POKE 925,TB: RETURN
726 :
998 :
999 :
1000 : MAIN PGM CONTROL
1001 :
1010 CALL 17046
1012 DIM B$(2),BA(3,8),HA(3,8)
1014 :INIT BASE PTRS FOR MAX B DISKS
1016 T=B:H=T:BA(1,0)=T:BA(2,0)=T:BA(3,0)=T
1017 :
1018 POKE 40960,2: POKE 40961,40
1020 PRINT "TOWERS OF HANOI"
1022 :
1024 :PUT BASES: INSTR?
1026 GOSUB 1127: GOSUB 1510
1028 :
1030 :NBR DSKS? AND START BASE
1032 :RETURNS ND & B=(1 2 OR 3)
1034 GOSUB 1142
1036 :

```

```

1050 :INIT BA FOR B(MD)
1052 FOR D=ND TO 1 STEP -1
1054 BA(B,T)=D:T=T-1:BA(B,0)=T: NEXT
1056 :
1060 :SET D; GET A; SC,EC FOR D(T)
1062 D=BA(B,0): GOSUB 20: GOSUB 40
1064 :
1070 :SET R; PUT DSKS; MIN MYS
1072 R=9: IF B=2 THEN R=12
1074 GOSUB 1112: GOSUB 1160:M=0
1076 :
1077 GOSUB 720: GOSUB 1531: REM MOVE FRONT PIC
1078 :
1080 :MOVE FROM/TO ? GETS (FB,TD,OB)
1081 GOSUB 710: IF FB>3 THEN GOSUB 1172: STOP : REM QUIT
1082 IF TD>3 THEN GOSUB 1172: GOTO 1081: REM ERROR
1083 IF TB=FB THEN GOSUB 1172: GOTO 1081: REM ERROR
1084 IF BA(FB,0)=0 THEN GOSUB 1172: GOTO 1081: REM EMPTY BASE
1085 IF P=0 IF OB>0 GOSUB 542: GOSUB 1172: STOP : REM HANOI RECURSIVELY
1086 :
1087 : MAKE OB NEG IN CASE IT WAS SET, MOVE DISK
1088 OB=(-1): GOSUB 72
1089 :
1090 :DONE ?
1092 IF BA(TD,B-(ND-1))<>1 THEN 1081
1094 GOSUB 1172: STOP : REM DONE
1096 :
1098 :
1100 : ONE TIME ONLY PER PLAY
1101 :
1102 :
1110 : PUT N DSKS ON A BASE
1112 S0=15:S1=5:S2=10
1114 FOR D=ND TO 1 STEP -1: COLOR =D-1
1116 IF D/2= INT (D/2) THEN GOSUB 66: GOTO 1120: REM EVN(FIX)
1118 GOSUB 62:SC=SC+1:EC=EC-1
1120 R=R-1: NEXT : RETURN
1121 :
1125 :PUT BASES W/ LABELS
1127 S0=12:S1=14:S2=13: COLOR =2
1129 SC=0:EC=10:R=10: GOSUB 62
1131 SC=10:EC=20:R=13: GOSUB 62
1133 SC=20:EC=30:R=10: GOSUB 62
1135 POKE 837,1: POKE 943,2: POKE 857,3: RETURN
1136 :
1137 :
1140 : BET NB AND START BASE(B)
1142 POKE 40960,3: POKE 40961,192
1144 INPUT "HOW MANY DSKS (1 TO 0)",ND: IF ND<(ND-9)=0 THEN 1142
1145 :
1146 GOSUB 1172: REM CLR LINE14
1147 :
1150 POKE 40961,192
1152 INPUT "START BASE (A B OR C",B0:B= ASC (B0)-64
1154 GOSUB 1172: RETURN
1155 :
1160 MN=(2*ND)-1: POKE 40961,98
1162 PRINT "MINIMUM": POKE 40961,131
1164 PRINT "MOVES": POKE 40961,164: PRINT MN: RETURN
1166 :
1170 :CLEAR L14
1172 FOR X=960 TO 991: POKE X,120: NEXT : RETURN
1174 :
1175 :
1500 : INSTRUCTIONS/MISC
1501 :
1510 POKE 40960,2: POKE 40961,96
1511 INPUT "DO YOU WANT INSTRUCTIONS (Y/W)",B0
1512 IF B0="N" THEN 1519
1513 POKE 40961,96: PRINT "AFTER FROM/TO PROMPT ENTER:
1514 PRINT "1: FR/TO ID (AB) FOR SELF PLAY"
1515 PRINT "2: FR/TO/OTHER (ABC) FOR IN-1"
1516 PRINT "3: QUIT - ANY LETTER BUT A,B,C"
1517 PRINT "HIT ANY KEY TO BEGIN"
1518 B0= KEY$ (0): IF B0="" THEN 1518
1519 FOR X=600 TO 767: POKE X,120: NEXT : RETURN
1520 :
1521 : MOVE FRONT PIC TO (0 - 511) ((RONNON)
1522 POKE 41400,2: POKE 41409,0: REM (SA-FN)
1523 POKE 41410,3: POKE 41411,253: REM (EA-FN)
1524 POKE 41412,0: POKE 41413,0: REM (SA-TO)
1525 CALL 20456: POKE 41452,255: REM SAVE 0-511
1526 RETURN
1527 :
1528 :
1530 : MOVE FRONT PIC TO (0 - 511)((IM-1))
1531 POKE 41001,0: POKE 41002,0: REM (SA-TO)
1532 POKE 41003,2: POKE 41004,0: REM (SA-FN)
1533 CALL 41994
1534 POKE 41001,1: POKE 41002,0: REM (SA-TO)
1535 POKE 41003,3: POKE 41004,0: REM (SA-FN)
1536 CALL 41994: POKE 41452,255: REM SAV 0-511
1537 RETURN
1538 :
1539 :CHANGE LINE 1 STRING "AAAAAAAAAA" TO
1540 "C6FF" LDAB 00FF RB=255
1541 "BD7700"JSR 07700 CALL RTN AT 7700
1542 "39" RTS RETURN
1543 ABOVE INSTR WILL BE LOCATED @ 41994(A40A)
1544 :
1545 END

```

```

1 REM SUBMITTED BY GUY MILLER
10 POKE 24578,54: POKE 24578,38: CALL 17046
20 DIM Y$(1)
33 DIM M$(1)
35 DIM E$(1)
40 A=5: DIM T$(4,20): DIM D$(8)
43 DIM L$(40,80): DIM S$(20)
45 REM LET TER FOR M PROGRAM 8/6/82
47 INPUT " ENTER - E - EMPHASIZED -- F -TO CANSER ENTER -D- COMPRESSED --R- TO CANSER-WHAT IS YOUR CHOISE",E$
50 PRINT : INPUT "WHAT IS THE DATE ",D$: PRINT
51 FOR E=1 TO H: PRINT ;"LINE #";E: INPUT T$(E,20)
53 INPUT "HOW MANY LINE IN ADDRES",H
55 NEXT E: GOSUB 400
60 IF Y$="YES" THEN GOSUB 800
61 IF E$="D" THEN GOSUB 805
62 IF E$="E" THEN GOSUB 800
63 IF E$="F" THEN GOSUB 810
64 IF E$="R" THEN GOSUB 820
70 U=37: PRINT TAB (U);D$: PRINT
80 PRINT TAB (0);"GUY MILLER"
90 PRINT TAB (0);"212 NOURTH SANTA ANA"
100 PRINT TAB (0);"MODESTO ,CA. 95354"
110 FOR S=1 TO 5: PRINT : NEXT S
200 FOR K=1 TO H: PRINT TAB (0);T$(K,20)
230 NEXT K
250 PRINT CHR$(10)
260 GOTO 490
400 INPUT "SALUTATION",S$: PRINT
420 L=L+1: INPUT L$(L,80)
450 IF L$(L,80)="ZXX" THEN L=L-1
460 GOTO 420
480 RETURN : REM
490 T=0: PRINT TAB (0);S$: PRINT : PRINT
510 REM L=L-1 NOT APPLICABLE NOW
520 FOR E=1 TO L: IF Y$(E)"YES" THEN PRINT ;E;");
540 IF E=1 THEN T=10
545 IF L$(E,80)="*" THEN L$(E,80)=""
560 PRINT TAB (T);L$(E,80)
565 IF L$(E,80)="" THEN T=10: PRINT : GOSUB 590
570 T=0
590 NEXT E
620 PRINT TAB (33);"SINCERELY"
645 PRINT TAB (33);"GUY MILLER"
650 PRINT TAB (33);"MODESTO,CA"
652 PRINT =0
653 IF KQ=5 THEN KQ=0: PRINT : INPUT "YOU WISH TO CONT.";M$: IF M$="NO" THEN END"
655 PRINT : INPUT "COPY, CH OR NO",Y$
670 IF Y$="CH" THEN GOSUB 720
673 IF Y$="COPY" THEN Y$="YES"
675 GOTO 60
720 REM
730 J=J+1: INPUT "ENTER LINE #",J: PRINT
735 IF J>L THEN L=L+1
740 IF J=0 THEN KQ=5: RETURN
750 PRINT L$(J,80): PRINT
760 INPUT "CHANGE",L$(J,80)
780 GOTO 730
800 PRINT CHR(27);"E": PRINT
805 PRINT CHR(15): RETURN
810 PRINT CHR(27);"F": RETURN
820 PRINT CHR(18): RETURN
830 REM ADD CHR(27) ; "F": REM AU TO CANSER
850 REM COPY & CH. (CHANGE) COMMAND WILL EXECUTE PRINT ER
860 REM HEADING LINES--80-90-100--LEFT MARGIN LINES -490-570-ORIGINAL-(T=5).
865 REM SIGN OFF -645-650-
870 REM ZXX END LET TER
900 REM SOME LINES ARE FOR MY USE--CHANGE OR DE LET E AS DESIRED
1000 REM OR FILE IN NEAREST DISPOSABLE SHUTE.

```



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10. -----
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```

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