



BBC Micro

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10 DIM M(10): DIM A(10): DIM B(10): DIM C(10)
20 DIM D$(10,10): DIM H(3): DIM P(3,10)
30 GO SUB 3000
90 DIM M(100): DIM A(100): DIM B(100):
   DIM C(100)
100 INPUT "HOW MANY DISCS? ";N
110 IF N<1 OR N>10 THEN GO TO 100
120 GO SUB 3100
130 LET J=1: LET M(J)=N: LET A(J)=1: LET B(J)
   =2: LET C(J)=3
140 GO SUB 1000
200 STOP
1000 IF M(J)=1 THEN GO SUB 1500: RETURN
1010 LET J=J+1
1020 LET M(J)=M(J-1)-1
1030 LET A(J)=A(J-1)
1040 LET B(J)=C(J-1)
1050 LET C(J)=B(J-1)
1060 GO SUB 1000
1100 LET M(J)=1
1110 LET A(J)=A(J-1)
1120 LET B(J)=B(J-1)
1130 LET C(J)=C(J-1)
1140 GO SUB 1000
1200 LET M(J)=M(J-1)-1
1210 LET A(J)=C(J-1)
1220 LET B(J)=B(J-1)
1230 LET C(J)=A(J-1)
1240 GO SUB 1000
1300 LET J=J-1
1310 RETURN
1500 LET PA=A(J): LET PB=B(J)
1510 LET M#=D$(P(PA,N+1-H(PA)))
1520 FOR I=22-H(PA) TO 7 STEP -1
1530 PRINT AT I-1,10*(PA-1);M#;
1540 PRINT AT I,10*(PA-1);B#;
1550 NEXT I
1560 FOR I=10*(PA-1) TO 10*(PB-1) STEP SGN (PB-PA)
1570 PRINT AT 6,I;M#;
1575 PRINT AT 6,I;B#;
1580 NEXT I
1590 FOR I=6 TO 20-H(PB)
1600 PRINT AT I,10*(PB-1);B#;
1610 PRINT AT I+1,10*(PB-1);M#;
1620 NEXT I
1640 LET H(PB)=H(PB)+1: LET P(PB,N+1-H(PB))=P
   (PA,N+1-H(PA))
1650 LET P(PA,N+1-H(PA))=0: LET H(PA)=H(PA)-1
1660 RETURN
3000 LET B#="" : LET C#=CHR# 143+CHR#
   143+CHR# 143+CHR# 143
3010 LET C#="" : FOR I=1 TO 10: LET C#=C#+CHR#
   143: NEXT I
3020 FOR I=1 TO 9 STEP 2
3030 LET D$(I)=B#( TO 4-INT (I/2))+CHR# 133+C#
   ( TO 2*INT (I/2))+CHR# 138+B#( TO 4-INT (I/2))
3040 LET D$(I+1)=B#( TO 4-INT (I/2))+C#( TO
   I+1)+B#( TO 4-INT (I/2))
3050 NEXT I
3060 RETURN
3100 INK 3: PAPER 6: BORDER 6: CLS
3120 FOR I=1 TO N
3130 PRINT AT 21-N+I,0;D$(I);
3135 LET P(1,I)=I: LET P(2,I)=0: LET P(3,I)=0
3140 NEXT I
3150 LET H(1)=N: LET H(2)=0: LET H(3)=0
3160 RETURN

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Spectrum

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10DIM D$(12),H(3),P(3,12)
20PROCINIT
100INPUT"HOW MANY DISCS (1-12)";N
110IF N<1 OR N>12 THEN 100
120PROCDISPLAY(N)
130PROCHANOI(N,1,2,3)
200END
1000DEFPROCCHANOI(M,PA,PB,PC)
1010IF M=1 THEN PROCMOVE(PA,PB):
   ENDPROC
1020PROCHANOI(M-1,PA,PC,PB)
1030PROCHANOI(1,PA,PB,PC)
1040PROCHANOI(M-1,PC,PB,PA)
1050ENDPROC
1100DEFPROCMOVE(PA,PB)
1110D#=D$(P(PA,N+1-H(PA)))
1120FORI=24-H(PA) TO 10 STEP -1
1130PRINT TAB(13*(PA-1),I);B#;
1140PRINT TAB(13*(PA-1),I-1);D#;
1150NEXTI
1160FORI=13*(PA-1) TO 13*(PB-1)
   (PB-PA)
1170PRINT TAB(I,9);D#;
1180NEXT I
1190FORI=9 TO 22-H(PB)
1200PRINT TAB(13*(PB-1),I);B#
1210PRINT TAB(13*(PB-1),I+1);D#;
1220NEXT I
1240H(PB)=H(PB)+1:P(PB,N+1-H(PB))
   =P(PA,N+1-H(PA))
1250P(PA,N+1-H(PA))=0:H(PA)=H(PA)-1
1260ENDPROC
3000DEFPROCINIT
3020FOR I%=1 TO 11 STEP 2
3030D$(I%)=CHR#150+STRING$(5-
   I%/DIV2,"")+CHR#234+STRING$(2*
   (I%/DIV2),CHR#255)+CHR#53+STRING$(
   5-I%/DIV2,"")
3040D$(I%+1)=CHR#150+STRING$(5-
   I%/DIV2,"")+STRING$(I%+1,CHR#
   255)+STRING$(5-I%/DIV2,"")
3050NEXT I%
3060B#=CHR#150+STRING$(12,"")
3070VDU 23,1,u;0;0;0;
3080ENDPROC
3100DEFPROCDISPLAY(N)
3110CLS
3120FORI=1 TO N
3130PRINT TAB(0,23-N+I);D$(I);
3135P(1,I)=I:P(2,I)=0:P(3,I)=0
3140NEXT I
3150H(1)=N:H(2)=0:H(3)=0
3160ENDPROC

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Recurring Problems

This is a photograph of the Towers of Hanoi program running on a Spectrum. The colour of the blocks can be changed very easily. If you try to follow as the computer solves the problem, watch carefully - the action moves rather quickly!

