

0 6 9 6 Program Description I

Program Title CHESS - ENDGAME 1

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Program Description, Equations, Variables

HP-67 PLAYS CHESS, HAVING KING + TWO BISHOPS (white) AGAINST YOUR KING ONLY (black). At the beginning of the game White's pieces are placed as follows:

King (=K) at 51 (X=5,Y=1), ~~First~~ bishop at 31, second bishop at 61.

This situation is shown, after initializing (LBL A), as

B₁B₁B₂B₂O O K K . O O

At this moment you can put your (black) king on any place of rows 7 or 8 (y=7 or y=8). The chosen place is introduced as $\overline{xy}$ (=10x+y) and the game begins. After every move you have made, HP finds an answer and shows the new situation as

B₁B₁B₂B₂O O K K . k k (kk being the black King)

Whatever your game may be, HP will win.

Please be careful not to make any false moves, since HP has not been programmed to detect such moves.

Operating Limits and Warnings

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

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[illegible]

Sample Problem(s)

Here is one of the many possibilities:

(A) redd: 31 61 00 51.00

57 (RS)	31 52	51 57	68 (RS)	56 55 00 65 68	28 (RS)	26 16 00 36 28
56	42 52	51 56	57	56 64	18	16 26 25 18
55	42 52	62 55	68	56 64	28	16 48 25 28
54	53 52	62 54	58	56 46	17	16 48 15 17
45	53 52	63 45	48	46 56	28	16 48 26 28
55	53 43	63 55	58	46 45	18	27 48 26 18
66	43 64	63 66	48	46 45	28	27 37 26 28
56	54 64	63 56	38	46 36		MATE
66	54 64	74 66	48	36 46		
56	54 64	75 56	38	36 35		
67	65 64	75 67	28	36 35		
77	65 55	75 77	38	36 26		
67	66 65	75 67	28	26 36		
58	66 65	76 58	38	26 25		
68	66 56	76 68	27	26 34		
58	56 66	65 58	18	26 34		

(39 moves)

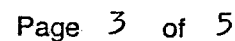
IF YOU TRY TO CONTINUE, YOU'LL FIND 0.00, THEN THE BEGINNING SITUATION OF A NEW GAME.

Note that CHECK is not indicated by any symbol.

Solution(s)

bishops Kings

Reference(s) _____

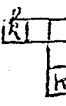
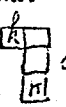
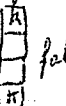


CHES: ENDGAME 1

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[illegible]



STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	1 *LBL 0			57	CHS		
2	GSB B			58	STO8		-11
3	$\Rightarrow$			59	GSB E		show beginning of game
4	6			0660	9		
5	=		Is white king K on row-6?	61	CHS		
6	GTO1			62	STO9		-9;
7	GSB D			63	*LBL 2		first and second b. moves
8	=0		Is  correct?	64	GSB c		
9	GTO5			65	GSB 7		
01010	RCL5			66	GTO2		
11	=		Is  correct?	67	*LBL 3		
12	GTO4			68	GSB 8		one move of king
13	RCL4			69	GTO3		
14	GSB d			0770	*LBL 4		one move of king
15	-			71	GSB 8		
16	GSB B			72	GSB D		
17	-			73	=0		Is  correct?
18	3			74	GTO3		
19	+			75	GSB B		
02020	=		Is $y-x = Y-X+3$?	76	3		
21	GTO2		(when $k = \overline{xy}$	77	=		Is $X=3$? (king in third column?)
22	GSB B		and $K = \overline{XY}$)	78	GTO3		
23	3			79	RCL9		
24	$\neq$		Is $X=3$? (White king in third column)	0880	GSB b		two moves {first and second bishop}
25	GTO3			81	GSB 9		
26	GSB 9			82	*LBL 6		
27	RCL8		two moves of second bishop interchange bishops	83	RCL6		
28	GSB c			84	GSB a		Move of king
033	GSB C			85	GTO0		
31	*LBL 2			86	*LBL 3		Move of first bishop
32	GSB B			87	GSB 7		
33	8			88	GTO4		
34	=		Is $X=8$? (White king in last column)	89	*LBL 5		Move of first bishop
35	GTO3			0990	GSB 7		
36	RCL7			91	GSB D		
37	GTO2			92	RCL8		
38	*LBL A		initializing starts here	93	$\neq$		Is  false?
39	CL REG			94	GTO3		
04040	CFO			95	GSB B		
41	5			96	8		Is $X=8$?
42	1			97	=		
43	STO1		$K=51$	98	GTO3		
44	STO2			99	RCL7		Move of second bishop
45	STO3			100100	GSB c		
46	1			101	*LBL 2		
47	0			102	RCL7		Move of king
48	STO5		10	103	GSB a		
49	STO+3		$B_2=6.1$	104	GTO0		
05050	STO-2		$B_1=3.1$	105	*LBL 3		Move of king
51	STO-2			106	GSB 8		
52	CHS			107	*LBL 4		
53	STO6		-10	108	GSB 9		Move of second bishop
54	1			109	GSB C		interchange bishops
55	1			110	GTO0		
56	STO7		11	111	*LBL 1		
57				112	RCL8		

REGISTERS

0	1 K	2 B_1	3 B_2	4 k	5 10	6 -10	7 11	8 -11	9 -9
50	S1	S2	S3	S4	S5	S6	S7	S8	S9
A	B	C	D	E	F	G	H	I	J



696

Program Listing II

Page 5 of 5

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
113	GSB a		Move of King	169	RCL9		
114	GSB B			170	*LBL c		Moves second bishop
115	2			171	STO+3		
116	=		Is X=2 (White King in second column)	172	*LBL E		Shows situation
117	GTO2			173	RCL1		
118	RCL8			174	RCL2		
119	GSB c		move of second bishop	175	EX		
120	GSB D			176	6		
121	≠0		Is  false?	177	x		
122	GTO3			178	+		
123	9			179	RCL3		
124	GSB c		Move of second bishop	180	EX		
125	*LBL 3			181	4		
126	GSB 8		Move of king	182	x		
127	RCL2			183	+		
128	RCL5			184	RCL4		
129	-		Move of second bishop	185	EX		
130	STO3			186	2		
131	GSB E		show situation	187	:		
132	GSB C		Interchange bishops	188	+		
133	GTO1			189	RS		see situation, enter
134	*LBL2			190	F?0		new place of (black)
135	2			191	CLX		king = xy
136	2			192	STO4		
137	GSB c		Move of second bishop	193	F?0		
138	GSB D			194	-x-		see 0.00 (new game
139	=0		Is  correct?	195	F?0		coming)
140	GTO2			196	GTOA		
141	GSB 8		Move of King	197	RTN		
142	GTO3			198	*LBL B		finds X of white king
143	*LBL 2			199	RCL1		
144	RCL6			200	*LBL d		finds absissa (and
145	GSB a		Two moves of King	201	RCL5		ordinate)
146	RCL7			202	:		
147	GSB a			203	INT		
148	*LBL 3			204	LSTX		
149	GSB D		Is  false?	205	FRAC		
150	≠0			206	RCL5		
151	GTO2			207	x		
152	GSB 7		Move of first bishop	208	⇒		
153	SFO		Flag indicates end	209	RTN		
154	*LBL 2			210	*LBL C		interchanges the two
155	RCL8		Move of second bishop	211	RCL2		bishops for
156	GSB c			212	RCL3		simplicity.
157	SFO		Flag indicates end	213	STO2		
158	*LBL 7			214	⇒		
159	RCL7		Move of first bishop	215	STO3		
160	*LBL b		Moves first bishop	216	RTN		
161	STO+2			217	*LBL D		calculates K-k-S
162	GTO E			218	RCL1		
163	*LBL 8			219	RCL4		
164	1			220	-		
165	*LBL a		Moves white king	221	8		
166	STO+1			222	-		
167	GTO E			223	RTN		
168	*LBL 9						

LABELS					FLAGS	SET STATUS		
A start	B used	C used	D used	E used	0 used	FLAGS	TRIG	DISP
a used	b used	c used	d used	e	1	ON OFF		
used	used	used	used	used	2	0 ☐ ☒	DEG ☒	FIX ☒
						1 ☐ ☐	GRAD ☐	SCI ☐
						2 ☐ ☐	RAD ☐	ENG ☐