



50500 Program Description I

Program Title MATE YOUR HP KING WITH KING BISHOP AND KNIGHT,
IN 35 MOVES

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Program Description, Equations, Variables THE NOTATION USED IS THE ALGEBRAIC ONE I.E.

EXAMPLES:

	8							
	7							
	6							
ROW	5							
	4							
	3							
	2							
	1							
		1	2	3	4	5	6	7

COLUMN

1) SQUARE  IS CODED AS 5.3 IN PROGRAM

2) KNIGHT POSITION: N QB6 IS CODED 3.6 AND INPUT BY STO C.

3) BISHOP MOVE IS INPUT BY 4.7 B

4) BLACK KING POSITION IS 3.2

AFTER PRESSING YOUR MOVE OUTPUT IS EITHER:

- 1) BLACK KING MOVE I.E. A NEW POSITION
- 2) NO MOVE, OUTPUT IS THE PREVIOUS BLACK KING POSITION, IT IS A STALEMATE.
- 3) ZERO. YOU WON, HP IS MATE.

Operating Limits and Warnings IF BLACK KING RESPONSE IS ILLEGAL
YOU PROBABLY ENTER ILLEGAL ~~WHITE~~ PIECES
POSITIONS. PLEASE CHECK YOUR POSITION BY:

RCL A	FOR	WHITE	KING	POSITION
RCL B	"	"	BISHOP	" "
RCL C	"	"	KNIGHT	" "

AND INPUT A LEGAL BLACK KING POSITION BY STO D.

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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Sketch(es)		DISPLAY (OUTPUT):		CALCULATOR'S MOVE	
		$\left[\begin{array}{c} X \cdot Y \\ \uparrow \\ \text{BLACK KING'S} \\ \text{NEW COLUMN} \end{array} \right.$ $\left[\begin{array}{c} N N \\ \uparrow \\ \text{BLACK KING'S} \\ \text{NEW ROW} \end{array} \right.$ $\left[\begin{array}{c} \\ \uparrow \\ \text{REMAINING} \\ \text{MOVES NUMBER} \end{array} \right.$			

Sample Problem(s) START WITH THE POSITION GIVEN IN TEST CARD
THAT IS: WHITE: K B6, B K6, N Q5 (K f6, B e6, Nd5)
BLACK: K K1 CK e8)
AND, AS WHITE, PLAY THE FOLLOWING GAME:

WHITE (YOU)	BLACK (HP67)	
		AND SO ON
1 B K6-QB8	K K1-Q1	IF YOU CONSIDER THAT THE LAST
2 B QB8-QR6	K Q1-K4	HP'S KING ^{MOVE} IS A REAL BAD ONE
3 K B6-N7	K K1-Q2	GIVE HIM AN?
4 K N7-B7	K Q2-Q3	KQ5-K4? → KQ5-K5
5 B QR6-QB4	K Q3-K4	THE MOVE IS CORRECTED
6 K B7-K7	K K4-Q5	(THIS GAME IS ILLUSTRATIVE THE
7 N Q5-QN6	K Q5-K4	GOOD MOVES ARE GIVEN IN REFERENCE)

Solution(s) LOAD SIDE 1 OF TEST CARD (OR SEE STEP 3 INSTRUCTIONS).

KEYSTROKE	HP DEFENCE (output)	TO GIVE AN? PRESS
3.8 B	4.8 34	R/S
1.6 B	5.8 33	NEW OUTPUT IS
7.7 A	4.7 32	5.4 28
6.7 A	4.6 31	AND SO ON...
3.4 B	5.5 30	
5.7 A	4.4 29	
2.6 C	5.5 28	

Reference(s) YOUNG AVERBACH "Théorie des finales de partie"
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STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	LOAD SIDE 1 AND SIDE 2 OF PROGRAM		☐ ☐	
2	OPTIONAL: LOAD SIDE 1 OF DATA CARD		☐ ☐	
	GO TO STEP 4		☐ ☐	
3	INPUT CHESS-BOARD POSITIONS		☐ ☐	
	1) WHITE KING POSITION E.G. 6.6		STC A	I.J ♔
	2) " " BISHOP " " " 5.6		STC B	I.J ♚
	3) " " KNIGHT " " " 4.5		STC C	I.J ♞
	4) BLACK KING " " " 5.8		STC D	I.J ♚
	INPUT THE NUMBER OF MOVES† E.G. 35		h STI	35.♔ ♚
	OPTIONAL: RECORD DATA ON BLANK CARD		F W/DATA	Crd
4	INPUT YOUR MOVE BY KEYING:		☐ ☐	
	1) New PIECE POSITION		I .	
	FIRST # OF COLUMN • THEN # OF ROW		J ☐	
	2) IF MOVED PIECE IS THE		☐ ☐	
	KING PRESS		A ☐	
	BISHOP " "		B ☐	
	KNIGHT " "		C ☐	
5	WAIT FOR HP67 DEFENCE§--		☐ ☐	I _K J _K NN
	OPTIONAL: GIVE AN ? TO HP67 MOVE		R/S ☐	
	AND WAIT FOR BETTER DEFENCE		☐ ☐	
	GO TO STEP 5		☐ ☐	
6	OPTIONAL: RECORD ACTUAL GAME		☐ ☐	
	POSITION AND REMAINING MOVES		☐ ☐	
	ON BLANK DATA CARD		A W/DATA	Crd
7	GO TO STEP 4		☐ ☐	
			☐ ☐	
			☐ ☐	
	§ SEE PROGRAM DESCRIPTION AND		☐ ☐	
	SKETCH FOR EXPLANATION OF		☐ ☐	
	DEFENCE CODING ON DISPLAY.		☐ ☐	
			☐ ☐	
	† AS HP DEFENCE IS NOT		☐ ☐	
	ALWAYS THE BEST ONE INPUT		☐ ☐	
	LESS MOVES FOR MORE CHALLENGING		☐ ☐	
	GAME. 35 MOVES ARE REQUIRED		☐ ☐	
	TO MATE BLACK KING AGAINST ITS BEST		☐ ☐	
	DEFENCE, WITH THE WORST STARTING		☐ ☐	
	POSITION FOR WHITE PIECES.		☐ ☐	

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*LBL A	31 25 11	WHITE KING MOVE		G5B 2	31 22 02	STRATEGY FOR
	STO A	33 11			G5B 4	31 22 04	
	GTO 1	22 01			G5B 3	31 22 03	
	*LBL B	31 25 12	WHITE BISHOP MOVE	060	G5B 6	31 22 06	
	STO B	33 12			G5B 9	31 22 09	
	GTO 1	22 01			G5B 8	31 22 08	
	*LBL C	31 25 13	WHITE KNIGHT MOVE		G5B 7	31 22 07	
	STO C	33 13			GTO e	22 31 15	→ check if (stale) mate
	*LBL 1	31 25 01			*LBL 1	31 25 01	MOVE 1
010	DSZ	31 33			1	01	
	DEG	35 41			.	83	
	RCL D	34 14	PROVISIONAL SQUARE		1	01	↓
	STO 9	33 09	→ DEFINITIVE		CHS	42	
	G5B d	32 22 14		070	GTO e	22 31 15	
	5	05			*LBL 2	31 25 02	MOVE 2
	x ≤ y	32 71	PROGRAM LOCALIZES BLACK KING POSITION		.	83	↓
	GTO a	22 31 11			1	01	
	x ↔ y	35 52			CHS	42	
	RV	35 53			GTO e	22 31 15	
020	x ≤ y	32 71			*LBL 3	31 25 03	MOVE 3
	GTO 2	22 31 12			.	83	↓
	G5B 9	31 22 09			9	09	
	G5B 8	31 22 08			GTO e	22 31 15	
	G5B 6	31 22 06		080	*LBL 4	31 25 04	MOVE 4
	G5B 7	31 22 07			1	01	←
	G5B 4	31 22 04			CHS	42	
	G5B 1	31 22 01			GTO e	22 31 15	
	G5B 3	31 22 03			*LBL 6	31 25 06	MOVE 6
	G5B 2	31 22 02			1	01	→
	GTO e	22 31 15	→ check if (stale) mate		GTO e	22 31 15	
	*LBL 2	32 25 12			*LBL 7	31 25 07	MOVE 7
	G5B 7	31 22 07			.	83	↓
	G5B 4	31 22 04			9	09	
	G5B 8	31 22 08		090	CHS	42	
	G5B 9	31 22 09			GTO e	22 31 15	
	G5B 1	31 22 01			*LBL 8	31 25 08	MOVE 8
	G5B 6	31 22 06			.	83	↑
	G5B 2	31 22 02			1	01	
	G5B 3	31 22 03			GTO e	22 31 15	
040	GTO e	22 31 15	→ check if (stale) mate		*LBL 9	31 25 09	MOVE 9
	*LBL a	32 25 11	PROGRAM RESUMES B. KING LOCALIZATION		1	01	↗
	x ↔ y	35 52			.	83	
	RV	35 53			1	01	
	x ≤ y	32 71		100	*LBL e	32 25 15	CHECK IF PROVISIONAL SQUARE IS OK (100-206)
	GTO c	22 31 13			RCL 9	34 09	
	G5B 3	31 22 03			+	61	
	G5B 6	31 22 06			STO D	33 14	
	G5B 9	31 22 09			G5B d	32 22 14	
	G5B 2	31 22 02			STO E	33 15	
050	G5B 1	31 22 01			x ↔ y	35 52	
	G5B 8	31 22 08			STO D	33 00	
	G5B 4	31 22 04			x ≤ y	32 71	
	G5B 7	31 22 07			x ↔ y	35 52	
	GTO e	22 31 15	→ check if (stale) mate	110	9	09	
	*LBL c	32 25 13			x ≤ y	32 71	YES: SEE NEXT MOVE
	G5B 1	31 22 01			GTO 0	22 00	IS THIS SQUARE OUT OF BOARD?

REGISTERS

0 X B.KING	1 Y W.B-Y B.K	2 X W.B-X B.K	3	4	5 Y W.KING	6 X W.KING	7 Y W.KNIGHT	8 X W.KNIGHT	9 B.KING POSITION
S0	S1	S2	S3	S4	S5	S6	S7	S8	S9
A Actual W. KING position	B Actual W. BISHOP position	C Actual W. KNIGHT position	D Provisional B. KING position	E Y B.KING	I # OF MOVES BEFORE END				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	RV	35 53			x ²	32 54	
	d x	44		170	x ≠ y	32 61	NO: MOVE
	x = y	32 51	YES: SEE NEXT MOVE		GTO 1	22 01	IS OK
	GTO 0	22 00			RCL 2	34 02	
	RCL A	34 11			RCL 1	34 01	
	QSB d	32 22 14			→ P	32 72	
120	STO 5	33 05			x < y	35 52	
	RCL E	34 15			RCL 8	34 08	
	-	51			RCL 7	34 07	
	ABS	35 64			→ P	32 72	
	x < y	35 52			RV	35 53	SAME AZIMUT?
	STO 6	33 06		180	x ≠ y	32 61	NO: YES:
	RCL 0	34 00			GTO 2	22 02	
	-	51			RA	35 54	
	ABS	35 64			RA	35 54	
	x < y	32 71			x > y	32 81	SCREEN SQUARE OK
	x < y	35 52			GTO 1	22 01	
130	1	01	YES: SEE NEXT MOVE		*LBL 2	31 25 02	
	x < y	32 51			RA	35 54	
	GTO 0	22 00			RCL 6	34 06	
	RCL C	34 13			RCL 5	34 05	
	QSB d	32 22 14		190	→ P	32 72	
	STO 7	33 07			RV	35 53	SAME AZIMUT?
	RCL E	34 15			x ≠ y	32 61	NO: NEXT MOVE
	-	51			GTO 0	22 00	
	ABS	35 64			RA	35 54	
	x < y	35 52			RA	35 54	
140	STO 8	33 08			x ≤ y	32 71	NEXT MOVE
	RCL E	34 00			GTO 0	22 00	
	-	51			*LBL 1	31 25 01	
	ABS	35 64			RCL D	34 14	
	x > y	32 71		200	RCL	35 34	
	x < y	35 52			10x	32 53	
	2	02	NO: CHECK BISHOP		X	71	
	x ≠ y	32 61			RIS	84	
	GTO 1	22 01			*LBL 0	31 25 00	
	RV	35 53			0	00	
150	+	61			RTN	35 22	
	3	03	YES: SEE NEXT MOVE		*LBL d	32 25 14	
	x = y	32 51			INT	31 83	
	GTO 0	22 00			LST x	35 82	
	*LBL 1	31 25 01		210	FRAC	32 83	
	RCL B	34 12			1	01	
	QSB d	32 22 14			0	00	
	RCL E	34 15			X	71	
	STO - 7	33 51 07			RTN	35 22	
	STO - 5	33 51 05					
160	-	51					
	STO 1	33 01					
	x ²	32 54					
	x < y	35 52					
	RCL 0	34 00					
	STO - 8	33 51 08					
	STO - 6	33 51 06					
	-	51					
	STO 2	33 02					

LABELS					FLAGS		SET STATUS		
A KING	B BISHOP	C KNIGHT	D	E	0 NOT USED	1	FLAGS	TRIG	DISP
a	b	c	d DECODING	e CHECK CHECK	1 " "	0 ☐ ON ☒ OFF	0 ☐ ☒	DEG ☒	FIX ☐
0 NEXT MOVE	1 K	2 ↓	3 ↘	4 ←	2 " "	1 ☐ ☒	1 ☐ ☒	GRAD ☐	SCI ☒
5	6 →	7 ↗	8 ↑	9 →	3 " "	2 ☐ ☒	2 ☐ ☒	RAD ☐	ENG ☐
						3 ☐ ☒	3 ☐ ☒		n 4