



60158 Program Description I

Program Title INVERSE MASTERMIND

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Program Description, Equations, Variables

Inverse Mastermind is played against your HP. Having chosen a four-digit number (with digits chosen from [1,9]), Mac will find this number from clues given after each "try". A normal clue (r, g) has to be given, if Mac "tries" a number in DSP1. The integers r and g resp. give the number of right or good digits in Mac's try. A digit is called right if it is correct and on the correct place. It is only called good, if it is correct but not on the right place. As soon as Mac gives its tries in DSP0, you'll only furnish r as clue. After no more than 3+m clues (m being the highest digit in your four-digit number), Mac will have found your number and show it in DSP5.

Data for a datacard are given on page 3.

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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Sketch(es)

Sample Problem(s)

You have written 5213 on a piece of paper. Pressing A, Mac begins guessing:

A	1111.0	you play	1	ENT	0	RS
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	1222.0		1			
--	--------	--	---	--	--	--

	1233.0		2			
--	--------	--	---	--	--	--

	1234.0		1		2	
--	--------	--	---	--	---	--

	1235.0		1		3	
--	--------	--	---	--	---	--

	1253.		2			
--	-------	--	---	--	--	--

	5213.		4			
--	-------	--	---	--	--	--

	5213.00000					
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Solution(s)

Reference(s)

START

[illegible]

STEP	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*LBL4 DSP1 C STO1 *LBL4 EX 3 + *LBL3		GTO5 3 STI 10X		
010	EX 2 + *LBL2 1 0 + *LBL1 1 +	060	STOx0 0 GSBa GSBb GSBd GSBc RS B		Mac this d ₁ d ₂ d ₃ d ₄ key in r only
020	STO+1 RCL1 RS x==y? STO0 4 x≠y? GTO0 RCL1 GTO8	070	GSBd GSBb GSBa GSBc RS B GSBd GSBb GSBc GSBa RS		Now try d ₁ d ₂ d ₃ d ₄ key in r only
030	*LBLO - + CHS STI 0 x≠y? GTOi DSPO 3	080	B RCL3 RCL4 CFO x=y? SFO 0 C 1 C 9 C 9 0 C 9 0 C EX		And last d ₁ d ₂ d ₃ d ₄ key in r only
040	STI *LBL5 ISZ RCL1 1 0 : INT STO1 LSTX	090	9 C 9 0 C 9 0 C EX 2 P?0 STO-0 8 9 0 CHS C 1 1 C		From this moment on Mac will find your number by consulting the information of the data card. This card translates four last r-values into correct answer!! ↓ ⋮
050	FRAC 1 0 *STOi DSZ DSZ	100	2 P?0 STO-0 8 9 0 CHS C 1 1 C		
		110	EX 2		

Start here
First part in DSP1:
finding the digits

key in r ent g RS

i = 4 - r - g
not yet all digits found?

Second part: putting
the digits in good order!
Just the digits are placed
in sto 1-2-3-4
say d₁, d₂, d₃, d₄

REGISTERS

0 used	1 used	2 used	3 used	4 used	5	6	7	8	9
S0	S1	S2	S3	S4	S5	S6	S7	S8	S9
A	B	C	D	E	I	used			

data card



60158

Program Listing II

Page 5 of 5

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	P?0				LSTX		
	STO+0			170	FRAC		
	2				1		
	0				0		
	CHS				x		
	C				STI		
	1				RCLi		
120	9				↑		
	*LBLC				+		
	STO-0				1		
	2				0		
	1			180	:		
	2				GTO7		
	1				*LBL0		
	RCLO				↓		
	x>y?				EX		
	RTN				4		
130	EX				x		
	3				GTO8		
	x==y				*LBLa		
	x>y?				RCL1		
	SF2			190	GTO0		
	1				*LBLb		
	0				RCL2		
	ENT				GTO0		
	5				*LBLc		
	F?2				RCL3		
140	+				GTO0		
	STI				*LBLd		
	*LBL6				RCL4		
	RCLO				*LBL0		
	RCLi			200	x==y		
	INT				1		
	x=y?				0		
	GTO0				x		
	x>y?				+		
	RTN				RTN		
150	ISZ				*LBLB		
	GTO6				4		
	*LBL0				x==y		
	LSTX				x=y?		
	FRAC			210	GTO0		
	EX				DSZ		
	4				SPACE		
	x				RCI		
	STO0				10 ^x		
	0				x		
160	*LBL7				STO+0		
	RCLO				0		
	x=0?				RTN		
	GTO0				*LBL0		
	1			220	-		
	0				+		
	:				*LBL8		
	INT				DSP5		
	STO0				RS		

Heart of program!
Can be consulted
up to 9 times

Mac makes a
four-digit number
to "try".

Mac remembers
your x-clues

end of game -
ready for a new
game!

LABELS					FLAGS	SET STATUS										
A	✓	B	✓	C	✓	D		E		0	unol	FLAGS			TRIG	DISP
a	✓	b	✓	c	✓	d	✓	e	✓	1		ON OFF			DEG	FIX
0	✓	1	✓	2	✓	3	✓	4	✓	2	unol	0	☐	☒	☒	☒
												1	☐	☒	☐	☐
												2	☐	☒	☐	☐
												3	☐	☒	☐	☐
5	✓	6	✓	7	✓	8	✓	9		3						n 0