

Program Title MASTERMINDContributor's Name RICHARD GRAYAddress 11100 ROSELLE SUITE ECity SAN DIEGO State CAZip Code 92121

Program Description, Equations, Variables Calculator generates a set of four integers $1 \leq N_i \leq \text{Range}$ this set is compared with a guess, each number used and in correct position is scored as "2", each number used but in the wrong position scores as a "1".

The program is written as much as possible with inline code to expedite calculations.

SET

GUESS

N₁N₁N₂N₂N₃N₃N₄N₄

Each number is compared when hits are encountered both cells a set to illegal values to prevent ambiguous scoring

Operating Limits and Warnings Calculations continue after results are printed. Removal of paper tear window facilitates seeing a series of results.

Program is easily adaptable to HP67 change step 202 to RCL 9, Delete step 203

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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User Instructions

00888D



STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	Load sides 1 and 2		<input type="text"/> <input type="text"/>	
2	Start After several seconds (at least 10)		<input type="text"/> A	
3	STOP (press any key)		<input type="text"/> R/S	
4	NEW GAME	*	<input type="text"/> B	6
5	GUESS NNNN Where N=1,2,3,4,5,6 Score "2" for each number used in the correct position Score "1" for each number used out of position		<input type="text"/> E	SCORE, GUESS
6	When a score of "2222" go to step 4		<input type="text"/> <input type="text"/>	
*	The difficulty of the game may be altered by specifying the "Range" before depressing "NEW GAME" Range may be 1 to 9 Range is displayed when calculations cease		<input type="text"/> <input type="text"/>	
	EXAMPLE	8	<input type="text"/> B	8
	GOOD LUCK		<input type="text"/> <input type="text"/>	

Program Listing I

Page 4 of 5

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*LBLA	21 11	START	057	FRC	16 44	
002	FIX	-11		058	ST-5	35-45 05	
003	CF3	16 22 03	Ready for range change	059	RCLD	36 14	
004	1	01		060	x	-35	
005	0	00		061	ST06	35 06	
006	ST00	35 14	Store Constants	062	FRC	16 44	
007	9	09		063	ST-6	35-45 06	
008	9	09		064	RCLD	36 14	
009	7	07		065	x	-35	
010	ST0C	35 13		066	ST07	35 07	
011	4	04		067	FRC	16 44	
012	CHS	-22	Generate Random Seed	068	ST-7	35-45 07	
013	STOI	35 46		069	RCLD	36 14	
014	Pi	16-24		070	x	-35	
015	FRC	16 44		071	ST08	35 08	
016	STOB	35 12		072	1	01	Reset score pointer
017	RCLC	36 13		073	STOE	35 15	
018	x	-35		074	ST+0	35-55 00	Increment guess counter
019	GT01	22 45		075	SF0	16 21 00	Set for direct hits
020	*LBLB	21 12		076	RCL1	36 01	
021	6	06		077	RCL5	36 05	
022	F32	16 23 03	NEW GAME	078	X#Y?	16-32	
023	R+	-31	Default value	079	GT00	22 00	
024	STOA	35 11	If Keyboard entry set new range	080	1	01	
025	CLX	-51		081	5	05	Compare Guess with generated
026	ST00	35 00	Reset guess counter	082	GSB1	23 01	Set; if hit:
027	SPC	16-11		083	*LBL0	21 00	
028	4	04		084	RCL2	36 02	
029	STOI	35 46		085	RCL6	36 06	
030	*LBL3	21 03		086	X#Y?	16-32	Score & Null out both cells
031	RCLB	36 12		087	GT00	22 00	
032	RCLC	36 13		088	2	02	
033	x	-35		089	6	06	
034	FRC	16 44		090	GSB1	23 01	
035	STOB	35 12		091	*LBL0	21 00	
036	RCLA	36 11		092	RCL3	36 03	
037	x	-35		093	RCL7	36 07	
038	1	01		094	X#Y?	16-32	
039	+	-55	Fill both primary and secondary registers with generated set where	095	GT00	22 00	
040	INT	16 34		096	3	03	
041	STOI	35 45		097	7	07	
042	P+S	16-51		098	GSB1	23 01	
043	STOI	35 45		099	*LBL0	21 00	
044	P+S	16-51		100	RCL4	36 04	
045	DSZI	16 25 46		101	RCL8	36 08	
046	GT03	22 03		102	X#Y?	16-32	
047	RCLA	36 11		103	GT00	22 00	
048	RTN	24		104	4	04	
049	*LBLB	21 15		105	8	08	
050	EEX	-23	Display Range	106	GSB1	23 01	
051	4	04		107	*LBL0	21 00	
052	÷	-24		108	CF0	16 22 00	
053	ST09	35 09		109	RCL1	36 01	
054	RCLD	36 14		110	RCL8	36 08	
055	x	-35		111	X#Y?	16-32	
056	ST05	35 05		112	GT00	22 00	

Reset score pointer
Increment guess counter
Set for direct hits

Compare Guess with generated Set; if hit:

Score & Null out both cells
Sub 1

- Check for used numbers out of position

REGISTERS

0 GUESS COUNTER	1 N ₁	2 N ₂	3 N ₃	4 N ₄	5 GUESS N ₁	6 GUESS N ₂	7 GUESS N ₃	8 GUESS N ₄	9 STORE GUESS
S0	S1 COPY N ₁	S2 COPY N ₂	S3 COPY N ₃	S4 COPY N ₄	S5	S6	S7	S8	S9
A RANGE	B RANDOM #	C 997	D 10	E SCORE POINTER	F USED				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
113	1	01		169	4	04	
114	8	08		170	6	06	
115	GSB1	23 01		171	GSB1	23 01	
116	*LBL0	21 00		172	*LBL0	21 00	
117	RCL2	36 02		173	RCL1	36 01	
118	RCL5	36 05		174	RCL6	36 06	
119	X=Y?	16-32		175	X=Y?	16-33	
120	GT00	22 00		176	GSB2	23 02	
121	2	02		177	RCL2	36 02	
122	5	05		178	RCL7	36 07	
123	GSB1	23 01		179	X=Y?	16-33	
124	*LBL0	21 00		180	GSB2	23 02	
125	RCL3	36 03		181	RCL3	36 03	
126	RCL6	36 06		182	RCL8	36 08	
127	X=Y?	16-32		183	X=Y?	16-33	
128	GT00	22 00		184	GSB2	23 02	
129	3	03		185	RCL4	36 04	
130	6	06		186	RCL5	36 05	
131	GSB1	23 01		187	X=Y?	16-33	
132	*LBL0	21 00		188	GSB2	23 02	
133	RCL4	36 04		189	RCL9	36 09	
134	RCL7	36 07		190	DSP4	-63 04	
135	X=Y?	16-32		191	PRTX	-14	
136	GT00	22 00		192	4	04	
137	4	04		193	STOI	35 46	
138	7	07		194	*LBL4	21 04	
139	GSB1	23 01		195	P2S	16-51	
140	*LBL0	21 00		196	RCL7	36 45	
141	RCL1	36 01		197	P2S	16-51	
142	RCL7	36 07		198	STOI	35 45	
143	X=Y?	16-32		199	DSZI	16 25 46	
144	GT00	22 00		200	GT04	22 04	
145	1	01		201	CF3	16 22 03	
146	7	07		202	RCL0	36 00	
147	GSB1	23 01		203	DSP0	-63 00	
148	*LBL0	21 00		204	RTN	24	
149	RCL2	36 02		205	*LBL1	21 01	
150	RCL8	36 08		206	RCLD	36 14	
151	X=Y?	16-32		207	=	-24	
152	GT00	22 00		208	STOI	35 46	
153	2	02		209	STOI	35 45	
154	8	08		210	FRC	16 44	
155	GSB1	23 01		211	RCLD	36 14	
156	*LBL0	21 00		212	x	-35	
157	RCL3	36 03		213	STOI	35 46	
158	RCL5	36 05		214	RCLC	36 13	
159	X=Y?	16-32		215	STOI	35 45	
160	GT00	22 00		216	*LBL2	21 02	
161	3	03		217	RCLC	36 15	
162	5	05		218	F0?	16 23 00	
163	GSB1	23 01		219	ST+9	35-55 09	
164	*LBL0	21 00		220	ST+9	35-55 09	
165	RCL4	36 04		221	RCLD	36 14	
166	RCL6	36 06		222	x	-35	
167	X=Y?	16-32		223	STOE	35 15	
168	GT00	22 00		224	RTN	24	

No need to
null on last
four comparisons

Print Score

Restore generated
Set to primary
registers

Set for range change
Display guess count

Null out Cells
by setting to
invalid numbers

score
If direct hit
Score "2" by
adding twice
Reposition score
pointer

LABELS				FLAGS		SET STATUS		
START	NEW GAME	C	D	GUESS	USED	FLAGS	TRIG	DISP
a	b	c	d	e	1	ON OFF		
0 LOCAL LABEL	1 SCORE SUB + NULL	2 SCORE	3	4 RESTORE SET	2	0 <input type="checkbox"/> <input type="checkbox"/>	DEG <input type="checkbox"/>	FIX <input type="checkbox"/>
5	6	7	8	9	3 USED	1 <input type="checkbox"/> <input type="checkbox"/>	GRAD <input type="checkbox"/>	SCI <input type="checkbox"/>
						2 <input type="checkbox"/> <input type="checkbox"/>	RAD <input type="checkbox"/>	ENG <input type="checkbox"/>
						3 <input type="checkbox"/> <input type="checkbox"/>		n