



52058 Program Description I a,

Page 1 of 1

Program Title SEA BATTLE

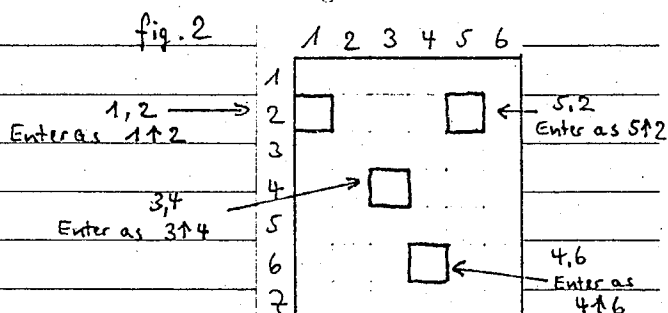
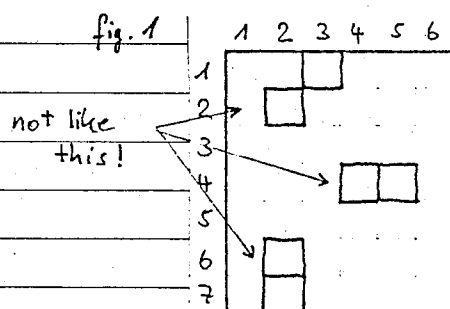
Contributor's Name Martin Landua

Address Kranichsteinerstr. 22

City Frankfurt/Main Country Germany Postal Code 6000

Program Description, Equations, Variables This program qualifies your HP to play with
you nearly like a human being.

The rules: You first have to draw the rectangular field like it is shown in the sketch on page 3. Then you have to place 6 ships like this . Those ships may not touch each other by side or corner (see fig.1). Each of the



points in the field gets a combination of numbers (3,4; 5,2; aso). These numbers must be called (and are called by the calculator) whenever you want to get information about a certain field (see fig.2). The information that you get can get:

1. "water" (shown by "-1." by the HP), i.e. on this field there is no ship.

2. "hit" (shown by repeating the field-number), i.e. this field contains a ship.

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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Program Description, Equations, Variables Before the game starts you draw two rectangular fields, one for you and one for the calculator. In the left field you place your ships that must be found by the calculator and when game has begun you mark the HP's questions. In the right field you mark your own questions.

How to mark: 1. in the left field. If the HP misses one of your ships mark a point: . .

If he hit a ship make a cross through the ship: ☒.

2. in the right field. If you missed mark a point.

If you hit a ship draw the ship: ☐.

When you and the calculator have set the ships you start the game by asking any field. Press B and the HP will tell you if you were right and then automatically go on and ask you any field. You only have to tell the HP if it hit a ship by reentering the number of the field and press D. If HP missed you go on ~~by~~ asking. The game ends when one of the players has found all 6 ships which is displayed by the calculator.

Something to say to the program: The most important program-parts are two subroutines for random numbers. While the first is drawn from Standard Pac Handbook, page 148, the other is a special random number generator that shows every number only once because otherwise the HP would not reach every field

Operating Limits and Warnings within 42 times and would ask some fields twice or more

For more information see Program Form.

In some cases it is possible that the program asks certain fields in sequence, i.e. some fields are asked permanently and others are not touched.

If so, choose any integer that is not equal to that in register B store that into R and press RCL C, STO D and start guessing once again.

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52058 Program Description II

1												2											
Sketch(es)												Sketch(es)											
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
1						1						1						1					
2						2						2						2					
3						3						3						3					
4						4						4						4					
5						5						5						5					
6						6						6						6					
7						7						7						7					

Player HP Player HP

Sample Problem(s) You first have to enter a number between 0 and 1 as a basis for the random numbers. Then press f A to start the program. The calculator now sets his own ships.

PRESS	DISPLAY	COMMENTS
.6325154256		any number between 0 and 1
f A	0.	calculator has set his ships
3.5 B	3.5 : 5.2	you ask 3.5, "hit" , calculator asks 5.2:"water"
1.4 B	-1. : 2.4	1.4 is "water", HP asks 2.4 also "water"

This goes on until one of the players wins.

Not.: You draw all these informations into two fields, one for you, one that represents the calculator only to show you the sequence the sketch contains of 4 fields!

Solution(s)

Reference(s)

[illegible]



52058

Program Listing I

Page 5 of

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	LBL9	31 25 09			RCL9	34 09	
	F?0	35 71 00			6	06	
	RTN	35 22			X=Y?	32 61	
	RCLC	34 15		060	GTO8	22 08	
	9	09			CLX	44	
	9	09			DSPO	23 00	
	7	07			PS5	31 42	
	X	71			RTN	35 22	
	FRAC	32 83	random number		LBL0	31 25 00	
010	STOE	33 15	generator like		RCL9	34 09	
	4	04	"Standard Pac"		STOI	35 34	
	9	09	page 148		GSB9	31 22 09	
	X	71			F?0	35 71 00	
	1	01	49 possibilities	070	GSBe	32 22 15	
	+	61			JTOO	33 00	
	INT	31 83	all random numbers		LBL2	31 25 02	
	STOA	33 11	that can be divided		RCL(i)	34 24	
	7	07	by 7 are omitted		RCL0	34 00	
	÷	81			-	51	
020	FRAC	32 83			ABS	35 64	
	X=0?	31 51			X=0?	31 51	
	GTO9	22 09			GTOO	22 00	
	RCLA	34 11			1	01	
	RTN	35 22		080	X=Y?	32 51	
	LBLA	32 25 11			GTOO	22 00	
	STOE	33 15			X=Y	35 52	
	LBLA	31 25 11			6	06	
	RCLC	34 15			X=Y?	32 51	
	CLREG	31 43			GTOO	22 00	
	PS5	31 42			X=Y	35 52	
	CLREG	31 42			7	07	
	STOE	33 15			X=Y?	32 51	
	JX	31 54			GTOO	22 00	
	FRAC	32 83		090	X=Y	35 52	
	EEX	43			8	08	
	3	03			X=Y?	32 51	
	X	71			GTOO	22 00	
	INT	31 83			DSZ I	31 33	
	STOB	33 12			GTO2	22 02	
040	4	04			RTN	35 22	
	9	09			LBL3	31 25 12	
	1/x	35 62			GSB6	32 22 12	
	STOC	33 13			PS5	31 42	
	STOD	33 14		100	6	06	
	1	01			STOI	35 33	
	STOG	33 09			LBL3	31 25 03	
	GSB9	31 22 09			X=Y	35 52	
	STOI	33 01			RCL(i)	34 24	
	LBLDAB8	31 25 08			X=Y?	32 51	
050	GSBO	31 22 00			GTO4	22 04	
	1	01			DSZ I	31 33	
	STOG	33 61 09			GTO3	22 03	
	RCL9	34 09			1	01	
	STOI	35 33		110	CHS	42	
	RCL0	34 00			-X-	31 84	
	STO(i)	33 24			PS5	31 42	

Subroutine to find
out if two ships
or fields touch each
other by side or corner.

$x-8$ $x-2$ $x-6$
 $x-1$ $\boxed{x}$ $x+1$
 $x+8$ $x+2$ $x+6$

these fields have
to be recognized.

REGISTERS

0 used	1 $X_1, Y_1(a_1)$	2 $X_2, Y_2(a_2)$	3 $X_3, Y_3(a_3)$	4	5	6	7	8	9 control
S0 used	S1 "	S2 "	S3 "	S4 "	S5 "	S6 "	S7	S8	S9 control
A used	B random number	C $1/49$	D $n \cdot 1/49$	E starting random number	I control				



52058 Program Listing II

Page 6 of

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	GTO C	22 13			1	01	
	LBL 4	31 25 04		170	0	00	
	GJB C	32 22 13			÷	81	
	-X-	31 84			+	61	
	1	01			RTN	35 22	
	STO-9	33 51 09			LBL 6	31 25 06	
	RCL 9	34 09			6	06	flash 6 times "6"
120	PSS	31 42			PAUSE	35 72	
	X=0?	31 51			DSZ I	34 33	
	RTN	35 22			GTO 6	22 06	
	LBL C	31 25 13			LBL E	31 25 15	
	RCL 8	34 03		180	PSS	31 42	
	STO I	35 33			6	06	
	X≠0	31 61			STO I	35 33	
	GTO 5	22 05			LBL d	32 25 14	
	GJBe	32 22 15			RCL (i)	34 24	
	GTO c	31 22 22 31 13			DEL GSB c	32 22 13	
130	LBL 5	25 05			-X-	31 84	
	SFO	35 51 00			DSZ I	31 33	
	GJBO	31 22 00			GTO d	22 31 14	
	RCL (i)	34 24			PSS	31 42	
	E=0	35 61 00		190	RTN	35 22	
	GTO c	22 31 13			LBL e	32 25 15	random number
	LBL D	31 25 14			RCL D	34 14	subroutine:
	GJb b	32 22 12			RCL B	34 12	another random number
	1	01			X	71	is multiplied by 1/49, 2/49, ...
	STO+9	33 61 09			FRAC	32 83	(RCLD)
140	RCL 9	34 09	Every field gets a number		4	04	
	STO I	35 33	1 2 3 4 5 6, 7		9	09	
	6	06	8 9 10 11 12 13		X	71	this causes that every
	-	51	14 16 17 18 19 20		1	01	number appears only
	X=0?	31 51	21 23 24 25 26 27	200	+	61	once within a sequence
	GTO 6	22 06	28 20 31 32 33 34		INT	31 83	of 49 numbers.
	R↓	35 53	35 37 38 39 40 41		RCL D	34 14	
	R↓	35 53	42 43 44 45 46 47 48		RCL C	34 13	
	STO (i)	33 24	Subroutine b		+	61	
	GTO c	22 31 13	for conversion:		STO D	33 14	
150	LBL b	32 25 12	coordinates into field-		R↓	35 53	
	1	01	number		STO A	33 11	
	-	51			7	07	
	7	07			÷	81	
	X	71		210	FRAC	32 83	
	+	61			X=0?	31 51	
	RTN	35 22			GTO e	22 31 15	
	LBL c	32 25 13	Subroutine c		RCL A	34 11	
	DSP 1	23 01	for conversion:		RTN	35 22	
	7	07	field number into		R/S	84	
	÷	81	coordinates				
160	INT	31 83					
	LST X	35 82					
	FRAC	32 83					
	7	07					
	X	71					
	XSY	35 52		220			
	1	01					
	+	61					

LABELS					FLAGS	SET STATUS		
A RESTART	B X↑Y 2	C used	D hit X↑Y	E X ₁ Y ₁ X ₂ Y ₂ ...	0 control	FLAGS	TRIG	DISP
a START	b X↑Y → a	c a → X↑Y	d used	e random number subr. 1	1	ON OFF	DEG ☒	FIX ☒
0 random number subr. 2	1 used	2 used	3 used	4 used	2	0 ☐ ☒	GRAD ☐	SCI ☐
5 used	6 used	7 used	8 used	9 used	3	1 ☐ ☒	RAD ☐	ENG ☐
						2 ☐ ☒		n. 2
						3 ☐ ☒		