

## PINBALL MACHINE

This game allows multiple scoring for 5 balls. The balls may be controlled with 4 flippers and tilting is also allowed. As the ball scores, the score is flashed and the running total is displayed. When the ball falls, the display blinks zero. New balls may be set up and played until the 5th ball falls; at that time the total score for the game is displayed as a negative number.

NOTE:

On very rare occasions, the machine will overflow ( $\theta=90^\circ...$ ). In that event, store some other seed in  $R_2$  or start a new game.

This program is adapted from HP-65 Users' Library program #03458A by Peter C. Wang.

SOLUTION:

```

      0.32147 ST02 * Initialize
      B XXXX Use flipper [1]
      200. *** Total score
      D XXXX [3]
      XXXX Flashing 0-Ball 1 falls
RC I XXXX
      4. *** 4 balls left

      C XXXX [2]
      500. *** Score=300,total=500
      C XXXX [2]
      1000. *** Total
      B XXXX [1]
      XXXX Flashing 0-Ball 2 falls
RC I XXXX
      3. *** 3 Balls Left

      E XXXX [4]
      2100. ***
      C XXXX
      2700. ***
      B XXXX
      3300. ***
      B XXXX
      8000. ***
      E XXXX
      8800. ***
      B XXXX
      8900. ***
      C XXXX
      9400. ***
      D XXXX
      11300. ***
      E XXXX * To reproduce this
      12000. *** example, store 0.32147
      E XXXX in R2. When playing
      12800. *** follow user
      E XXXX instruction 2.
      12800. ***
      E XXXX
      15500. ***
      E XXXX
      16600. ***
      C XXXX
      26200. ***

```

SOLUTION:

D ~~XXXX~~  
 26400. \*\*\*  
 B ~~XXXX~~  
 27200. \*\*\* Score=800, Total=27,200  
 D ~~XXXX~~  
 27300. \*\*\*  
 B ~~XXXX~~  
 27800. \*\*\*  
 E ~~XXXX~~  
 28600. \*\*\*  
 D ~~XXXX~~  
 29500. \*\*\*  
 B ~~XXXX~~  
 Flashing Ø-Ball 3 falls  
 RC I ~~XXXX~~  
 2. \*\*\* 2 balls left  
 D ~~XXXX~~  
 RC I ~~XXXX~~  
 1. \*\*\* 1 ball left  
 C ~~XXXX~~  
 29500. \*\*\*  
 D ~~XXXX~~  
 30000. \*\*\*  
 B ~~XXXX~~  
 30900. \*\*\*  
 E ~~XXXX~~  
 31000. \*\*\*  
 B ~~XXXX~~  
 32200. \*\*\*  
 B ~~XXXX~~  
 32700. \*\*\*  
 D ~~XXXX~~  
 39800. \*\*\*  
 C ~~XXXX~~  
 39800. \*\*\*  
 C ~~XXXX~~  
 40200. \*\*\*  
 D ~~XXXX~~  
 40900. \*\*\*  
 C ~~XXXX~~  
 -40900. \*\*\* Last ball falls, total=  
 40,900



# Program Listings

9

01 <del>*LBL0</del> LBL A	Initialize	50 ST02	
02 CLRG		51 RCL4	
03 1		52 RCL7	$\theta > 85^\circ?$
04 ST02		53 X $\neq$ Y?	Ball falls(tan $\theta$ too large)
05 .		54 GT08	$0 <  \tan\theta  < 11.43$
06 9		55 RCL2	
07 8		56 1	
08 5		57 0	
09 3		58 x	
10 ST03		59 INT	
11 EEX		60 RCL5	"round" to 100's
12 2		61 x	$\Sigma$ scores
13 ST05		62 ST+1	Display score
14 8		63 PSE	
15 5		64 RCL1	Display total
16 ST07		65 R/S	
17 5		66 *LBL8	Reduce # of balls
18 <del>ST00</del> STO I	i=# of balls=5	67 DSZ	Indicate fall of
19 FIX0		68 GT09	ball
20 *LBL5	tilting operation	69 RCL1	
21 RCL3	$(.9853)^n \rightarrow R_2$	70 CLRG	
22 STx2	n=#of loops	71 CHS	Display game total
23 GT05		72 R/S	as a negative no.
24 <del>*LBL1</del> LBL B		73 *LBL9	
25 3	39=k for flipper[1]	74 0	Blinking zero
26 9		75 PSE	
27 <del>GT04</del> GTO E		76 GT09	
28 <del>*LBL2</del> LBL C	53=k for flipper[2]	77 R/S	
29 5			
30 3			
31 <del>GT04</del> GTO E			
32 <del>*LBL3</del> LBL D			
33 RCL7	85=k for flipper[3]		
34 <del>*LBL4</del> LBL E			
35 RCL2			
36 RCL7	lastx = k for		
37 x	flipper [4]		
38 +			
39 RCL3			
40 Yx	(85) $R_2 + K$		
41 RCL3			
42 x			
43 X <sup>2</sup>			
44 FRC			
45 RCL5			
46 x			
47 ST04	$\theta$		
48 TAN			
49 ABS	$ \tan\theta $		

## REGISTERS

1 i=# of balls	2 $\Sigma$ Scores	3 Seed	4 .9853	5 0	6 100
7 85	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	