Program Description I

Program Title ____CONCENTRATION____

Contributor's Name   William M Kolb   (265)

Address   34 Laughton Street

City   Upper Marlboro   **State** Maryland   **Zip Code** 20870

Program Description, Equations, Variables

Concentration challenges the ability of a player to correctly recall numbers. Each number is displayed for approximately 2½ seconds. Perfect recall will be rewarded with a larger number while an incorrect guess results in a smaller number. After three incorrect guesses, the player's score will be displayed as a negative number. This score will be the total number of digits correctly guessed from all of the numbers displayed.

The average number of digits correctly guessed for the three numbers missed can also be obtained. This average is typically less than a player's actual recall ability because incorrect guesses are usually wrong in several places.

Skilled players may increase the level of difficulty at the start of each game by entering the number of digits desired.

Operating Limits and Warnings

At least one digit must be entered for every guess, i.e., zero is not an acceptable guess. Random number seeds must be positive quantities less than one. Difficulty factors must be positive integers from 2 to 10.

00266D

Program Description II

Sketch(es)

Sample Problem(s) Enter 0.123456789 and press A:

TRIAL	NUMBER	GUESS	COMMENTS
1.	3	3	
2.	46	46	
3.	593	593	
4.	7208	7208	
5.	84827	84827	
6.	975711	9757111	Extra digits won't count off.
7.	2031448	2031445	The last digit is wrong.
8.	330578	330578	
9.	4580116	45801	The first 5 digits are right!
10.	585444	558444	2nd and 3rd digits are interchanged.

The total number of digits correctly guessed is -42. The average number of correct digits in the three numbers missed is 5.00.

Solution(s)

SCORE	ABILITY
9 or less	Total amnesia
10 - 25	Counting requires use of fingers
26 - 45	Survival level
46 - 57	You are not concentrating
58 - 70	Average memory
71 - 83	Excellent recall
84 - 97	Recites zip codes from memory
98 or more	Eidetic memory

Reference(s)

CONCENTRATION

◄1

2►

START   DIFF   AVG
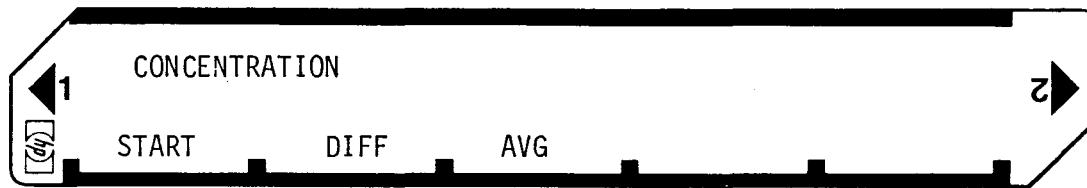
STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS		OUTPUT DATA/UNITS
1	Enter program				0.
2	Enter a decimal point followed by several digits (random number seed)	.nnn			
3	Press A to start the game. When the display stops flashing, memorize the number. The number will disappear after 2½ seconds.		A		N
4	Enter as many digits as you can remember; press R/S.	GUESS	R/S		N
5	Repeat Step 4. After three incorrect guesses your score will be displayed as a negative value equal to the total number of digits correctly guessed.				-SCORE
6	Depress C to determine the average number of correct digits in the three numbers you missed (don't be surprised if it's less than you thought).		C		AVG
7	Go to Step 3 to start a new game.				
8	OPTIONAL: Skilled player may start with a higher difficulty factor by entering the desired number of digits and depressing B. Now go to Step 3.	n	B		n
9	OPTIONAL: A new random number seed can be entered at the start of any game (go to Step 2).				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	f LBL A	31 25 11			h LSTx	35 82	
	h F? 3	35 71 03	Initialize all		g x = y	32 51	
	h F? 3	35 71 03	registers. If F3		GTO 1	22 01	
	RCL 1	34 01	is set, change	060	h SF 2	35 51 02	
	f CL REG	31 43	Random Number seed.		1	01	
	f P ↔ S	31 42			STO + 4	33 61 04	
	STO 1	33 01	-------------------		GTO 1	22 01	-------------------
	f LBL 0	31 25 00			f LBL 2	31 25 02	
	RCL 1	34 01	Generate new Random		1	01	Compute sum of
010	h π	35 73	Number such that		STO + 5	33 61 05	digits of all num-
	+	61	0≤RN<1.		RCL 0	34 00	bers guessed
	g FRAC	32 83			STO + 5	33 61 05	
	STO 1	33 01	-------------------		h F? 2	35 71 02	
	9	09		070	GTO 3	22 03	-------------------
	x	71	Generate number (N)		9	09	
	1	01	with required num-		g x > y	32 81	Increase difficulty
	+	61	ber of digits such		g ISZ (i)	32 34	up to ten digits.
	RCL 0	34 00	that most signifi-		GTO 0	22 00	-------------------
	g 10^x	32 53	cant digit is not		f LBL 3	31 25 03	
020	x	71	zero.		STO + 6	33 61 06	Accumulate number
	f INT	31 83			2	02	of digits in all
	STO 2	33 02	-------------------		RCL 7	34 07	numbers guessed
	h PAUSE	35 72	Display number (N)		g x = y	32 51	incorrectly. Stop
	h PAUSE	35 72	for 2½ seconds.	080	GTO 4	22 04	after three in-
	CLx	44	-------------------		RCL 0	34 00	correct guesses.
	R/S	84	Input guess.		1	01	Otherwise, decrease
	ENTER	41	-------------------		STO + 7	33 61 07	difficulty down to
	f LOG	31 53			g x ≤ y	32 71	one digit.
	f INT	31 83	Left justify digits		STO - 0	33 51 00	
030	RCL 0	34 00	in guess so that it		GTO 0	22 00	-------------------
	-	51	is the same size as		f LBL 4	31 25 04	
	g 10^x	32 53	N.		RCL 4	34 04	
	÷	81			RCL 5	34 05	Compute score.
	f INT	31 83		090	-	51	
	STO 3	33 03	-------------------		h CF 3	35 61 03	
	f. LBL 1	31 25 01			h RTN	35 22	-------------------
	RCL 3	34 03			f LBL B	31 25 12	
	RCL 2	34 02	Determine number of		f P ↔ S	31 42	Input desired diff-
	g x = y	32 51	digits correctly		STO 0	33 00	iculty factor (num-
040	GTO 2	22 02	guessed by testing		g DSZ (i)	32 33	ber of digits).
	1	01	least significant		h CF 3	35 61 03	
	0	00	digit (LSD) first.		f P ↔ S	31 42	
	STO ÷ 2	33 81 02	If it is incorrect,		h RTN	35 22	-------------------
	STO ÷ 3	33 81 03	set Flag 2 and in-	100	f LBL C	31 25 13	
	RCL 2	34 02	crement error count		RCL 6	34 06	
	ENTER	41	by 1. If all other		RCL 4	34 04	
	g FRAC	32 83	digits are now		-	51	Compute average
	-	51	correct, end loop.		3	03	number of digits
	STO 2	33 02	Otherwise, remove		+	61	correctly guessed
050	h LSTx	35 82	LSD and repeat.		h LSTx	35 82	for all numbers
	RCL 3	34 03			÷	81	guessed incorrectly
	ENTER	41			DSP 2	23 02	
	g FRAC	32 83			h PAUSE	35 72	
	-	51		110	DSP 0	23 00	
	STO 3	33 03			h RTN	35 22	
	CLx	44					

REGISTERS									
0 DIFF	1 RND NUM	2 N	3 GUESS	4 ERR	5 SOD	6 USED	7 USED	8	9
S0	S1	S2	S3	S4	S5	S6	S7	S8	S9
A	B		C		D		E		I

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
				170			
120				180			
130				190			
140				200			
150				210			
160				220			

LABELS

A	B	C	D	E
START	DIFF	AVG		
a	b	c	d	e
0 used	1 used	2 used	3 used	4 used
5	6	7	8	9

FLAGS

0	.
1	
2	used
3	used

SET STATUS

FLAGS		TRIG	DISP
	ON OFF	DEG ☒	FIX ☒
0	☐ ☒	GRAD ☐	SCI ☐
1	☐ ☒	RAD ☐	ENG ☐
2	☐ ☒		n___0___
3	☐ ☒		