Program Description I

Program Title RANDOM NUMBERS

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Program Description, Equations, Variables THIS PROGRAM PROVIDES SEQUENCES OF RANDOM NUMBER UNIFORMELY DISTRIBUTED BETWEEN GIVEN LIMITS. ALGORYTHM IS DONE IN THE WAY TO CUT ANY LOOP IN THE SEQUENCE NUMBER.

THE RANDOM GENERATOR :

$R = [[[seed]^2 / 100]\ INT / 10000]\ FRAC \times 10000$

R is THEN TRANSLATED INTO THE GIVEN LIMITS.

PROGRAM ACCEPTS ANY POSITIVE SEED, BUT WORKS WITH SEED BETWEEN 1000 AND 9999. THE PROCESS TIME TO RESET INITIAL SEED TO WORKING SEED IS DIRECTLY PROPORTIONAL TO THE RANGE BETWEEN THEM.

TO KILL LOOPS, A SPECIAL SUBROUTINE AUTOMATICALLY CHANGES THE SEED AT EACH NEW NUMBER AND SHIFTS IT RANDOMLY TOO.

Operating Limits and Warnings FOR EXTREME seed [10^{-75} OR 10^{75}] FOR EXAMPLE, THE PROGRAM CAN'T FAILED, BUT ANY WAY THE PROCESS TIME IS QUITE LONG.

Program Description II

Sketch(es)

Sample Problem(s)

GETS 5 RANDOM NUMBERS BETWEEN 1 AND 100

SEED = 5230

SOLUTION: READ BOTH SIDES OF CARD 1 AND 2

1 [ENT] 100 [ENT] 5 → [D] → 1.

5230 [A] → 95, 9, 20, 68, 4

DO IT AGAIN, SAME LIMITS, SAME SEED.

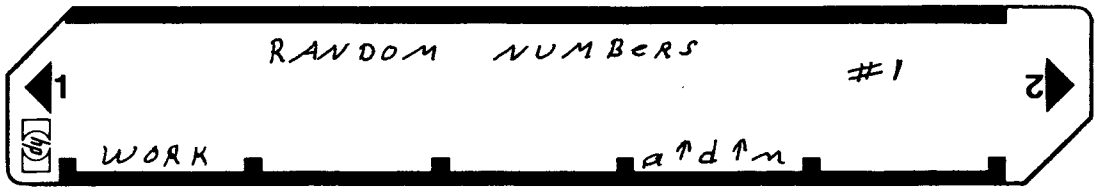
5230 [A] → 47, 65, 16, 91, 97

NOTE: THE AVERAGE OF THE 10 NUMBERS GOTTEN IS 51 AND STANDARD DEVIATION IS 37. THAT'S LOOK OK. ON A SO SMALL SET OF DATA!

Solution(s)

Reference(s)

User Instructions



STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	READ SIDE 1 AND 2 CARD #1			
2	READ SIDE 1 AND 2 CARD #2			
3	ENTER LOWER LIMIT a	a	ENT	
	ENTER UPPER LIMIT d	d	ENT	
	ENTER NUMBERS WISHED	n	D	a
4	ENTER seed AND GET RANDOM NUMBERS			
	-ANY REAL NUMBER	seed	A	R_1
				R_2
				:
				R_n
				0
5	NEW sequences GTO STEP 3 OR 4			

User Instructions

PSEUDA ALEATOIRE MEMO #2

STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
	THIS CARD IS ONE DATA			
	ENTER THE FOLLOWING DATA IN			
	THE REGISTERS AND RECORDEI THEM			
	DATA REGISTER			
	663 R0			
	848 R1			
	285 R2			
	424 R3			
	10000 R4			
	1000 R5			
	10 R6			
	100 R7			
	9650 R8			
	9999 R9			
	71.14 Rs1			
	7.256024602 Rs2			
	1 Rs3			
	7.5 B			
	.51 C			
	1105910 D			
	3141 E			

03837D Program Listing I

STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*LBL2	21 12	ENTER
002	P≠S	16-51	
003	STO3	35 03	A, D, m
004	P≠S	16-51	
005	R↓	-31	
006	.	-62	
007	5	05	
008	+	-55	
009	STOE	35 12	
010	R↓	-31	
011	.	-62	
012	4	04	
013	9	09	
014	-	-45	
015	STOC	35 13	
016	RTN	24	
017	*LBL+	21 11	WORK
018	STOE	35 05	
019	P≠S	16-51	
020	RCLE	36 05	
021	P≠S	16-51	
022	STOA	35 11	
023	RCL8	36 08	
024	X=0?	16-43	
025	RCLC	36 14	
026	RCL4	36 04	SEED ≥ 10^4 ?
027	X≤Y?	16-35	
028	GSBC	23 13	
029	RCL8	36 08	
030	RCL5	36 05	
031	X≠Y	-41	
032	X≤Y?	16-35	SEED ≤ 103?
033	GSBB	23 12	
034	RCL8	36 08	
035	*LBLE	21 15	RANDOM.
036	RCL8	36 08	
037	RCL6	36 06	SHIFTED
038	÷	-24	GENERATION
039	INT	16 34	
040	RCL6	36 06	
041	÷	-24	
042	FRC	16 44	
043	RCLE	36 06	
044	x	-35	
045	1	01	
046	+	-55	
047	2	02	
048	÷	-24	
049	RND	16 24	
050	RCL1	36 46	
051	+	-55	
052	2	02	
053	÷	-24	
054	INT	16 34	
055	STO1	35 46	
056	RCL8	36 08	
057	GTO1	22 15	
058	*LBL1	21 11	
059	RCL0	36 00	
060	+	-55	
061	1	01	
062	7	07	
063	ST+0	35-55 00	
064	R↓	-31	
065	GTO6	22 06	
066	*LBL2	21 02	
067	P≠S	16-51	
068	RCL1	36 01	
069	1	01	
070	7	07	
071	ST+1	35-55 01	
072	P≠S	16-51	
073	R↓	-31	
074	+	-55	
075	GTOE	22 06	
076	*LBL3	21 03	
077	RCL1	36 01	
078	+	-55	
079	1	01	
080	7	07	
081	ST+1	35-55 01	
082	R↓	-31	
083	GTO6	22 06	
084	*LBL4	21 04	
085	RCL2	36 02	
086	+	-55	
087	1	01	
088	7	07	
089	ST+2	35-55 02	
090	R↓	-31	
091	GTO6	22 06	
092	*LBL5	21 05	
093	RCL3	36 03	
094	+	-55	
095	1	01	
096	7	07	
097	ST+3	35-55 03	
098	R↓	-31	
099	*LBL6	21 06	RANDOM
100	X^2	53	GENERATOR
101	RCL7	36 07	
102	÷	-24	
103	INT	16 34	
104	RCL4	36 04	
105	÷	-24	
106	FRC	16 44	
107	RCL4	36 04	
108	x	-35	
109	STO8	35 08	
110	RCL8	36 12	
111	RCLC	36 13	
112		-45	

REGISTERS

0: 663	1: 848	2: 285	3: 424	4: 10000	5: 1000	6: 10	7: 100	8: 9650 SEED	9: 9999
S0	S1: 71.14	S2: 7.25602	S3: 1	S4	S5	S6	S7	S8	S9
A: m	B: D	C: A	D: 1105910	E: 3141	I: 1 – 5				

03837D Program Listing II

STEP	KEY ENTRY	KEY CODE	COMMENTS
113	×	-35	
114	RCL9	36 09	
115	÷	-24	
116	RCLC	36 13	
117	+	-55	
118	P≠S	16-51	
119	STO2	35 02	
120	ABS	16 31	
121	.	-62	
122	4	04	
123	9	09	
124	X>Y?	16-34	
125	GSB9	23 09	
126	RCL2	36 02	
127	P≠S	16-51	
128	DSP0	-63 00	
129	PSE	16 51	
130	RCLA	36 11	
131	1	01	
132	-	-45	
133	STOA	35 11	
134	X=0?	16-43	
135	RTN	24	
136	GTOE	22 15	
137	*LBLB	21 12	seed ≤ 10^3
138	ENT↑	-21	
139	ABS	16 31	
140	LOG	16 32	
141	ABS	16 31	
142	Pi	16-24	
143	+	-55	
144	×	-35	
145	RCL5	36 05	
146	X≠Y	-41	
147	X≤Y?	16-35	
148	GTOB	22 12	
149	*LBL7	21 07	
150	RCL4	36 04	
151	X≠Y	-41	
152	STO8	35 08	
153	X≤Y?	16-35	
154	RTN	24	
155	Pi	16-24	
156	÷	-24	
157	GTO7	22 07	
158	*LBLC	21 13	seed ≥ 10^4
159	RCLE	36 15	
160	÷	-24	
161	RCL4	36 04	
162	X≠Y	-41	
163	X>Y?	16-34	
164	GTOC	22 13	
165	STO8	35 08	
166	X≠Y	-41	
167	RTN	24	
168	*LBL9	21 09	OUT
169	0	00	
170	STO2	35 02	
171	RTN	24	

LABELS					FLAGS
WORK	B USED	C USED	D addrm	E USED	0
a	b	c	d	e	1
0	1 USED	2 USED	3 USED	4 USED	2
5 USED	6 USED	7 USED	8	9 USED	3

SET STATUS		
FLAGS	TRIG	DISP
ON OFF	DEG ☑	FIX ☑
0 ☐ ☑	GRAD ☐	SCI ☐
1 ☐ ☑	RAD ☐	ENG ☐
2 ☐ ☑		n 0
3 ☐ ☑		