

003360 PROGRAM DESCRIPTION I

Page 1 of 5

Program Title GRAPHICS AID PROGRAM "GAP"
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Program Description, Equations, Variables "GAP" PROVIDES FUNCTIONS USEFUL FOR GENERATING GRAPHICS ACCORDING TO THE DOT-MATRIX REQUIREMENTS OF THE HP 82143A PRINTER. A SINGLE INPUT OF THE FORMAT, N.DDDDDDD
ALLOWS USERS TO:

1. GENERATE SPECIFIC GRAPHICS ROWS (N=0 THRU 6)
2. EDIT SPECIFIC ROWS (N= -1 THRU -6)
3. RETURN 7 COLUMN PRINT NUMBERS (N=7)
4. FORM NEGATIVE IMAGE OF A 7 X 7 MATRIX (N= -7)
5. BUILD SPECIAL CHARACTERS (N=8)

N SPECIFIES THE ROW # & FUNCTION, AND .DDDDDD ARE THE DIGITS VISUALLY ORIENTED TO THE PLACEMENT OF DOTS IN COLUMNS 0 THRU 6.
A ZERO AT D INHIBITS A DOT, ANY NON-ZERO AT D ENABLES A DOT.
N=0 ALWAYS CLEARS THE COLUMN DATA REGISTERS WHILE GENERATING ROW 0.

Necessary Accessories HP 82143A PRINTER (HOOKUP IS OPTIONAL EXCEPT WHEN BUILDING SPECIAL CHARACTERS)

Operating Limits and Warnings NOTE: N= -0.XXXXXXX IS AN ILLEGAL & DISRUPTIVE INPUT!
ROW 0 CAN BE EDITED BY SIMPLY SUBTRACTING 1 FROM EACH COLUMN REGISTER WHERE A DOT IS TO BE REMOVED. "GAP" DOES NOT DISASSEMBLE "BIDSPEC"
CHARACTERS; HOWEVER, PLACING COLUMN PRINT NUMBERS DIRECTLY INTO COLUMN REGISTERS 0 THRU 6 PERMITS EDITING OF PREVIOUSLY GENERATED GRAPHICS. PROGRAM ALTERS THE STACK.

Reference(s) HP 82143A PRINTER OWNERS HANDBOOK, PP 61-66.

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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Sample Problem (Sketch if Desired) BUILD, STORE, AND PRINT THE FOLLOWING SPECIAL CHARACTERS:

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CHARACTER 1

CHARACTER 2

CHARACTER 3

(NOTE THAT PRINTER WAS SET TO "NORM" FOR TUTORIAL PURPOSES ONLY. LEFT JUSTIFIED PRINT DISPLAYS PROGRAM OUTPUT AND RIGHT JUSTIFIED PRINT DISPLAYS USER INPUT.)

EDIT CHAR,2 INTO
CHARACTER 3°

XEQ "GAP"

INPUT? -1.0000011 RUN
INPUT? -2.0000001 RUN
INPUT? -4.0000001 RUN
INPUT? -5.0000011 RUN
INPUT? -6.0000345 RUN
INPUT?

CREATE

PRODUCE NEGATIVE
FOR

CHARACTER 1

CHARACTER 2

SOLUTION:

	FIX 7	on		XEQ "GAP"
INPUT?	XEQ "GAP"		INPUT?	-7.0000000 RUN
INPUT?	0.1000000 RUN	(R/S)		P.NO.S R0-R6 NEGATIVE
INPUT?	1.1100000 RUN			XEQ "GAP"
INPUT?	2.1110000 RUN		INPUT?	8.0000000 RUN
INPUT?	3.1111100 RUN			CHAR. IN X
INPUT?	4.1110000 RUN			STO 10
INPUT?	5.0011000 RUN			
INPUT?	-5.0011000 RUN			
INPUT?	5.1100000 RUN			
INPUT?	6.1000000 RUN			
INPUT?	8.0000000 RUN			

WHOOPS!

EDIT & RESUME
THIS WAYCONTROL "N" FOR
BUILDING CHAR.

STO 09 ← Special Char.
NOW IN REG. 9

EDIT
ROW 0

1.0000000 ST- 06
ST- 05
ST- 04

8.0000000 RUN

CHAR. IN X

RCL 09
ACSPECRCL 11
ACSPECRCL 10
ACSPECRCL 09
ACSPECRCL 11
ACSPECRCL 10
ACSPEC

THIS SEQUENCE
IN "MAN"
MODE...

PRODUCES
THIS

→→→

00336C USER INSTRUCTIONS

Page 3 of 5

				SIZE: (HP-41C)
STEP	INSTRUCTIONS	INPUT	FUNCTION	DISPLAY
1	ENTER PROGRAM, FIX 7, XEQ SIZE ACCORDING TO DESIRED CHARACTER STORAGE BEYOND REGISTER 9.			
2	ASSIGN: XEQ "GAP" TO CONVENIENT KEY (LN USED HERE)			
3	EXECUTE "GAP"		<LN>	INPUT?
4	KEY IN ROW/DOT NUMBER (FIRST NUMBER MUST BE 0.XXXXXXX (TO CLEAR REG'S. OTHERS ANY ORDER))	ROW.DATA	<NUMERIC> < KEYS >	N.DDDDDDD
(5)	OPTIONAL ENTRY FOR ROW EDITING	ROW.DATA	<NUMERICS>	N.DDDDDDD
			<CHS>	-N.DDDDDDD
6	RUN		<R/S>	
				INPUT?
7	REPEAT STEPS 4-6 UNTIL ALL ROWS ARE COMPLETED.			
8	SELECT CONTROL NUMBER INPUT FROM THESE FUNCTIONS:			
	A. EXIT PROGRAM WITH COLUMN PRINT NUMBERS IN REG'S R0 THRU R6	7	<7>	7.0000000
	OR		<R/S>	P.NO.S R0-R6
	B. CREATE NEGATIVE IMAGE FROM DATA IN REG'S R0 THRU R6, EXIT.	-7	<7>	7.0000000
			<CHS>	-7.0000000
			<R/S>	P.NOS R0-R6 NEGATIVE
	OR			
	C. BUILD A SPECIAL CHARACTER FROM DATA IN R0 THRU R6, LEAVE IN REGISTER X, EXIT PROGRAM.	8	<8>	8.0000000
			<R/S>	
		PRINTER HP41C &	DISPLAYS: PRINTER DISP:	* (CHAR.) CHAR. IN X
9	GO TO STEP 3 FOR FURTHER OPERATIONS.			

□ 67 □ 97 □ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
01	LBL "GAP"			44	LBL 12		TEST FOR BRANCH
02	LBL 01		INITIALIZE &	45	7		TO SPECIAL
03	CF 00		INPUT VIA	46	X<Y?		CHARACTER
04	.006			47	GTO 13		BUILDER
05	STO 08		X REGISTER	48	FS? 00		TEST TO FORM
06	"INPUT?"			49	XEQ 14		NEGATIVE IMAGE
07	PROMPT			50	"P.NO.S		
08	6.9		SET EDIT/NEG.	R0-R6"			PROGRAM EXIT
09	X<>Y		FLAG IF -N	51	FS? 00		WITH
10	X<0?			52	"F NEGAT		COLUMN PRINT
11	SF 00		INPUT	IVE"			NUMBERS IN
12	ABS			53	AVIEW		REGISTERS R0-R6
13	X>Y?		BRANCH ON	54	RTN		
14	GTO 12		CONTROL N	55	LBL 13		
15	ENTER↑		READY N AS ROW	56	RCL IND		PROGRAM EXIT
16	INT		NUMBER &	08			FROM SPECIAL
17	STO 07		EXPONENT	57	BLDSPEC		CHARACTER
18	RDN		DOT PORTION OF	58	ISG 08		BUILDING.
19	FRC		INPUT	59	GTO 13		
20	LBL 10		RESET COLUMN	60	ACSPEC		DATA UNALTERED
21	RCL 07		REGISTERS	61	PRBUF		IN R0-R6
22	X=0?		WHEN	62	"CHAR. I		
23	STO IND			N X"			
08			N=0	63	AVIEW		
24	X<>Y		GET SINGLE DOT	64	RTN		
25	10		DIGIT D	65	LBL 14		
26	*			66	127		COMPLEMENTS
27	ENTER↑			67	RCL IND		R0-R6 TO
28	INT			08			FORM NEGATIVE
29	X=0?		NO COL. CHANGE	68	-		IMAGE.
30	GTO 11		WHEN D=0	69	STO IND		
31	2		"2" TO APPROPRI-	08			
32	RCL 07		ATE "ROW" POWER	70	ISG 08		
33	Y↑X			71	GTO 14		
34	FS? 00			72	RTN		
35	ST- IND		DOT REMOVED IF	73	END		
08			EDIT FLAGGED				
36	FC? 00						
37	ST+ IND		DOT CREATED IF				
08			EDIT CLEARED				
38	RDN						
39	LBL 11		RETRIEVE FRACTION.				
40	-		LOOP FOR 7 COLUMNS.				
41	ISG 08						
42	GTO 10		BACK TO INPUT				
43	GTO 01		FOR CONTROL.				

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Page 5 of 5

[illegible]

PROGRAM REGISTERS NEEDED: 22

ROW 1 (1 : 4)



ROW 2 (4 : 8)



ROW 3 (9 : 19)



ROW 4 (20 : 30)



ROW 5 (30 : 38)



ROW 6 (39 : 47)



ROW 7 (48 : 50)



ROW 8 (50 : 52)



ROW 9 (52 : 58)



ROW 10 (58 : 62)



ROW 11 (62 : 67)



ROW 12 (68 : 73)

