71-00010 PROGRAM DESCRIPTION

Program Title Simple and Enhanced Key Redefinition

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Program Description (include equations) KEYDEF allows keys to be redefined with a minimum of keystrokes. It leads the user through the redefinition process with a straightforward series of prompts. The user can also choose to scroll through the "keys" file, viewing and editing already-existing key assignments. It also provides a simple mechanism for imbedding escape characters in an assignment string using an intuitive list of mnemonics (see page 10).

Necessary Accessories CUSTUTIL LEX file

Operating limits and warnings

Minimum RAM Requirement 3214

References HP-71 Owners Manual, Section 7 - Redefining the Keyboard

HP-71 Reference Manual - DEF KEY

This program has been verified only with respect to the numerical example given in *Program Description*. 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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71-00010 VARIABLE DEFINITIONS

NAME	DEFINITION
C	Cursor position in user-input string.
C2	Cursor position while entering escape character.
E	Ending Keycode - largest physical keycode that has an assignment associated with it.
F	Flag indicates keys file was secure on entry.
I	Index variable for scrolling through keys file - contains physical keycode.
J	Index variable for matching user-input escape sequence mnemonic to corresponding escape character.
K	Indicates which key terminated user input.
L	Character # in LCD position 1 (for INLINE prompting).
P	Position of blank in D$; Position of escape character in assignment string.
S	Starting keycode - smallest physical keycode that has an assignment associated with it; = -1 if not yet determined = Ø if no redefined keys
W	Window start - ensures prompt is in protected field of display.
A$	Assignment string currently (or proposed to be) associated to a particular key.
D$	Display contents when scrolling through key assignments.
E$	Array of escape sequence mnemonics, and their corresponding escape characters.
E1$	Escape sequence mnemonic input by user.
K$	Indicates key to redefine.
P$	Prompt.
R$	User response to "Y/N" prompt.
T$	Type of assignment currently - ":", ";", or space.
T1$	Type of assignment proposed - " "
Z$	Saves information about the user's environment: Z$[1,6] - 1st alternate character set character Z$[7,21] - System flags -13 through -64 User flags 0 through 7

71-00010 SAMPLE PROBLEM

Assume you want keys redefined as follows:

The [Q] key is to become a typing aid to display:

```
        A$=A$&A$@
```

The [RUN] key is to remain a "direct execute" key, in the sense that pushing it will cause execution, without altering the display, but instead of running current file it will

```
        EDIT NEW
```

The [<] key is to become a typing aid. When hit in User mode, the following will be added to the display contents, and then the entire display contents will be executed as though [END LINE] was pressed

```
        CAT ALL
```

Additionally, redefine [↑] so that when it is pressed in User mode, some escape sequences are sent to the display device. Have it display ABC, home the cursor, then display DEF.

Re-define [B], then delete the key redefinition.

Finally, before exiting the program, scroll through your file of key redefinitions. Make some modifications and delete a key redefinition.

71-00010 SAMPLE PROBLEM SOLUTION

DISPLAY CONTENTS	USER RESPONSE	COMMENTS
>	RUN KEYDEF	
Define new keys?	Y	
Hit key to re-define	Q	
String	A$=A$&A$@ [ENDLINE]	
Type: ; or : or [SPC]	;	Hit [g] [=] The ; terminator makes this a typing aid that remains in the display.
Assignment complete		No response
Done?	N	
Hit key to re-define	[RUN]	Hit the [RUN] key
String	EDIT NEW [ENDLINE]	
Type: ; or : or [SPC]	:	Hit [g] [*] The colon terminator makes this a direct execute key in user mode, that does not alter the display.
Assignment complete		No response
Done?	N	
Hit key to re-define	[RUN]	Let's double check
String EDIT NEW	[ENDLINE]	KEYDEF shows any string alread assigned. Hitting [ENDLINE] here leaves the assignment unchanged.
Type: : ; [SPC]	:	This time ":" displayed first - whichever terminator appears first is the current terminator.

71-00010 SAMPLE PROBLEM SOLUTION

DISPLAY CONTENTS	USER RESPONSE	COMMENTS
Assignment complete		No response
Done?	N	
Hit key to re-define	<	Hit [g] [.]
String	CAT ALL [ENDLINE]	
Type: ; or : or [SPC]	[SPC]	Hit the [SPC] key
Assignment complete		No response
Done?	N	
Hit key to re-define	<	Let's double check this one, too
String CAT ALL	[ENDLINE]	No change
Type: [SPC] or ; or :	[SPC]	Note that this time [SPC] was the first terminator type displayed
Assignment complete		No response
Done?	N	
Hit key to re-define	[↑]	Hit the [↑] key
String	ABC [RUN]	Hitting the [RUN] key puts th program in the proper mode to recognize escape sequence mnemonics. Notice that after [RUN] is hit, the 0 annunciator comes on, indicating it is waiting for a mnemonic.

71-00010 SAMPLE PROBLEM SOLUTION

DISPLAY CONTENTS	USER RESPONSE	COMMENTS
String ABC	CHM [RUN]	User enters "cursor home" mnemonic. Hitting the [RUN] key a second time toggles out of the mnemonic mode and turns off the 0 annunciator.
String ABC^{E}cH	DEF [ENDLINE]	See note below (*)
Type ; or : or [SPC]	;	Hit [g] [=]
Assignment complete		No response
Done?	N	
Hit key to re-define	[B]	Let's re-define the [B] key, then delete the key re-definition.
String	BBB [ENDLINE]	
Type: ; or : or [SPC]	;	
Assignment complete		[B] re-defined
Done?	N	
Hit key to re-define	[B]	
String BBB	[f] [RUN]	Delete the key re-definition
Assignment deleted		
Done?	Y	Done re-defining new keys
Scroll thru keys?	Y	
Initializing KEYSCROLL		This takes about 12 seconds

71-00010 SAMPLE PROBLEM SOLUTION

DISPLAY CONTENTS	USER RESPONSE	COMMENTS
KEY Q ;A$=A$&A$@	[↓]	There is nothing wrong with the program! It takes about 6 seconds to display the next key assignment, since there are no re-defined keys between Q (Keycode #1) and [RUN] (keycode #46). KEYSCROLL checks each key to see if it's redefined
KEY #46 :EDIT NEW	[↓]	
KEY #50 ;ABC$^{E}{}_{c}$HDEF	[↓]	It takes about 14 seconds to see the next re-defined key, since it has keycode 166. The program operates much more rapidly when redefined keys have keycodes that are closer together.
KEY < CATALL	[g] [↑]	Go to first re-defined key
KEY Q ;A$=A$&A$@	[→] [→] [f] [-line] [RUN]	Key assignments can be changed as well as viewed from KEYSCROLL
KEY Q ;A$	CFL [RUN]	Cursor far left mnemonic
KEY Q ; A$$^{E}{}_{c}$∝	[ENDLINE]	
Assignment complete		Next re-defined key displayed automatically
KEY #46 : EDIT NEW	[g] [↓]	Go to last key re-definition
KEY ∠ CAT ALL	[←] [;] [ENDLINE]	Change the terminator type
Assignment complete		

71-00010 SAMPLE PROBLEM SOLUTION

DISPLAY CONTENTS	USER RESPONSE	COMMENTS
Key< ; CAT ALL	[f] [RUN]	then, decide to delete the key re-definition
Assignment deleted		
KEY #50 ;ABC^{E}cHDEF	[ATTN]	Exits KEYSCROLL
Define new keys?	N	
Scroll thru keys?	N	
Exited KEYDEF		

(*) Note that the key assignment above could have been handled a bit differently:

DISPLAY CONTENTS	USER RESPONSE	COMMENTS
Hit key to re-define	[↑]	
String	ABCDEF [←] [←] [←] [RUN]	Type in entire ascii string, position to proper spot in string, then toggle into mnemonic mode. Note that while the 0 annunciator is on, the cursor keys are disabled.
String ABCDEF 0	CHM [RUN]	
String ABC^{E}cHDEF	[ENDLINE] ⋮	

Miscellaneous notes:

Hitting [ATTN] when the 0 annunciator is lit, automatically takes the program out of mneumonic entry mode.

In the scrolling portion of the program,to avoid ambiguity [SPC], f [SPC], and g [SPC] ar represented by their key numbers : #49, #105, #161 respectively.

If KEYDEF is interrupted via the ATTN key, and never allowed to exit normally, the following may be changed from what they were on entry:

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GENERAL FEATURES

Alternate character set The first alternate character (CHR$(128)) is set to $^{E}{}_{C}$ (CHR$(31) & CHR$(21) & CHR$(113) & CHR$(80) & CHR$(80))

ENDLINE

EXACT

Files If the user answers 'Y' to the prompt asking to 'Unsecure keys file', and suspends the program, the keys file will still be unsecure. When the program exits normally*, it re-secures the keys file, and gives a message to that effect.

FLAGS

BEEP ON/OFF

Beep volume

Math Exceptions

OPTION BASE/ROUND/ANGLE

Other system or user flags (include flag number) Flag - 16 (Option Base is set to 0)
Flags 0,5

STARTUP

Variables If KEYDEF is suspended by ATTN and not to be continued, then entering END from the keyboard will restore all your variables (Executing END will not restore CHR$(128), the status of the keys file, or flags 0, 5, -16).

Other

DISPLAY

CONTRAST

DELAY

FIX/SCI/ENG/STD

WIDTH

WINDOW Window is changed to 1 (machine default)

KEYBOARD

LC

Re-defined keys Whatever the user changes them to

USER mode

HPIL

ASSIGN IO

DISPLAY IS

PRINTER IS

PWIDTH

STANDBY

NOTES *It is perfectly acceptable to interrupt KEYDEF using the ATTN key. However, the only way to restore your system to its previous state is to CONT; this gives KEYDEF the opportunity to restore your variables, CHR$(128), flags 0, 5, -16, etc. You know KEYDEF has done this when it gives the message "Exiting KEYDEF". If ATTN is hit during a prompt requiring a "Y" or "N" response, then when the program continues, the prompt is not

71-00010 SAMPLE PROBLEM

Mnemonic	Escape Character	Effect
INSW	N	Insert cursor (with wrap-around)
INS	Q	Insert cursor
RPL	R	Replace cursor
CRT	C	Moves cursor right
CLT	D	Moves cursor left
CHM	H	Homes cursor
CD	J	Clears display
DEL	K	Deletes through end of line
CON	>	Turns cursor on
COFF	<	Turns cursor off
RD	E	Resets display
DCW	O	Deletes character (with wrap-around)
DC	P	Deletes character
CPV	%	Sets cursor position in video monitor (See page 328 HP-7 Reference Manual)
CFR	(CHR$(3)) ←	Moves cursor to right of righmost character
CFL	(CHR$(4)) ∝	Moves cursor to leftmost character