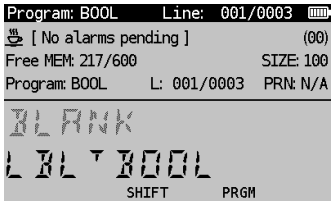
BOOL

Display



(HP-41CX, Hewlett Packard 1983 and DM41X, SwissMicros 2020)

Overview[1]

The BOOL program can process boolean functions and show results simultaneously. The latter may be interesting when formulas have been optimised and the outcome must be compared. Basic function OR, AND and NOT can be invoked for 1, 2, 3 or 4 parameters. The functions F_1, F_2,..., F_x must be programmed as shown in the examples below. Examples of some functions are:

F_1 = a.b.c.d

F_2 = a + b + c + d

F_3 = a.b(c + d)

F_4 = /a.b + /a + /b

F_5 = a./b + /(c + /d)

F_6 = /a + /b + /c.d

and more:

F_x = /(/a + /b + /c + /d)

F_y = /a.b + a./b

where the "/" represents the boolean NOT. The program is limited to a maximum of 4 parameters. The maximum number of functions depends on the available registers and memory but is also constrained by the number of function outcomes that fit in the display, i.e. maximum 9.

Examples

KEYSTROKES	DISPLAY	COMMENTS
		Run F_1=a.b.c.d and F_2=a+b+c+d
[XEQ] [ALPHA] BOOL [ALPHA]	VARS=?	Number of variables for F_1 and F_2
4 [R/S]	F.NAME=?	Enter label name for the first function (F_1)
F1 [R/S]	F.NAME=?	Enter label name for the second function (F_2)
F2 [R/S]	F.NAME=?	Enter label name for the third function (F_3)

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F3 [R/S]	F.NAME=?	Enter label name for the fourth function (F_4)
F4 [R/S]	F.NAME=?	Enter label name for the fifth function (F_5)
F5 [R/S]	F.NAME=?	Enter label name for the sixth function (F_6)
F6 [R/S]	F.NAME=?	Hit R/S if there are no further functions
[R/S]	0000 :0:0:0:0:0:	Input abcd - Output :F_1:F_2:F_3:F_4:F_5:F_6:
[R/S]	0001 :0:0:0:0:0:	All combination abcd (0-15=$_{bin}$0000-$_{bin}$1111)
[R/S]	0010 :0:0:0:0:0:	
[R/S]	0011 :0:0:0:0:0:	
[R/S]	0100 :0:0:0:0:0:	
[R/S]	0101 :0:0:0:0:0:	
[R/S]	0110 :0:0:0:0:0:	
[R/S]	0111 :0:0:0:0:0:	
[R/S]	1000 :0:0:0:0:0:	
[R/S]	1001 :0:0:0:0:0:	
[R/S]	1010 :0:0:0:0:0:	
[R/S]	1011 :0:0:0:0:0:	
[R/S]	1100 :0:0:0:0:0:	
[R/S]	1101 :0:0:0:0:0:	
[R/S]	1110 :0:0:0:0:0:	
[R/S]	1111 :0:0:0:0:0:	
[R/S]	VARS=?	Run again by entering new values

Program Listing

The listing of BOOL is given below with 2 function which need to be added with their name. Four more examples have been added in the listing below.

```
01▪LBL "BOOL"
02▪LBL 00
03 1.004
04 CLRGX
05 "VARS=?"
06 PROMPT
07 STO 07
08 2
09 X<>Y
10 Y^X
11 STO 06
12 9
13 STO 00
14▪LBL 09
15 "F.NAME=?"
16 AON
17 PROMPT
18 AOFF
19 FC?C 23
20 GTO 07
21 1
22 ST+ 00
23 ASTO IND 00
24 GTO 09
25▪LBL 07
26 FIX 00
27 CF 29
28 RCL 07
29 STO 05
30 CLA
31▪LBL 08
32 RCL 07
33 RCL 05
34 -
35 1
36 +
37 ARCL IND X
38 DSE 05
39 GTO 08
40 >" :"
41 RCL 00
42 1 E3
43 /
44 10
45 +
46 STO 08
47▪LBL 10
48 RCL IND 08
49 XEQ IND X
50 ARCL X
51 >":"
52 ISG 08
53 GTO 10
54 PROMPT
55 RCL 07
56 STO 05
57▪LBL 05
58 RCL IND 05
59 X=0?
60 ISG IND 05
61 ST- IND 05
62 X=0?
63 GTO 06
64 DSE 05
65 GTO 05
66▪LBL 06
67 DSE 06
68 GTO 07
69 FIX 05
70 SF 29
71 GTO 00
72▪LBL "F1"
73 RCL 01
74 RCL 02
75 RCL 03
76 RCL 04
77 XEQ 04
78 RTN
79▪LBL "F2"
80 RCL 01
81 RCL 02
82 RCL 03
83 RCL 04
84 XEQ 14
```

```
 85 RTN
 86▪LBL "F3"
 87 RCL 03
 88 RCL 04
 89 XEQ 12
 90 RCL 01
 91 RCL 02
 92 XEQ 03
 93 RTN
 94▪LBL "F4"
 95 RCL 01
 96 XEQ 01
 97 RCL 02
 98 XEQ 02
 99 RCL 01
100 XEQ 01
101 RCL 02
102 XEQ 01
103 XEQ 13
104 RTN
105▪LBL "F5"
106 RCL 04
107 XEQ 01
108 RCL 03
109 XEQ 12
110 XEQ 01
111 RCL 02
112 XEQ 01
113 RCL 01
114 XEQ 02
115 XEQ 12
116 RTN
117▪LBL "F6"
118 RCL 01
119 XEQ 01
120 RCL 02
121 XEQ 01
122 RCL 03
123 XEQ 01
124 RCL 04
125 XEQ 02
126 XEQ 13
127 RTN
128▪LBL 04
129 *
130▪LBL 03
131 *
132▪LBL 02
133 *
134 RTN
135▪LBL 14
136 +
137▪LBL 13
138 +
139▪LBL 12
140 +
141 X>0?
142 1
143 RTN
144▪LBL 01
145 CHS
146 ISG X
147 RTN
148 END
```

(281 bytes)

Registers, Labels and Flags

REGISTERS	COMMENTS
R00	Number of FUNCTIONS $F_1..F_n$
R01	a
R02	b
R03	c
R04	d
R05	Counter of VARS
R06	Total binary value
R07	Number of VARS
R08	Counter of FUNCTIONS
R09	-
R10-Rnn	FUNCTION names $F_1..F_n$

LABELS	COMMENTS
LBL00	Start of program
LBL01	NOT – operation
LBL02	AND 2 – operation
LBL03	AND 3 – operation
LBL04	AND 4 – operation
LBL05	Loop around VARS+1
LBL06	Escape for LBL05
LBL07	Loop all boolean values
LBL08	Loop VARS results
LBL09	Loop FUNCTION names
LBL10	Loop FUNCTION calls
LBL11	-
LBL12	OR 2 – operation
LBL13	OR 3 – operation
LBL14	OR 4 – operation

FLAGS	COMMENTS
23	Check for alpha keyboard input

Downloads

The RAW/TXT format of the program is available via the website: BOOL (in zip file).