

# Quine–McCluskey algorithm

The function that is minimized can be entered via a truth table that represents the function  $y = f(x_6, \dots, x_1, x_0)$ . You can manually edit this function by clicking on the gray elements in the  $y$  column. Alternatively, you can generate a random function by pressing the "Random example" button.

**Random example**

Number of input variables:  Allow Don't-Care:

Truth table:

	$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$	$y$
0:	0	0	0	0	0	0	0	×
1:	0	0	0	0	0	0	1	×
2:	0	0	0	0	0	1	0	0
3:	0	0	0	0	0	1	1	0
4:	0	0	0	0	1	0	0	×
5:	0	0	0	0	1	0	1	0
6:	0	0	0	0	1	1	0	×
7:	0	0	0	0	1	1	1	0
8:	0	0	0	1	0	0	0	×
9:	0	0	0	1	0	0	1	×
10:	0	0	0	1	0	1	0	×
11:	0	0	0	1	0	1	1	0
12:	0	0	0	1	1	0	0	×
13:	0	0	0	1	1	0	1	0
14:	0	0	0	1	1	1	0	×
15:	0	0	0	1	1	1	1	0
16:	0	0	1	0	0	0	0	×
17:	0	0	1	0	0	0	1	0
18:	0	0	1	0	0	1	0	×
19:	0	0	1	0	0	1	1	0
20:	0	0	1	0	1	0	0	×
21:	0	0	1	0	1	0	1	0
22:	0	0	1	0	1	1	0	×
23:	0	0	1	0	1	1	1	0
24:	0	0	1	1	0	0	0	×
25:	0	0	1	1	0	0	1	0
26:	0	0	1	1	0	1	0	×
27:	0	0	1	1	0	1	1	0
28:	0	0	1	1	1	0	0	×
29:	0	0	1	1	1	0	1	0
30:	0	0	1	1	1	1	0	×
31:	0	0	1	1	1	1	1	0
32:	0	1	0	0	0	0	0	×
33:	0	1	0	0	0	0	1	0
34:	0	1	0	0	0	1	0	×
35:	0	1	0	0	0	1	1	0
36:	0	1	0	0	1	0	0	×
37:	0	1	0	0	1	0	1	0
38:	0	1	0	0	1	1	0	×
39:	0	1	0	0	1	1	1	0
40:	0	1	0	1	0	0	0	×
41:	0	1	0	1	0	0	1	1
42:	0	1	0	1	0	1	0	×
43:	0	1	0	1	0	1	1	0
44:	0	1	0	1	1	0	0	×
45:	0	1	0	1	1	0	1	0
46:	0	1	0	1	1	1	0	×
47:	0	1	0	1	1	1	1	0
48:	0	1	1	0	0	0	0	×
49:	0	1	1	0	0	0	1	0
50:	0	1	1	0	0	1	0	×
51:	0	1	1	0	0	1	1	0
52:	0	1	1	0	1	0	0	×
53:	0	1	1	0	1	0	1	0
54:	0	1	1	1	0	1	1	0

Implicants (Order 0):

	$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$	
0:	0	0	0	0	0	0	0	→ 0, 1:
1:	0	0	0	0	0	0	1	→ 0, 4:
4:	0	0	0	0	1	0	0	→ 0, 8:
6:	0	0	0	0	1	1	0	→ 0, 16:
8:	0	0	0	1	0	0	0	→ 0, 32:
9:	0	0	0	1	0	0	1	→ 0, 64:
10:	0	0	0	1	0	1	0	→ 1, 9:
12:	0	0	0	1	1	0	0	→ 1, 33:
14:	0	0	0	1	1	1	0	→ 1, 65:
15:	0	0	0	1	1	1	1	→ 4, 6:
16:	0	0	1	0	0	0	0	→ 4, 12:
18:	0	0	1	0	0	1	0	→ 4, 20:
20:	0	0	1	0	1	0	0	→ 4, 36:
21:	0	0	1	0	1	0	1	→ 4, 68:
22:	0	0	1	0	1	1	0	→ 6, 14:
24:	0	0	1	1	0	0	0	→ 6, 22:
25:	0	0	1	1	0	0	1	→ 6, 38:
26:	0	0	1	1	0	1	0	→ 6, 70:
27:	0	0	1	1	0	1	1	→ 8, 9:
28:	0	0	1	1	1	0	0	→ 8, 10:
30:	0	0	1	1	1	1	0	→ 8, 12:
32:	0	1	0	0	0	0	0	→ 8, 24:
33:	0	1	0	0	0	0	1	→ 8, 40:
34:	0	1	0	0	0	1	0	→ 8, 72:
35:	0	1	0	0	0	1	1	→ 9, 25:
36:	0	1	0	0	1	0	0	→ 9, 41:
38:	0	1	0	0	1	1	0	→ 10, 14:
39:	0	1	0	0	1	1	1	→ 10, 26:
40:	0	1	0	1	0	0	0	→ 10, 42:
41:	0	1	0	1	0	0	1	→ 10, 74:
42:	0	1	0	1	0	1	0	→ 12, 14:
44:	0	1	0	1	1	0	0	→ 12, 28:
45:	0	1	0	1	1	0	1	→ 12, 44:
46:	0	1	0	1	1	1	0	→ 12, 76:
48:	0	1	1	0	0	0	0	→ 14, 15:
49:	0	1	1	0	0	0	1	→ 14, 30:
50:	0	1	1	0	0	1	0	→ 14, 46:
51:	0	1	1	0	0	1	1	→ 14, 78:
52:	0	1	1	0	1	0	0	→ 15, 79:
54:	0	1	1	0	1	1	0	→ 16, 18:
55:	0	1	1	0	1	1	1	→ 16, 20:
56:	0	1	1	1	0	0	0	→ 16, 24:
57:	0	1	1	1	0	0	1	→ 16, 48:
58:	0	1	1	1	0	1	0	→ 16, 80:
60:	0	1	1	1	1	0	0	→ 18, 22:
62:	0	1	1	1	1	1	0	→ 18, 26:
63:	0	1	1	1	1	1	1	→ 18, 50:
64:	1	0	0	0	0	0	0	→ 18, 82:
65:	1	0	0	0	0	0	1	→ 20, 21:
66:	1	0	0	0	0	1	0	→ 20, 22:
68:	1	0	0	0	1	0	0	→ 20, 28:
69:	1	0	0	0	1	0	1	→ 20, 52:
70:	1	0	0	0	1	1	0	→ 20, 84:
72:	1	0	0	1	0	0	0	→ 21, 85:
74:	1	0	0	1	0	0	1	→ 22, 30:

Implicants (Order 1):

	$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$	
0:	0	0	0	0	0	0	0	→ -
1:	0	0	0	0	-	0	0	→ -
4:	0	0	0	-	0	0	0	→ -
6:	0	0	-	0	0	0	0	→ -
8:	0	-	0	0	0	0	0	→ -
9:	-	0	0	0	0	0	0	→ -
10:	0	0	-	0	0	0	1	→ -
12:	0	-	0	0	0	0	1	→ -
14:	-	0	0	0	0	0	1	→ -
15:	0	0	0	0	1	-	0	→ -
16:	0	0	0	-	1	0	0	→ -
18:	0	-	0	0	1	0	0	→ -
20:	0	0	-	0	1	0	0	→ -
21:	0	-	0	0	1	0	0	→ -
22:	-	0	0	0	1	0	0	→ -
24:	0	0	0	0	1	1	-	→ -
25:	0	0	0	0	1	1	1	→ -
26:	0	0	0	1	1	1	1	→ -
27:	0	0	0	1	1	1	1	→ -
28:	0	0	0	1	1	1	1	→ -
29:	0	0	0	1	1	1	1	→ -
30:	0	0	0	1	1	1	1	→ -
31:	0	0	0	1	1	1	1	→ -
32:	0	0	0	1	1	1	1	→ -
33:	0	0	0	1	1	1	1	→ -
34:	0	0	0	1	1	1	1	→ -
35:	0	0	0	1	1	1	1	→ -
36:	0	0	0	1	1	1	1	→ -
37:	0	0	0	1	1	1	1	→ -
38:	0	0	0	1	1	1	1	→ -
39:	0	0	0	1	1	1	1	→ -
40:	0	0	0	1	1	1	1	→ -
41:	0	0	0	1	1	1	1	→ -
42:	0	0	0	1	1	1	1	→ -
43:	0	0	0	1	1	1	1	→ -
44:	0	0	0	1	1	1	1	→ -
45:	0	0	0	1	1	1	1	→ -
46:	0	0	0	1	1	1	1	→ -
47:	0	0	0	1	1	1	1	→ -
48:	0	0	0	1	1	1	1	→ -
49:	0	0	0	1	1	1	1	→ -
50:	0	0	0	1	1	1	1	→ -
51:	0	0	0	1	1	1	1	→ -
52:	0	0	0	1	1	1	1	→ -
53:	0	0	0	1	1	1	1	→ -
54:	0	0	0	1	1	1</		

## Quine–McCluskey algorithm

v	t	t	v	t	t	v	
55:	0	1	1	0	1	1	1
56:	0	1	1	1	0	0	0
57:	0	1	1	1	0	0	1
58:	0	1	1	1	0	1	0
59:	0	1	1	1	0	1	1
60:	0	1	1	1	1	0	0
61:	0	1	1	1	1	0	1
62:	0	1	1	1	1	1	0
63:	0	1	1	1	1	1	1
64:	1	0	0	0	0	0	0
65:	1	0	0	0	0	0	1
66:	1	0	0	0	0	1	0
67:	1	0	0	0	0	1	1
68:	1	0	0	0	1	0	0
69:	1	0	0	0	1	0	1
70:	1	0	0	0	1	1	0
71:	1	0	0	0	1	1	1
72:	1	0	0	1	0	0	0
73:	1	0	0	1	0	0	1
74:	1	0	0	1	0	1	0
75:	1	0	0	1	0	1	1
76:	1	0	0	1	1	0	0
77:	1	0	0	1	1	0	1
78:	1	0	0	1	1	1	0
79:	1	0	0	1	1	1	1
80:	1	0	1	0	0	0	0
81:	1	0	1	0	0	0	1
82:	1	0	1	0	0	1	0
83:	1	0	1	0	0	1	1
84:	1	0	1	0	1	0	0
85:	1	0	1	0	1	0	1
86:	1	0	1	0	1	1	0
87:	1	0	1	0	1	1	1
88:	1	0	1	1	0	0	0
89:	1	0	1	1	0	0	1
90:	1	0	1	1	0	1	0
91:	1	0	1	1	0	1	1
92:	1	0	1	1	1	0	0
93:	1	0	1	1	1	0	1
94:	1	0	1	1	1	1	0
95:	1	0	1	1	1	1	1
96:	1	1	0	0	0	0	0
97:	1	1	0	0	0	0	1
98:	1	1	0	0	0	1	0
99:	1	1	0	0	0	1	1
100:	1	1	0	0	1	0	0
101:	1	1	0	0	1	0	1
102:	1	1	0	0	1	1	0
103:	1	1	0	0	1	1	1
104:	1	1	0	1	0	0	0
105:	1	1	0	1	0	0	1
106:	1	1	0	1	0	1	0
107:	1	1	0	1	0	1	1
108:	1	1	0	1	1	0	0
109:	1	1	0	1	1	0	1
110:	1	1	0	1	1	1	0
111:	1	1	0	1	1	1	1
112:	1	1	1	0	0	0	0
113:	1	1	1	0	0	0	1
114:	1	1	1	0	0	1	0
115:	1	1	1	0	0	1	1
116:	1	1	1	0	1	0	0
117:	1	1	1	0	1	0	1
118:	1	1	1	0	1	1	0
119:	1	1	1	0	1	1	1

120:	1	1	1	1	0	0	0	x
121:	1	1	1	1	0	0	1	x
122:	1	1	1	1	0	1	0	x
123:	1	1	1	1	0	1	1	x
124:	1	1	1	1	1	0	0	x
125:	1	1	1	1	1	0	1	x
126:	1	1	1	1	1	1	0	x
127:	1	1	1	1	1	1	0	

48, 52:	0	1	1	0	-	0	0	→
48, 56:	0	1	1	-	0	0	0	→
48, 112:	-	1	1	0	0	0	0	→
49, 51:	0	1	1	0	0	-	1	→
49, 57:	0	1	1	-	0	0	1	→
50, 51:	0	1	1	0	0	1	-	→
50, 54:	0	1	1	0	-	1	0	→
50, 58:	0	1	1	-	0	1	0	→
50, 114:	-	1	1	0	0	1	0	→
51, 55:	0	1	1	0	-	1	1	→
51, 115:	-	1	1	0	0	1	1	→
52, 54:	0	1	1	0	1	-	0	→
52, 60:	0	1	1	-	1	0	0	→
52, 116:	-	1	1	0	1	0	0	→
54, 55:	0	1	1	0	1	1	-	→
54, 62:	0	1	1	-	1	1	0	→
54, 118:	-	1	1	0	1	1	0	→
55, 63:	0	1	1	-	1	1	1	→
55, 119:	-	1	1	0	1	1	1	→
56, 57:	0	1	1	1	0	0	-	→
56, 58:	0	1	1	1	0	-	0	→
56, 60:	0	1	1	1	-	0	0	→
56, 120:	-	1	1	1	0	0	0	→
57, 121:	-	1	1	1	0	0	1	→
58, 62:	0	1	1	1	-	1	0	→
58, 122:	-	1	1	1	0	1	0	→
60, 62:	0	1	1	1	1	-	0	→
60, 124:	-	1	1	1	1	0	0	→
62, 63:	0	1	1	1	1	1	-	→
62, 126:	-	1	1	1	1	1	1	→
64, 65:	1	0	0	0	0	0	-	→
64, 66:	1	0	0	0	0	-	0	→
64, 68:	1	0	0	0	-	0	0	→
64, 72:	1	0	0	-	0	0	0	→
64, 80:	1	0	-	0	0	0	0	→
64, 96:	1	-	0	0	0	0	0	→
65, 69:	1	0	0	0	-	0	1	→
65, 81:	1	0	-	0	0	0	1	→
65, 97:	1	-	0	0	0	0	1	→
66, 70:	1	0	0	0	-	1	0	→
66, 74:	1	0	0	-	0	1	0	→
66, 82:	1	0	-	0	0	1	0	→
66, 98:	1	-	0	0	0	1	0	→
68, 69:	1	0	0	0	1	0	-	→
68, 70:	1	0	0	0	1	-	0	→
68, 76:	1	0	0	-	1	0	0	→
68, 84:	1	0	-	0	1	0	0	→
68, 100:	1	-	0	0	1	0	0	→
69, 77:	1	0	0	-	1	0	1	→
69, 85:	1	0	-	0	1	0	1	→
70, 78:	1	0	0	-	1	1	0	→
70, 86:	1	0	-	0	1	1	0	→
70, 102:	1	-	0	0	1	1	0	→
72, 74:	1	0	0	1	0	-	0	→
72, 76:	1	0	0	1	-	0	0	→
72, 88:	1	0	-	1	0	0	0	→
72, 104:	1	-	0	1	0	0	0	→
74, 75:	1	0	0	1	0	1	-	→
74, 78:	1	0	0	1	-	1	0	→
74, 90:	1	0	-	1	0	1	0	→
74, 106:	1	-	0	1	0	1	0	→
75, 79:	1	0	0	1	-	1	1	→
75, 91:	1	0	-	1	0	1	1	→
76, 77:	1	0	0	1	1	0	-	→
76, 78:	1	0	0	1	1	-	0	→
76, 92:	1	0	-	1	1	0	0	→

	v	v	-	t	t	v	v	-
76, 108:	1	-	0	1	1	0	0	→
77, 79:	1	0	0	1	1	-	1	→
77, 93:	1	0	-	1	1	0	1	→
78, 79:	1	0	0	1	1	1	-	→
78, 94:	1	0	-	1	1	1	0	→
78, 110:	1	-	0	1	1	1	0	→
79, 95:	1	0	-	1	1	1	1	→
79, 111:	1	-	0	1	1	1	1	→
80, 81:	1	0	1	0	0	0	-	→
80, 82:	1	0	1	0	0	-	0	→
80, 84:	1	0	1	0	-	0	0	→
80, 88:	1	0	1	-	0	0	0	→
80, 112:	1	-	1	0	0	0	0	→
81, 85:	1	0	1	0	-	0	1	→
82, 86:	1	0	1	0	-	1	0	→
82, 90:	1	0	1	-	0	1	0	→
82, 114:	1	-	1	0	0	1	0	→
84, 85:	1	0	1	0	1	0	-	→
84, 86:	1	0	1	0	1	-	0	→
84, 92:	1	0	1	-	1	0	0	→
84, 116:	1	-	1	0	1	0	0	→
85, 87:	1	0	1	0	1	-	1	→
85, 93:	1	0	1	-	1	0	1	→
85, 117:	1	-	1	0	1	0	1	→
86, 87:	1	0	1	0	1	1	-	→
86, 94:	1	0	1	-	1	1	0	→
86, 118:	1	-	1	0	1	1	0	→
87, 95:	1	0	1	-	1	1	1	→
87, 119:	1	-	1	0	1	1	1	→
88, 90:	1	0	1	1	0	-	0	→
88, 92:	1	0	1	1	-	0	0	→
88, 120:	1	-	1	1	0	0	0	→
90, 91:	1	0	1	1	0	1	-	→
90, 94:	1	0	1	1	-	1	0	→
90, 122:	1	-	1	1	0	1	0	→
91, 95:	1	0	1	1	-	1	1	→
91, 123:	1	-	1	1	0	1	1	→
92, 93:	1	0	1	1	1	0	-	→
92, 94:	1	0	1	1	1	-	0	→
92, 124:	1	-	1	1	1	0	0	→
93, 95:	1	0	1	1	1	-	1	→
93, 125:	1	-	1	1	1	0	1	→
94, 95:	1	0	1	1	1	1	-	→
94, 126:	1	-	1	1	1	1	0	→
96, 97:	1	1	0	0	0	0	-	→
96, 98:	1	1	0	0	0	-	0	→
96, 100:	1	1	0	0	-	0	0	→
96, 104:	1	1	0	-	0	0	0	→
96, 112:	1	1	-	0	0	0	0	→
97, 99:	1	1	0	0	0	-	1	→
97, 105:	1	1	0	-	0	0	1	→
98, 99:	1	1	0	0	0	1	-	→
98, 102:	1	1	0	0	-	1	0	→
98, 106:	1	1	0	-	0	1	0	→
98, 114:	1	1	-	0	0	1	0	→
99, 115:	1	1	-	0	0	1	1	→
100, 102:	1	1	0	0	1	-	0	→
100, 108:	1	1	0	-	1	0	0	→
100, 116:	1	1	-	0	1	0	0	→
102, 110:	1	1	0	-	1	1	0	→
102, 118:	1	1	-	0	1	1	0	→
104, 105:	1	1	0	1	0	0	-	→
104, 106:	1	1	0	1	0	-	0	→
104, 108:	1	1	0	1	-	0	0	→
104, 120:	1	1	-	1	0	0	0	→

105, 121:	1	1	-	1	0	0	1	→
106, 110:	1	1	0	1	-	1	0	→
106, 122:	1	1	-	1	0	1	0	→
108, 110:	1	1	0	1	1	-	0	→
108, 124:	1	1	-	1	1	0	0	→
110, 111:	1	1	0	1	1	1	-	→
110, 126:	1	1	-	1	1	1	0	→
112, 114:	1	1	1	0	0	-	0	→
112, 116:	1	1	1	0	-	0	0	→
112, 120:	1	1	1	-	0	0	0	→
114, 115:	1	1	1	0	0	1	-	→
114, 118:	1	1	1	0	-	1	0	→
114, 122:	1	1	1	-	0	1	0	→
115, 119:	1	1	1	0	-	1	1	→
115, 123:	1	1	1	-	0	1	1	→
116, 117:	1	1	1	0	1	0	-	→
116, 118:	1	1	1	0	1	-	0	→
116, 124:	1	1	1	-	1	0	0	→
117, 119:	1	1	1	0	1	-	1	→
117, 125:	1	1	1	-	1	0	1	→
118, 119:	1	1	1	0	1	1	-	→
118, 126:	1	1	1	-	1	1	0	→
120, 121:	1	1	1	1	0	0	-	→
120, 122:	1	1	1	1	0	-	0	→
120, 124:	1	1	1	1	-	0	0	→
121, 123:	1	1	1	1	0	-	1	→
121, 125:	1	1	1	1	-	0	1	→
122, 123:	1	1	1	1	0	1	-	→
122, 126:	1	1	1	1	-	1	0	→
124, 125:	1	1	1	1	1	0	-	→
124, 126:	1	1	1	1	1	-	0	→

Implicants (Order 2):

$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$		
0, 1, 8, 9:	0	0	0	-	0	0	-	→
0, 1, 32, 33:	0	-	0	0	0	0	-	→
0, 1, 64, 65:	-	0	0	0	0	0	-	→
0, 4, 8, 12:	0	0	0	-	-	0	0	→
0, 4, 16, 20:	0	0	-	0	-	0	0	→
0, 4, 32, 36:	0	-	0	0	-	0	0	→
0, 4, 64, 68:	-	0	0	0	-	0	0	→
0, 8, 16, 24:	0	0	-	-	0	0	0	→
0, 8, 32, 40:	0	-	0	-	0	0	0	→
0, 8, 64, 72:	-	0	0	-	0	0	0	→
0, 16, 32, 48:	0	-	-	0	0	0	0	→
0, 16, 64, 80:	-	0	-	0	0	0	0	→
0, 32, 64, 96:	-	-	0	0	0	0	0	→
1, 9, 33, 41:	0	-	0	-	0	0	1	→
1, 33, 65, 97:	-	-	0	0	0	0	1	→
4, 6, 12, 14:	0	0	0	-	1	-	0	→
4, 6, 20, 22:	0	0	-	0	1	-	0	→
4, 6, 36, 38:	0	-	0	0	1	-	0	→
4, 6, 68, 70:	-	0	0	0	1	-	0	→
4, 12, 20, 28:	0	0	-	-	1	0	0	→
4, 12, 36, 44:	0	-	0	-	1	0	0	→
4, 12, 68, 76:	-	0	0	-	1	0	0	→
4, 20, 36, 52:	0	-	-	0	1	0	0	→
4, 20, 68, 84:	-	0	-	0	1	0	0	→
4, 36, 68, 100:	-	-	0	0	1	0	0	→
6, 14, 22, 30:	0	0	-	-	1	1	0	→
6, 14, 38, 46:	0	-	0	-	1	1	0	→
6, 14, 70, 78:	-	0	0	-	1	1	0	→
6, 22, 38, 54:	0	-	-	0	1	1	0	→
6, 22, 70, 86:	-	0	-	0	1	1	0	→
6, 38, 70, 102:	-	-	0	0	1	1	0	→

8, 9, 24, 25:

8, 9, 40, 41:

8, 10, 12, 14:

8, 10, 24, 26:

8, 10, 40, 42:

8, 10, 72, 74:

8, 12, 24, 28:

8, 12, 40, 44:

8, 12, 72, 76:

8, 24, 40, 56:

8, 24, 72, 88:

8, 40, 72, 104:

9, 25, 41, 57:

10, 14, 26, 30:

10, 14, 42, 46:

10, 14, 74, 78:

10, 26, 42, 58:

10, 26, 74, 90:

10, 42, 74, 106:

12, 14, 28, 30:

12, 14, 44, 46:

12, 14, 76, 78:

12, 28, 44, 60:

12, 28, 76, 92:

12, 44, 76, 108:

14, 15, 78, 79:

14, 30, 46, 62:

14, 30, 78, 94:

14, 46, 78, 110:

16, 18, 20, 22:

16, 18, 24, 26:

16, 18, 48, 50:

16, 18, 80, 82:

16, 20, 24, 28:

16, 20, 48, 52:

16, 20, 80, 84:

16, 24, 48, 56:

16, 24, 80, 88:

16, 48, 80, 112:

18, 22, 26, 30:

18, 22, 50, 54:

18, 22, 82, 86:

18, 26, 50, 58:

18, 26, 82, 90:

18, 50, 82, 114:

20, 21, 84, 85:

20, 22, 28, 30:

20, 22, 52, 54:

20, 22, 84, 86:

20, 28, 52, 60:

20, 28, 84, 92:

20, 52, 84, 116:

22, 30, 54, 62:

22, 30, 86, 94:

22, 54, 86, 118:

24, 25, 26, 27:

24, 25, 56, 57:

24, 26, 28, 30:

24, 26, 56, 58:

24, 26, 88, 90:

24, 28, 56, 60:

24, 28, 88, 92:

24, 56, 88, 120:

26, 27, 90, 91:

26, 30, 58, 62:

26, 30, 80, 81:

0	0	-	1	0	0	-	→
0	-	0	1	0	0	-	→
0	0	0	1	-	-	0	→
0	0	-	1	0	-	0	→
0	-	0	1	0	-	0	→
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0	-	-	1	0	0	1	→
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0	-	0	1	-	1	0	→
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0	0	-	1	1	-	0	→
0	-	0	1	1	-	0	→
-	0	0	1	1	-	0	→
0	-	-	1	1	0	0	→
-	0	-	1	1	0	0	→
-	-	0	1	1	0	0	→
-	0	0	1	1	1	-	✓
0	-	-	1	1	1	0	→
-	0	-	1	1	1	0	→
-	-	0	1	1	1	0	→
0	0	1	0	-	-	0	→
0	0	1	-	0	-	0	→
0	-	1	0	0	-	0	→
-	0	1	0	0	-	0	→
0	0	1	-	-	0	0	→
0	-	1	0	-	0	0	→
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-	0	1	0	-	1	0	→
0	-	1	0	0	0	0	→
-	0	1	0	0	1	0	→
-	-	1	0	0	1	0	→
-	0	1	0	1	0	-	(✗)
0	0	1	-	1	-	0	→
0	-	1	0	1	-	0	→
-	0	1	0	1	-	0	→
0	-	1	-	0	1	0	→
-	0	1	-	0	1	0	→
-	-	1	0	0	1	0	→
-	0	1	0	1	0	-	(✗)
0	0	1	-	1	-	0	→
0	-	1	0	1	-	0	→
-	0	1	0	1	-	0	→
0	-	1	-	1	0	0	→
-	0	1	-	1	0	0	→
-	-	1	0	1	0	0	→
0	-	1	-	1	1	0	→
-	0	1	-	1	1	0	→
-	-	1	0	1	1	0	→
-	0	1	0	1	1	0	→
0	0	1	1	0	-	-	(✗)
0	-	1	1	0	0	-	→
0	0	1	1	-	-	0	→
0	-	1	1	0	-	0	→
-	0	1	1	0	-	0	→
0	-	1	1	0	-	0	→
-	0	1	1	0	-	0	→
-	-	1	1	0	0	0	→
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-	-	1	1	0	0	0	→
-	0	1	1	0	1	-	(✗)
0	-	1	1	1	-	0	→
-	0	1	1	1	-	0	→
-	-	1	1	1	-	0	→
-	0	1	1	1	0	-	(✗)

26, 30, 90, 94:  
 26, 58, 90, 122:  
 28, 30, 60, 62:  
 28, 30, 92, 94:  
 28, 60, 92, 124:  
 30, 62, 94, 126:  
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 32, 33, 40, 41:  
 32, 33, 48, 49:  
 32, 33, 96, 97:  
 32, 34, 36, 38:  
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 32, 36, 40, 44:  
 32, 36, 48, 52:  
 32, 36, 96, 100:  
 32, 40, 48, 56:  
 32, 40, 96, 104:  
 32, 48, 96, 112:  
 33, 35, 49, 51:  
 33, 35, 97, 99:  
 33, 41, 49, 57:  
 33, 41, 97, 105:  
 34, 35, 38, 39:  
 34, 35, 50, 51:  
 34, 35, 98, 99:  
 34, 38, 42, 46:  
 34, 38, 50, 54:  
 34, 38, 98, 102:  
 34, 42, 50, 58:  
 34, 42, 98, 106:  
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 35, 39, 51, 55:  
 35, 51, 99, 115:  
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 36, 38, 52, 54:  
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 36, 44, 52, 60:  
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 38, 46, 54, 62:  
 38, 46, 102, 110:  
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 42, 46, 106, 110:  
 42, 58, 106, 122:  
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 44, 46, 108, 110:  
 44, 60, 108, 124:  
 46, 62, 110, 126:  
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 48, 49, 56, 57:  
 48, 50, 52, 54:  
 48, 50, 56, 58:

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0	-	1	1	1	-	0	→	
-	0	1	1	1	-	0	→	
-	-	1	1	1	0	0	→	
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0	1	1	0	0	-	-	→	
0	1	1	-	0	0	-	→	
0	1	1	0	-	-	0	→	
0	1	1	0	-	0	-	→	

48, 50, 112, 114:  
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 64, 68, 96, 100:  
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 64, 80, 96, 112:  
 65, 69, 81, 85:  
 66, 70, 74, 78:  
 66, 70, 82, 86:  
 66, 70, 98, 102:  
 66, 74, 82, 90:  
 66, 74, 98, 106:  
 66, 82, 98, 114:  
 68, 69, 76, 77:  
 68, 69, 84, 85:  
 68, 70, 76, 78:  
 68, 70, 84, 86:  
 68, 70, 100, 102:  
 68, 76, 84, 92:  
 68, 76, 100, 108:  
 68, 84, 100, 116:  
 69, 77, 85, 93:  
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 72, 74, 76, 78:  
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 72, 74, 104, 106:  
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 72, 76, 104, 108:  
 72, 88, 104, 120:  
 74, 75, 78, 79:  
 74, 75, 90, 91:  
 74, 78, 90, 94:  
 74, 78, 106, 110:  
 74, 90, 106, 122:  
 75, 78, 81, 85:

-	1	1	0	0	-	0	→
0	1	1	-	-	0	0	→
-	1	1	0	-	0	0	→
-	1	1	-	0	0	0	→
0	1	1	0	-	1	-	→
-	1	1	0	0	1	-	→
0	1	1	-	-	1	0	→
-	1	1	0	-	1	0	→
-	1	1	-	0	1	0	→
-	1	1	0	-	1	1	→
0	1	1	-	1	-	0	→
-	1	1	0	1	1	-	→
0	1	1	-	1	1	-	(x)
-	1	1	0	1	1	-	→
-	1	1	-	1	1	0	→
-	1	1	1	0	0	-	→
0	1	1	1	-	-	0	→
-	1	1	1	0	-	0	→
-	1	1	1	-	0	0	→
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1	-	0	0	-	0	0	→
1	0	-	0	-	0	0	→
1	0	-	0	-	0	0	→
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1	-	0	0	-	0	0	→
1	0	-	0	-	0	0	→
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1	0	-	0	-	0	0	→
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1	0	-	0	-	0	0	→
1	0	-	0	-	0	0	→
1	-	0	0	-	0	0	→
1	-	0	0	-	0	0	→
1							

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 76, 77, 78, 79:  
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 76, 78, 92, 94:  
 76, 78, 108, 110:  
 76, 92, 108, 124:  
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 96, 104, 112, 120:  
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 98, 102, 114, 118:  
 98, 106, 114, 122:  
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 100, 108, 116, 124:  
 102, 110, 118, 126:  
 104, 105, 120, 121:  
 104, 106, 108, 110:  
 104, 106, 120, 122:  
 104, 108, 120, 124:  
 106, 110, 122, 126:  
 108, 110, 124, 126:  
 112, 114, 116, 118:  
 112, 114, 120, 122:  
 112, 116, 120, 124:

1	0	-	1	-	1	1	→
1	0	0	1	1	-	-	→
1	0	-	1	1	0	-	→
1	0	-	1	1	-	0	→
1	-	0	1	1	-	0	→
1	-	-	1	1	0	0	→
1	0	-	1	1	-	1	→
1	0	-	1	1	1	-	→
1	-	0	1	1	1	-	✓
1	-	-	1	1	1	0	→
1	0	1	0	-	0	-	→
1	0	1	0	-	-	0	→
1	0	1	-	0	-	0	→
1	-	1	0	0	-	0	→
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1	0	1	-	-	1	1	→
1	-	1	0	1	-	1	→
1	0	1	1	-	1	1	→
1	-	1	1	0	1	-	(✗)
1	-	1	1	-	1	0	→
1	0	1	1	1	-	-	→
1	-	1	1	1	0	-	→
1	-	1	1	1	-	0	→
1	1	0	0	0	-	-	→
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1	1	-	-	0	1	0	→
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1	1	1	0	-	-	0	→
1	1	1	1	0	-	0	→
1	1	1	1	-	0	0	→
1	1	1	1	-	0	0	→

114, 115, 118, 119:	1	1	1	0	-	1	-	→
114, 115, 122, 123:	1	1	1	-	0	1	-	(x)
114, 118, 122, 126:	1	1	1	-	-	1	0	→
116, 117, 118, 119:	1	1	1	0	1	-	-	→
116, 117, 124, 125:	1	1	1	-	1	0	-	→
116, 118, 124, 126:	1	1	1	-	1	-	0	→
120, 121, 122, 123:	1	1	1	1	0	-	-	(x)
120, 121, 124, 125:	1	1	1	1	-	0	-	(x)
120, 122, 124, 126:	1	1	1	1	-	-	0	→

Implicants (Order 3):

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 0, 1, 32, 33, 64, 65, 96, 97:  
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 0, 4, 16, 20, 64, 68, 80, 84:  
 0, 4, 32, 36, 64, 68, 96, 100:  
 0, 8, 16, 24, 32, 40, 48, 56:  
 0, 8, 16, 24, 64, 72, 80, 88:  
 0, 8, 32, 40, 64, 72, 96, 104:  
 0, 16, 32, 48, 64, 80, 96, 112:  
 4, 6, 12, 14, 20, 22, 28, 30:  
 4, 6, 12, 14, 36, 38, 44, 46:  
 4, 6, 12, 14, 68, 70, 76, 78:  
 4, 6, 20, 22, 36, 38, 52, 54:  
 4, 6, 20, 22, 68, 70, 84, 86:  
 4, 6, 36, 38, 68, 70, 100, 102:  
 4, 12, 20, 28, 36, 44, 52, 60:  
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 4, 12, 36, 44, 68, 76, 100, 108:  
 4, 20, 36, 52, 68, 84, 100, 116:  
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 6, 22, 38, 54, 70, 86, 102, 118:  
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 8, 10, 40, 42, 72, 74, 104, 106:  
 8, 12, 24, 28, 40, 44, 56, 60:  
 8, 12, 24, 28, 72, 76, 88, 92:  
 8, 12, 40, 44, 72, 76, 104, 108:  
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 16, 18, 20, 22, 80, 82, 84, 86:  
 16, 18, 24, 26, 48, 50, 56, 58:  
 16, 18, 24, 26, 80, 82, 88, 90:  
 16, 18, 48, 50, 80, 82, 112, 114:  
 16, 20, 24, 28, 48, 52, 56, 60.

$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$	
0	-	0	-	0	0	-	✓
-	-	0	0	0	0	-	✓
0	0	-	-	-	0	0	→
0	-	0	-	-	0	0	→
-	0	0	-	-	0	0	→
0	-	-	0	-	0	0	→
-	0	-	0	-	0	0	→
-	-	0	0	-	0	0	→
0	-	-	0	-	0	0	→
-	0	-	0	-	0	0	→
-	-	0	0	-	0	0	→
0	-	-	0	0	0	0	→
-	0	-	0	0	0	0	→
-	-	0	0	0	0	0	→
0	0	-	-	1	-	0	→
0	-	0	-	1	-	0	→
-	0	0	-	1	-	0	→
0	-	-	0	1	-	0	→
-	0	-	0	1	-	0	→
-	-	0	0	1	-	0	→
0	-	-	-	1	0	0	→
-	0	-	-	1	0	0	→
-	-	-	0	1	0	0	→
0	-	-	-	1	1	0	→
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-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
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-	0	-	-	1	1	1	→
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0	-	-	-	1	1	1	→
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-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
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-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
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-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
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-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
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0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
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-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
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-	-	-	0	1	1	1	→
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0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1	1	→
0	-	-	-	1	1	1	→
-	0	-	-	1	1	1	→
-	-	-	0	1	1		

## Quine–McCluskey algorithm

16, 20, 24, 28, 80, 84, 88, 92:  
16, 20, 48, 52, 80, 84, 112, 116:  
16, 24, 48, 56, 80, 88, 112, 120:  
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32, 40, 48, 56, 96, 104, 112, 120:  
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34, 35, 50, 51, 98, 99, 114, 115:  
34, 38, 42, 46, 50, 54, 58, 62:  
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64, 66, 72, 74, 80, 82, 88, 90:  
64, 66, 72, 74, 96, 98, 104, 106:  
64, 66, 80, 82, 96, 98, 112, 114:

-	0	1	-	-	0	0	→
-	-	1	0	-	0	0	→
-	-	1	-	0	0	0	→
0	-	1	-	-	1	0	→
-	0	1	-	-	1	0	→
-	-	1	0	-	1	0	→
-	-	1	-	0	1	0	→
0	-	1	-	1	-	0	→
-	0	1	-	1	-	0	→
-	-	1	0	1	-	0	→
-	-	1	-	1	0	0	→
-	-	1	-	1	1	0	→
0	-	1	1	-	-	0	→
-	0	1	1	-	-	0	→
-	-	1	1	0	-	0	→
-	-	1	1	-	0	0	→
-	-	1	1	-	1	0	→
-	-	1	1	1	-	0	→
0	1	-	0	0	-	-	(×)
-	1	0	0	0	-	-	✓
0	1	-	-	0	0	-	✓
-	1	0	-	0	0	-	✓
0	1	0	-	-	-	0	→
0	1	-	0	-	-	0	→
-	1	0	0	-	-	0	→
0	1	-	-	0	-	0	→
-	1	0	-	0	-	0	→
-	1	-	0	0	-	0	→
0	1	-	-	-	0	0	→
-	1	0	-	-	0	0	→
-	1	-	0	-	0	0	→
-	1	-	-	0	0	0	→
0	1	-	0	-	1	-	(×)
-	1	-	0	0	1	-	(×)
0	1	-	-	-	1	0	→
-	1	0	-	-	1	0	→
-	1	-	0	-	1	0	→
-	1	-	-	0	1	0	→
0	1	-	-	1	-	0	→
-	1	0	-	1	-	0	→
-	1	-	0	1	-	0	→
-	1	-	-	1	0	0	→
-	1	-	-	1	1	0	→
-	1	-	1	0	0	-	✓
0	1	-	1	-	-	0	→
-	1	0	1	-	-	0	→
-	1	-	1	0	-	0	→
-	1	-	1	-	0	0	→
-	1	-	1	-	1	0	→
-	1	-	1	1	-	0	→
0	1	1	-	-	-	0	→
-	1	1	0	-	-	0	→
-	1	1	-	0	-	0	→
-	1	1	-	-	0	0	→
-	1	1	0	-	1	-	(×)
-	1	1	-	-	1	0	→
-	1	1	-	1	-	0	→
-	1	1	1	-	-	0	→
1	0	-	0	-	0	-	(×)
1	0	0	-	-	-	0	→
1	0	-	0	-	-	0	→
1	-	0	0	-	-	0	→
1	0	-	-	0	-	0	→
1	-	0	-	0	-	0	→
1	-	-	0	0	-	0	→

64, 68, 72, 76, 80, 84, 88, 92:  
 64, 68, 72, 76, 96, 100, 104, 108:  
 64, 68, 80, 84, 96, 100, 112, 116:  
 64, 72, 80, 88, 96, 104, 112, 120:  
 66, 70, 74, 78, 82, 86, 90, 94:  
 66, 70, 74, 78, 98, 102, 106, 110:  
 66, 70, 82, 86, 98, 102, 114, 118:  
 66, 74, 82, 90, 98, 106, 114, 122:  
 68, 69, 76, 77, 84, 85, 92, 93:  
 68, 70, 76, 78, 84, 86, 92, 94:  
 68, 70, 76, 78, 100, 102, 108, 110:  
 68, 70, 84, 86, 100, 102, 116, 118:  
 68, 76, 84, 92, 100, 108, 116, 124:  
 70, 78, 86, 94, 102, 110, 118, 126:  
 72, 74, 76, 78, 88, 90, 92, 94:  
 72, 74, 76, 78, 104, 106, 108, 110:  
 72, 74, 88, 90, 104, 106, 120, 122:  
 72, 76, 88, 92, 104, 108, 120, 124:  
 74, 75, 78, 79, 90, 91, 94, 95:  
 74, 78, 90, 94, 106, 110, 122, 126:  
 76, 77, 78, 79, 92, 93, 94, 95:  
 76, 78, 92, 94, 108, 110, 124, 126:  
 80, 82, 84, 86, 88, 90, 92, 94:  
 80, 82, 84, 86, 112, 114, 116, 118:  
 80, 82, 88, 90, 112, 114, 120, 122:  
 80, 84, 88, 92, 112, 116, 120, 124:  
 82, 86, 90, 94, 114, 118, 122, 126:  
 84, 85, 86, 87, 92, 93, 94, 95:  
 84, 85, 86, 87, 116, 117, 118, 119:  
 84, 85, 92, 93, 116, 117, 124, 125:  
 84, 86, 92, 94, 116, 118, 124, 126:  
 88, 90, 92, 94, 120, 122, 124, 126:  
 96, 98, 100, 102, 104, 106, 108, 110:  
 96, 98, 100, 102, 112, 114, 116, 118:  
 96, 98, 104, 106, 112, 114, 120, 122:  
 96, 100, 104, 108, 112, 116, 120, 124:  
 98, 102, 106, 110, 114, 118, 122, 126:  
 100, 102, 108, 110, 116, 118, 124, 126:  
 104, 106, 108, 110, 120, 122, 124, 126:  
 112, 114, 116, 118, 120, 122, 124, 126:

1	0	-	-	-	0	0	→
1	-	0	-	-	0	0	→
1	-	-	0	-	0	0	→
1	-	-	-	0	0	0	→
1	0	-	-	-	1	0	→
1	-	0	-	-	1	0	→
1	-	-	0	-	1	0	→
1	-	-	-	0	1	0	→
1	0	-	-	1	0	-	(×)
1	0	-	-	1	-	0	→
1	-	0	-	1	-	0	→
1	-	-	0	1	-	0	→
1	-	-	-	1	0	0	→
1	-	-	-	1	1	0	→
1	0	-	1	-	-	0	→
1	-	0	1	-	-	0	→
1	-	-	1	0	-	0	→
1	-	-	1	-	0	0	→
1	0	-	1	-	1	-	✓
1	-	-	1	-	1	0	→
1	0	-	1	1	-	-	✓
1	-	-	1	1	-	0	→
1	0	1	-	-	-	0	→
1	-	1	0	-	-	0	→
1	-	1	-	0	-	0	→
1	-	1	-	-	0	0	→
1	-	1	-	-	1	0	→
1	0	1	-	1	-	-	(×)
1	-	1	0	1	-	-	(×)
1	-	1	-	1	0	-	(×)
1	-	1	-	1	-	0	→
1	-	1	1	-	-	0	→
1	1	0	-	-	-	0	→
1	1	-	0	-	-	0	→
1	1	-	-	0	-	0	→
1	1	-	-	-	0	0	→
1	1	-	-	-	1	0	→
1	1	-	-	1	-	0	→
1	1	-	1	-	-	0	→
1	1	1	-	-	-	0	→

Implicants (Order 4):

0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60:  
 0, 4, 8, 12, 16, 20, 24, 28, 64, 68, 72, 76, 80, 84, 88, 92:  
 0, 4, 8, 12, 32, 36, 40, 44, 64, 68, 72, 76, 96, 100, 104, 108:  
 0, 4, 16, 20, 32, 36, 48, 52, 64, 68, 80, 84, 96, 100, 112, 116:  
 0, 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112, 120:  
 4, 6, 12, 14, 20, 22, 28, 30, 36, 38, 44, 46, 52, 54, 60, 62:  
 4, 6, 12, 14, 20, 22, 28, 30, 68, 70, 76, 78, 84, 86, 92, 94:  
 4, 6, 12, 14, 36, 38, 44, 46, 68, 70, 76, 78, 100, 102, 108, 110:  
 4, 6, 20, 22, 36, 38, 52, 54, 68, 70, 84, 86, 100, 102, 116, 118:  
 4, 12, 20, 28, 36, 44, 52, 60, 68, 76, 84, 92, 100, 108, 116, 124:  
 6, 14, 22, 30, 38, 46, 54, 62, 70, 78, 86, 94, 102, 110, 118, 126:  
 8, 10, 12, 14, 24, 26, 28, 30, 40, 42, 44, 46, 56, 58, 60, 62:  
 8, 10, 12, 14, 24, 26, 28, 30, 72, 74, 76, 78, 88, 90, 92, 94:  
 8, 10, 12, 14, 40, 42, 44, 46, 72, 74, 76, 78, 104, 106, 108, 110:  
 8, 10, 24, 26, 40, 42, 56, 58, 72, 74, 88, 90, 104, 106, 120, 122:  
 8, 12, 24, 28, 40, 44, 56, 60, 72, 76, 88, 92, 104, 108, 120, 124:  
 10, 14, 26, 30, 42, 46, 58, 62, 74, 78, 90, 94, 106, 110, 122, 126:  
 12, 14, 28, 30, 44, 46, 60, 62, 76, 78, 92, 94, 108, 110, 124, 126:  
 16, 18, 20, 22, 24, 26, 28, 30, 48, 50, 52, 54, 56, 58, 60, 62:  
 16, 18, 20, 22, 24, 26, 28, 30, 80, 82, 84, 86, 88, 90, 92, 94:  
 16, 18, 20, 22, 48, 50, 52, 54, 80, 82, 84, 86, 112, 114, 116, 118:  
 16, 18, 24, 26, 48, 50, 56, 58, 80, 82, 88, 90, 112, 114, 120, 122:  
 16, 20, 24, 28, 48, 52, 56, 60, 80, 84, 88, 92, 112, 116, 120, 124:  
 18, 22, 26, 30, 50, 54, 58, 62, 82, 86, 90, 94, 114, 118, 122, 126:  
 20, 22, 28, 30, 52, 54, 60, 62, 84, 86, 92, 94, 116, 118, 124, 126:  
 24, 26, 28, 30, 56, 58, 60, 62, 88, 90, 92, 94, 120, 122, 124, 126:  
 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62:  
 32, 34, 36, 38, 40, 42, 44, 46, 96, 98, 100, 102, 104, 106, 108, 110:  
 32, 34, 36, 38, 48, 50, 52, 54, 96, 98, 100, 102, 112, 114, 116, 118:  
 32, 34, 40, 42, 48, 50, 56, 58, 96, 98, 104, 106, 112, 114, 120, 122:  
 32, 36, 40, 44, 48, 52, 56, 60, 96, 100, 104, 108, 112, 116, 120, 124:  
 34, 38, 42, 46, 50, 54, 58, 62, 98, 102, 106, 110, 114, 118, 122, 126:  
 36, 38, 44, 46, 52, 54, 60, 62, 100, 102, 108, 110, 116, 118, 124, 126:  
 40, 42, 44, 46, 56, 58, 60, 62, 104, 106, 108, 110, 120, 122, 124, 126:  
 48, 50, 52, 54, 56, 58, 60, 62, 112, 114, 116, 118, 120, 122, 124, 126:  
 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94:  
 64, 66, 68, 70, 72, 74, 76, 78, 96, 98, 100, 102, 104, 106, 108, 110:  
 64, 66, 68, 70, 80, 82, 84, 86, 96, 98, 100, 102, 112, 114, 116, 118:  
 64, 66, 72, 74, 80, 82, 88, 90, 96, 98, 104, 106, 112, 114, 120, 122:  
 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116, 120, 124:  
 66, 70, 74, 78, 82, 86, 90, 94, 98, 102, 106, 110, 114, 118, 122, 126:  
 68, 70, 76, 78, 84, 86, 92, 94, 100, 102, 108, 110, 116, 118, 124, 126:  
 72, 74, 76, 78, 88, 90, 92, 94, 104, 106, 108, 110, 120, 122, 124, 126:  
 80, 82, 84, 86, 88, 90, 92, 94, 112, 114, 116, 118, 120, 122, 124, 126:  
 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126:

$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$	
0	-	-	-	-	0	0	→
-	0	-	-	-	0	0	→
-	-	0	-	-	0	0	→
-	-	-	0	-	0	0	→
-	-	-	-	0	0	0	→
0	-	-	-	1	-	0	→
-	0	-	-	1	-	0	→
-	-	0	-	1	-	0	→
-	-	-	0	1	-	0	→
-	-	-	-	1	0	0	→
-	-	-	-	1	1	0	→
0	-	-	1	-	-	0	→
-	0	-	1	-	-	0	→
-	-	0	1	-	-	0	→
-	-	-	1	0	-	0	→
-	-	-	1	-	0	0	→
-	-	-	-	1	-	0	→
0	-	1	-	-	-	0	→
-	0	1	-	-	-	0	→
-	-	1	0	-	-	0	→
-	-	1	-	0	-	0	→
-	-	1	-	-	0	0	→
-	-	1	-	-	1	0	→
-	-	1	-	1	-	0	→
-	-	1	1	-	-	0	→
0	1	-	-	-	-	0	→
-	1	0	-	-	-	0	→
-	1	-	0	-	-	0	→
-	1	-	-	0	-	0	→
-	1	-	-	-	0	0	→
-	1	-	-	-	1	0	→
-	1	-	-	1	-	0	→
-	1	1	-	-	-	0	→
1	0	-	-	-	-	0	→
1	-	0	-	-	-	0	→
1	-	-	0	-	-	0	→
1	-	-	-	0	-	0	→
1	-	-	-	-	1	0	→
1	-	-	-	1	-	0	→
1	-	-	1	-	-	0	→
1	-	1	-	-	-	0	→

Implicants (Order 5):

0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, 112,  
 4, 6, 12, 14, 20, 22, 28, 30, 36, 38, 44, 46, 52, 54, 60, 62, 68, 70, 76, 78, 84, 86, 92, 94, 100, 102, 108, 110, 11  
 8, 10, 12, 14, 24, 26, 28, 30, 40, 42, 44, 46, 56, 58, 60, 62, 72, 74, 76, 78, 88, 90, 92, 94, 104, 106, 108, 110, 11  
 16, 18, 20, 22, 24, 26, 28, 30, 48, 50, 52, 54, 56, 58, 60, 62, 80, 82, 84, 86, 88, 90, 92, 94, 112, 114, 116, 118,  
 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 11  
 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 11

Prime implicant chart:

$x_6$	$x_5$	$x_4$	$x_3$	$x_2$	$x_1$	$x_0$	41	79	97
0, 1, 8, 9, 32, 33, 40, 41:	0	-	0	-	0	0	-	○	
0, 1, 32, 33, 64, 65, 96, 97:	-	-	0	0	0	0	-		○
8, 9, 24, 25, 40, 41, 56, 57:	0	-	-	1	0	0	-	○	
32, 33, 34, 35, 96, 97, 98, 99:	-	1	0	0	0	-	-		○
32, 33, 40, 41, 48, 49, 56, 57:	0	1	-	-	0	0	-	○	
32, 33, 40, 41, 96, 97, 104, 105:	-	1	0	-	0	0	-	○	○
40, 41, 56, 57, 104, 105, 120, 121:	-	1	-	1	0	0	-	○	
74, 75, 78, 79, 90, 91, 94, 95:	1	0	-	1	-	1	-		○
76, 77, 78, 79, 92, 93, 94, 95:	1	0	-	1	1	-	-	○	
14, 15, 78, 79:	-	0	0	1	1	1	-		○
40, 41, 44, 45:	0	1	0	1	-	0	-	○	
78, 79, 110, 111:	1	-	0	1	1	1	-		○

$(\bar{x}_6 \bar{x}_4 \bar{x}_2 \bar{x}_1) \equiv p_0$

$(\bar{x}_4 \bar{x}_3 \bar{x}_2 \bar{x}_1) \equiv p_1$

$(\bar{x}_6 x_3 \bar{x}_2 \bar{x}_1) \equiv p_2$

$(x_5 \bar{x}_4 \bar{x}_3 \bar{x}_2) \equiv p_3$

$(\bar{x}_6 x_5 \bar{x}_2 \bar{x}_1) \equiv p_4$

$(x_5 \bar{x}_4 \bar{x}_2 \bar{x}_1) \equiv p_5$

$(x_5 x_3 \bar{x}_2 \bar{x}_1) \equiv p_6$

$(\bar{x}_6 \bar{x}_5 x_3 x_1) \equiv p_7$

$(x_6 \bar{x}_5 x_3 x_2) \equiv p_8$

$(\bar{x}_5 \bar{x}_4 x_3 x_2 \bar{x}_1) \equiv p_9$

$(\bar{x}_6 x_5 \bar{x}_4 x_3 \bar{x}_1) \equiv p_{10}$

$(x_6 \bar{x}_4 x_3 x_2 x_1) \equiv p_{11}$

Petrick's method

$$\begin{aligned}
 & (p_0 \vee p_2 \vee p_4 \vee p_5 \vee p_6 \vee p_{10})(p_7 \vee p_8 \vee p_9 \vee p_{11})(p_1 \vee p_3 \vee p_5) \\
 \Leftrightarrow & (p_0 p_7 \vee p_0 p_8 \vee p_0 p_9 \vee p_0 p_{11} \vee p_2 p_7 \vee p_2 p_8 \vee p_2 p_9 \vee p_2 p_{11} \vee p_4 p_7 \vee p_4 p_8 \vee p_4 p_9 \vee p_4 p_{11} \vee p_5 p_7 \vee p_5 p_8 \vee p_5 p_9 \vee p_5 p_{11} \vee p_6 p_7 \vee p_6 p_8 \vee p_6 p_9 \vee p_6 p_{11} \vee p_7 p_{10} \vee p_8 p_{10} \vee p_9 p_{10} \vee p_{10} p_{11})(p_1 \vee p_3 \vee p_5) \\
 \Leftrightarrow & (p_0 p_7 \vee p_0 p_8 \vee p_0 p_9 \vee p_0 p_{11} \vee p_2 p_7 \vee p_2 p_8 \vee p_2 p_9 \vee p_2 p_{11} \vee p_4 p_7 \vee p_4 p_8 \vee p_4 p_9 \vee p_4 p_{11} \vee p_5 p_7 \vee p_5 p_8 \vee p_5 p_9 \vee p_5 p_{11} \vee p_6 p_7 \vee p_6 p_8 \vee p_6 p_9 \vee p_6 p_{11} \vee p_7 p_{10} \vee p_8 p_{10} \vee p_9 p_{10} \vee p_{10} p_{11})(p_1 \vee p_3 \vee p_5) \\
 \Leftrightarrow & (p_0 p_1 p_7 \vee p_0 p_3 p_7 \vee p_0 p_5 p_7 \vee p_0 p_1 p_8 \vee p_0 p_3 p_8 \vee p_0 p_1 p_9 \vee p_0 p_3 p_9 \vee p_0 p_1 p_{11} \vee p_0 p_3 p_{11} \vee p_0 p_5 p_{11} \vee p_1 p_2 p_7 \vee p_2 p_3 p_7 \vee p_2 p_5 p_7 \vee p_1 p_2 p_8 \vee p_2 p_3 p_8 \vee p_2 p_5 p_8 \vee p_1 p_2 p_9 \vee p_2 p_3 p_9 \vee p_2 p_5 p_9 \vee p_1 p_2 p_{11} \vee p_2 p_3 p_{11} \vee p_2 p_5 p_{11} \vee p_1 p_4 p_7 \vee p_3 p_4 p_7 \vee p_4 p_5 p_7 \vee p_1 p_4 p_8 \vee p_2 p_4 p_8 \vee p_3 p_4 p_9 \vee p_4 p_4 p_9 \vee p_3 p_4 p_{11} \vee p_4 p_4 p_{11} \vee p_4 p_5 p_{11} \vee p_1 p_5 p_7 \vee p_1 p_5 p_8 \vee p_2 p_5 p_7 \vee p_2 p_5 p_8 \vee p_3 p_5 p_7 \vee p_3 p_5 p_8 \vee p_4 p_5 p_7 \vee p_4 p_5 p_8 \vee p_5 p_5 p_7 \vee p_5 p_5 p_8 \vee p_6 p_5 p_7 \vee p_6 p_5 p_8 \vee p_7 p_5 p_7 \vee p_7 p_5 p_8 \vee p_8 p_5 p_7 \vee p_8 p_5 p_8 \vee p_9 p_5 p_7 \vee p_9 p_5 p_8 \vee p_{10} p_5 p_7 \vee p_{10} p_5 p_8 \vee p_1 p_6 p_7 \vee p_2 p_6 p_7 \vee p_3 p_6 p_7 \vee p_4 p_6 p_7 \vee p_5 p_6 p_7 \vee p_6 p_6 p_7 \vee p_7 p_6 p_7 \vee p_8 p_6 p_7 \vee p_9 p_6 p_7 \vee p_{10} p_6 p_7 \vee p_1 p_7 p_8 \vee p_2 p_7 p_8 \vee p_3 p_7 p_8 \vee p_4 p_7 p_8 \vee p_5 p_7 p_8 \vee p_6 p_7 p_8 \vee p_7 p_7 p_8 \vee p_8 p_7 p_8 \vee p_9 p_7 p_8 \vee p_{10} p_7 p_8 \vee p_1 p_8 p_9 \vee p_2 p_8 p_9 \vee p_3 p_8 p_9 \vee p_4 p_8 p_9 \vee p_5 p_8 p_9 \vee p_6 p_8 p_9 \vee p_7 p_8 p_9 \vee p_8 p_8 p_9 \vee p_9 p_8 p_9 \vee p_{10} p_8 p_9 \vee p_1 p_9 p_{10} \vee p_2 p_9 p_{10} \vee p_3 p_9 p_{10} \vee p_4 p_9 p_{10} \vee p_5 p_9 p_{10} \vee p_6 p_9 p_{10} \vee p_7 p_9 p_{10} \vee p_8 p_9 p_{10} \vee p_9 p_9 p_{10} \vee p_{10} p_9 p_{10}) \\
 \Leftrightarrow & (p_0 p_1 p_7 \vee p_0 p_3 p_7 \vee p_0 p_5 p_7 \vee p_0 p_1 p_8 \vee p_0 p_3 p_8 \vee p_0 p_1 p_9 \vee p_0 p_3 p_9 \vee p_0 p_1 p_{11} \vee p_0 p_3 p_{11} \vee p_0 p_5 p_{11} \vee p_1 p_2 p_7 \vee p_2 p_3 p_7 \vee p_1 p_2 p_8 \vee p_2 p_3 p_8 \vee p_1 p_2 p_9 \vee p_2 p_3 p_9 \vee p_1 p_2 p_{11} \vee p_2 p_3 p_{11} \vee p_2 p_5 p_{11} \vee p_1 p_4 p_7 \vee p_3 p_4 p_7 \vee p_4 p_5 p_7 \vee p_1 p_4 p_8 \vee p_2 p_4 p_8 \vee p_3 p_4 p_9 \vee p_4 p_4 p_9 \vee p_1 p_4 p_{11} \vee p_2 p_4 p_{11} \vee p_3 p_4 p_{11} \vee p_4 p_4 p_{11} \vee p_5 p_5 p_7 \vee p_5 p_5 p_8 \vee p_6 p_5 p_7 \vee p_6 p_5 p_8 \vee p_7 p_5 p_7 \vee p_7 p_5 p_8 \vee p_8 p_5 p_7 \vee p_8 p_5 p_8 \vee p_9 p_5 p_7 \vee p_9 p_5 p_8 \vee p_{10} p_5 p_7 \vee p_{10} p_5 p_8 \vee p_1 p_6 p_7 \vee p_2 p_6 p_7 \vee p_3 p_6 p_7 \vee p_4 p_6 p_7 \vee p_5 p_6 p_7 \vee p_6 p_6 p_7 \vee p_7 p_6 p_7 \vee p_8 p_6 p_7 \vee p_9 p_6 p_7 \vee p_{10} p_6 p_7 \vee p_1 p_7 p_8 \vee p_2 p_7 p_8 \vee p_3 p_7 p_8 \vee p_4 p_7 p_8 \vee p_5 p_7 p_8 \vee p_6 p_7 p_8 \vee p_7 p_7 p_8 \vee p_8 p_7 p_8 \vee p_9 p_7 p_8 \vee p_{10} p_7 p_8 \vee p_1 p_8 p_9 \vee p_2 p_8 p_9 \vee p_3 p_8 p_9 \vee p_4 p_8 p_9 \vee p_5 p_8 p_9 \vee p_6 p_8 p_9 \vee p_7 p_8 p_9 \vee p_8 p_8 p_9 \vee p_9 p_8 p_9 \vee p_{10} p_8 p_9 \vee p_1 p_9 p_{10} \vee p_2 p_9 p_{10} \vee p_3 p_9 p_{10} \vee p_4 p_9 p_{10} \vee p_5 p_9 p_{10} \vee p_6 p_9 p_{10} \vee p_7 p_9 p_{10} \vee p_8 p_9 p_{10} \vee p_9 p_9 p_{10} \vee p_{10} p_9 p_{10}) \\
 \end{aligned}$$

Extracted prime implicants (Petrick's method):  $(\bar{x}_5 \bar{x}_4 \bar{x}_2 \bar{x}_1)$ ,  $(\bar{x}_5 \bar{x}_4 x_3 x_2 x_1)$ **Minimal boolean expression:**

$$y = (\bar{x}_5 \bar{x}_4 \bar{x}_2 \bar{x}_1) \vee (\bar{x}_5 \bar{x}_4 x_3 x_2 x_1)$$

**Legend:**Don't-care:  $\times$ Implicant (non prime):  $\rightarrow$ Prime implicant:  $\checkmark$ Essential prime implicant:  $\bullet$ Prime implicant but covers only don't-care:  $(\times)$ The JavaScript source code can be found here: [qmc.js](#).This website is part of the lecture [Technical Computer Science](#).

Keywords: interactive Quine–McCluskey algorithm, method of prime implicants, Quine–McCluskey method, Petrick's method for cyclic covering problems, prime implicant chart, html5, javascript