

Current state
Input
Next state
Outputs at current state

S_2	S_1	S_0	K	D_2	D_1	D_0	A	B	C	D
0	0	0	0	0	0	1	1	0	0	0
0	0	0	1	0	1	1	1	0	0	0
0	0	1	0	0	1	1	0	1	0	0
0	0	1	1	0	1	0	0	1	0	0
0	1	1	0	0	1	0	0	0	1	0
0	1	1	1	1	0	1	0	0	1	0
0	1	0	0	1	0	1	1	0	1	0
0	1	0	1	1	0	0	1	0	1	0
1	1	0	0	x	x	x	x	x	x	x
1	1	0	1	x	x	x	x	x	x	x
1	0	0	0	1	0	1	1	0	0	1
1	0	0	1	1	0	0	1	0	0	1
1	0	1	0	0	1	1	0	1	0	1
1	0	1	1	0	1	1	0	1	0	1
1	1	1	0	x	x	x	x	x	x	x
1	1	1	1	x	x	x	x	x	x	x

$A = \overline{S_0}$
 $B = S_0 \overline{S_1}$
 $C = S_1$
 $D = S_2$
 $D_2 =$
 $K S_1 + \overline{S_0} S_1 + \overline{S_0} S_2$
 $D_1 =$
 $\overline{S_0} \overline{K} + \overline{S_1} S_0 + \overline{S_2} \overline{S_1} K$
 $D_0 =$
 $\overline{K} \overline{S_1} + \overline{S_0} \overline{K} + S_2 S_0 + \overline{S_2} \overline{S_1} \overline{S_0} + S_1 S_0 K$

150
A

(row) S_0 K

S_2 S_1	00	01	11	10
00	1	1	X→1	1
01	1	1	X→1	1
11	0	0	x	0
10	0	0	x	0

$C = S_1$ S_2 S_1

S_0 K	00	01	11	10
00	0	1	X→1	0
01	0	1	X→1	0
11	0	1	X→1	0
10	0	1	X→1	0

$B = S_0 \overline{S_1}$ S_2 S_1

S_0 K	00	01	11	10
00	0	0	x	0
01	0	0	x	0
11	1	0	x	1
10	1	0	x	1

$D = S_2$ S_2 S_1

S_0 K	00	01	11	10
00	0	0	X→1	1
01	0	0	X→1	1
11	0	0	X→1	1
10	0	0	X→1	1

$+$ = OR
 AB : A and B

(D2)

$$KS_1 + \overline{S_0}\overline{K}S_1 + \overline{S_0}KS_1 + S_0KS_1 + S_2S_0$$

$$= \overline{S_0}S_1 + S_2\overline{S_0} + KS_1$$

S_0 K	$S_2 S_1$			
	00	01	11	10
0 0	0	1	X \rightarrow 1	1
0 1	0	1	X \rightarrow 1	1
1 1	0	1	X \rightarrow 1	0
1 0	0	0	X	0

$$KS_1 + \overline{S_0}S_1 + \overline{S_0}S_2$$

(D1)

$$S_0\overline{K} + S_2\overline{S_1}S_0 + \overline{S_2}\overline{S_1}K + \overline{S_2}\overline{S_1}S_0$$

S_0 K	$S_2 S_1$			
	00	01	11	10
0 0	0	0	X	0
0 1	1	0	X	0
1 1	1	0	X	1
1 0	1	1	X \rightarrow 1	1

$$S_0\overline{K} + \overline{S_1}S_0 + \overline{S_2}\overline{S_1}K$$

(D0)

$$\overline{K}S_1 + \overline{S_0}\overline{K} + \overline{S_2}\overline{S_1}\overline{S_0} + S_1S_0K + S_2S_0$$

S_0 K	$S_2 S_1$			
	00	01	11	10
0 0	1	1	X \rightarrow 1	1
0 1	1	0	X	0
1 1	0	1	X \rightarrow 1	1
1 0	1	0	X \rightarrow 1	1

grouping all the corner 1's

$S_2S_1S_0$ 12
0000
1000
1010
0010