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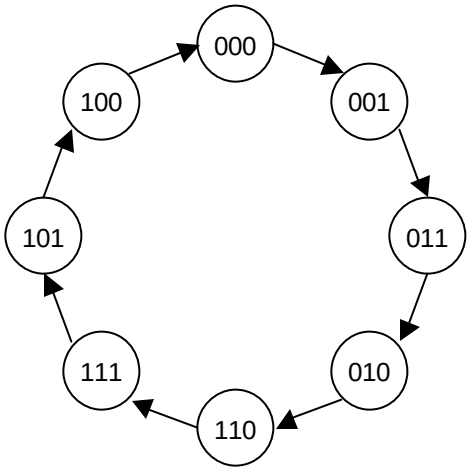
Quiz #12 – Solution

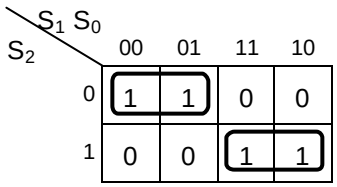
The counter FSM will represent the gray-code directly in 3 state bits. The next-state function will be the "next gray-code" function, and the counter output will be the state registers.



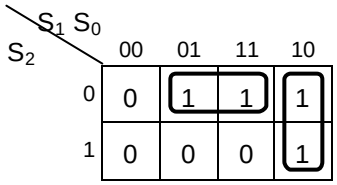
State Transition Diagram

State			Next State		
S_2	S_1	S_0	NS_2	NS_1	NS_0
0	0	0	0	0	1
0	0	1	0	1	1
0	1	0	1	1	0
0	1	1	0	1	0
1	0	0	0	0	0
1	0	1	1	0	0
1	1	0	1	1	1
1	1	1	1	0	1

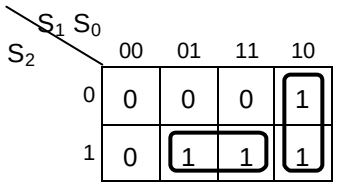
State Transition Table



$NS_0 = S'_2S'_1+S_2S_1 = (S_2 \oplus S_1)'$



$NS_1 = S'_2S_0+S_1S'_0$



$NS_2 = S_2S_0+S_1S'_0$

Karnaugh Maps for Next State **Reduced Logic Eqns**