

STATE TABLE & NEXT-STATE DECODER EQUATIONS for "LIGHTS"

* State Table

Present State			Input	Next-state		
Q_2	Q_1	Q_0	$LtoR$	D_2	D_1	D_0
0	0	0	0	0	0	1
0	0	0	1	1	0	0
0	0	1	0	0	1	0
0	0	1	1	0	0	0
0	1	0	0	1	0	0
0	1	0	1	0	0	1
0	1	1	0	0	0	0
0	1	1	1	0	0	0
1	0	0	0	0	0	0
1	0	0	1	0	1	0
1	0	1	0	0	0	0
1	0	1	1	0	0	0
1	1	0	0	0	0	0
1	1	0	1	0	0	0
1	1	1	0	0	0	0
1	1	1	1	0	0	0

← unused states all go to "000"

* Next State Equations

$$D_2 = \bar{Q}_2 \bar{Q}_1 \bar{Q}_0 LtoR + \bar{Q}_2 Q_1 \bar{Q}_0 \overline{LtoR}$$

$$D_1 = \bar{Q}_2 \bar{Q}_1 Q_0 \overline{LtoR} + Q_2 \bar{Q}_1 \bar{Q}_0 LtoR$$

$$D_0 = \bar{Q}_2 \bar{Q}_1 \bar{Q}_0 \overline{LtoR} + \bar{Q}_2 Q_1 \bar{Q}_0 LtoR$$