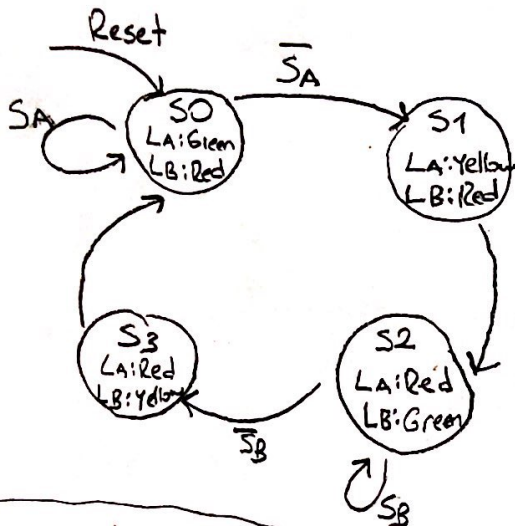# ~Traffic Light System Diagrams and Schematics~

State Transition Diagram

State Encodings

$S0 = 00$
$S1 = 01$
$S2 = 10$
$S3 = 11$

Output Encodings

$Green = 00$
$Yellow = 01$
$Red = 10$

State Transition Table

S_1	S_0	S_A	S_B	S_1'	S_0'
0	0	0	X	0	1
0	0	1	X	0	0
0	1	X	X	1	0
1	0	X	0	1	1
1	0	X	1	1	0
1	1	X	X	0	0

Output Table

S_1	S_0	L_{A1}	L_{A0}	L_{B1}	L_{B0}
0	0	0	0	1	0
0	1	0	1	1	0
1	0	1	0	0	0
1	1	1	0	0	1

Next State Equations

$$S_1' = S_1 \oplus S_0$$
$$S_0' = \overline{S_1}\,\overline{S_0}\,\overline{S_A} + S_1 \overline{S_0}\,\overline{S_B}$$

Output Equations

$$L_{A1} = S_1 \quad , \quad L_{A0} = \overline{S_1} S_0$$
$$L_{B1} = \overline{S_1} \quad , \quad L_{B0} = S_1 S_0$$

FSM Schematic