

Cmsc 130
Machine Exercise 10

I. State Function:

$$Q_{next} = yQ + xQ + xy \quad (1)$$

State Table:

x	y	Q	S	Q_{next}
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

Figure 1.1

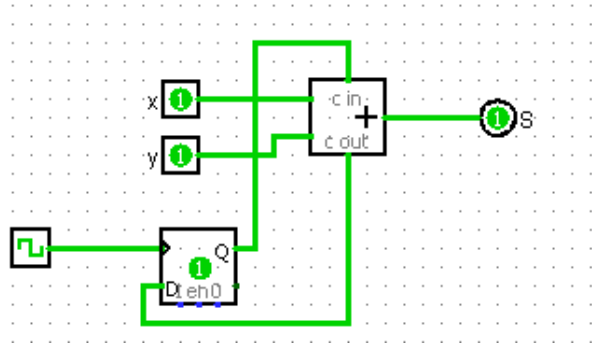


Figure 1.2

State Diagram:

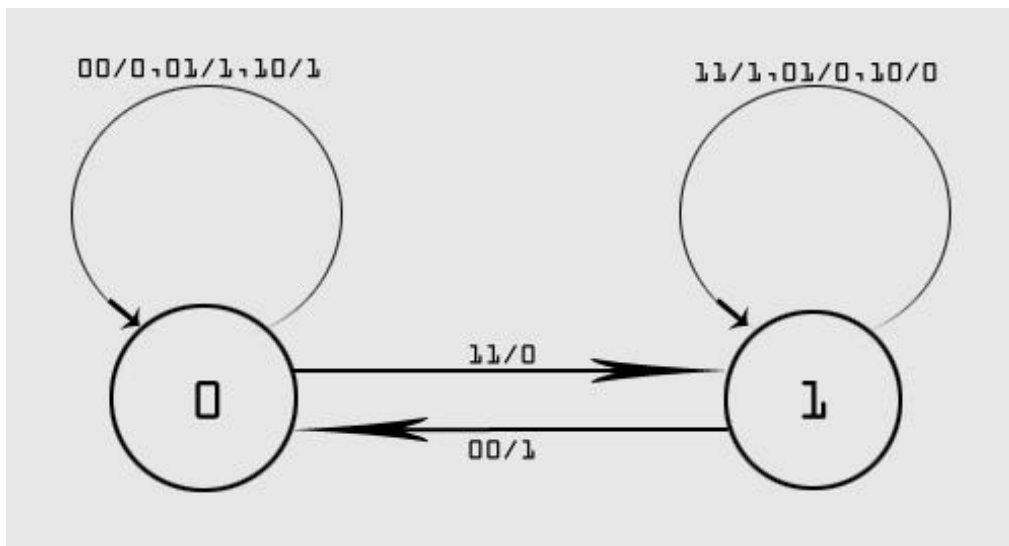


Figure 1.3

II. State Function:

$$Q(t+1) = T \odot Q \quad (2)$$

$$T_A = A + B \quad (3)$$

$$T_B = A' + B \quad (4)$$

$$A_{next} = (A + B) \odot A \quad (5)$$

$$B_{next} = (A' + B) \odot B \quad (6)$$

State Table:

A	B	A _{next}	B _{next}
0	0	0	1
0	1	1	0
1	0	0	0
1	1	0	0

Figure 2.1

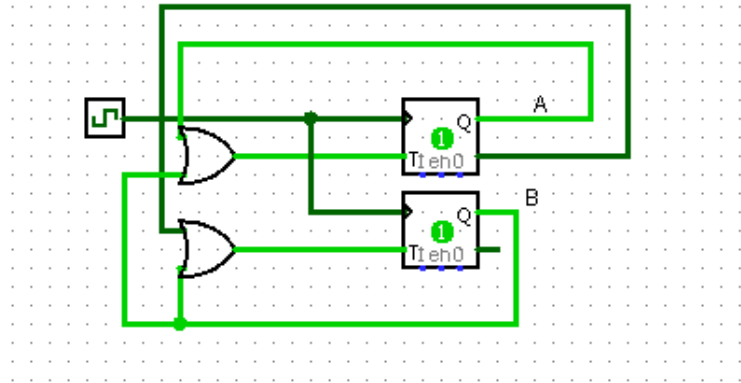


Figure 2.2

State Diagram:

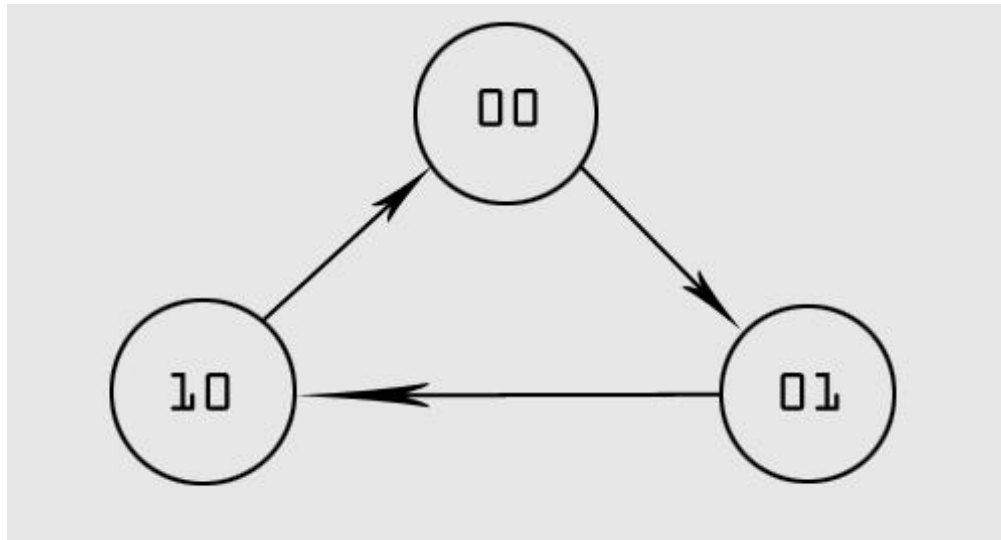


Figure 2.3

The circuit loops around the three states 00, 01 and 10.