VE270 Homework 7

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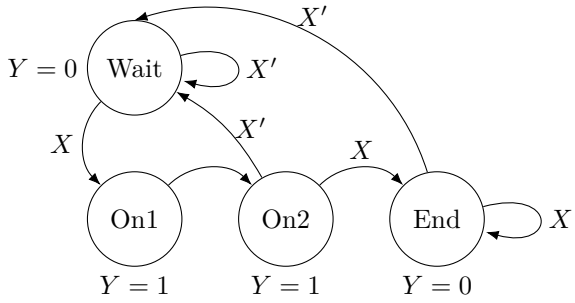
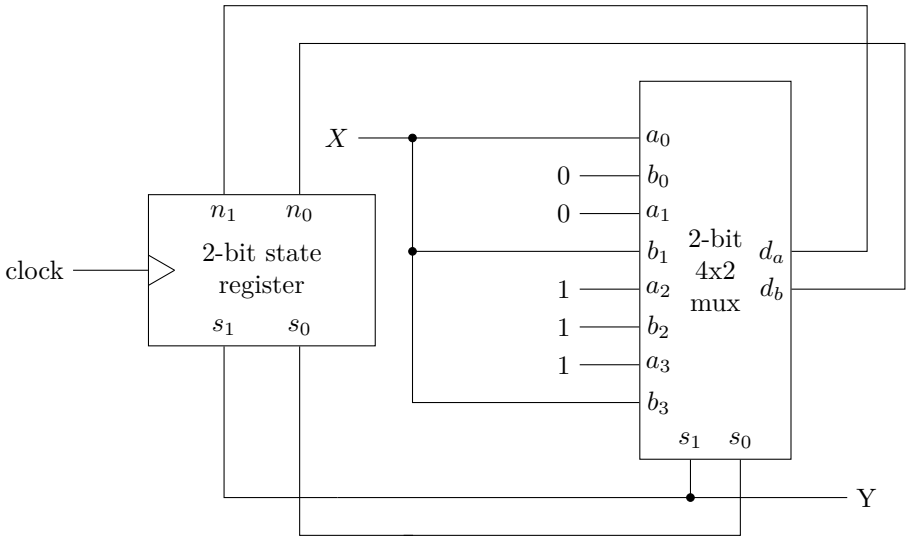
Problem 1.

Inputs: X; Outputs: Y

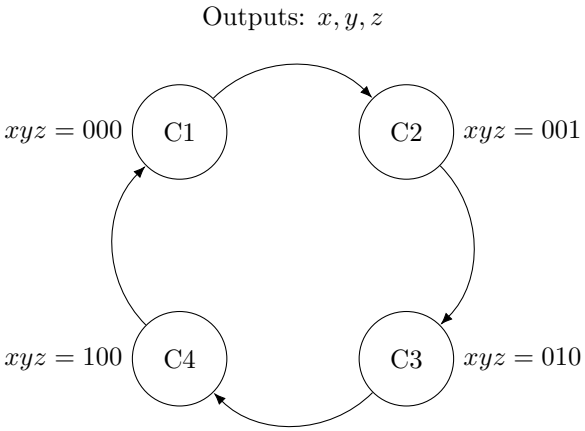


Problem 2.

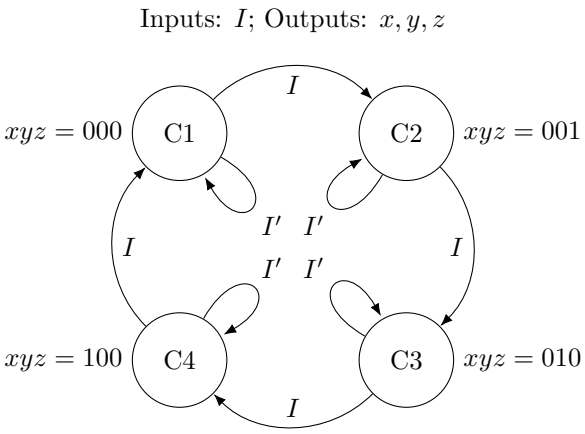
Encode the states ($s_1 s_0$): Wait: 00, On1: 10, On2: 11, End: 01.



Problem 3.

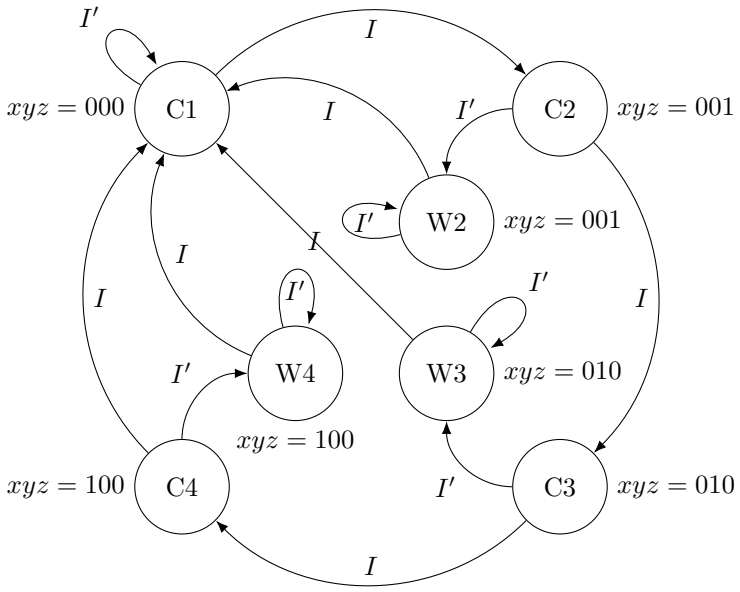


Problem 4.



Problem 5.

Inputs: I; Outputs: x, y, z



Problem 6.

Encode the states ($s_2 a_1 s_0$): C1: 000, C2: 001, W2: 010, C3: 011, W3: 100, C4: 101. The truth table is

s_2	s_1	s_0	I	n_2	n_1	n_0	X	Y	Z
0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	1	0	0	0
0	0	1	0	0	1	0	0	0	1
0	0	1	1	0	1	1	0	0	1
0	1	0	0	0	1	0	0	0	1
0	1	0	1	0	0	0	0	0	1
0	1	1	0	1	0	0	0	1	0
0	1	1	1	1	0	1	0	1	0
1	0	0	0	1	0	0	0	1	0
1	0	0	1	0	0	0	0	1	0
1	0	1	0	1	0	1	1	0	0
1	0	1	1	0	0	0	1	0	0
1	1	0	0	X	X	X	X	X	X
1	1	0	1	X	X	X	X	X	X
1	1	1	0	X	X	X	X	X	X
1	1	1	1	X	X	X	X	X	X

The euqations are

$$n_2 = s_1 s_0 + s_2 I'$$

$$n_1 = s_2' s_1' s_0 + s_1 s_0' I'$$

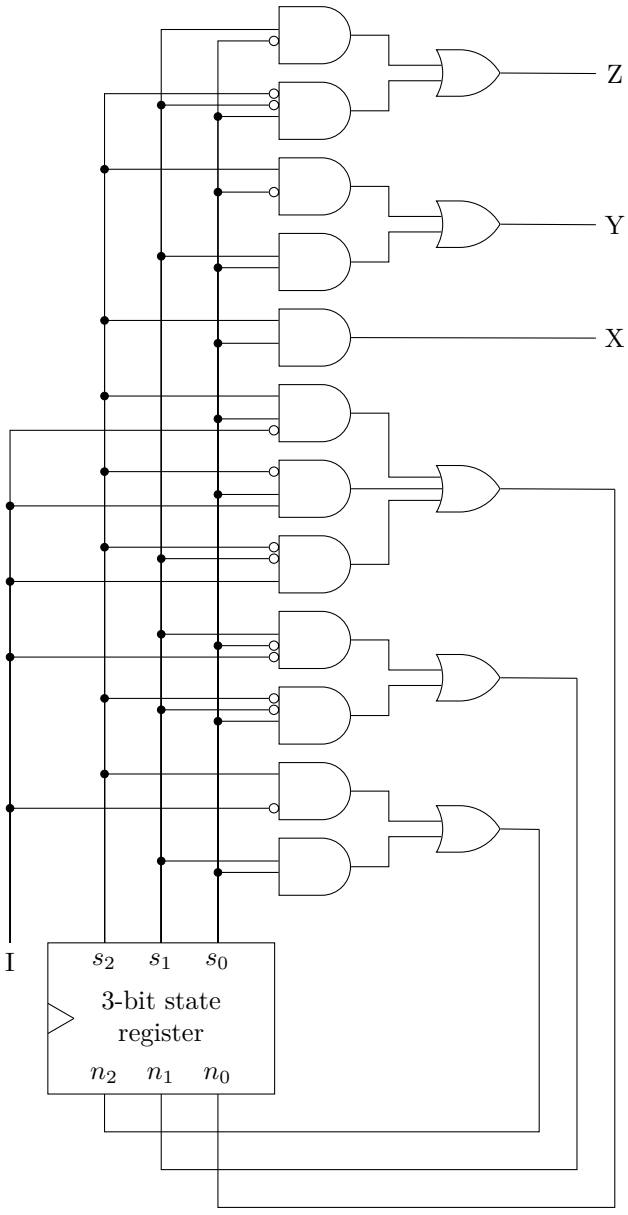
$$n_0 = s_2' s_1' I + s_2' s_0 I + s_2 s_0 I'$$

$$X = s_2 s_0$$

$$Y = s_1 s_0 + s_2 s_0'$$

$$Z = s_2' s_1' s_0 + s_1 s_0'$$

The schematics is



Problem 7.

Inputs: B; Outputs: s_1, s_0