LAB 1: #2 (16µs waveform)

$$2^n = 8 \text{ inputs}$$
$$n = 3 \text{ outputs}$$

ENCODER

Inputs: A_7, A_6, A_5, A_4, A_3, A_2, A_1, A_0

Outputs: Y_2, Y_1, Y_0
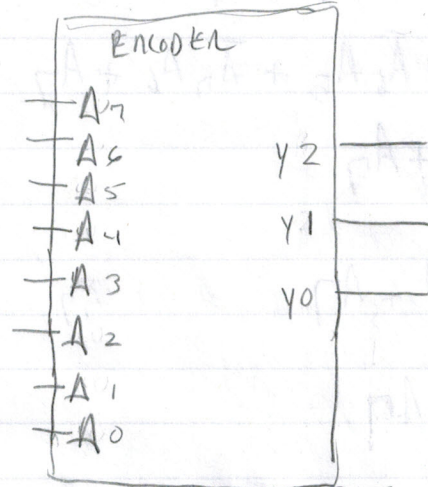
TRUTH TABLE

A_7	A_6	A_5	A_4	A_3	A_2	A_1	A_0	Y_2	Y_1	Y_0	NONE	
0	0	0	0	0	0	0	0	X	X	X	1	✓
0	0	0	0	0	0	0	1	0	0	0	0	✓
0	0	0	0	0	0	1	X	0	0	1	0	✓
0	0	0	0	0	1	X	X	0	1	0	0	
0	0	0	0	1	X	X	X	0	1	1	0	
0	0	0	1	X	X	X	X	1	0	0	0	
0	0	1	X	X	X	X	X	1	0	1	0	
0	1	X	X	X	X	X	X	1	1	0	0	
1	X	X	X	X	X	X	X	1	1	1	0	

$$Y_2 = \overline{A_7}\,\overline{A_6}\,\overline{A_5}\,A_4 + \overline{A_7}\,\overline{A_6}\,A_5 + \overline{A_7}A_6 + A_7 = \Sigma(4,5,6,7)$$
$$0\;\;0\;\;0\;\;1 \qquad 0\;0\;1$$

$$Y_1 = \Sigma(2,3,6,7) = \overline{A_7}\,\overline{A_6}\,\overline{A_5}\,\overline{A_4}\,\overline{A_3}A_2 + \overline{A_7}A_6\overline{A_5}\,\overline{A_4}A_3 + \overline{A_7}A_6 + A_7$$
$$0\;\;0\;\;0\;\;0\;\;0\;\;1$$

$$Y_0 = \Sigma(1,3,5,7) = \overline{A_7}\,\overline{A_6}\,\overline{A_5}\,\overline{A_4}\,\overline{A_3}\,\overline{A_2}A_1 + \overline{A_6}\,\overline{A_6}\,\overline{A_5}\,\overline{A_4}A_3 + \overline{A_7}\,\overline{A_6}A_5 + A_7$$

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