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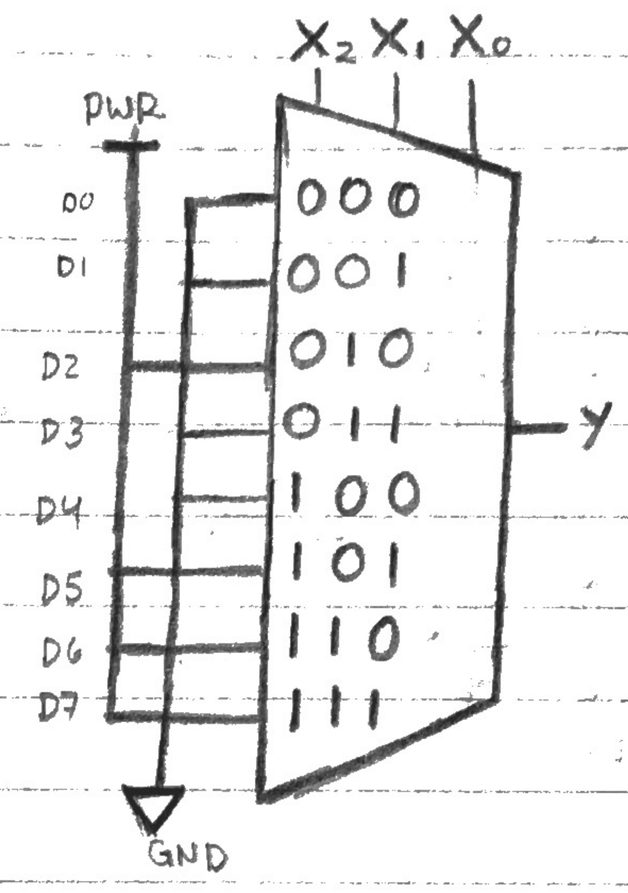
WRITTEN HOMEWORK #2

1.) Given only an 8-1 multiplexer & constants 0 and 1 implement circuit that behaves like $m_2 + m_5 + m_6 + m_7$.
3 input variables $x_2 x_1 x_0$.

	x_2	x_1	x_0	Y
0	0	0	0	0
1	0	0	1	0
→ 2	0	1	0	1
3	0	1	1	0
4	1	0	0	0
→ 5	1	0	1	1
→ 6	1	1	0	1
→ 7	1	1	1	1

$m_2 + m_5 + m_6 + m_7 =$
$(\overline{x}_2 x_1 \overline{x}_0) + (x_2 \overline{x}_1 x_0) +$
$(x_2 x_1 \overline{x}_0) + (x_2 x_1 x_0)$



2.) Given only a 3-8 one hot decoder & OR gate, implement circuit that behaves like $m_0 + m_2 + m_6$. Use x_2, x_1, x_0.

	x_2	x_1	x_0	Y_7	Y_6	Y_5	Y_4	Y_3	Y_2	Y_1	Y_0
→ 0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	1	0	0	0	0	0	0	1	0
→ 2	0	1	0	0	0	0	0	0	1	0	0
3	0	1	1	0	0	0	0	1	0	0	0
4	1	0	0	0	0	0	1	0	0	0	0
5	1	0	1	0	0	1	0	0	0	0	0
→ 6	1	1	0	0	1	0	0	0	0	0	0
7	1	1	1	1	0	0	0	0	0	0	0

$m_0 + m_2 + m_6 =$
$(\overline{x}_2 \overline{x}_1 \overline{x}_0) + (\overline{x}_2 x_1 \overline{x}_0) +$
$(x_2 x_1 \overline{x}_0)$