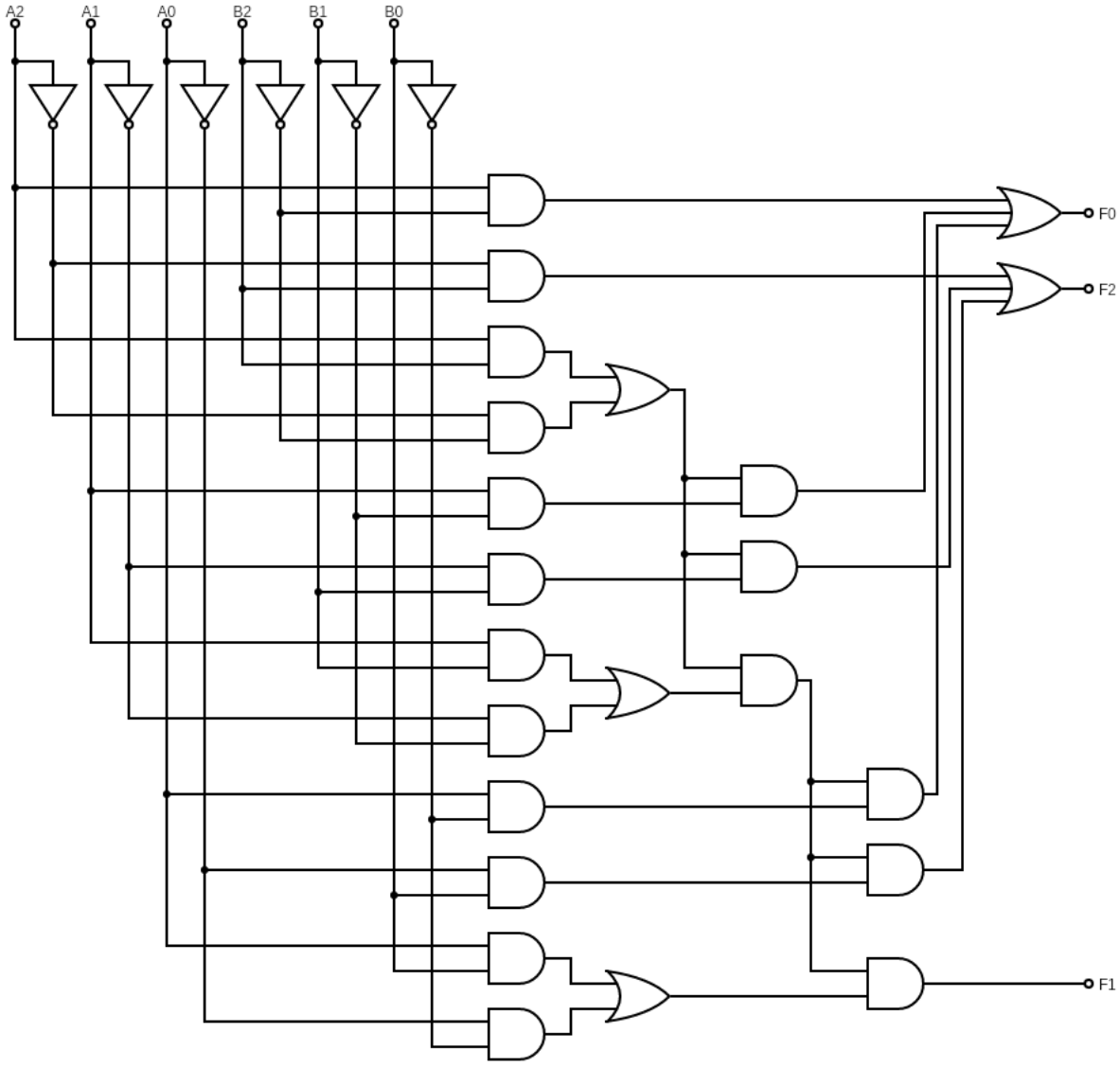
4.2 가

$F_2 = \overline{A_2}B_2 + (A_2B_2 + \overline{A_2}\,\overline{B_2})\overline{A_1}B_1 + (A_2B_2 + \overline{A_2}\,\overline{B_2})(A_1B_1 + \overline{A_1}\,\overline{B_1})\overline{A_0}B_0$

$F_1 = (A_2B_2 + \overline{A_2}\,\overline{B_2})(A_1B_1 + \overline{A_1}\,\overline{B_1})(A_0B_0 + \overline{A_0}\,\overline{B_0})$

$F_0 = A_2\overline{B_2} + (A_2B_2 + \overline{A_2}\,\overline{B_2})A_1\overline{B_1} + (A_2B_2 + \overline{A_2}\,\overline{B_2})(A_1B_1 + \overline{A_1}\,\overline{B_1})A_0\overline{B_0}$



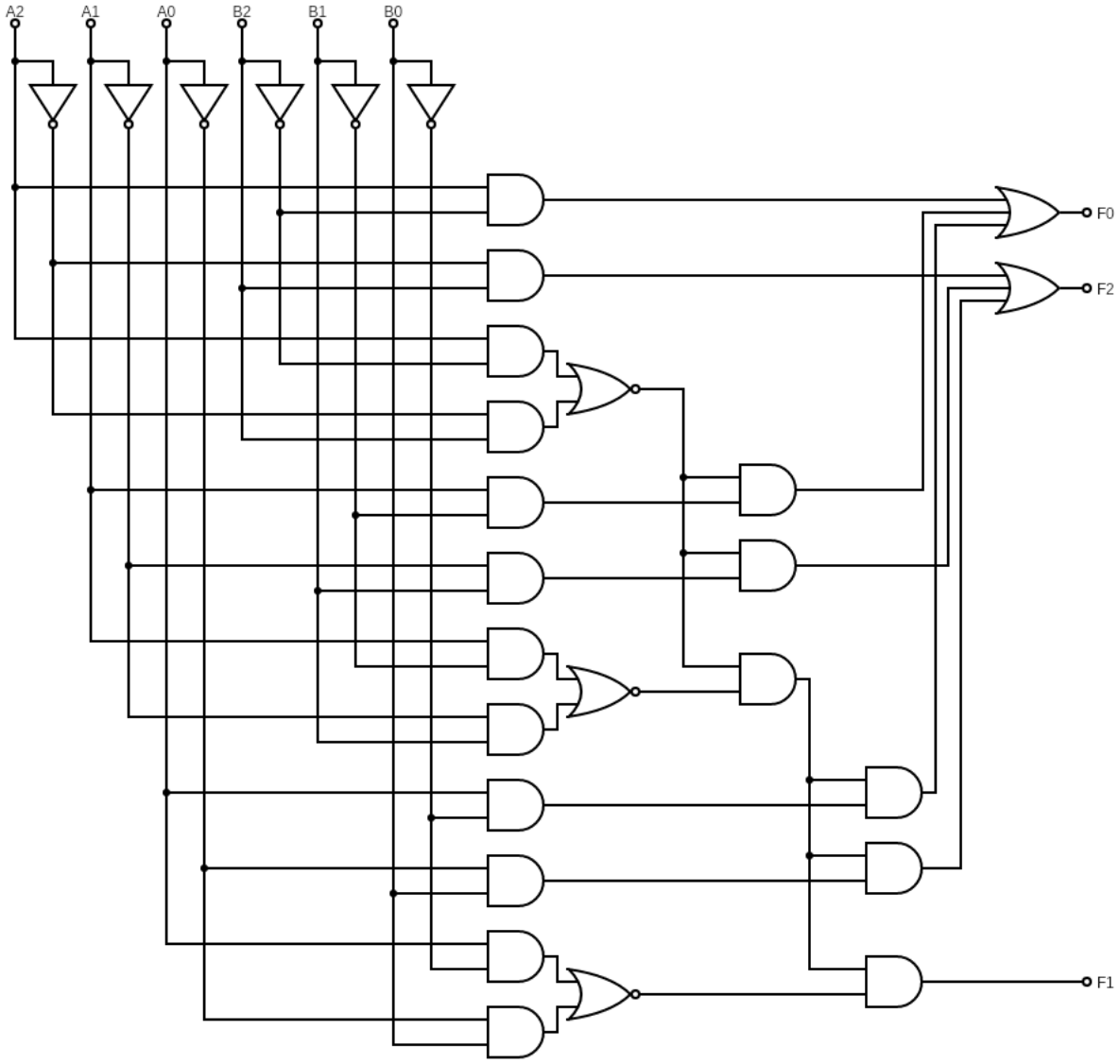
4.2 나

Using De Morgan's Theorem,

$$A_2B_2 + \overline{A_2}\,\overline{B_2} = \overline{\overline{A_2B_2}\,\overline{\overline{A_2}\,\overline{B_2}}} = \overline{(\overline{A_2} + \overline{B_2})(A_2 + B_2)} = \overline{\overline{A_2}\,A_2 + \overline{B_2}\,A_2 + \overline{A_2}\,B_2 + \overline{B_2}\,B_2} = \overline{A_2\,\overline{B_2} + \overline{A_2}\,B_2}$$

We can use AOI22 to replace AND-AND-OR gates from above.

AOI22 is expressed as two 2-input AND gates with outputs going into a 2-input NOR gate.



4.3 Pulse Shaper Circuit 가