$$\begin{array}{c} p_1 \\ p_2 \\ p_3 \\ p_4 \end{array} \left(\begin{array}{ccccccc} 1 & 1 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 \end{array} \right)$$