$$\begin{cases} a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + a_{14}x_4 = b_1 \\ a_{21}x_1 + a_{22}x_2 + a_{23}x_3 + a_{24}x_4 = b_2 \\ a_{31}x_1 + a_{32}x_2 + a_{33}x_3 + a_{34}x_4 = b_3 \\ a_{41}x_1 + a_{42}x_2 + a_{43}x_3 + a_{44}x_4 = b_4 \end{cases}$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} & a_{14} & b_1 \\ a_{21} & a_{22} & a_{23} & a_{24} & b_2 \\ a_{31} & a_{32} & a_{33} & a_{34} & b_3 \\ a_{41} & a_{42} & a_{43} & a_{44} & b_4 \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} & a_{14} & b_1 \\ 0 & a_{22}^{(1)} & a_{23}^{(1)} & a_{24}^{(1)} & b_2^{(1)} \\ 0 & a_{32}^{(1)} & a_{33}^{(1)} & a_{34}^{(1)} & b_3^{(1)} \\ 0 & a_{42}^{(1)} & a_{43}^{(1)} & a_{44}^{(1)} & b_4^{(1)} \end{pmatrix}$$

$$\begin{pmatrix} u_{11} & u_{12} & u_{13} & u_{14} & b_1 \\ m_{21} & a_{22}^{(1)} & a_{23}^{(1)} & a_{24}^{(1)} & b_2^{(1)} \\ m_{31} & a_{32}^{(1)} & a_{33}^{(1)} & a_{34}^{(1)} & b_3^{(1)} \\ m_{41} & a_{42}^{(1)} & a_{43}^{(1)} & a_{44}^{(1)} & b_4^{(1)} \end{pmatrix}$$

$$\begin{pmatrix} \textcolor{blue}{u_{11}} & \textcolor{blue}{u_{12}} & \textcolor{blue}{u_{13}} & \textcolor{blue}{u_{14}} & \textcolor{blue}{b_1} \\ \textcolor{red}{m_{21}} & a_{22}^{(1)} & a_{23}^{(1)} & a_{24}^{(1)} & b_2^{(1)} \\ \textcolor{red}{m_{31}} & 0 & a_{33}^{(2)} & a_{34}^{(2)} & b_3^{(2)} \\ \textcolor{red}{m_{41}} & 0 & a_{43}^{(2)} & a_{44}^{(2)} & b_4^{(2)} \end{pmatrix}$$

$$\begin{pmatrix} u_{11} & u_{12} & u_{13} & u_{14} & b_1 \\ m_{21} & u_{22} & u_{23} & u_{24} & b_2^{(1)} \\ m_{31} & m_{32} & a_{33}^{(2)} & a_{34}^{(2)} & b_3^{(2)} \\ m_{41} & m_{42} & a_{43}^{(2)} & a_{44}^{(2)} & b_4^{(2)} \end{pmatrix}$$

$$\begin{pmatrix} u_{11} & u_{12} & u_{13} & u_{14} & b_1 \\ m_{21} & u_{22} & u_{23} & u_{24} & b_2^{(1)} \\ m_{31} & m_{32} & a_{33}^{(2)} & a_{34}^{(2)} & b_3^{(2)} \\ m_{41} & m_{42} & 0 & a_{44}^{(3)} & b_4^{(3)} \end{pmatrix}$$

$$\begin{pmatrix} u_{11} & u_{12} & u_{13} & u_{14} & b_1 \\ m_{21} & u_{22} & u_{23} & u_{24} & b_2^{(1)} \\ m_{31} & m_{32} & u_{33} & u_{34} & b_3^{(2)} \\ m_{41} & m_{42} & m_{43} & a_{44}^{(3)} & b_4^{(3)} \end{pmatrix}$$

$$\begin{pmatrix} u_{11} & u_{12} & u_{13} & u_{14} & b_1 \\ m_{21} & u_{22} & u_{23} & u_{24} & b_2^{(1)} \\ m_{31} & m_{32} & u_{33} & u_{34} & b_3^{(2)} \\ m_{41} & m_{42} & m_{43} & u_{44} & b_4^{(3)} \end{pmatrix}$$

$$L = \begin{pmatrix} 1 & 0 & 0 & 0 \\ m_{21} & 1 & 0 & 0 \\ m_{31} & m_{32} & 1 & 0 \\ m_{41} & m_{42} & m_{43} & 1 \end{pmatrix}, \quad U = \begin{pmatrix} u_{11} & u_{12} & u_{13} & u_{14} \\ 0 & u_{22} & u_{23} & u_{24} \\ 0 & 0 & u_{33} & u_{34} \\ 0 & 0 & 0 & u_{44} \end{pmatrix}$$