

9.1

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ l_2 & 1 & 0 & 0 \\ 0 & l_3 & 1 & 0 \\ 0 & 0 & l_4 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} f_1 \\ f_2 \\ f_3 \\ f_4 \end{bmatrix}$$

$$x_1 = f_1$$

$$l_2 x_1 + x_2 = f_2$$

$$l_3 x_2 + x_3 = f_3$$

$$l_4 x_3 + x_4 = f_4$$

$$\begin{aligned} x_2 &= f_2 - l_2 x_1 \\ &\vdots \end{aligned}$$

$\left. \begin{array}{l} n = 4, \\ 3 \text{ SUB.'S}, \\ 3 \text{ MULT.'S}, \end{array} \right\}$

$\longrightarrow \left. \begin{array}{l} n-1 \text{ SUB.'S} \\ n-1 \text{ MULT.'S} \end{array} \right\} \text{ FOR FORWARD ELEM., THE OPERATION COUNT IS } O(n)$