Total number of operations

$$\begin{bmatrix} l_{11} & 0 & 0 & 0 \\ l_{21} & l_{22} & 0 & 0 \\ l_{31} & l_{32} & l_{33} & 0 \\ l_{41} & l_{42} & l_{43} & l_{44} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \\ b_4 \end{bmatrix}$$

→ This is applicable for both upper and lower triangular matrix

$$l_{11} \cdot x_1 = b_1$$

$$x_1 = \frac{b_1}{l_{11}}$$

[no of operation Here
1 division
Total = 1]

$$l_{21} x_1 + l_{22} x_2 = b_2$$

$$x_2 = \frac{b_2 - l_{21} x_1}{l_{22}}$$

no of operation Here.
1 multiplication
1 subtraction
1 division
Total = 1+1+1 = 3

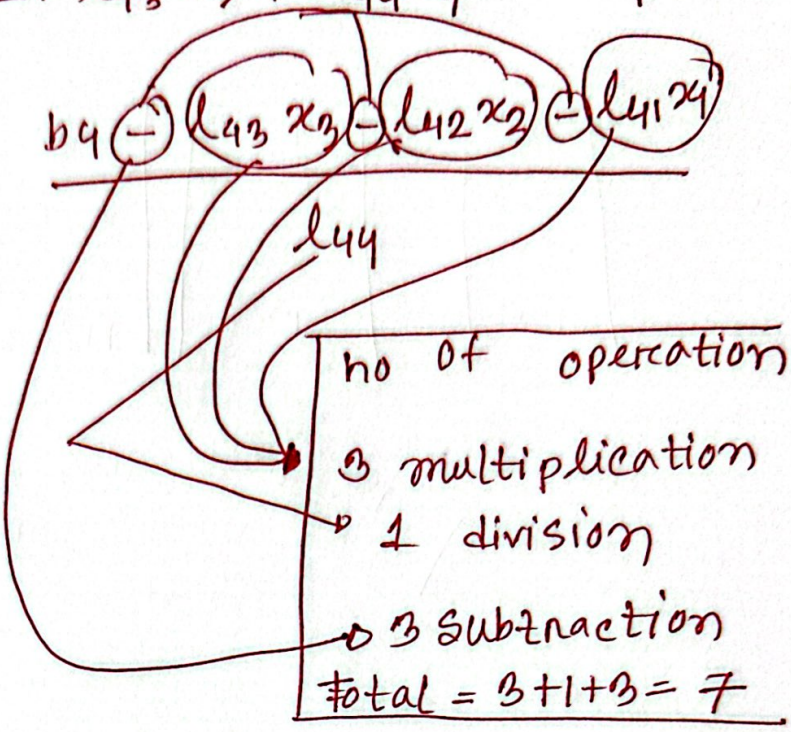
$$l_{31} x_1 + l_{32} x_2 + l_{33} x_3 = b_3$$

$$x_3 = \frac{b_3 - l_{32} x_2 - l_{31} x_1}{l_{33}}$$

no of operation
2 multiplication
2 subtraction
1 division
Total = 2+2+1 = 5

$$l_{41}x_4 + l_{42}x_2 + l_{43}x_3 + l_{44}x_4 = b_4$$

$$x_4 = \frac{b_4 - l_{43}x_3 - l_{42}x_2 - l_{41}x_4}{l_{44}}$$



∴ Total no of operation = $1 + 3 + 5 + 7$

$= 16$

$= 4^2$

if we look at our lower triangular matrix we will see it a 4×4 matrix.

So to solve this we need $16 = 4^2$ operation,

if matrix is a $n \times n$ matrix then the total no of operation will be n^2.

(This applicable for both lower triangular & upper triangular matrix)