Let $F = \mathbb{Z}_5$.

$$\left[\begin{array}{ccc|cc} 1 & 4 & 3 & 1 & 2 \\ 0 & 2 & 4 & 2 & 4 \\ 4 & 1 & 3 & 3 & 1 \end{array}\right] = \tag{1}$$

$$L_3 \to L_3 + L_1 \mid = \left[\begin{array}{ccc|cc} 1 & 4 & 3 & 1 & 2 \\ 0 & 2 & 4 & 2 & 4 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{2}$$

$$L_2 \to L_2 + L_1 \mid = \left[\begin{array}{ccc|cc} 1 & 4 & 3 & 1 & 2 \\ 1 & 1 & 2 & 3 & 1 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{3}$$

$$L_1 \to L_1 - L_2 \mid = \left[\begin{array}{ccc|cc} 0 & 3 & 1 & 3 & 1 \\ 1 & 1 & 2 & 3 & 1 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{4}$$

$$L_1 \to L_1 - L_3 \mid = \left[\begin{array}{ccc|cc} 0 & 3 & 0 & 4 & 3 \\ 1 & 1 & 2 & 3 & 1 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{5}$$

$$L_1 \to 2L_1 \mid = \left[\begin{array}{ccc|cc} 0 & 1 & 0 & 3 & 1 \\ 1 & 1 & 2 & 3 & 1 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{6}$$

$$L_2 \to L_2 - L_1 \mid = \left[\begin{array}{ccc|cc} 0 & 1 & 0 & 3 & 1 \\ 1 & 0 & 2 & 0 & 0 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{7}$$

$$L_2 \to L_2 - 2L_3 \mid = \left[\begin{array}{ccc|cc} 0 & 1 & 0 & 3 & 1 \\ 1 & 0 & 0 & 2 & 4 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{8}$$

$$\text{switch } L_1 \text{ and } L_2 \quad \mid = \left[\begin{array}{ccc|cc} 1 & 0 & 0 & 2 & 4 \\ 0 & 1 & 0 & 3 & 1 \\ 0 & 0 & 1 & 4 & 3 \end{array}\right] \tag{9}$$

Therefore, in the first case, $x_1 = 2, x_2 = 3, x_3 = 4$,
while in the second case $x_1 = 4, x_2 = 1, x_3 = 3$.