Example of diagonal dominance.

Q.1 Convert following into diagonal dominance Matrix

$$\begin{bmatrix} 8 & -3 & 2 \\ 6 & 3 & 12 \\ 4 & 11 & -1 \end{bmatrix} \begin{matrix} R_1 \\ R_2 \\ R_3. \end{matrix}$$

Sol^{n} - Interchanging $R_2 \sim R_3$

$$\begin{bmatrix} 8 & -3 & 2 \\ 4 & 11 & -1 \\ 6 & 3 & 12 \end{bmatrix}$$ is diagonal dominance

Q.2 Consider the system of equation. Convert the system so that the Matrix is diagonal dominance.

$$\begin{aligned} x_1 + 7x_2 - x_3 &= 3 \\ 5x_1 + x_2 + x_3 &= 9 \\ -3x_1 + 2x_2 + 7x_3 &= 17 \end{aligned}$$

Diagonal Dominance

$$\begin{aligned} 5x_1 + x_2 + x_3 &= 9 \\ x_1 + 7x_2 - x_3 &= 3 \\ -3x_1 + 2x_2 + 7x_3 &= 17 \end{aligned}$$

Sol^{n} - OR Rearrange equations as follows also.

$$\begin{aligned} 7x_2 + x_1 - x_3 &= 3 \\ x_2 + 5x_1 + x_3 &= 9 \\ 2x_2 - 3x_1 + 7x_3 &= 17 \end{aligned}$$

Now Matrix will be diagonal dominan

The solution appear in order x_2, x_1 and x