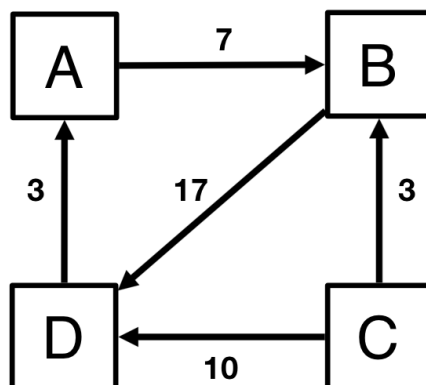# Massey Method for Ranking

Let's rank Teams A, B, C and D for the season below.

First, we create the 4×4 matrix. We will let row 1 correspond to Team A, row 2 to Team B, row 3 to Team C and row 4 to Team D. Therefore, the matrix becomes:

$$\begin{bmatrix} 2 & -1 & 0 & -1 \\ -1 & 3 & -1 & -1 \\ 0 & -1 & 2 & -1 \\ -1 & -1 & -1 & 3 \end{bmatrix}.$$

The righthand side vector becomes

$$\begin{bmatrix} 4 \\ 7 \\ 13 \\ -24 \end{bmatrix}.$$

Replacing the last row of the matrix with ones and the last element of the vector with a 0, we want to solve the system:

$$\begin{bmatrix} 2 & -1 & 0 & -1 \\ -1 & 3 & -1 & -1 \\ 0 & -1 & 2 & -1 \\ 1 & 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} A \\ B \\ C \\ D \end{bmatrix} = \begin{bmatrix} 4 \\ 7 \\ 13 \\ 0 \end{bmatrix}.$$

Therefore, the ratings vector is:

$$\begin{bmatrix} -0.125 \\ 1.75 \\ 4.375 \\ -6 \end{bmatrix}.$$

So, the teams (from best to worst) would be ranked C, B, A, D.