In the questions below convert the system to matrix form \( AX = B \). Then find a series of elementary matrices that converts the system \( AX = B \) to \( UX = B' \), where \( U \) is upper triangular and \( B' \) is a vector derived from \( B \).

1.

\[
\begin{align*}
2x + 3y + 4z &= 2 \\
2x + 4y + 5z &= 5 \\
5x + 6y + 7z &= 1
\end{align*}
\]
2.

\[2x + 3y + 4z = 2\]
\[2x + 4y + 5z = 5\]
\[4x + 6y + 7z = 1\]
\[5x + 6y + 7z = 1\]

3.

\[2x + 3y + 4z + w = 2\]
\[2x + 3y + 5z + 2w = 5\]
\[2x + 3y + 5z + 8w = 5\]
4. Find the LU factorization of the following matrix:

\[ A = \begin{bmatrix}
  2 & -1 & 0 \\
-1 & 2 & -1 \\
 0 & -1 & 2
\end{bmatrix} \]