Assignment-3

Problem-2: Solve the following set of equations using an LU decomposition program. Then move on the find the inverse of the coefficient matrix A.

$3.0x_1 - 0.1x_2 - 0.2x_3 = 7.85$
$0.1x_1 + 7.0x_2 - 0.3x_3 = -19.3$
$0.3x_1 - 0.2x_2 + 10.0x_3 = 71.4$

Problem-1: Write a program for Cholesky's decomposition to the symmetric matrix $A = \begin{bmatrix} 4 & 3 & 2 & 1 \\ 3 & 3 & 2 & 1 \\ 2 & 2 & 2 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$. You have to show that $A = \mathcal{L}\mathcal{L}^T$, where $\mathcal{L}$ is a lower triangular matrix.