Instructions for preparing the solution script:

- Write your name, ID#, and Section number clearly in the very front page.
- Write all answers sequentially.
- Start answering a question (not the part of the question) from the top of a new page.
- Write legibly and in orderly fashion maintaining all mathematical norms and rules. Prepare a single solution file.
- Start working right away. There is no late submission form. If you miss the deadline, you need to use the make-up assignment to cover up the marks.

A linear system is described by the following equations.

$$\begin{aligned} 2x + y - z &= 1 \\ x + 2y + z &= 0 \\ -x - y + 2z &= 2 \end{aligned}$$

1. (10 marks) From the given linear systen, start with Aug$(A|d)$, and using the Gaussian elimination method, evaluate the upper triangular matrix U. Note that you have to show the row multipliers m_{ij} and row subtractions for each step as necessary.
2. (6 marks) Using the upper triangular matrix U found in the previous question, compute the solution of the given linear system by Gaussian elimination method.
3. (6 marks) For the same linear system,, evaluate the Frobenius matrices for the given system.
4. (2 marks) Evaluate the unit lower triangular matrix L using the Frobenius matrices found in the previous question.
5. (6 marks) Now compute the solution of the given linear system using LU-decomposition method. Use the matrices L and U found in the previous questions. Show your works. Note that the solution must be the same as the solution found in Gaussian method.