

## CMPUT 340 PA1 Writeup

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### Question 2D.

Given a linear system as follows:

- Matrix 'A' (nxn)
- Result vector 'b' (nx1)

And a goal to find unknown vector '**x**' (nx1) such that **Ax = b**, we can use the functions I wrote as follows:

1. Call  $[L, U] = \text{myLU}(A)$  in order to get the LU decomposition of **A**, with the lower triangular component in **L** and the upper triangular component in **U**.
2. Call  $y = \text{fwdSubst}(L, b)$  in order to get the solution vector (**y**) for the system **Ly = b**
3. Call  $x = \text{backSubst}(U, y)$  in order to get the solution vector (**x**) for the system **Ux = y** and therefore the solution to the original system **Ax = b**
4. Check answer to the original system by calling **A \* x** and notice that it is equal to **b**

An example of carrying out this procedure for a 2x2 matrix exists inside the attached demo\_solve\_linear\_system.m script.