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AMSC 460 - HW7

```
clear all; format compact; close all; syms f(x) x y
```

Problem 1

Obtain the precise operation count (number of operations $+, -, *, /$) for computing a matrix-matrix product AB. Suppose each matrix is $n \times n$.

Since LU decomposition is O(n^2) The total of 0.001 seconds solving Cx=b using an LU decomposition Solving Ax =b using LU may take 0.0001* ((10^12)/(10^4))= 10^5 seconds which will be around 28 hours, in that case we will not consider LU to solve Ax = b

Problem 2

Find the P A = LU decomposition (using partial pivoting) for the matrix A = [2 1; 4 3] All calculations should be recorded and done by hand. Check your answer using MATLAB's lu command.

```
 A = [2 1; 4 3]
 [L,U,P] = lu(A)
```

```
A =
     2     1
     4     3
L =
    1.0000         0
    0.5000    1.0000
U =
    4.0000    3.0000
         0   -0.5000
P =
     0     1
     1     0
```

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