261: First Assessment

Deadline: 17th January, 2003

Write a program that solves $Ax = y$ for x, where y is a general vector and A a general matrix. Your program should read in A and y from separate files and use gaussian elimination to make the equation $Ax = y$ diagonal, before applying backwards substitution to solve for x.

Use the `#define` command to declare a variable at the start of your program that contains the dimension of the vector and use that variable when you need to explicitly refer to the size of the matrix or vector. This will ensure that, when you want to change the size, you should only have to change the value in the `#define` command and not modify the rest of the code.

Test your program on the following example

$$A = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 6 & 7 & 8 & 9 & 10 \\ 1 & 2 & 5 & 5 & 4 \\ 2 & 2 & 2 & 4 & 2 \\ 1 & 11 & 3 & 6 & 6 \end{pmatrix} \quad y = \begin{pmatrix} 48 \\ 118 \\ 57 \\ 36 \\ 77 \end{pmatrix}$$