PROJECT 3

Write a code that solves an $n \times n$ system by the Jacobi and Gauss-Seidel methods.

Use your code to solve the following example for verification:

$$\begin{bmatrix} 5 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 6 \\ -2 \\ 17 \end{bmatrix}.$$

Use the vector

$$\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$$

as the initial guess for both methods, and solve the linear system up to the tolerance 10^{-6}. Compare the efficiency of the two methods using the relation between the error and the iteration steps.

Matlab or Python is suggested. Email your code to `xlwan@math.lsu.edu` with the subject **math4064_Project_03**.