Assignment-6

Problem-1: Consider the symmetric matrix

$$\text{A}= \begin{bmatrix} 2 & \sqrt{3} \\ \sqrt{3} & 4 \end{bmatrix}$$

and obtain the eigenvalues using the Jacobi method by computing t, c and s. Once you find the eigenvalues, verify the relation $D = R^T AR$.

Where R is the rotation matrix.

$$\text{R}= \begin{bmatrix} c & s \\ -s & c \end{bmatrix}$$

and D is a diagonal matrix with eigenvalues of A as the diagonal elements.

Ans: Eigenvalues of A are 1 and 5.

Problem-2 : Use the Jacobi iteration method to diagonalise the following matrix and obtain the final transformation matrix.

$$\text{A}= \begin{bmatrix} 8 & -1 & 3 & -1 \\ -1 & 6 & 2 & 0 \\ 3 & 2 & 9 & 1 \\ -1 & 0 & 1 & 7 \end{bmatrix}$$