Lab Report

Group 4

November 23, 2020

Q3.

$tol = 10^{-10}$

$$A = \begin{bmatrix} 1 & 1 & 1 \\ -1 & 9 & 2 \\ 0 & -1 & 2 \end{bmatrix}$$

Output of $[B, k] = \text{CallFrancis}(A, m, tol)$ is:

For $m = 1$ i.e. FrancisQRS

$k = 4$

$$B = \begin{bmatrix} 8.5887e + 00 & 1.3560e + 00 & 3.3425e + 00 \\ -2.3253e - 02 & 1.2164e + 00 & -9.6205e - 01 \\ 0 & 9.6083e - 13 & 2.1949e + 00 \end{bmatrix}$$

For $m = 2$ i.e. FrancisQRD

$k = 4$

$$B = \begin{bmatrix} 1.2207e + 00 & 1.3768e + 00 & 1.5533e + 00 \\ 1.1050e - 14 & 8.5796e + 00 & 3.1230e + 00 \\ 0 & 9.8533e - 03 & 2.1997e + 00 \end{bmatrix}$$

$$A = \begin{bmatrix} 1 & 1 & 1 \\ -1 & 3 & 2 \\ -4 & -1 & 2 \end{bmatrix}$$

Output of $[B, k] = \text{CallFrancis}(A, m, tol)$ is:

For $m = 1$ i.e. FrancisQRS

$k = 6$

$$B = \begin{bmatrix} 2.1269e + 00 & -2.4424e + 00 & 3.4363e + 00 \\ 2.6603e + 00 & 2.6333e + 00 & -3.9348e - 01 \\ 0 & 8.0182e - 21 & 1.2399e + 00 \end{bmatrix}$$

For $m = 2$ i.e. FrancisQRD

$k = 6$

$$B = \begin{bmatrix} 2.1045e + 00 & -2.5553e + 00 & -3.4427e + 00 \\ 2.5474e + 00 & 2.6557e + 00 & -3.3261e - 01 \\ 0 & -1.5874e - 13 & 1.2399e + 00 \end{bmatrix}$$