ME685 HW4

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$$Ax = b$$

The task is to solve for x using **Gauss-Seidel**, where A and b are known non-singular matrix and vector respectively.

The code is attached with the submission.

For the matrix given:

$$A = \begin{bmatrix} 4 & 1 & 1 & 1 \\ 1 & 4 & 1 & 1 \\ 1 & 1 & 4 & 1 \\ 1 & 1 & 1 & 4 \end{bmatrix}; b = \begin{bmatrix} 7 \\ 7 \\ 7 \\ 7 \end{bmatrix}$$

After solving, we get x as:

$$x = \begin{bmatrix} 0.99 \\ 1 \\ 1 \\ 1 \end{bmatrix}$$

A snapshot of the Result of the code:

```
aman@xps  ~/ME685  f95 seidel.f90
aman@xps  ~/ME685  ./a.out
A Matrix:
  4.00000000       1.00000000       1.00000000       1.00000000
  1.00000000       4.00000000       1.00000000       1.00000000
  1.00000000       1.00000000       4.00000000       1.00000000
  1.00000000       1.00000000       1.00000000       4.00000000
B Matrix:
  7.00000000
  7.00000000
  7.00000000
  7.00000000
Number of Iterations Required=  10
 Result Matrix:
  0.999999762
  1.00000000
  1.00000000
  1.00000000
```