Statement of the Problem

We are expected to solve the displacement problem for the given eight storied industrial structure using Gauss elimination with pivoting.

Algorithm

Gauss Elimination with pivoting:-

- Matrix A from the form Ax = b, needs to be factorised into an upper triangular matrix.
- We can use pivoting to achieve the above stated solution as it has higher accuracy
- We then solve for the vector x using back substitution starting from the last independent variable x_n.

Results

The results presented by the program are as follows:

- *X1 = 0.6999*
- *X2 = 1.2066*
- *X3 = 1.6667*
- *X4 = 2.2861*
- *X5 = 2.4562*
- *X6 = 31.8527*
- *X7 = 32.0093*
- *X8 = 32.2650*

Comments

1. ***This method has a time complexity of $O(n^3)$***

2. ***We can solve this system of equations in under a second which is very fast, since it would be a very slow process for 8 equations with hand calculation.***