

## Step-1

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For  $Ax = b$  with  $A = \text{ones}(4, 4)$  is a singular matrix and so not invertible.

So, considering  $b = \text{rand}(4, 1)$ , to find the solution through MATLAB, it considers

$x = A^{-1}b$  which does not exist.

So, obviously it displays that  $Ax = b$  has no solution.

## Step-2

By putting  $b = \text{ones}(4, 1)$ , the system reduces to one non zero row and all other rows zero in A/b.

So, it will pick  $x = (1, 0, 0, 0)$  and  $\text{pinv}(A) * b$  and the shortest solution  $x = (1, 1, 1, 1) / 4$