Contents


```
% HW 1 Problem 1(b)
% Demonstrate simple forward elim. & back sub. method

clear
clc
close all

load('testproblem.mat')
```

Use the simple forward elimination function to solve the same system (exclude scaled pivoting)

```
[Awork,xsoln,xmat,Errr] = simforel(A,b);
```

```
elim([Aref,bref]) =
  Columns 1 through 7

   -1.0149   -2.1321    2.1778   -0.2730   -0.7841   -0.4677   -0.2841
         0    2.1349    0.1277    1.7030   -1.4414    0.0922    0.0452
         0         0   -2.1480    0.2136    1.1336    1.4554   -1.4883
         0         0         0    0.8624   -0.8568   -0.8022    0.3901
         0         0   -0.0000         0    0.1172    1.3485   -0.9577
         0         0    0.0000         0         0   -8.6038    6.3411
         0         0   -0.0000         0         0         0    0.7162
         0         0   -0.0000         0         0         0   -0.0000

  Columns 8 through 9

   -0.2883  -10.8600
    0.4839    8.9982
   -1.6670  -14.9430
    1.3688    8.0335
    1.1407   11.0994
  -11.5207  -99.4011
    7.2391   62.9261
   13.5981  108.7849

Elimination/back sub solution:
    1.0000
    2.0000
    3.0000
    4.0000
    5.0000
    6.0000
    7.0000
    8.0000

Matlab,GNU/Octave built-in solution:
    1.0000
    2.0000
```

```
     3.0000
     4.0000
     5.0000
     6.0000
     7.0000
     8.0000

The error is:
   1.0e-13 *

    0.0022
   -0.0067
   -0.0888
   -0.0933
   -0.1332
   -0.0622
   -0.0444
   -0.0089
```

Use the Gaussian elimination function to solve the same system (include scaled pivoting)

```
[Amod,ord]=Gauss_elim(A,b);

xgauss=backsub(Amod(ord,:));
disp('Back substitution solution using Gaussian elimination result:  ');
disp(xgauss);
```

```
Back substitution solution using Gaussian elimination result:
    1.0000
    2.0000
    3.0000
    4.0000
    5.0000
    6.0000
    7.0000
    8.0000
```

Compare against Gaussian elimination function result

```
Errr = xgauss - xsoln;
disp('The error is:  ');
disp(Errr);
```

```
The error is:
   1.0e-13 *

   -0.0278
   -0.0022
   -0.1021
   -0.0977
   -0.1155
   -0.0444
   -0.0622
```

```
    0.0089
```

Published with MATLAB® R2020b