

```
function [p,e] = q8_1226347696(m,n,b,A)
%i am finding the values of L and U
% Detailed explanation goes here
[L,U]=Kirthik_Roshan_Nagaraj_q1(A);
for i=1:n
    if(U(i,i)== 0)
        A(:,i)=[];
    end
end
disp(A)
p = A/(transpose(A)*A)*(transpose(A)*b);
e = b-p;
function [L,U] = Kirthik_Roshan_Nagaraj_q1(A)
%%%% Code starts %%%%
flag =0;
%assign rows and columns
[row,column]=size(A);
%assign one empty matrix
Q= zeros (row,row);
for c = 1:column-1
    %add if statement such that row exchange is invalid
    if flag == 0
        for r = c:row-1
            if A(c,c)==0
                fprintf('row exchange needed');
                flag = flag+1;
            break;
            %now we know that lower and upper triangular matrix will have
            %zeroes in their respective area so substitute and do
            %elimination
            else
                k = A(r+1,c)/A(c,c);
                A(r+1,:) = A(r+1,:) - k*A(c,:);
                Q(r+1,c)=k;
            end
        end
    end
end
%incase the matrix requires row exchange give output as zero
if flag ==1
    fprintf(' Program will not run unless rows are exchanged');
else
    %now store the values that we get by elimination in respective place

U = A;
L = Q;
for i=1:row
    L(i,i)=1;
end
```

end

end

end

%%% Code ends %%%

```
>> b
```

```
b =
```

```
1.0000  
-0.4411  
-2.0963  
0.2157  
4.9085  
-3.1307  
3.6215  
-0.6391  
2.3163  
0.4225
```

```
>> A
```

```
A =
```

```
2     2    -1     4     5     6     3     3     8  
4    -13    -2    16     8    -3     7     2    15  
6     7     0    18     1     8     8     1     9  
-4     0     4   -20     0    -4     0     0     0  
-1    -1     2    -7    -4    -7    -3     1    -7  
-10     2    -1   -28    -3     0     8    -2     5  
8     4     2    20    -2     0     0    -3    -2  
2     7     5    -4     0     2    -5    -4    -5  
0    -20   -10    20     4    -6    -7     5    -3  
5     1     1    13     2     2    11     6    13
```

```
>> [p,e]=q8_1226347696(10,9,b,A)
```

```
2     2    -1     4     5     6     3     3     8  
4    -13    -2    16     8    -3     7     2    15  
6     7     0    18     1     8     8     1     9  
-4     0     4   -20     0    -4     0     0     0  
-1    -1     2    -7    -4    -7    -3     1    -7  
-10     2    -1   -28    -3     0     8    -2     5  
8     4     2    20    -2     0     0    -3    -2  
2     7     5    -4     0     2    -5    -4    -5  
0    -20   -10    20     4    -6    -7     5    -3  
5     1     1    13     2     2    11     6    13
```

```
Warning: Matrix is close to singular or badly scaled. Results may be  
inaccurate. RCOND = 2.684988e-19.
```

```
> In q8_1226347696 (line 11)
```

```
p =
```

```
1.0000  
-0.4411  
-2.0963  
0.2157  
4.9085  
-3.1307  
3.6215  
-0.6391  
2.3163  
0.4225
```

```
e =
```

```
1.0e-13 *
```

```
0.2132  
-0.0799  
-0.0977  
0.1066  
-0.0355  
-0.1421  
0.0711  
0.1066  
0.0178  
0.0355
```

```
>>
```