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% generate a upper triangular matrix
n=4;
U=rand(n);
U=triu(U);

%generate a vector b
b=rand(n,1);

%solution of Ax=b by my backward substitution method

x=backwardsub(U,b);

%solution by build in matlab command
y=U\b;

function [x] = backwardsub(U, b);

% Call: [x] = backwardsub(U, b);
%
% Backward substitution to solve upper triangular linear system
%  $U x = b$ 
%
% Input:
%   U: n by n upper triangular matrix,
%   b: right hand side vector of size n,
% Output:
%   x: solution vector of size n

n = length(b);

for j=n:-1:1
    if ( U(j,j) == 0 )
        Error('Singular matrix');
    end
    x(j) = b(j)/U(j,j);
    b(1:j-1) = b(1:j-1) - U(1:j-1,j) * x(j);
end
x = x';
end

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