```
% demo_Jacobi.m

function [iteration, xnew] = jacobi(A,b)
%# of equations
n = length(b);
x = zeros(n,1);
xnew = zeros(n,1);

%initial guess for the solution
x(:) = 0;
iterLimit = 1000;
tol = 1e-6;

for iteration = 1 : iterLimit
    convergence = true;
    for i = 1 : n  %loop of equations
        Sum = 0;
        for j = 1 : n
            if j ~= i
                Sum = Sum + A(i,j)*x(j);
            end
        end
        xnew(i) = -1/A(i,i) * (Sum - b(i));
        if norm(xnew(i) - x(i), inf) > tol
            convergence = false;
        end
    end
    if convergence
        break
    end
    x = xnew;
end
x
end
```