```
% 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
end
```