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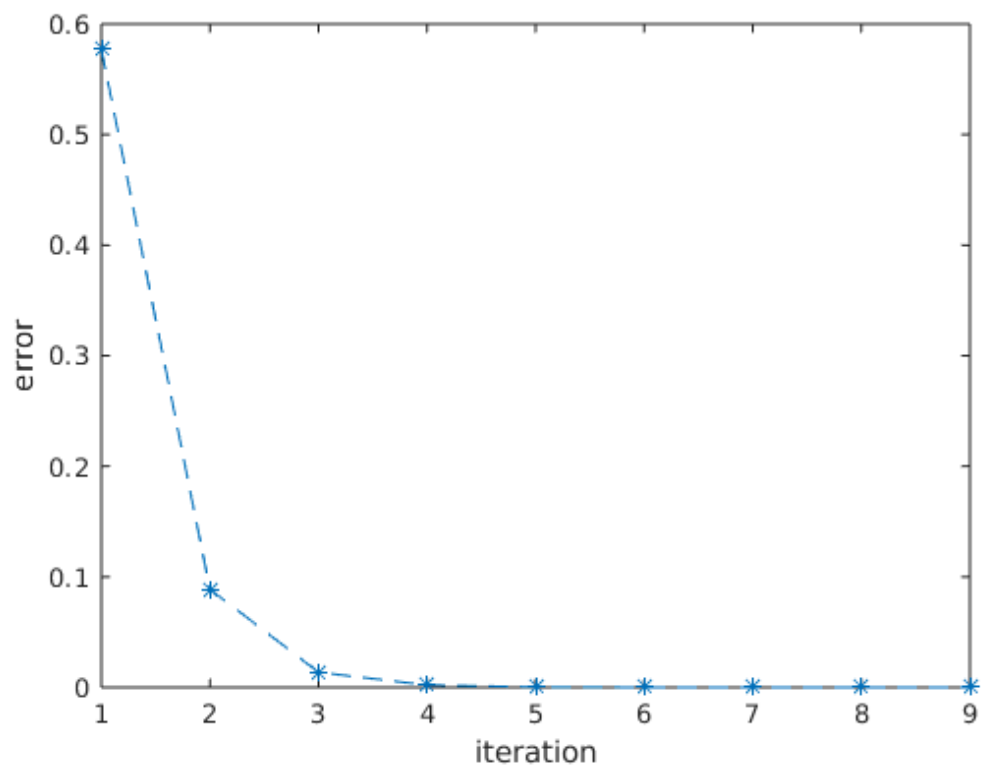
## Driver

```
% specify all inputs
A=[13,1,1;1,13,1;1,1,13];
b=[15,15,15];
x0=[0.5,0.5,0.5];
N_max=1000;
tol=1e-6;
% call the function using the inputs to get outputs
[N_iter, sol,errors]=gauss_jacobi(A,b,x0,tol,N_max);
% display the solution
disp('The solution is:')
fprintf('x(%d)=%f\n',[1:length(x0);sol])
% plot the error
plot(errors,'--*')
xlabel('iteration')
ylabel('error')
```

## The main function

```
function [N_iter, sol,errors]=gauss_jacobi(A,b,x0,tol,N_max)
k=1;
n=length(x0);
x=x0;
errors=zeros(1,N_max);
while k<=N_max
    for i=1:n
        sum=0;
        for j=1:n
            if i~=j
                sum=sum+A(i,j)*x0(j); % For Gauss-Seidal method just
replace x0 by x
            end
        end
        x(i)=(1/A(i,i))*(b(i)-sum);
    end
    errors(k)=max(abs(x-x0));
    if errors(k)<tol % infinity norm
        break
    end
    k=k+1; x0=x;
end
sol=x;
N_iter=k;
errors(k+1:end)=[];
end

The solution is:
x(1)=1.000000
x(2)=1.000000
x(3)=1.000000
```



*Published with MATLAB® R2019b*