
```

function hw4_q1

Alphas = [0, 1.0, 10.0, 100.0, 1000.0, 10000, 100000, 1000000];
n = 200;
tot_it = 100;

list_of_errors = zeros(1,length(Alphas));

for alpha=1:length(Alphas)
    %Generate Linear System
    [A,b] = generate_SPD_mat_and_rhs_vec(n, Alphas(alpha));

    %Compute Solution
    x_jacobi = my_jacobi(A,b,tot_it); %compute solution with your
    my_jacobi() function

    %"True" Solution
    x_t = A\b;

    %Errors
    err_jacobi = norm(x_t - x_jacobi) / norm(x_t); %compute norm of
    the error

    list_of_errors(alpha) = err_jacobi;

end

% Displaying errors in a table
T = table(Alphas',list_of_errors');
T.Properties.VariableNames = {'Alpha' 'Error'};
disp(T);

```

<i>Alpha</i>	<i>Error</i>
0	0.944471330027103
1	0.936079638953875
10	0.861133608013171
100	0.544520539554531
1000	0.0831566352544916
10000	7.09744911624351e-07
100000	3.21488803913428e-16
1000000	5.81430693565121e-18

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