
```
clear, clc;
close all;

%declaring and initializing variables
n = 4;
a = 2.*ones(1,n); % a(1) = 1
b = -5.*ones(1,n);
c = 2.*ones(1,n);
d = [-3,-1,-1,-3];
z = THOMAS3(a,b,c,d,n)

%problem 1
function x = THOMAS3(a,b,c,d,n)

    %initial condition
    bbar(1) = b(1);
    cbar(1) = c(1);
    dbar(1) = d(1);

    %making upper triangle
    for i = 2:n
        multiplier = a(i)./bbar(i-1);
        abar(i) = a(i) - bbar(i-1).*multiplier;
        bbar(i) = b(i) - cbar(i-1).*multiplier;
        cbar(i) = c(i);
        dbar(i) = d(i) - dbar(i-1).*multiplier;
    end

    %initialize x of size n
    x = ones(1,n);

    %initialize end condition
    x(n) = dbar(n)/bbar(n);

    % Upward substitution AKA zip it up
    for i = n-1:1
        x(i) = (dbar(i)-(bbar(i)*x(i+1)))/cbar(i);
    end
end
% end problem 1

z =

    1    1    1    1
```