



College of Engineering and Physics
Electrical Engineering Department

EE562 - Digital Signal Processing I

Second Semester (212)

Computer Assignment 4

Solved By: Mahmoud Yassin

ID: 202113650

Supervised by: Dr. Wail A. Mousa

```

%Assignment 4
% Done by Mahmoud Yassin Mahmoud
% ID: 202113650
% Submitted To Dr. Wail A. Mousa
% Bism Allah and I will start with
%(Q1):
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
clc;
clear;
%.....
num1 = [2 5 1];% numerator coefficients for H1(z)
den1 = [1 2 3];% denominator coefficients for H1(z)

%-----
num2 = [1];% numerator coefficients for H2(z)
den2 = [1 -5/6 1/6];% denominator coefficients for H2(z)

%-----
H1 = tf(num1, den1, 0.1) % Transfer Function H1(Z)
sprintf('\n')
H2 = tf(num2, den2, 0.1) % Transfer Function H2(Z)

%-----
% Calculation of poles and zeros for H1(z)
    poles1 = pole(H1)
    zeros1 = zero(H1)

%-----
% Calculation of poles and zeros for H2(z)
    poles2 = pole(H2)
    zeros2 = zero(H2)

%-----
%ploting
figure

subplot(211)
    pzmap(H1)
    title('the pole-zero map for H1(z)')

subplot(212)
    pzmap(H2)
    title('the pole-zero map for H1(z)')

```

H1 =

$$\frac{2z^2 + 5z + 1}{z^2 + 2z + 3}$$

Sample time: 0.1 seconds
Discrete-time transfer function.

ans =

,

H2 =

$$\frac{1}{z^2 - 0.8333 z + 0.1667}$$

Sample time: 0.1 seconds

Discrete-time transfer function.

poles1 =

$$\begin{aligned} &-1.0000 + 1.4142i \\ &-1.0000 - 1.4142i \end{aligned}$$

zeros1 =

$$\begin{aligned} &-2.2808 \\ &-0.2192 \end{aligned}$$

poles2 =

$$\begin{aligned} &0.5000 \\ &0.3333 \end{aligned}$$

zeros2 =

0×1 empty double column vector

