

%Design of IIR filter using Bilinear transform/Butterworth

%1)Design of IIR filter using Bilinear transform

clc;

clear all;

b=input('enter numerator coefficients :');

a=input('enter denorenter coefficients :');

f=input('enter the sampling frequency :');

[bz,az]=bilinear(b,a,f)

Output:

enter numerator coefficients :[1 2]

enter denorenter coefficients :[1 3 2]

enter the sampling frequency :5

bz =0.0909 0.0303 -0.0606

az =1.0000 -1.4848 0.5455

%20Design of IIR filter using Butterworth Technique

clc;

clear all;

alphap=0.4;

alphas=30;

fp=400;

F=5;

fs=800;

f=2000;

wp=2*fp/f;

ws=2*fs/f;

w=0:0.001:pi;

[n,wn]=buttord(wp,ws,alphap,alphas);

[b,a]=butter(n,wn)

[bz,az]=bilinear(b,a,F)

[h,om]=freqz(b,a,w)

m=20.*log10(abs(h));

an=angle(h)

subplot(2,1,1)

plot(om/pi,m)

xlabel('Gain in db')

ylabel('Normalised frequency')

grid on

subplot(2,1,2)

plot(om/pi,an)

xlabel('Phase in radians')

ylabel('Normalised frequency')

grid on