College Name: - Walchand College of Engineering, Sangli
Year: - Third Year
Name: - Om Ajit Patil
PRN: - 2020BTEEN00058
Subject: - Digital Signal System Lab
Batch: - EN3

Code

```
%set up the filter coefficients
b = [-6.76195,13.456335,-6.76195];

% set initial conditions to zero values
zi = [0 0];

% generate the two sinusoidal sequences
n = 0:99;

x1 = cos(0.1*n)
x2 = cos(0.4*n)

% generate the filter output sequences
y = filter(b,1,x1+x2,zi);

% numerator coefficients in vector b, denominator in vector a
% initial conditions of zi+
% plot the input and output sequences

plot(n,y,'r',n,x2,'b',n,x1,'-*');grid
axis([0 100 -1.2 4]);
ylabel('Amplitude');
xlabel('Time index n');
legend('y[n]','x2[n]','x1[n]')
```

Output

```
Exp6

x1 =

  Columns 1 through 20

    1.0000    0.9950    0.9801    0.9553    0.9211    0.8776    0.8253    0.7648
0.6967    0.6216    0.5403    0.4536    0.3624    0.2675    0.1700    0.0707   -
0.0292   -0.1288   -0.2272   -0.3233

  Columns 21 through 40

   -0.4161   -0.5048   -0.5885   -0.6663   -0.7374   -0.8011   -0.8569   -0.9041
-0.9422   -0.9710   -0.9900   -0.9991   -0.9983   -0.9875   -0.9668   -0.9365   -
0.8968   -0.8481   -0.7910   -0.7259

  Columns 41 through 60

   -0.6536   -0.5748   -0.4903   -0.4008   -0.3073   -0.2108   -0.1122   -0.0124
0.0875    0.1865    0.2837    0.3780    0.4685    0.5544    0.6347    0.7087
0.7756    0.8347    0.8855    0.9275

  Columns 61 through 80

    0.9602    0.9833    0.9965    0.9999    0.9932    0.9766    0.9502    0.9144
0.8694    0.8157    0.7539    0.6845    0.6084    0.5261    0.4385    0.3466
0.2513    0.1534    0.0540   -0.0460

  Columns 81 through 100

   -0.1455   -0.2435   -0.3392   -0.4314   -0.5193   -0.6020   -0.6787   -0.7486
-0.8111   -0.8654   -0.9111   -0.9477   -0.9748   -0.9922   -0.9997   -0.9972   -
0.9847   -0.9624   -0.9304   -0.8892


x2 =

  Columns 1 through 20

    1.0000    0.9211    0.6967    0.3624   -0.0292   -0.4161   -0.7374   -0.9422
-0.9983   -0.8968   -0.6536   -0.3073    0.0875    0.4685    0.7756    0.9602
0.9932    0.8694    0.6084    0.2513

  Columns 21 through 40

   -0.1455   -0.5193   -0.8111   -0.9748   -0.9847   -0.8391   -0.5610   -0.1943
0.2030    0.5683    0.8439    0.9862    0.9728    0.8059    0.5117    0.1367   -
0.2598   -0.6154   -0.8737   -0.9942

  Columns 41 through 60

   -0.9577   -0.7699   -0.4607   -0.0787    0.3157    0.6603    0.9006    0.9988
0.9392    0.7314    0.4081    0.0204   -0.3706   -0.7030   -0.9245   -1.0000   -
0.9176   -0.6903   -0.3541    0.0380
```

```
  Columns 61 through 80

    0.4242    0.7433    0.9452    0.9977    0.8928    0.6469    0.2989   -0.0963
-0.4763   -0.7811   -0.9626   -0.9921   -0.8650   -0.6013   -0.2427    0.1543
0.5268    0.8162    0.9768    0.9831

  Columns 81 through 100

    0.8342    0.5536    0.1856   -0.2117   -0.5756   -0.8486   -0.9876   -0.9707
-0.8006   -0.5041   -0.1280    0.2684    0.6223    0.8780    0.9951    0.9551
0.7643    0.4528    0.0699   -0.3241
```