```
clc;

xn = input('enter the sequence xn = ');
hn = input('enter the impulse response = ');

L = length(xn);
M = length(hn);
N = max(L, M);

XX = fft(xn, N);
HH = fft(hn, N);

for i = 1:N
    YK1(i) = XX(i) * HH(i);
end

YK2 = XX .* HH;
yn1 = ifft(YK1);
yn2 = ifft(YK2);

% Linear convolution using padding
N1 = L + M - 1;
XX = fft(xn, N1);
HH = fft(hn, N1);

for i = 1:N1
    YK1(i) = XX(i) * HH(i);
end

YK2 = XX .* HH;
yn1 = ifft(YK1);
yn2 = ifft(YK2);

k = 0:1:N1-1;

subplot(4,1,1);
stem(k, abs(yn1));
xlabel('k');
ylabel('mag Yn1');
title('Magnitude plot');

subplot(4,1,2);
stem(k, angle(yn1));
xlabel('k');
ylabel('angle YK1');
title('Phase plot');

subplot(4,1,3);
stem(k, abs(yn2));
xlabel('k');
ylabel('mag YK1');
```

```
title('Magnitude plot');

subplot(4,1,4);
stem(k, angle(yn2));
xlabel('k');
ylabel('angle YK1');
title('Phase plot');
```