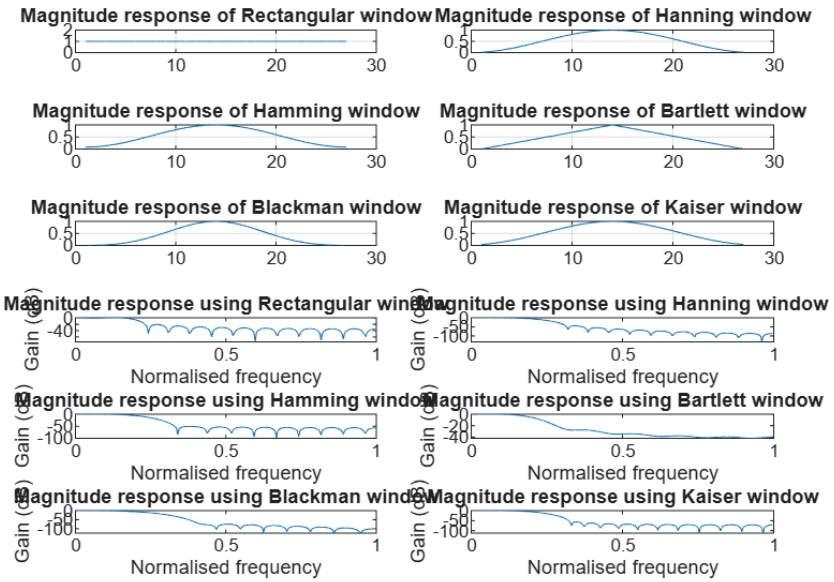
```
clc;
clear all;

fp = input('Enter the Passband frequency: ');
fs = input('Enter the stopband frequency: ');
rp = input('Enter the passband ripple: ');
rs = input('Enter the stopband ripple: ');
f  = input('Enter the sampling frequency: ');
B  = input('Enter the beta value: ');

wp = 2*(fp/f);
ws = 2*(fs/f);
% wn = [wp ws]; % only for bandpass and bandstop

num = -20*log10(sqrt(rp*rs)) - 13;
den = 14.6*(fs - fp)/f;
n   = ceil(num/den);
n1  = n + 1;

if (rem(n,2) ~= 0)
    n1 = n;
    n  = n - 1;
end

y1 = boxcar(n1);
y2 = hanning(n1);
y3 = hamming(n1);
y4 = bartlett(n1);
y5 = blackman(n1);
y6 = kaiser(n1, B);

subplot(6,2,1);
plot(y1);
title('Magnitude response of Rectangular window');
grid on;

subplot(6,2,2);
plot(y2);
title('Magnitude response of Hanning window');
grid on;

subplot(6,2,3);
plot(y3);
title('Magnitude response of Hamming window');
grid on;

subplot(6,2,4);
plot(y4);
title('Magnitude response of Bartlett window');
grid on;
```

```
subplot(6,2,5);
plot(y5);
title('Magnitude response of Blackman window');
grid on;

subplot(6,2,6);
plot(y6);
title('Magnitude response of Kaiser window');
grid on;

wp_normalized = wp / 2; % fs/2 normalized

b1 = fir1(n, wp_normalized, 'stop', boxcar(n+1));
b2 = fir1(n, wp_normalized, 'stop', hanning(n+1));
b3 = fir1(n, wp_normalized, 'stop', hamming(n+1));
b4 = fir1(n, wp_normalized, 'stop', bartlett(n+1));
b5 = fir1(n, wp_normalized, 'stop', blackman(n+1));
b6 = fir1(n, wp_normalized, 'stop', kaiser(n+1, B));

[h1, o1] = freqz(b1, 1, 256);
m1 = 20*log10(abs(h1));
subplot(6,2,7);
plot(o1/pi, m1);
title('Magnitude response using Rectangular window');
xlabel('Normalised frequency');
ylabel('Gain (dB)');

[h2, o2] = freqz(b2, 1, 256);
m2 = 20*log10(abs(h2));
subplot(6,2,8);
plot(o2/pi, m2);
title('Magnitude response using Hanning window');
xlabel('Normalised frequency');
ylabel('Gain (dB)');

[h3, o3] = freqz(b3, 1, 256);
m3 = 20*log10(abs(h3));
subplot(6,2,9);
plot(o3/pi, m3);
title('Magnitude response using Hamming window');
xlabel('Normalised frequency');
ylabel('Gain (dB)');

[h4, o4] = freqz(b4, 1, 256);
m4 = 20*log10(abs(h4));
subplot(6,2,10);
plot(o4/pi, m4);
title('Magnitude response using Bartlett window');
xlabel('Normalised frequency');
ylabel('Gain (dB)');

[h5, o5] = freqz(b5, 1, 256);
```

```
m5 = 20*log10(abs(h5));
subplot(6,2,11);
plot(o5/pi, m5);
title('Magnitude response using Blackman window');
xlabel('Normalised frequency');
ylabel('Gain (dB)');

[h6, o6] = freqz(b6, 1, 256);
m6 = 20*log10(abs(h6));
subplot(6,2,12);
plot(o6/pi, m6);
title('Magnitude response using Kaiser window');
xlabel('Normalised frequency');
ylabel('Gain (dB)');
```




```
% Input
% passband freq = 2000
% stopband freq = 3000
% passband ripple = 0.01
% stopband ripple = 0.001
% sampling freq = 10000
% beta value = 5
```