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

Code

```
% To design low pass filter with cutoff frequency 0.5pi radian using
% Rectangular, Hamming, Blackman window and plot their frequency response.
% Length of filter = 55

clear;
close all;
clc;

wc = 0.5*pi;
N = 55;
alpha=(N-1)/2;
eps = 0.001;

n=0:1:N-1
hd1 = sin(wc*(n-alpha+eps));
hd2 = pi*(n-alpha+eps);
hd = (hd1)./hd2;

%hd = sin(wc*(n-aplha+eps))/pi*(n-aplha+eps)

wr = boxcar(N); % Rectangular window sequence
hn = hd.*wr'; % Filter Coefficients
w = 0:0.01:pi;
h = freqz(hn,1,w);
plot(w/pi,abs(h));

hold on;
wh = hamming(N); %Hamming window sequence
hn = hd.*wh'; %Filter coefficients
w = 0:0.01:pi;
h = freqz(hn,1,w);
plot(w/pi,abs(h),'r.');

wb = blackman(N); %Hamming window sequence
```

```
hn = hd.*wb'; %Filter coefficients
w = 0:0.01:pi;
h = freqz(hn,1,w);
plot(w/pi,abs(h),'g-.');

legend('Boxcar Window','Hamming Window', 'Blackman Window');
xlabel('Normalized Frequecy');
ylabel('Magnitude');
hold off
```

Output