Assignment-1

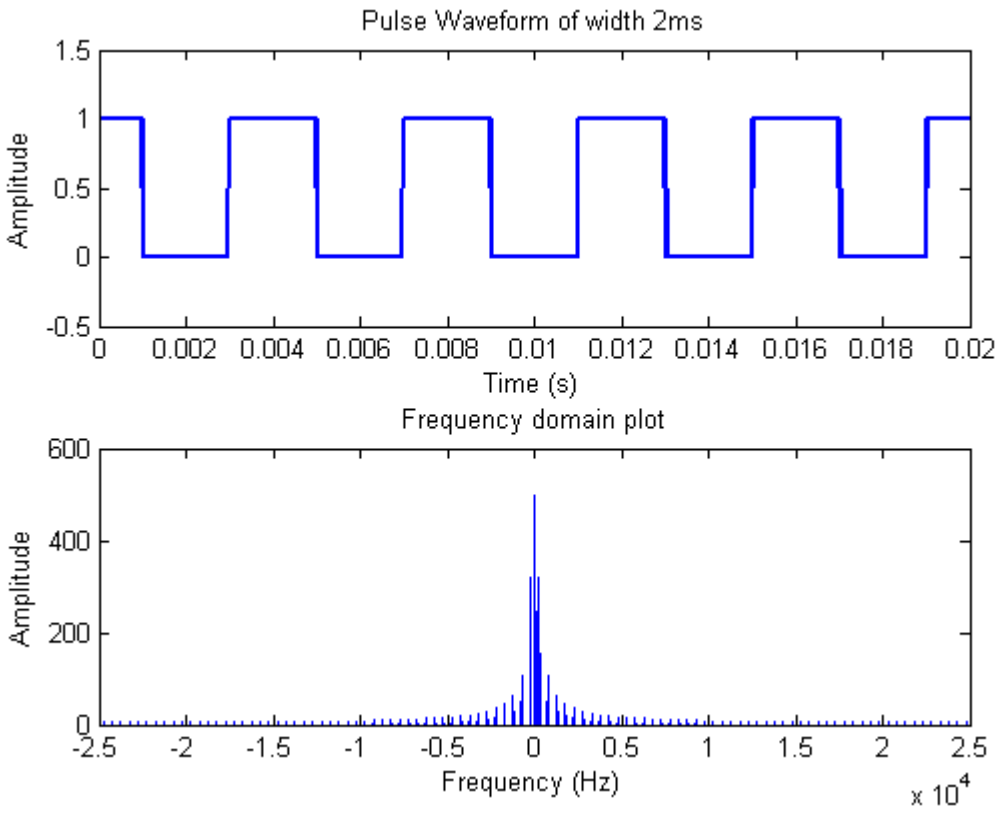
ANALOG COMMUNICATION LAB

```
% 1. Pulse waveform of width 2ms
% ------------------------------
%
% -by Subhajit Sahu, 110EC0181
%

clc;
clear all;
close all;

t = linspace(0,0.02,1000);
d = 0 : 0.02/5 : 0.02;
y = pulstran(t,d,'rectpuls',0.002);

subplot(2,1,1);
plot(t,y, 'LineWidth', 2);
title('Pulse Waveform of width 2ms');
xlabel('Time (s)');
ylabel('Amplitude');
ylim([-0.5 1.5]);
fs = linspace(-25000,25000,1000);
y1 = abs(fftshift(fft(y)));
subplot(2,1,2);
plot(fs,y1);
title('Frequency domain plot');
xlabel('Frequency (Hz)');
ylabel('Amplitude');
```



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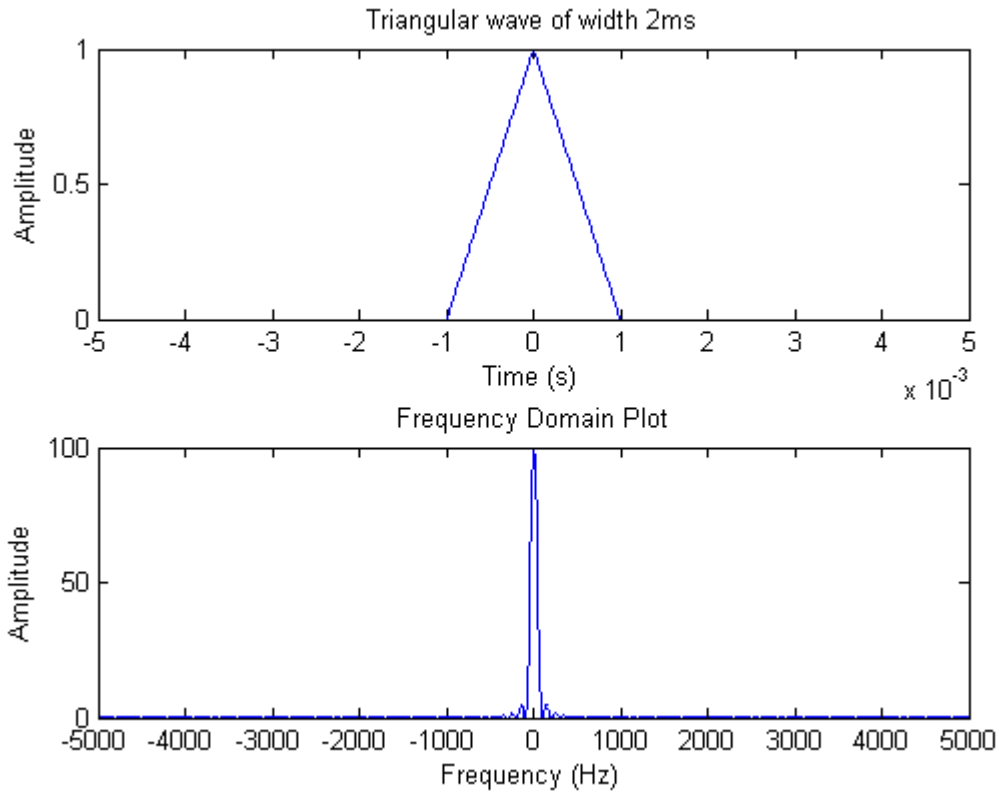
% 2. Triangular Wave of width 2ms
% ------------------------------
%
% -by Subhajit Sahu, 110EC0181
%

clc;
clear all;
close all;

t = linspace(-0.005,0.005,1000);
w = 0.002;
y = tripuls(t,w);
subplot(2,1,1);
plot(t,y);
title('Triangular wave of width 2ms');
xlabel('Time (s)');
ylabel('Amplitude');

fs = linspace(-5000,5000,1000);
y1 = abs(fftshift(fft(y)));
subplot(2,1,2);
plot(fs,y1)
title('Frequency Domain Plot');
xlabel('Frequency (Hz)');
ylabel('Amplitude');
```



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% 3. Square Wave of different amplitude and period
% ------------------------------------------------
%
% -by Subhajit Sahu, 110EC0181
%

clc;
clear all;
close all;

t = linspace(0,0.005,10000);
x = 2*square(t/(0.000025*2*pi));
subplot(3,2,1);
plot(t,x)
title('Square Wave of Period 1ms & Amplitude 2V');
xlabel('Time (s)');
ylabel('Amplitude');

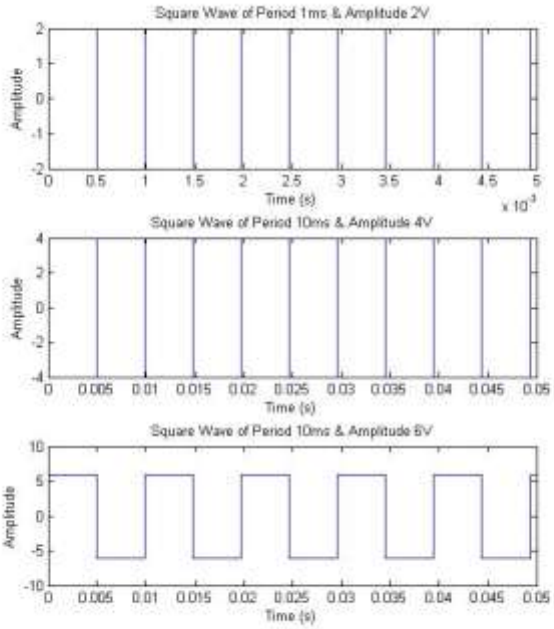
fs = linspace(-1000000,1000000,10000);
y1 = abs(fftshift(fft(x)));
subplot(3,2,2);
plot(fs,y1);
title('Frequency Domain plot');
xlabel('Frequency (Hz)');
ylabel('Amplitude');

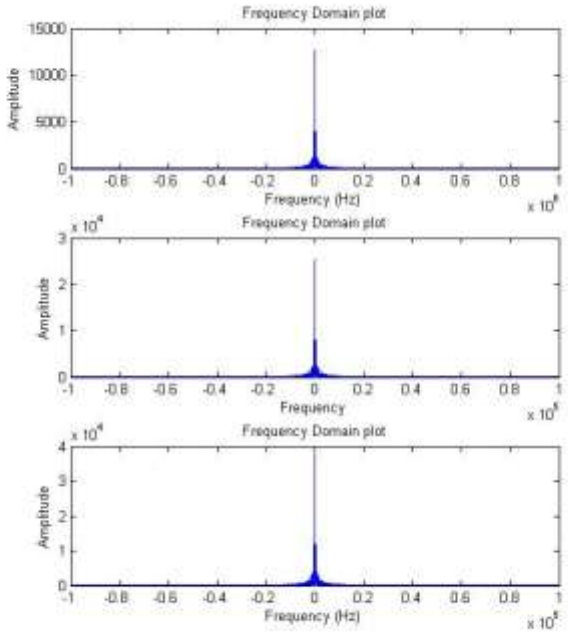
t = linspace(0,0.05,10000);
x = 4*square(t/(0.00025*2*pi));
subplot(3,2,3);
plot(t,x)
title('Square Wave of Period 10ms & Amplitude 4V');
xlabel('Time (s)');
ylabel('Amplitude');

fs = linspace(-100000,100000,10000);
y1 = abs(fftshift(fft(x)));
subplot(3,2,4);
plot(fs,y1);
title('Frequency Domain plot');
xlabel('Frequency');
ylabel('Amplitude');

t = linspace(0,0.05,10000);
x = 6*square(t/(0.00025*2*pi));
subplot(3,2,5);
plot(t,x)
title('Square Wave of Period 10ms & Amplitude 6V');
xlabel('Time (s)');
ylabel('Amplitude');

fs = linspace(-100000,100000,10000);
y1 = abs(fftshift(fft(x)));
subplot(3,2,6);
plot(fs,y1);
title('Frequency Domain plot');
xlabel('Frequency (Hz)');
ylabel('Amplitude');
```



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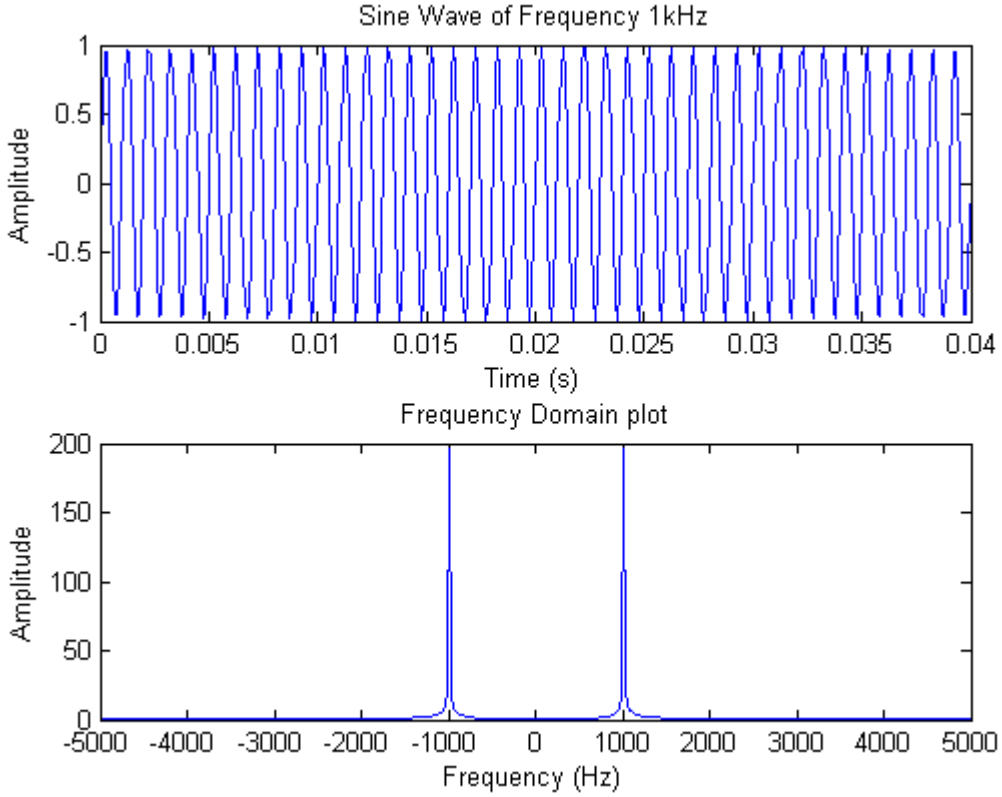
% 4. Sine wave of frequency 1kHz and sampling frequency 10kHz
% ------------------------------------------------------------
%
% -by Subhajit Sahu, 110EC0181
%

clc;
clear all;
close all;

t = linspace(0,0.04,400);
x = sin(2*pi*t*(1000));
subplot(2,1,1);
plot(t,x);
title('Sine Wave of Frequency 1kHz');
xlabel('Time (s)');
ylabel('Amplitude');

fs = linspace(-5000,5000,400);
y1 = abs(fftshift(fft(x)));
subplot(2,1,2);
plot(fs,y1);
title('Frequency Domain plot');
xlabel('Frequency (Hz)');
ylabel('Amplitude');
```


Sine Wave of Frequency 1kHz
Amplitude
Time (s)
Frequency Domain plot
Amplitude
Frequency (Hz)