Homework #4: Chapter 2 (due Sep. 30, 2015)

Preliminary

- Textbook reading Ch. 2.4 (pp. 116-127)
- Please direct all email to pdeleon@nmsu.edu (do not send email via Canvas). All requests for bonus points will receive a confirmation email within 48 hours.
- In order to receive full credit for homework problems, you must provide a detailed solution. Simply writing a few, summarized steps toward the answer will result in minimal credit.
- All problems are worth +10 points unless otherwise noted.

Textbook Problems

2.17(a)	2.18	2.28(a), (c), (e)
2.29(a), (c), (e)	2.30	2.31
2.33(a) only (ii)	2.38(b)	2.39(b)

Note for Problem 2.30: Use a table to numerically (by hand) compute $y[n] = h[n]$ when $x[n] = \delta[n]$ and then find the general pattern.

Software Problems

Use MATLAB to solve the following problem.

1. Create a quarter-amplitude echo at 1/2s using the following MATLAB code. Listen to the resulting wav file. Explain in plain English, why the unit-pulse response below creates the desired echo.

```
[x,fs] = audioread('Speech.wav'); % load .wav audio file
h = [1;zeros(fs/2-1,1);1/4]; % unit-pulse response
y = conv(h,x);
y = y ./ abs(max(y)); % normalize amplitude to 1.0 to prevent clipping
audiowrite('echo_speech.wav',y,fs); % save .wav audio file
```