**ECE 1000 Programming Assignment #2 Spring 2014**

**Objective**

Students will practice using the ‘while loop’ statements and will become more familiar with ‘switch’ statements and the ‘menu’ function. Each team will demonstrate the program to the TA. Each student should submit a report for grading using the blackboard course site. Copy and paste the commands and Matlab output into a word file for the report. In your report, include your assessment of your contribution and your lab partner’s contribution to the assignment.

**Assignment**

You have been given the following parameters for the sine wave, square wave and the wedge wave:

Amplitude (A) = 3; Frequency (f) = 20, Time Vector (t) = 0:0.001:1;

The formula to create the waves are given by:

sine\_wave = A\*sin(2\*pi\*f\*t)

sq\_wave = A\*square(2\*pi\*f\*t, 50)

wd\_wave = A \* sawtooth(2\*pi\*f\*t)

1. Use the ‘menu’ function to build a menu with 5 buttons: ‘Sine’, ‘Square’, ‘Wedge’, ‘Theremin’ and ‘Exit’.
2. If the user selects ‘Sine’, another menu window should pop up with 3 buttons: ‘Change Amplitude’, ‘Change Frequency’ and ‘Change Both’.After the user enters the value, it should then plot the first 100 points of the wave.
3. Do the same for ‘Square’ and ‘Wedge’.
4. For ‘Theremin’, a menu window should pop up with 2 buttons: ‘Amplitude’ and ‘Sound’. When the user selects ‘Amplitude’, it should ask the user for the new value of the amplitude. You should have a new theremin signal.

Now extract a part of the new modified data and then store it in a new vector using a‘***for loop’***. Then plot it.

When the user selects ‘Sound’, it should ask the user the number of times the sound has to be played. Use the ‘***while loop***’ to play the sound. Then plot the first 100 points.

1. The program should exit only when the ‘Exit’ button is selected.
2. Solve Chapter 4: Problems 6 and 7.