Section 1: Description

The purpose of this assignment is for you to gain experience with the microcontroller's ADC (Analog-toDigital Converter), display, and PWM (Pulse-width modulation). You will develop a game similar to Guitar Hero, where the joystick on the BoostXL board is used to select notes to play and the S1 push button (top button on BoostXL) is used to "strum a chord" or, in this case, play a selected note.

Section 2: Using Custom Graphics

For the main menu, and any display that required joystick movement I made use of static variables to keep track of how many times the joystick was moved. In order to tell which direction, the joystick moved I simply set a threshold constant for left, right, up, and down movement and if the variable that stored the data from the joystick was less than the threshold then the static variable will update and depending on what number it is will determine where the joystick is "hovering" over. This technique was important when implementing the main menu screen and providing the user with song choice functionality.

I used Timer_A to generate sounds by using a struct that holds info for the PWM, which drives the speaker. I set up a clock source, clock divider, compare register, duty cycle, period, and output mode within the struct which could be accessed throughout the code when the song is going to be played. If the note name was not "silent" then we play it and then stop timer_a(PWM). To get the correct note length/duration, I simply "waited" until the one shot timer expired with the specified noteLength.