Lab 2 Project Proposal (SE101)

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Project Description:

Our team decided to recreate Conway's Game of Life on the Launchpad Tiva C, utilizing the Orbit Booster Pack. Conway's Game of Life is a zero-player game, during which cells, based on a set of rules, can live, multiply or die. Depending on the game's initiate state, the cells will form various patterns, which will be displayed on the Booster Pack's OLED display. However, by using the Booster Pack's accelerometer and potentiometer, our simulated life will be dependent, not only on the size of its container, but also, on its surroundings. The potentiometer will vary the speed of growth and death, while a shake of the Launchpad and Booster Pack will wipe all life and start again. Finally, our Game of Life will feature an LED that will indicate the current progression of life on the display. For example, the LED will become red, if life has become sustainable.

Timeline:

Item	Completed By
Proposal Write Up	October 16, 2015
Understand How the OLED Display Works	October 29, 2015
Understand How the Potentiometer Works	October 29, 2015
Understand How the Accelerometer Works	October 29, 2015
Get LED to Work	October 29, 2015

Complete the Game of Life Simulation on the Orbit Booster Pack	November 5, 2015
Speed Variation from Potentiometer	November 12, 2015
Get the Refresh Function from the Accelerometer	November 19, 2015
Complete Demonstration	November 26, 2015

Hardware Components Required:

Hardware Component	Purpose
Launchpad Tiva C	For the computing power
Orbit Booster pack	To display the game of life simulation by utilizing its own hardware components
LEDs	Indicates the current state of progression of the game. For example, the Booster Pack's LED will turn red, if life has become sustainable.
3-Axis Accelerometers	Detects a shake of the system, which executes a restart feature of our game
128x32 Pixel OLED Display	Displays the pixels representing the cells in the Game of Life
Analog Potentiometer	Varies the frame rate of the game, speeding up or slowing down the progression of the game

Expected Challenges:

We anticipate various challenges while working on our project as it requires the use multiple hardware components and relatively complex code. On the hardware side, we will need to understand how the OLED screen, LEDs, the potentiometer and the accelerometer work. On the software side, we will need write the code for the Game of Life Simulation. When this is done, we will need to implement the speed variation based on the potentiometer and set up a refresh function based on the accelerometer value. We may find this final part challenging if we come across errors we do not understand.