Project Title: Dance Dance Revolution

What will it do?
There will be a rhythm game on the laptop, and 4 buttons with up, down, left, and right arrows drawn on top will be connected to the Arduino. For this game, a song will play and there will be the arrows of different directions moving from the top of the screen to a finish line at the bottom of the screen. Music will be played during the game, and each arrow will reach the finishing line to the beat of the tune. The user will press the button with the correct directional arrow when the arrow moves is on the finish line on the screen. A score will be given out for each press depending on the timing of the press. If the user pressed the button at the same time as when the arrow on the screen passed over the finish line, a higher score will be given. If the user missed the beat, a lower score will be given for that note. A total score is given out when the music finishes playing.

Major Software Components:

- Programming the Dance Dance Revolution game using a game engine (perhaps Unity)
    - Drawn graphics for the game
    - Object motion, score-keeping, and timer mechanisms
- Programming IDE for C# for Unity

Prototype Plan:

Evolutionary and Horizontal

- Each member will work on a different component of the project, and the prototype will contain the combination of parts
    - Person A: scoring system (using timers), creation of game board, music
    - Person B: animations, graphics
- Not safety-critical
- Prototype will not be abandoned but will become a complete final product
- Goal: implement one song for one player as the prototype
    - If time permits and prototype is functional, add additional features such as difficulty levels and multiplayer battles to the game

Hardware Acquired:

- Arduino Uno
- Wires
- LEDs
- Breadboard
- 4 Push Buttons

Anticipated Challenges:

- Learning the basics of using a game engine and programming in C#
- Timing mechanism to decide whether a press should be rewarded with an “excellent”, “good” or “poor” grade
- Wiring the electrical components for the game board