Christine Chen
Erika Lee
November 22, 2010
6.111 Final Project Checklist

Output Deliverables
- Force gauge on screen indicating the force of the user's punch
- Image of breaking board on the screen as the punch is thrown
- Sound of board breaking as punch is thrown
- List of top ten high scores (if time permits)

Hardware/Signal Processing Deliverables
- User selection of board orientation and difficulty level
- Processing the acceleration data to determine the magnitude of the user's punch
- Using the processed information to determine the graphics output
- Developing scoring system and saving scoring information (if time permits)
- Integrating IR beam to indicate board impact (if time permits)

Modules:
(1) ADC Control Module (Christine)

The ADC control module uses the timing list in the ADC datasheet to control when data from the accelerometer is being read and converted. Correct control signal and data signal outputs can be verified using the logic analyzer.

(2) Signal Processing Module (Christine)

The signal processing module uses the data converted by the ADC to determine the magnitude of the force by summing the acceleration over time as well as save the highest acceleration value currently seen. It also determines which image is to be shown on the screen and when to trigger audio playback. Like the ADC control module, functionality can be verified with the logic analyzer.

*addition of the scoring system and IR beam for board impact functionality would be added to this module as time permits

(3) Board Image Module (Erika)

The board image module takes in the input from the signal processing module and displays the appropriate image on the screen. Functionality can be demonstrated by using switches on the labkit to show how the image_select input determines the image shown.

(4) Audio Module (Erika)

The audio module takes in input from the signal processing module to trigger the start of audio playback. Functionality can be verified by using a button on the labkit as an option to

trigger playback to show how the start_audio signal from the signal processing module will cause audio playback.

(5) Force Gauge Module (Erika)

The force gauge module takes in input from the signal processing module as to the magnitude of the force of the user's punch and displays it graphically as a bar. Like the other two output modules, we could demonstrate how the force_gauge input into the module affects the length of the bar by using the switches on the lab kit to demonstrate.

(6) Top Ten Score List Module (if time permits)

This module would take in the scoring information that would be updated by the signal processing module and outputs it to the screen. Scoring would be based on the magnitude of the force of the user's punch.