

Final Project Checklist- Major Modules

- Beam Detector (Jenny)

The beam detector consists of a transmitter transmitting a signal and a receiver listening for the signal. When the hammer hits the target, it should interfere with the signal and output a high. Functionality can be demonstrated by the hex display, and upon the signal triggered, the accelerometer module should start accumulating data.

- ADC (Mike)

The ADC interface logic generates the necessary control signals to operate the ADC, and captures data from the ADC for the force logic module. Its functionality can be demonstrated by showing its control signals on the logic analyzer.

- Accelerometer Force Logic (Mike)

The force logic module computes the initial velocity of the ball from the acceleration measured. Its functionality can be demonstrated by observing the output on the display. It could also be demonstrated by showing the calculated velocity on the hex display.

- Physics Module (Jenny)

The physics module should calculate the motion of the ball according to the initial velocity provided by the accelerometer and dampened by gravity. The collision module should also adjust the position based on if the weight “collides” with the bell. The functionality of these modules will be shown by observing the output on the display, which will be a simple white ball flying up and down the screen.

- Graphics Module (Jenny)

The graphics module consists of the various sprites drawn to the screen. The sprites will be uploaded into ROM via a matlab module and displayed using some z-order logic. The functionality of this module will be shown by observing the output on the screen.

- Audio Module (Mike)

The audio module will play back the sound of a bell ringing when the weight and bell collide. Its functionality will be demonstrated by observing the sound as the game is played.

If Time Permits

- Extra Audio Modules

A sound plays when the ball hits the ground. As the ball slides up the pole, a corresponding frequency will be dynamically generated, producing a higher frequency as the ball gets higher on the pole. If memory space permits, we may also produce a background audio for the game using the matlab script. These audio modules will be demonstrated by listening to the game.

Jennifer Chan & Mike Stunes

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- Keeping Track of the High Score

This module should allow the user to enter in a high score. It should consist of a logic FSM, as well as a graphics component. Its functionality would be shown on the display, allowing the user to enter their initials and display those initials and high score on the screen.

- Rigging the System

Similar to how real carnivals “rig” this game, we would like to provide a way for the user to also rig the game, which would simply scale down the initial velocity of the ball. This would be displayed by the user flipping the switches on the labkit, and seeing the ball not go up as high even if they swung at the same acceleration.