Guitar Hero: Nursery Rhyme Edition

6.111 Final Project
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Implementation of Guitar Hero using Keyboard as Guitar

- Frets => keys 1-8
- Strum => shift key
- ROM will store nursery rhyme songs. Each address will hold a different note.
- Players must hit the correct notes displayed in the “Matching Zone” at the right time for song to play.
Major Modules

- Memory
- Display
- Game Logic
- Audio
Memory

- ROM
  - Generated with Xilinx tools with note codes of each song
- Song Selection
  - Keeps track of start and end locations of each song in the ROM

Mary had a Little Lamb
Display

- Receives notes from ROM
- Scrolls down 6 notes at a time
- Bottom area is designated for user to match notes to be played with note displayed
- Implementation: registers remember last 6 notes
Game Logic

- Determines whether user plays appropriate note correctly
- Sends either correct note code, buzzer note code, or off code to Audio
- Implementation: Only receives relevant expected note to compare with user input
- Challenge: Detection window - note is playable when it crosses top of matching zone y axis
Audio

- Receives note code from game logic
- Uses lookup table to output correct note frequency to AC97
- Output is hooked up to speakers
- Challenge: Synchronizing output and note on screen
Schedule

- **November 16th**
  - Generate ROM with all songs
  - Game Logic outputs correct note code

- **November 23rd**
  - Audio/AC97 outputs correct frequencies based on lookup table
  - Interface Keyboard
  - Display contains scrolling notes

- **November 26th – 30th**
  - individual modules tested and debugged

- **December 3rd – 9th**
  - integrated system tested and debugged