Baseline Goals

Zoe:

- Have FPGA generate 17 key piano image, from C to E, on computer monitor.
- Have FPGA dynamically change color of keys to indicate keypress.

Liam:

- Be able to write and read from the sensor over i2c

Sarah

- Have FPGA generate a 8-bit tone given some keypress.

Expected Goals

Zoe:

- Use FPGA to display image of the keyboard on a projector

Liam

- Have FPGA readout 1 note at a time from the sensor module
- Have FPGA produce key presses at minimum of 10Hz

Sarah

- Implement a recording feature which stores a played note sequence in FPGA memory
- Implement a playback feature which plays back a stored recording

Everyone

- Have a fully integrated system where a note will be played and a key will light up based on the position of the player's foot

Stretch Goals

Zoe:

- Use images stored in SD card to generate a more realistic looking piano
- Display soft buttons on the projector
- Display playback on the projector as if the keys were being played by the user

Sarah:

- Implement octave modulation
- Play 2 or more notes simultaneously
- Play instrument samples from memory instead of 8-bit tone or use harmonics to make the 8-bit tone sound prettier

Liam

- Have sensors recognize 2 or more notes simultaneously
- Convert FPGA button presses into `buttons' as dened by the TOF sensors - i.e. convert hard interface to a soft interface