6.111 Final Project Checklist

iSing Voice Harmonizer

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Basic

- FFT detects frequency of sung note within a 15 Hz tolerance.

- Pitchshifter module pitchshifts a 750 Hz Sine wave and microphone input by one octave up and one octave down.

- MIDI controller properly stores keyboard notes in MIDI memory.

- Use Modelsim to show that the CPU goes through the proper state transitions based on a pre-initialized sequence of feedback from mock pitchshifter and fft modules.

Medium

- FFT module displays the frequency of the most prominent sung note on the LED character display.

- Pitchshifter Module pitchshifts microphone input by any arbitrary factor between 0.25 and 4 determined by the ratio of the frequency of the single note pressed on the keyboard to the frequency of the sung note.

If time permits

- We'll display a representation of the FFT on the 1024x768 screen.

- We may add a special debug flag input to the CPU module, allowing a developer to prevent the CPU from switching state and to verify that both the state transitions and the intermediate data in local memory is correct.

- We will have up to 8 separate pitch shifted channels.