CS/EE 120B

Metronome/Tuner

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# Introduction

A metronome is a tool that plays a beat at specified tempo. A tuner is an object that takes in a sound and tells the user whether if that sound is sharp, flat, or in tune. For my project, I am proposing a hybrid of the two.

Features:

* Play tempo at a range from 40-180 bpm
* Set Tempo by either by inc/dec or ‘tapping’ it in
* Play a tuning note
* Set tuning note
* Tells the user if a tone is sharp or flat

A menu displayed on the LCD screen in conjunction with buttons, will be the means of how the user navigates all these functions.

# Components (Pin-out)

* **Inputs**
  + 3 buttons for inc/dec and select
  + Electret Microphone for taking in sound
* **Outputs**
  + Piezo Buzzer
  + LCD Screen/Nokia 5110 for menu
  + LED Matrix as visual aid for tempo and tuning



# Complexities/Build-apons

1. Using the EEPROM to save the tempo, note
2. LED matrix + 2 shift registers as additional visual aid for tempo/note.
3. Upgrading the LCD Screen to Nokia 5110 as the menu
4. Using the electret microphone and FFT to get frequencies of a sound