**Power Supply, Guitar Tuner Contract**

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**Description**

This capstone project is the design, construction and implementation of a guitar tuner. A guitar will be used to produce mechanical sound waves. A microphone will pick up the sound waves and convert them into electrical signals. These signals will be filtered and then amplified in order for the analog to digital converter to accurately convert the signals. The microcontroller will use digital signal processing algorithms to find the fundamental harmonic of the signal from the analog to digital converter. The frequency and note accuracy (compared to standard guitar notes) will be output to a display, which will show the frequency and whether the note is sharp or flat. The project will be powered by a battery.

**Inputs**

* Battery powered
* Acoustic wave (60Hz - 440Hz)

**Outputs**

* Print frequency of fundamental harmonic to display with corresponding musical note
* Display whether or not note being analyzed is in tune

**Specifications**

* Power supply: +5V ±10% with 200mV ripple capable of delivering up to 500mA.
* No development boards
* Frequency measurement: 60Hz to 440 Hz ±10%
* Frequencies greater than 1kHz attenuated by at least 20dB
* Frequencies greater than 50Hz but less than 500Hz amplified by at least 20dB

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