Frequency TO Music Player

ECE 153B Final Project Proposal

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OVERVIEW

We propose to create a frequency to music player which takes the user specified frequency and then displays the color on the LED and plays a musical tone at the sound frequency mapped to that color. The device can convert the frequency to a tone directly or plays through a tape of colors.

PERIPHERALS

1. RGB LED (On Project Board)
2. Trimming Potential Meter (On Project Board)
3. seven-segament LEDs (On Project Board)
4. i2s

SOFTWARE DESIGN

A single while loop will control the entire program where the user can specify the frequency to interpret by adjusting the Trimming Potential Meter. The red LEDs on board will turn on when the device is ready for input. Then a function is called to decode the value set by potential meter (i.e. the color of LED) to the corresponding music note. And then we use another function to output tones on the buzzer by generating PWM signal with corresponding note frequency.

GOALS
1. Ability to transfer 7 different frequency to 7 different color with suitable analog to digit conversion: red, orange, yellow, green, indigo, blue, purple

2. Play of 7 different music notes corresponds to each frerquency: A, B, C, D, E, F, G

GROUP RESPONSIBILITIES

Yutong focuses on developing the code to describe the LED color and music tone behavior. Junyan is in charge of the peripheral setup, for example, setting up the interrupts and PWM signal, and ensuring the functionality of potential meter.