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Linear Electronics

Final Project

Arduino Guitar Ear Tuner

What it Does:

The ear tuner allows the user to tune their guitar by ear. The device will display the current note being played and its frequency on the LCD screen. The speaker will play out the requested note so that the guitarist can tune their instrument to it. The device can play the frequency of each string on the guitar.

How to Operate it:

Once the code is sent to the device and a power source is connected to it, the changeNote button (the one closest to the bottom of the arduino) can be pressed to turn the machine on. The device will start by displaying and playing the note E2, which is string 6 on the guitar. As the changeNote button is pressed it will switch to the next string. When the first string is being played, if the changeNote button is pressed, it will go back to playing the 6th string. To stop the speaker from playing audio, the on/off button can be pressed. This will stop all sounds from being emitted from the speaker. The speak will resume playing if the on/off button is held down for three seconds. It can also begin playing again if the note is switched.

How to Improve it:

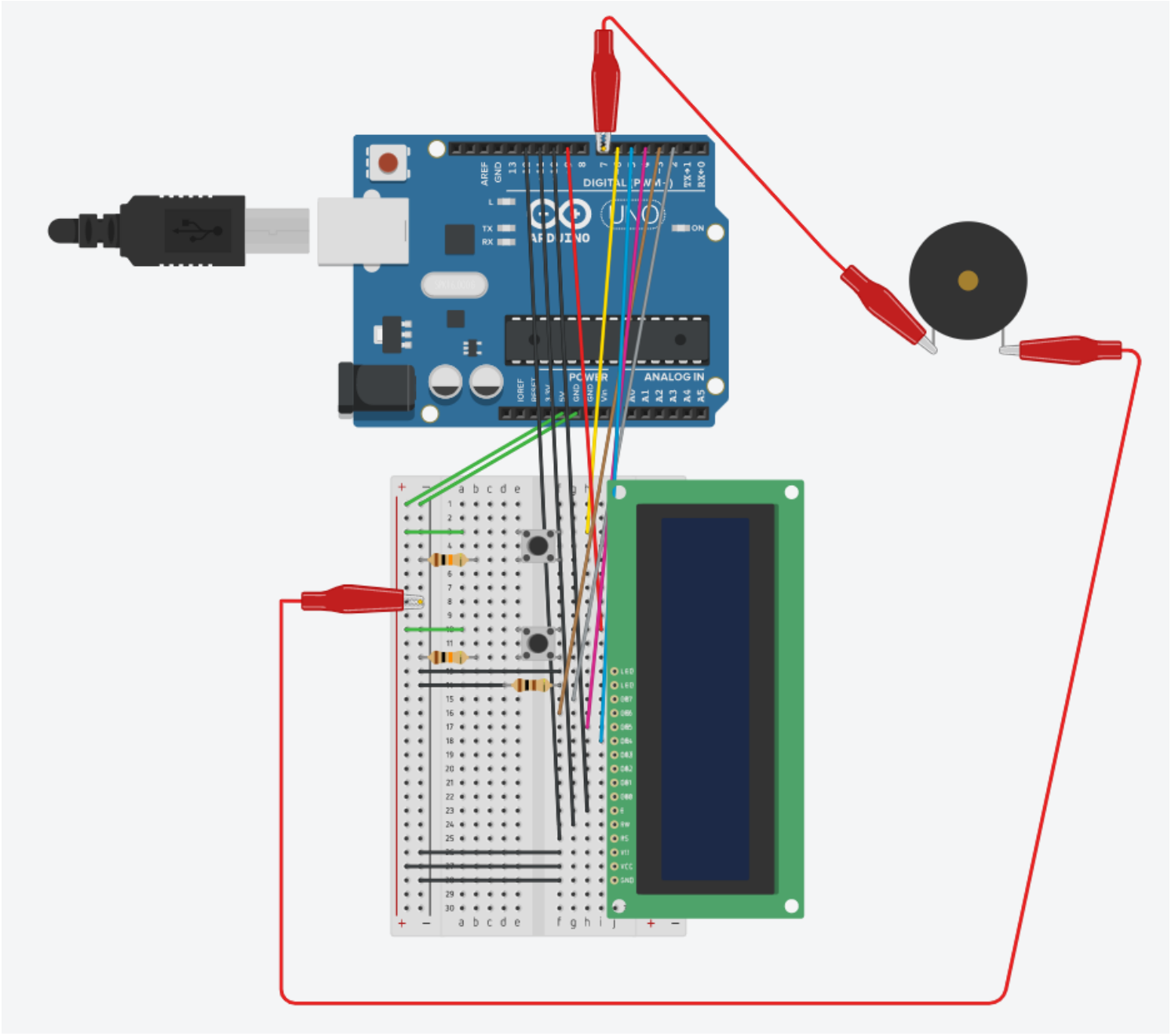
This device could be improved by adding other notes other than the standard tuning for the guitar. Another button could also be added that would go back to the previous note instead of moving forward. This would avoid having to shuffle through all the notes to go back to the previous string. Lastly, the speaker can be upgraded so that the note is more clearly played. It could also be attached to the arduino so that nothing is dangling off the device.

Spin Offs:

A great spin off for this device would be to make the tuner for other instruments. The base notes could be the notes required for the individual instrument. A clip could also be added so that it can clip to the instrument. Another good idea would be to make a piano on the arduino. More buttons could be added that correspond to the keys on a piano. The notes could be played on the speaker and outputted on the screen as well.

Components:

Name	**Quantity**
Arduino Uno R3	**1**
Pushbutton	**2**
Piezo Speaker	**1**
10 kΩ Resistor	**2**
LCD 16 x 2	**1**
100 Ω Resistor	**1**
Wiring Kit	**1**
Aligator Clips	**2**


DIGITAL (PWM~)
POWER
ANALOG IN
ON
TX
RX
LED
LED
VCC
GND