Embedded System Final project report

Tune Trainer

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Goal

The goal of this final project is to build a tune trainer. The tune trainer will play a melody of one or two notes, and the player will answer the name of melody with its correct note and signature.

For example, the tune trainer plays a sound with pitch 554, and the player will answer “Do sharp” or “Re flat”. The trainer will than gives correct or wrong message, and the correct answer.

Components

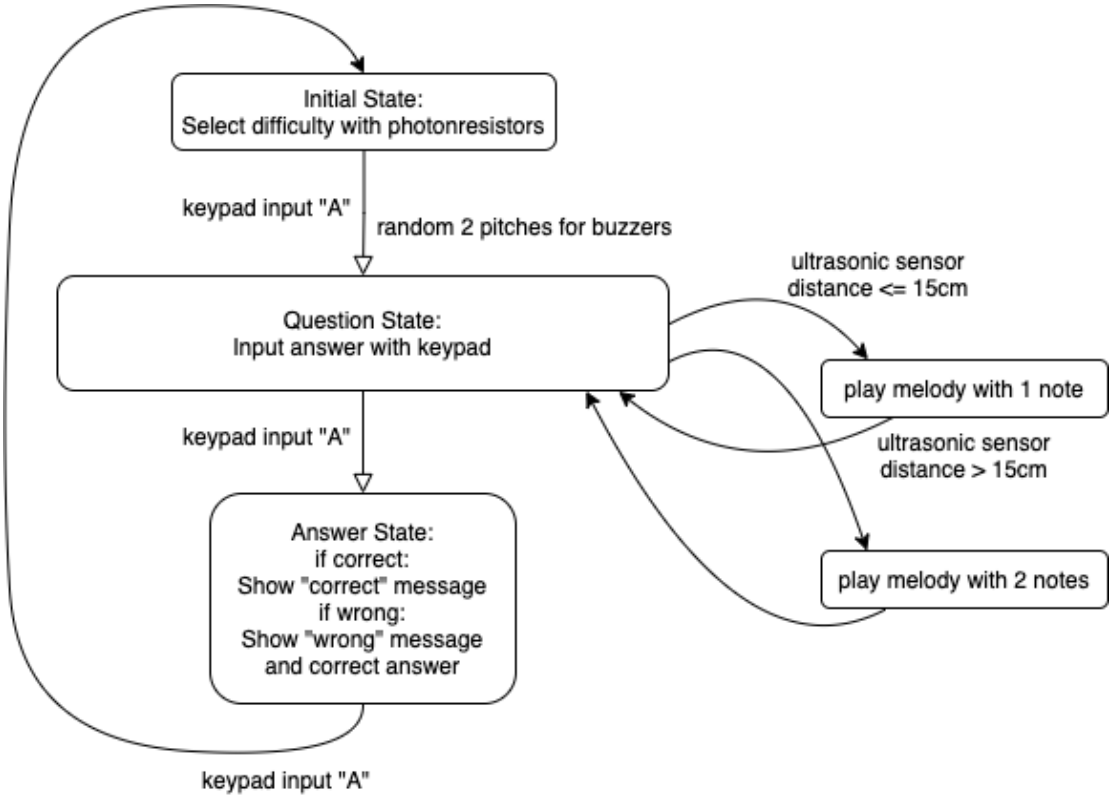
- Buzzer x2
- Keypad
- LCD
- Photoresistors x2
- Ultrasonic sensor

Difficulties

Playing 2 notes simultaneously fails, after consulting references on the internet, I found out that moving from a single square wave tone to anything else, including 2 tones at the same time requires output voltages that can vary beyond just low & high (0v & 5v on the Arduino). I implement a walk-around that switch the states of two buzzers between low and high rapidly to mimic a 2 notes melody.

After implementing the 2 notes melody, I found out that the effect does not go well. The sound is a little out of tune despite I set the right pitches, and the tone sounds very awkward. Hence, I did not implement the 3 notes melody as in the proposal.

Flow Chart



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