Arduino Air Piano Project

Objective: Build a basic air piano that plays different tones based on hand distance, lighting up LEDs for visual feedback. The ultrasonic sensor detects hand distance, triggering different tones and LEDs.

Components

- **Arduino Uno** - 1
- **Breadboard** - 1
- **Jumper Wires** - Assorted
- **LEDs**:
    - Red LED - 1
    - Yellow LED - 1
    - Green LED - 1
- **Resistors**:
    - 220Ω resistor (for each LED) - 3
- **Buzzer or Speaker** - 1
- **Button** - 1
- **Ultrasonic Sensor** - 1 (e.g., HC-SR04)

Wiring Diagram and Setup

1. **Connect the LEDs:**
    - **Red LED**:
        - Connect the **positive (longer) leg** to digital pin 8 on the Arduino through a 220Ω resistor.
        - Connect the **negative leg** to the **ground (GND)** on the breadboard.
    - **Yellow LED**:
        - Connect the **positive leg** to digital pin 9 through a 220Ω resistor.
        - Connect the **negative leg** to GND on the breadboard.
    - **Green LED**:
        - Connect the **positive leg** to digital pin 10 through a 220Ω resistor.
        - Connect the **negative leg** to GND on the breadboard.
2. **Connect the Buzzer/Speaker:**
    - Connect the **positive pin** of the buzzer to digital pin 8.
    - Connect the **negative pin** to GND.
3. **Connect the Ultrasonic Sensor (HC-SR04):**

    - Connect the **VCC** pin to the 5V pin on the Arduino.
    - Connect the **GND** pin to GND on the Arduino.
    - Connect the **Trig** pin to digital pin 13.
    - Connect the **Echo** pin to digital pin 12.
4. **Connect the Button:**
    - Connect one of the pins of the button to digital pin 6.
    - Connect the other pin to GND.
5. **Download the code posted to the git and upload it to the Arduino.**

Once you complete these steps, you are good to go!