MELODY MIXER:ARDUINO HARMONY ENSEMBLE

Crafting Melodies with Arduino tone () function and Chat GPT's Collaborative Symphony.

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04.08.2023
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ABSTRACT

The objective of this project is to create a real-time interactive musical experience that combines the Arduino tone() function with the collaborative power of Chat GPT to compose intricate and harmonious melodies. The system is designed in such a way that it allows users to collaborate with ChatGPT to compose, modify, and play back melodies on Arduino-powered musical devices such as piezo buzzers or speakers.

MATERIALS

1. Arduino Board (UNO)
2. Speaker
3. Jumper wires
4. Push buttons
5. Resistors
6. Computer with Arduino IDE

PROCEDURE

Step 1: Set up the circuit

Connect the piezo buzzer or speaker to a PWM-capable pin on the Arduino board using a jumper wire. If you are using push buttons for user input, connect them to digital pins on the Arduino board and add pull-down resistors if needed.

Step 2: Get the Arduino Code

Open the Arduino IDE and write the code for the "MelodyMixer: Arduino Harmony Ensemble" project. This code will read user inputs from push buttons or other sources, compose a melody, and play it using the tone() function. In our case, the Arduino Code will be generated using ChatGPT.

Step 3: Upload the Code

Connect the Arduino board to your computer using a USB cable and upload the code to the board using the Arduino IDE.

DESCRIPTION

Arduino tone() Function:

The Arduino tone() function is a built-in function that allows the Arduino board to generate sound by producing a square wave of a specified frequency on a designated pin. This function is ideal for producing simple tones and melodies through a piezo buzzer or a connected speaker. The tone() function takes the following parameters: the pin number to produce the tone, the frequency of the sound in hertz (Hz), and the duration of the tone in milliseconds (ms).

In the "MelodyMixer" project, the tone() function is used to play the melodies composed by combining user-contributed notes and durations. The Arduino code takes user inputs from push buttons, potentiometer, or ChatGPT, processes them, and generates tones using the tone() function to create a collaborative symphony.

ChatGPT to Generate Code:

ChatGPT is used to involve human creativity and collaboration in the project. Participants can interact with the AI model, providing musical ideas, notes, and durations through textual input. The AI model interprets the text input and generates Arduino code snippets that represent musical notes and durations.

The AI-generated code complements the user-contributed melodies and allows the project to have an endless variety of musical possibilities. Participants can collaborate with the AI model to create unique compositions, explore different patterns, and contribute to the symphony with their imaginative ideas.

Using ChatGPT for code generation streamlines the process of composing melodies and reduces the effort required to manually write the code for each musical pattern. It enhances the collaborative nature of the project by allowing participants to interact with the AI model and receive real-time responses, turning the "MelodyMixer" into an interactive and creative musical experience.

Integration of Technologies:

The technologies are integrated in the "MelodyMixer: Arduino Harmony Ensemble" project as follows:

- Participants provide musical ideas and inputs, either through physical push buttons, a potentiometer, or through textual interactions with ChatGPT.
- User-contributed inputs and AI-generated code snippets are processed by the Arduino board to create a melody using the tone() function.
- The Arduino plays the collaborative symphony by combining the generated musical tones from the inputs.
- The symphony evolves as more participants contribute their ideas and interact with ChatGPT, creating a dynamic and engaging musical experience.

CONCLUSION

By combining the Arduino tone() function with ChatGPT's code generation capabilities, the "MelodyMixer" project transcends traditional musical instruments, inviting participants to explore new possibilities and embark on an exciting journey of collaborative music composition.