Team Members

01

Marjea Ahad

mahad4

02

Reagan Caliendo

rcali3

03

Munazza Shifa

mshifa2

04

Chichi Ogugu

cogugu3

Holly Jolly Christmas Display

The Holly Jolly Christmas Display is an interactive holiday showcase featuring synchronized lights, music, and special effects. Using four interconnected Arduinos, it combines LED light patterns, music playback, a countdown timer, and confetti effects for a festive atmosphere. Key features include a light sensor for automatic light sensor, remote song control, and a manual emergency shutdown button. Bluetooth coordination across the Arduinos ensures unified control, creating a seamless experience. This unique setup transforms a model house into an immersive Christmas display, blending synchronized lighting and sound with interactive elements to bring holiday cheer to life.

Project Idea

- **Interactive Light and Sound**: Lights synchronized to holiday music for a festive experience.
- **Special Effects**: Fan for "snow," LCD displaying holiday messages, and a Christmas countdown.
- **Arduino Communication**:
  - Main Arduino: Central hub with power and music control.
  - Second Arduino: Music playback and LED synchronization.
  - Third Arduino: Display messages on LCD.
  - Fourth Arduino: Segment display and fan.
- **Creative Design**: Cardboard house model that's family-friendly and visually captivating.
- **Technical Showcase**: Multi-Arduino integration, Bluetooth communication, and teamwork in a unified design.

Project Design - I/O Devices

INPUTS:

- Remote Control
- Power Button
- Photoresistor

OUTPUT:

- LED Light Strips
- Buzzer
- LCD Screen
- Fan
- 7 Segment Display

Project Design - Communication

- **Arduino 1 (LED, Music):** Light-music coordination; adjusts song choice via Arduino 4 (Control).
- **Arduino 2 (LCD):** Controls message settings based on commands from Arduino 4.
- **Arduino 3 (Effects):** Executes special effects (e.g., fan and a countdown) upon receiving signal from Arduino 4.
- **Arduino 4 (Control):** Central hub managing inputs and communications:
  - Sends signal to start/end program: lights, music, and effects.
  - Handles manual (remote/power button) and automatic (light sensor) controls.
  - Bluetooth connection to all Arduinos to signal when to be on/off

Project Design - Original Work

- **Integrated Components:** Lights, music, and special effects synchronized into a cohesive display.
- **Interactive Design:** Remote control for songs, volume, and lights.
- **Responsive Setup:** Light sensor activates lights automatically at night.
- **Festive Additions:** Countdown timer and fan blowing confetti as artificial snow.

Originality: Multi-Arduino system with Bluetooth coordination for a seamless and engaging holiday experience.

What Has Worked

- Each individual component of the system is functioning as intended within its respective section.
- The LEDs, music playback, LCD, special effects, and control mechanisms are all operating correctly in isolation and are ready for integration into the overall system.

What Isn't Working

- The next step involves integrating all the individual components into a cohesive system, bringing the overall project together.
- This process will ensure that each Arduino seamlessly communicates with each other to achieve the desired functionality.

Team Member Roles

01

Marjea Ahad

Countdown and special effects Arduino (segment display, fan)

02

Reagan Caliendo

Light display and music playback Arduino (LED, music)

03

Munazza Shifa

Holiday greetings display Arduino (LCD)

04

Chichi Ogugu

Control Arduino (remote, button, photoresistor)