

AUTO FIRE EXTINGUISHER

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MOTIVATION

- Unoccupied Areas
- High-Risk Areas
- Cases of loses of life and property due to being late in addresing the fire atttacked issue.

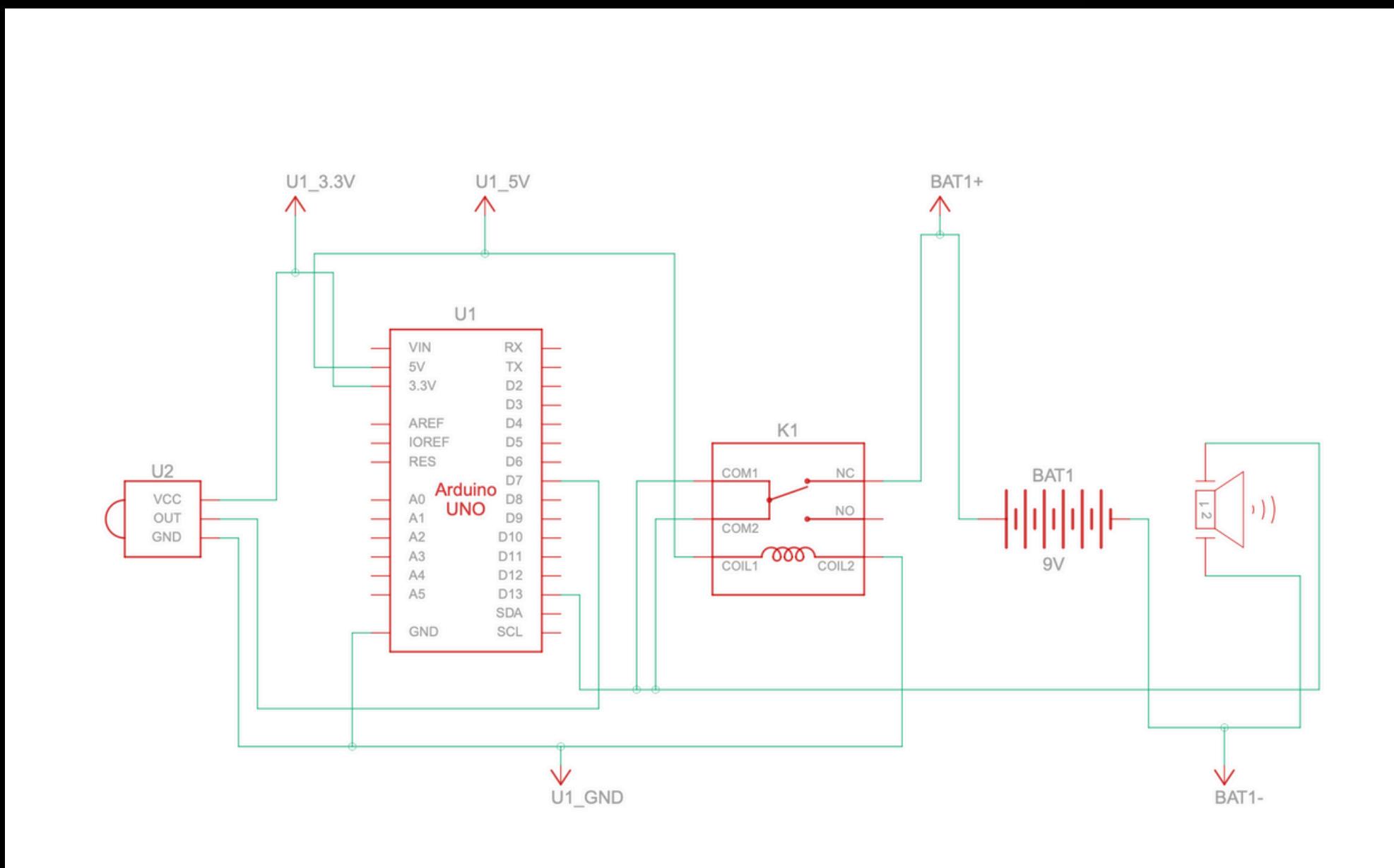


OBJECTIVES

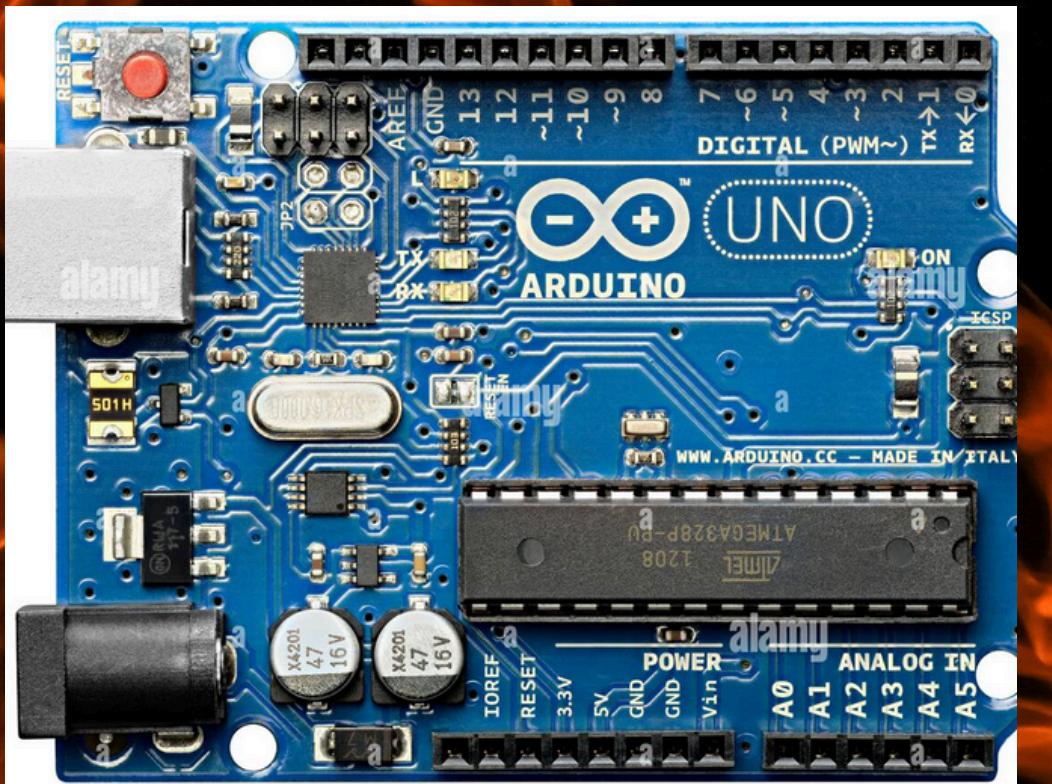
- Early Fire Detection
- Rapid Fire Suppression
- Supplementing manual fire extinguishing efforts
- Enhancing response time
- 24/7 Protection



SCHEMATIC OF THE SETUP



ITEMS AND SPECIFICATIONS

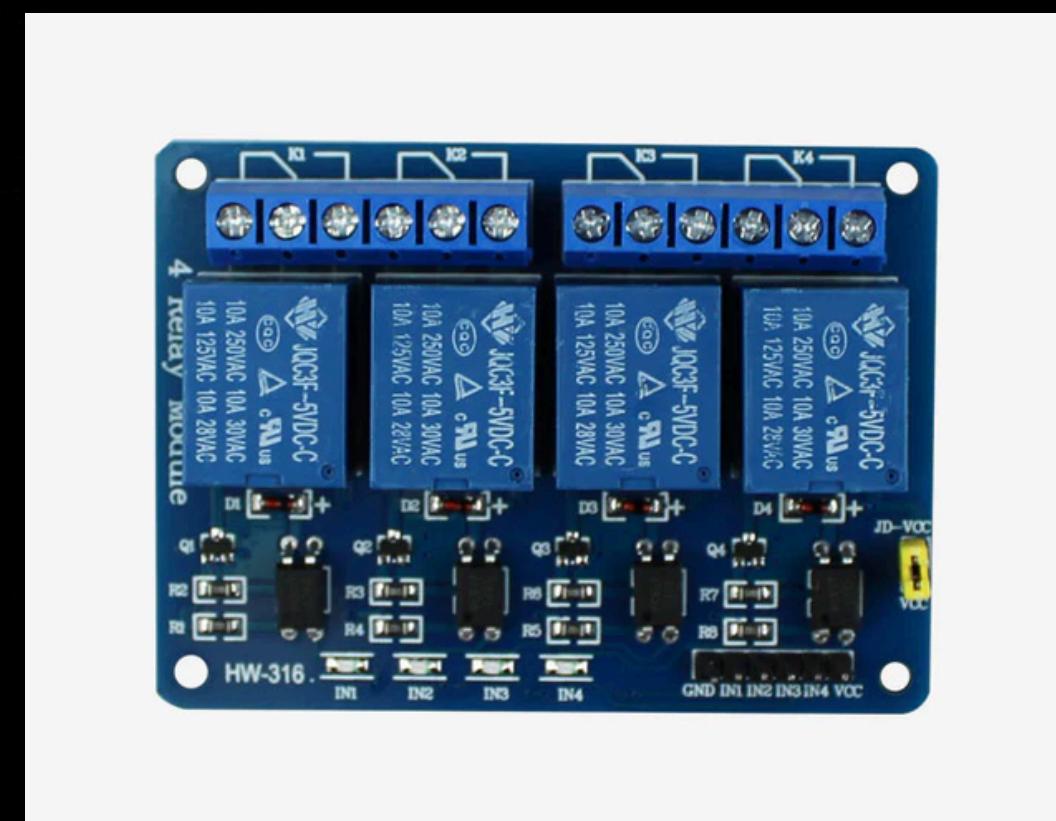


1. ARDUINO UNO

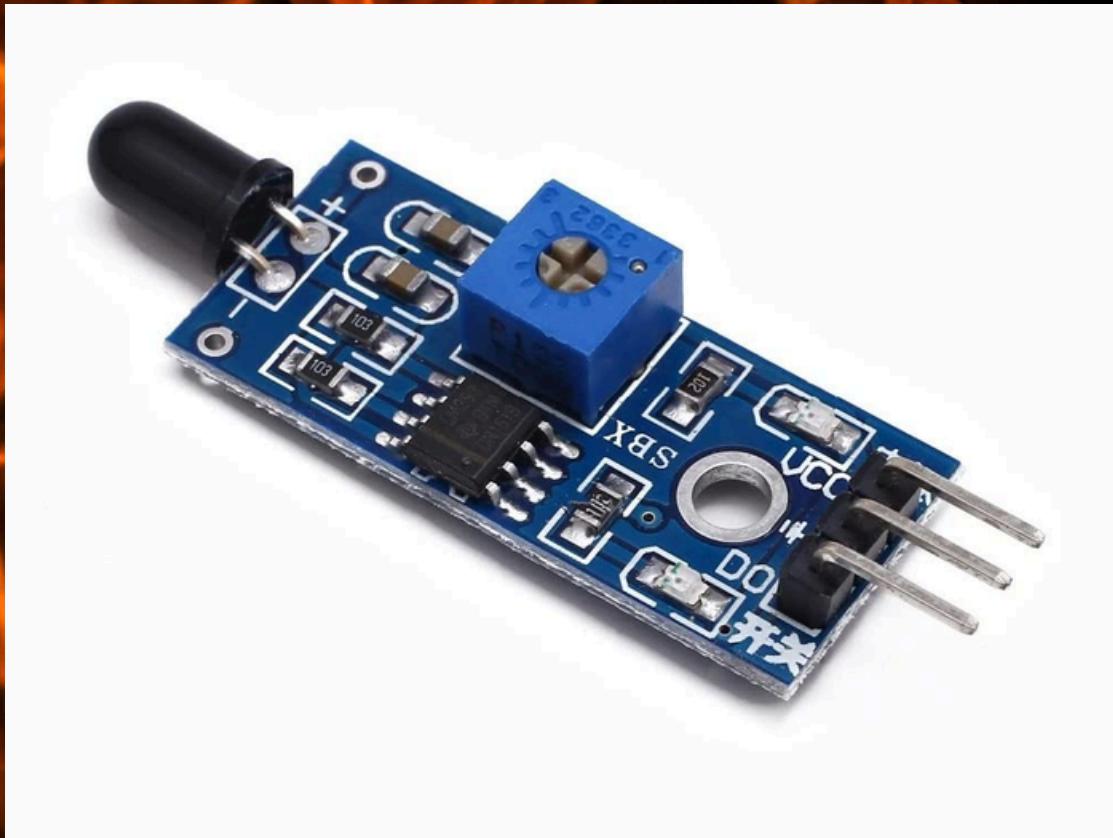
- Arduino Uno R3 Development Board with ATMEGA328
- Arduino UNO is a versatile microcontroller board that empowers creators to bring their electronic projects to life through its user-friendly interface and extensive compatibility with sensors and actuators. It combines simplicity with powerful capabilities, making it a go-to choice for beginners and experienced makers alike.

2. RELAY MODULE

- 4 Channel Isolated 5V 10A Relay Module opto coupler
- A relay module is an electronic device that allows low-power circuits to control high-power circuits, providing isolation and protection. It acts as a switch, enabling safe and reliable control of devices such as lights, motors, and appliances through a microcontroller or other digital signals.



ITEMS AND SPECIFICATIONS



3. INFRARED SENSOR

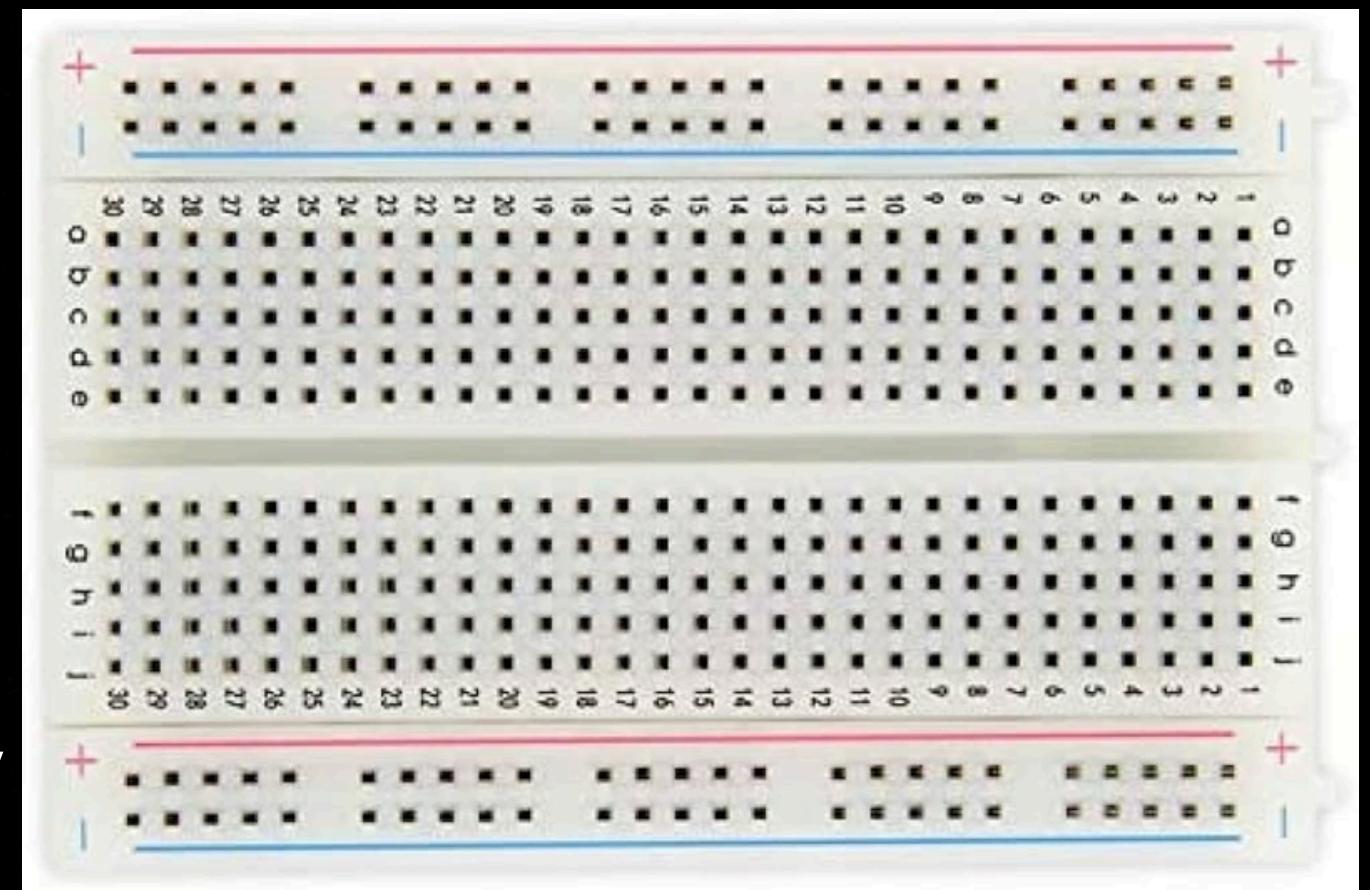
- IR Flame Sensor Module

Flame sensors used in Arduino projects are intelligent modules that detect the presence of flames or fire by sensing infrared light emitted by the flames, allowing for early fire detection and safety precautions in various applications.(760-1100nm)

4. BREADBOARD

-Half Size Breadboard 400 tie point

A breadboard is a prototyping tool commonly used in electronics projects, providing a platform for quick and temporary circuit connections without the need for soldering. It enables easy experimentation, component testing, and rapid design iteration by allowing components to be easily inserted and removed.



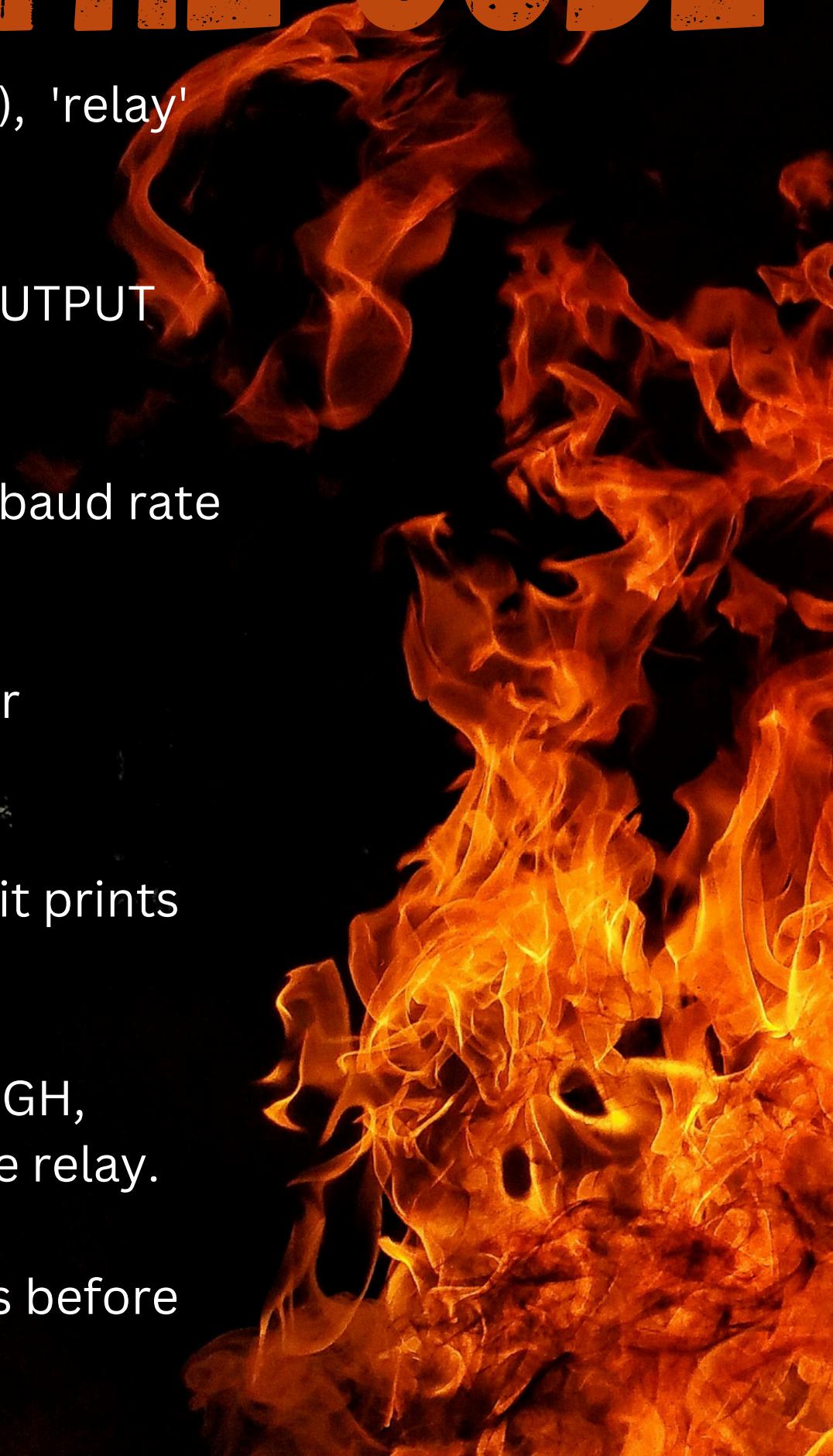
ITEMS AND SPECIFICATIONS

Additional Items

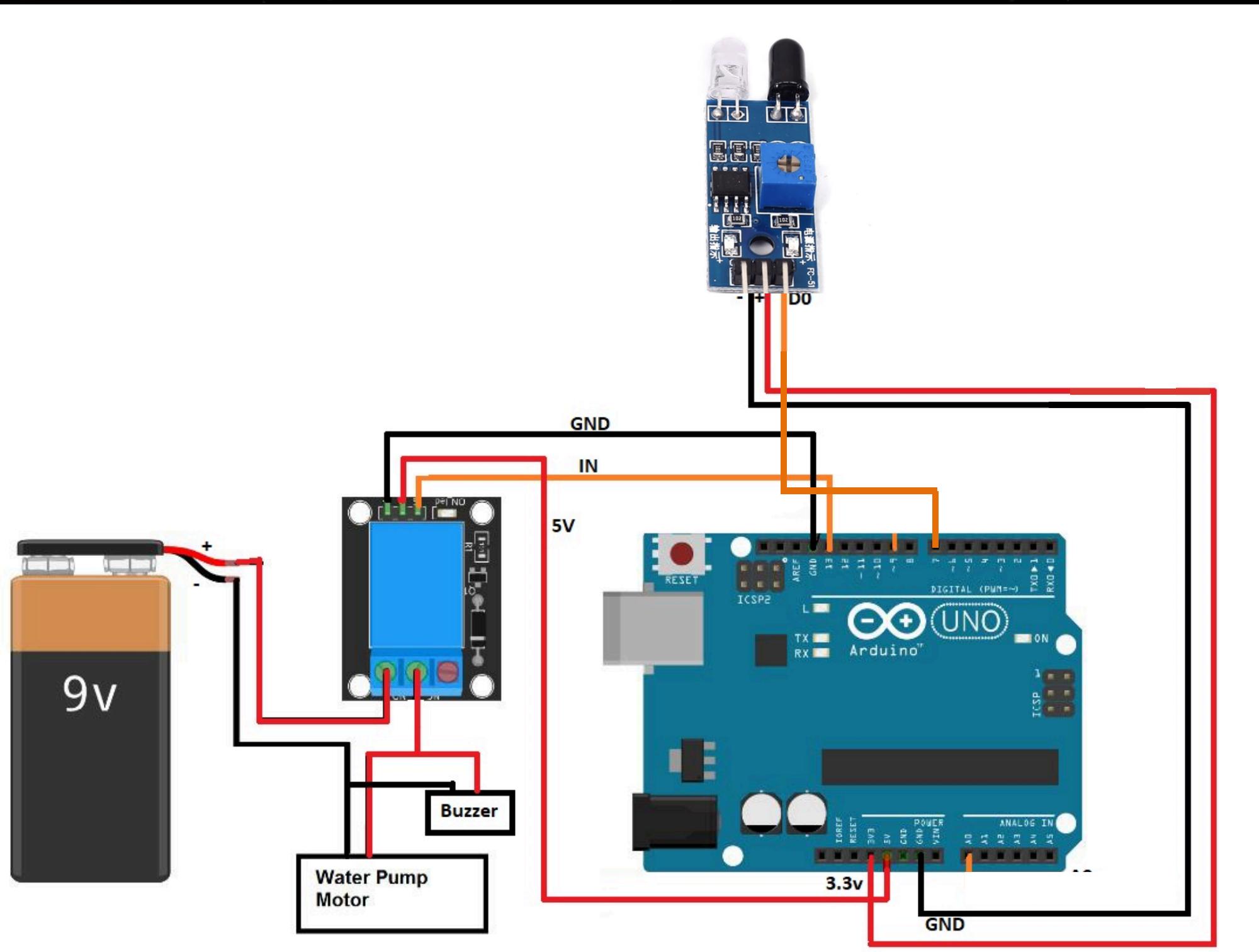
- DC PUMP - Submersible Mini Water Pump
- Jumper Wires - 20 cm Male - Male and Male - Female
- 12 V DC Buzzer
- 9V Battery

SALIENT FEATURES OF THE CODE

- **Variable Initialization:** The code initializes variables 'flame' (connected to digital pin 7), 'relay' (connected to digital pin 13), and 'val' to hold sensor readings.
- **Pin Configuration:** In the setup() function, pinMode() is used to set the 'relay' pin as OUTPUT and 'flame' pin as INPUT.
- **Serial Communication:** Serial.begin(9600) initializes the serial communication with a baud rate of 9600, enabling data transmission to a connected device.
- **Sensor Reading:** digitalWrite(flame) reads the digital input value from the flame sensor connected to pin 7 and stores it in the 'flameValue' variable.
- **Condition Checking:** If the flameValue is equal to 0 it means a flame is detected. Else it prints No flame is detected.
- **Output Control:** If a flame is detected, digitalWrite() is used to set the 'relay' pin to HIGH, turning on the relay. If no flame is detected, the 'relay' pin is set to LOW to turn off the relay.
- **Delay:** The delay(1000) function pauses the program execution for 1000 milliseconds before repeating the loop, introducing a delay between consecutive readings.
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CIRCUIT DIAGRAM





CHALLENGES FACED AND SOLUTIONS FOUND

Challenge- False alarm Reduction

**Solution- Proper tuning of the IR
Sensor**

Challenge- Size and Portability

**Solution - Use of container as a
water reservoir**

PHOTOGRAPH OF FINAL SYSTEM



LEARNINGS FROM THE PROJECT

- Adaptability to Change
- Debugging and Troubleshooting
- Safety Considerations



CONCLUSIONS

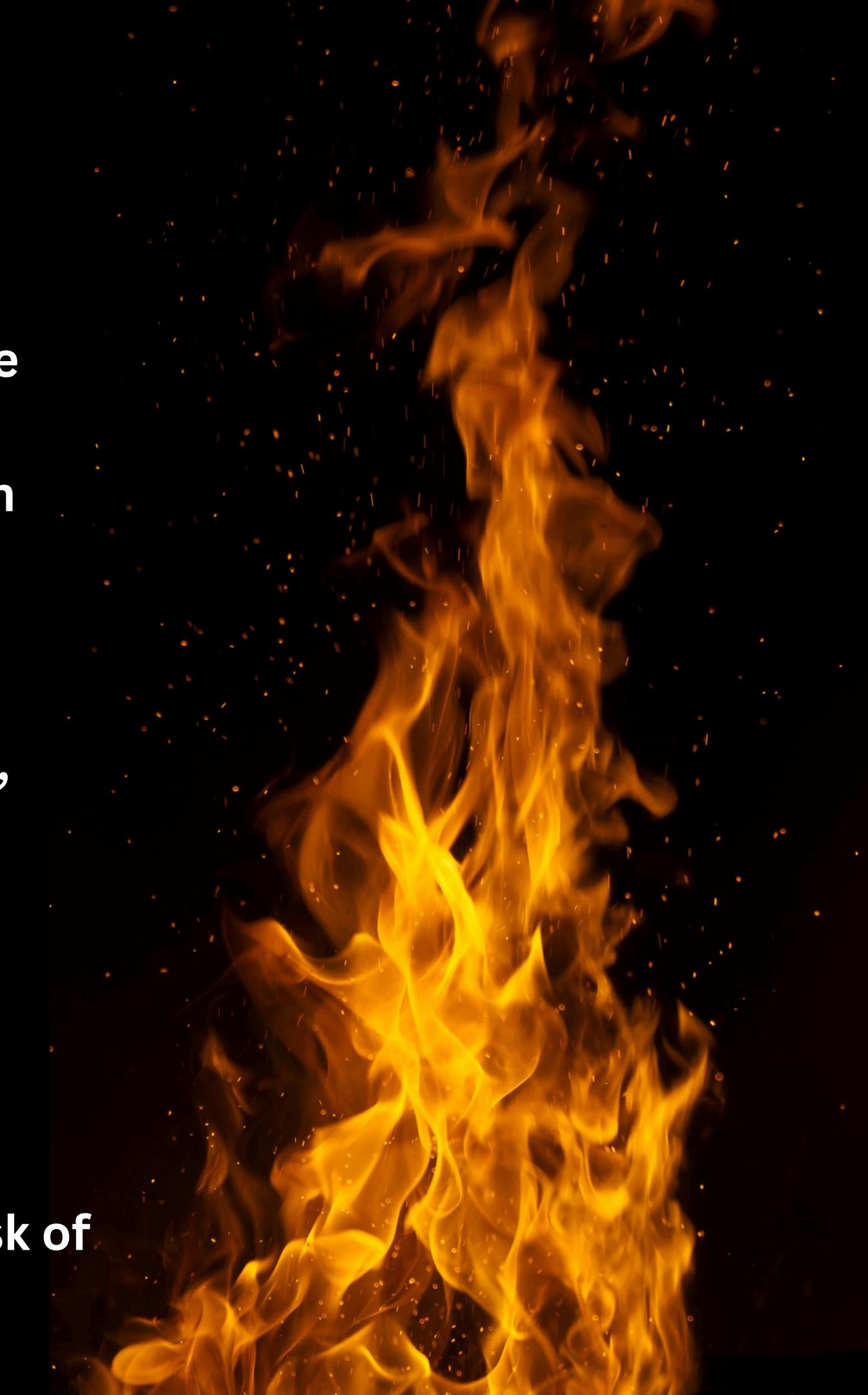
Objectives: Our project aimed to develop an Arduino-based fire extinguisher system for efficient fire safety.

Findings: We successfully implemented a reliable fire detection mechanism using IR Flame Sensor. The system demonstrated accurate detection capabilities and prompt activation of the extinguishing mechanism.

Achievements: Our fire extinguisher system integrates sensors, actuators, and an Arduino microcontroller, showcasing its potential for practical use.

Lessons Learned: We gained valuable insights into interdisciplinary collaboration, Arduino programming, and fire safety protocols.

Impact: Our system has the potential to enhance fire safety in homes, offices, and industrial environments, minimizing the risk of fire-related incidents.



REFERENCES AND VIDEO LINK

REFERENCE VIDEO:

<https://youtu.be/vzKjqQZ65-Y>

OUR FINAL PROJECT:

<https://youtu.be/zUn1Cl-mXKc>

*Thank
You*