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FIRE ALARM SYSTEM (F.A.S)

BY Gurram Manikanta

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Team Members :01
Team No:
Module: Model Based System Engineering

Table of Contents

Ver.Rel. No.	Release Date	Prepared. By	Reviewed By	Approved By	Remarks/Revision Details

Document History

1.0 Introduction :

In this project, we are going to create a fire alert system using ATMEGA8 microcontroller and fire sensor. Fire sensors can be of any type, here fire sensor play a vital role we have different types of fire alarms

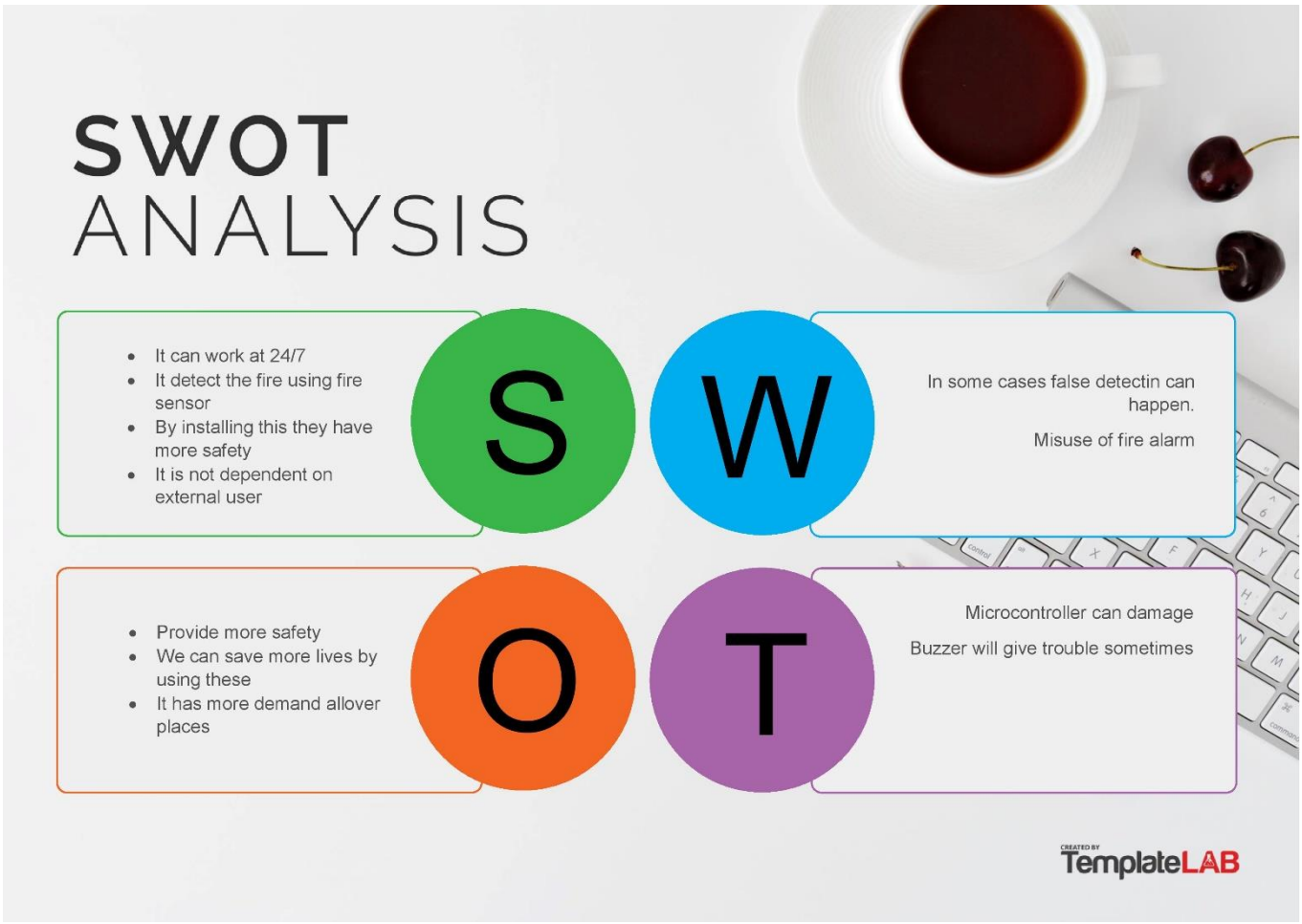
we can use any one with respect to your project here i am using LM35 a temperature sensor when temperature level exceed the actual level fire sensor sent signal to

microcontroller then buzzer rings after that we reset the buzzer using and fire sensor using reset button, we can use this in real time environments like hospitals schools and shopping malls etc..

we are going to install the fire sensor on the servo motor. The survey will rotate the 180 degree pendulum. With the fire sensor mounted on it, we get 270+ degree fire sensing vision. The survey will continue to rotate, thus providing a complete room fire alert system. We can add smoke sensors to the system for more accuracy. With it we can achieve high accuracy.

2.0 REQUIREMENTS

2.1 SWOT ANALYSIS



2.2 COMPONENTS USED IN FIRE ALARM

power supply

* it is used give power supply to circuit

Servo motor (

* it have connected with fire sensor it rotate according to temperature

Pressure

ATMEGA328

* it is used to control the all circuit and send commands and operate

Buzzer

BUZZER

* Buzzer is used to make sound and it a output to the circuit Button

* it is used to set and reset buzzer

10KΩ resistor, 1KΩ resistor, 220Ω resistor, 100nF capacitor.

Fire Sensor

The fire extinguisher works by detecting smoke or heat. These devices respond to the presence of smoke or extreme temperatures with fire. After activating the device, it will send a signal to the alarm system to perform a programmed response for that zone.

2.3 4W'S AND 1H

Where

* Fire alarm system is use this in real time environments like hospitals schools and shopping malls etc..

When

* Fire alarm is activated when it temperature level exceed to normal level it buzzer is activated
* buzzer is activated through micro controller atmega8

What

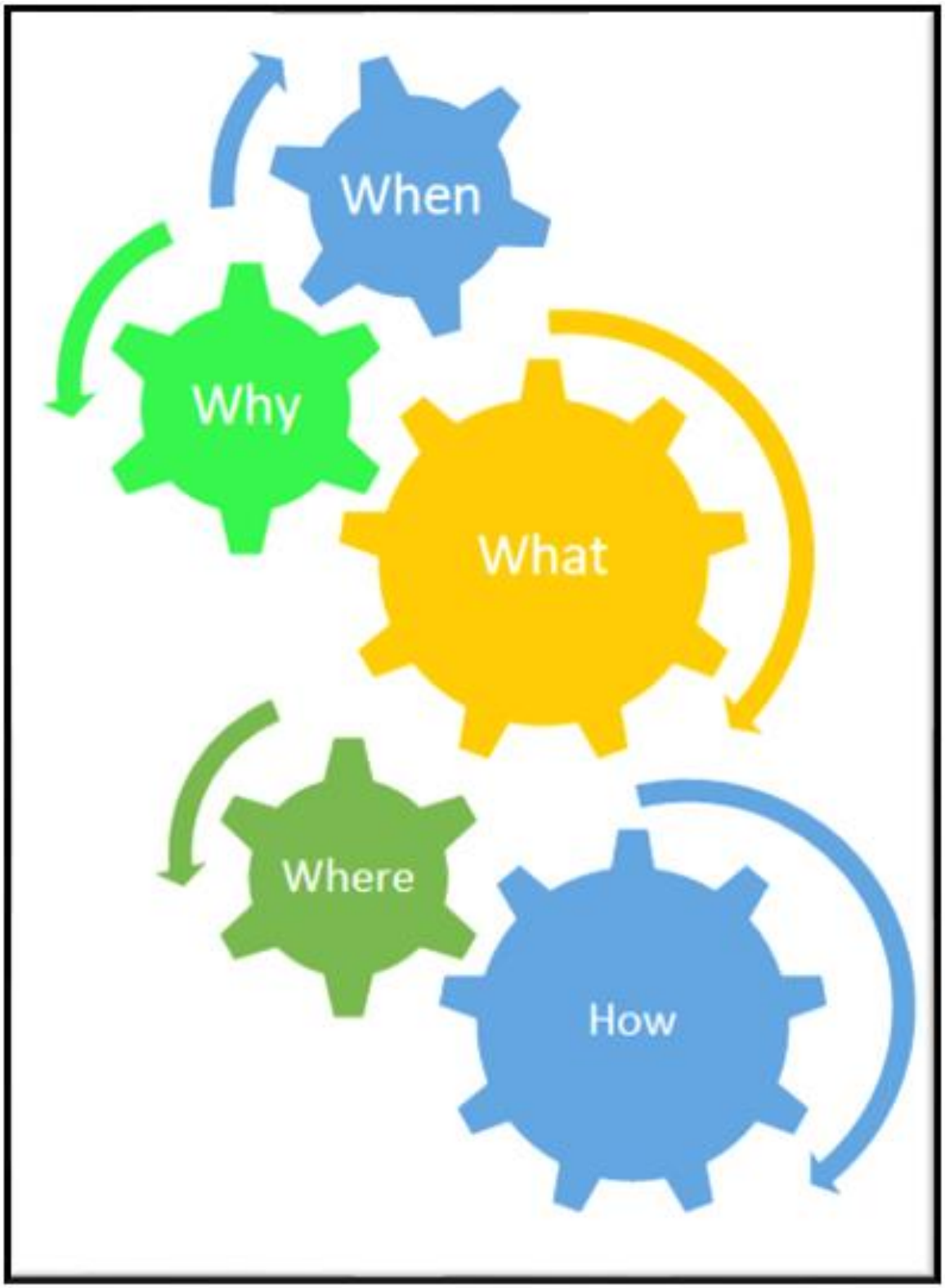
* fire alarm system using microcontroller Atmega8 and fire sensor, here fire sensor play a vital role

Who

* Fire alarm system is use this in real time environments like hospitals schools and shopping malls they are used this

How

* Fire alarm is independent device it not dependent on external user it work on micro controller


When
Why
What
Where
How

2.4 TABLE OF REQUIREMENTS

2.4.1 HIGH LEVEL REQUIREMENTS

HLR ID	High level Requirements
HLR1	It shall be sense the fire
HLR2	It shall be make sound when fire senses
HLR3	It shall have reset button to reset buzzer
HLR4	It shall have ADC to sense analog signals

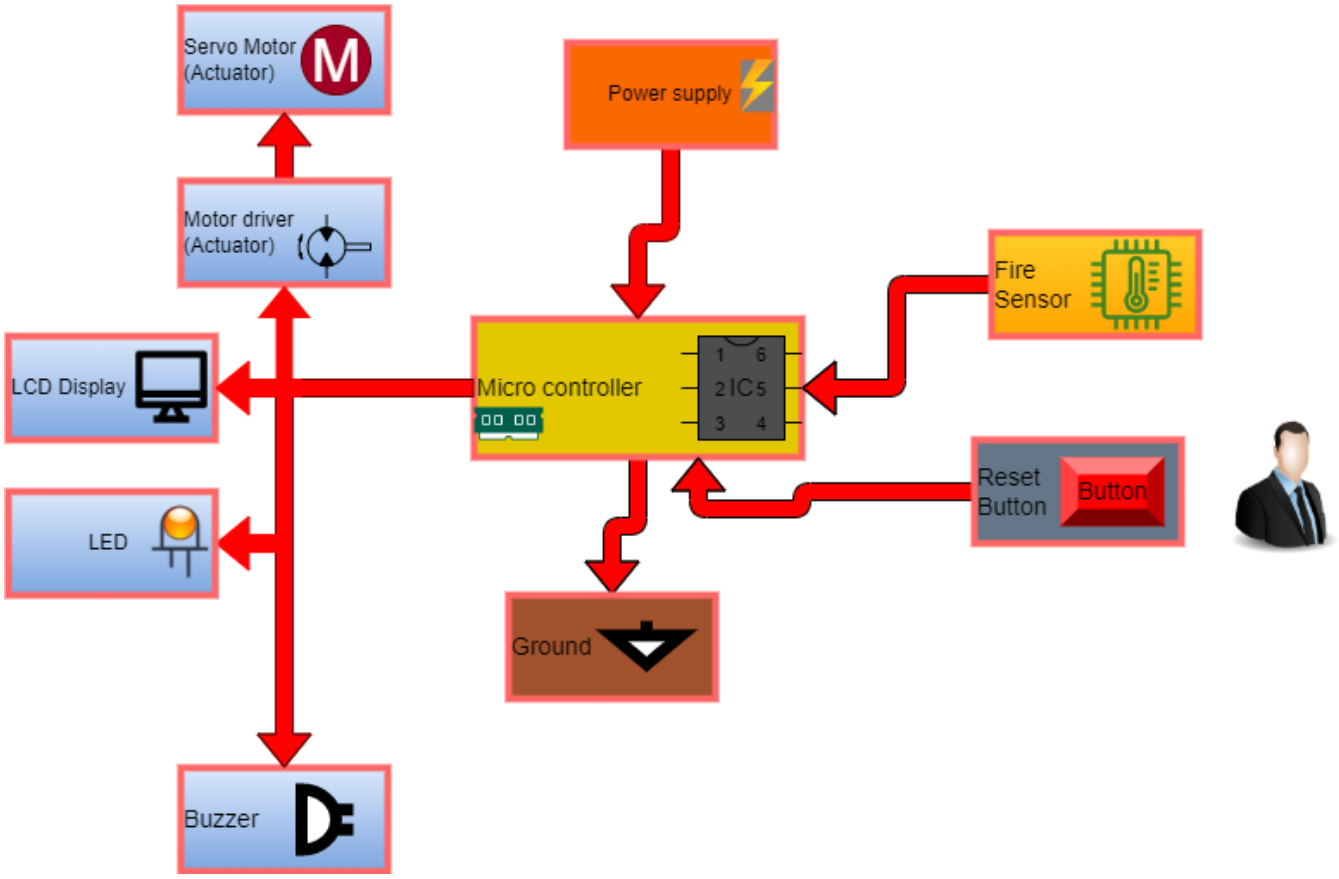
2.4.2 LOW LEVEL REQUIREMENTS

ID	Low Level Requirements for HLR1	ID	Low Level Requirements for HLR2
LLR1	It shall have Fire sensor	LLR1	It shall have a buzzer to connect
LLR2	It shall have ADC	LLR2	It shall have a sensor to connect

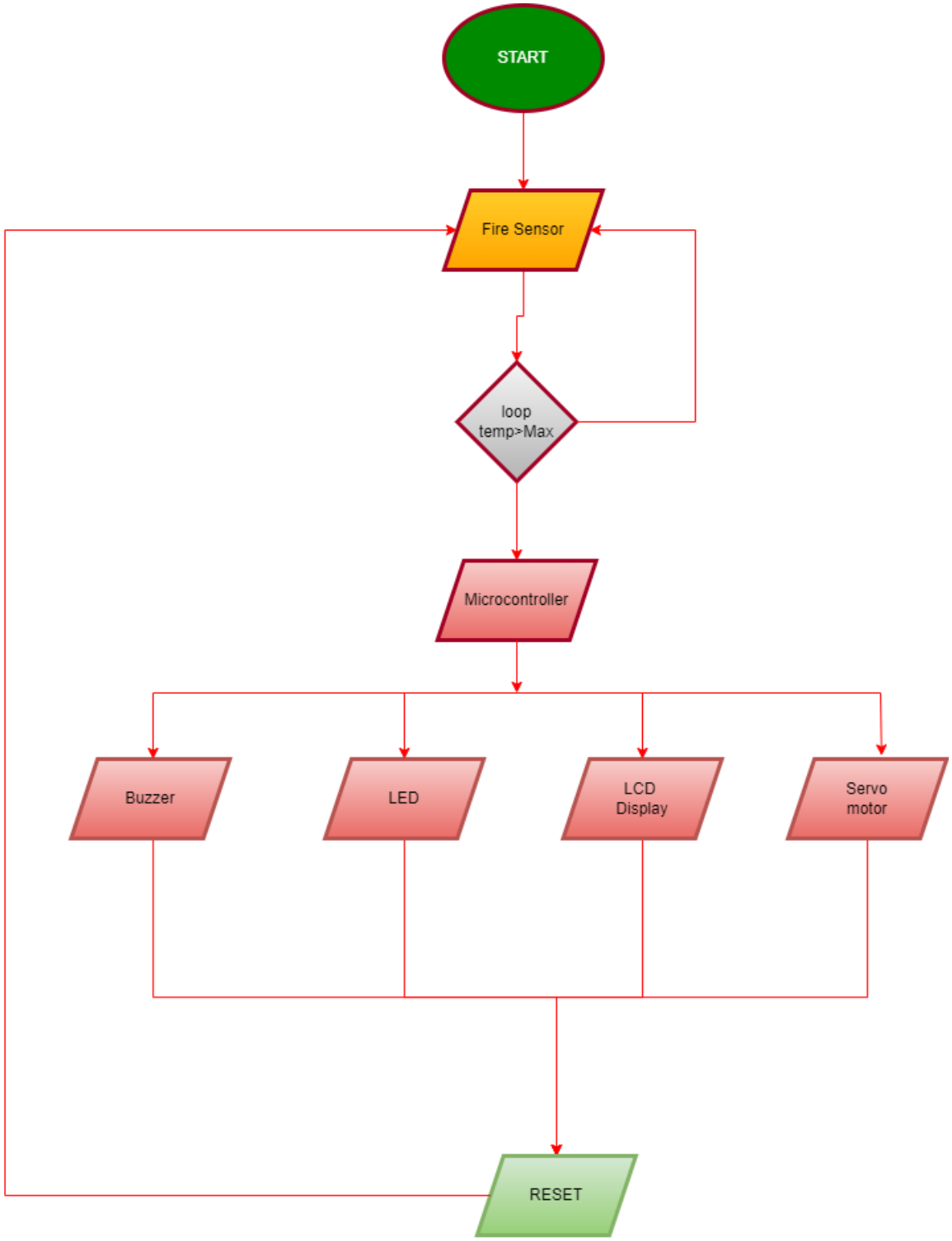
ID	Low Level Requirements for HLR3	ID	Low Level Requirements for HLR4
LLR1	It shall reset button manually	LLR1	It shall have interrupt
LLR2	Reset button is connect buzzer	LLR2	It have ADC to convert signals

3.0 Architecture

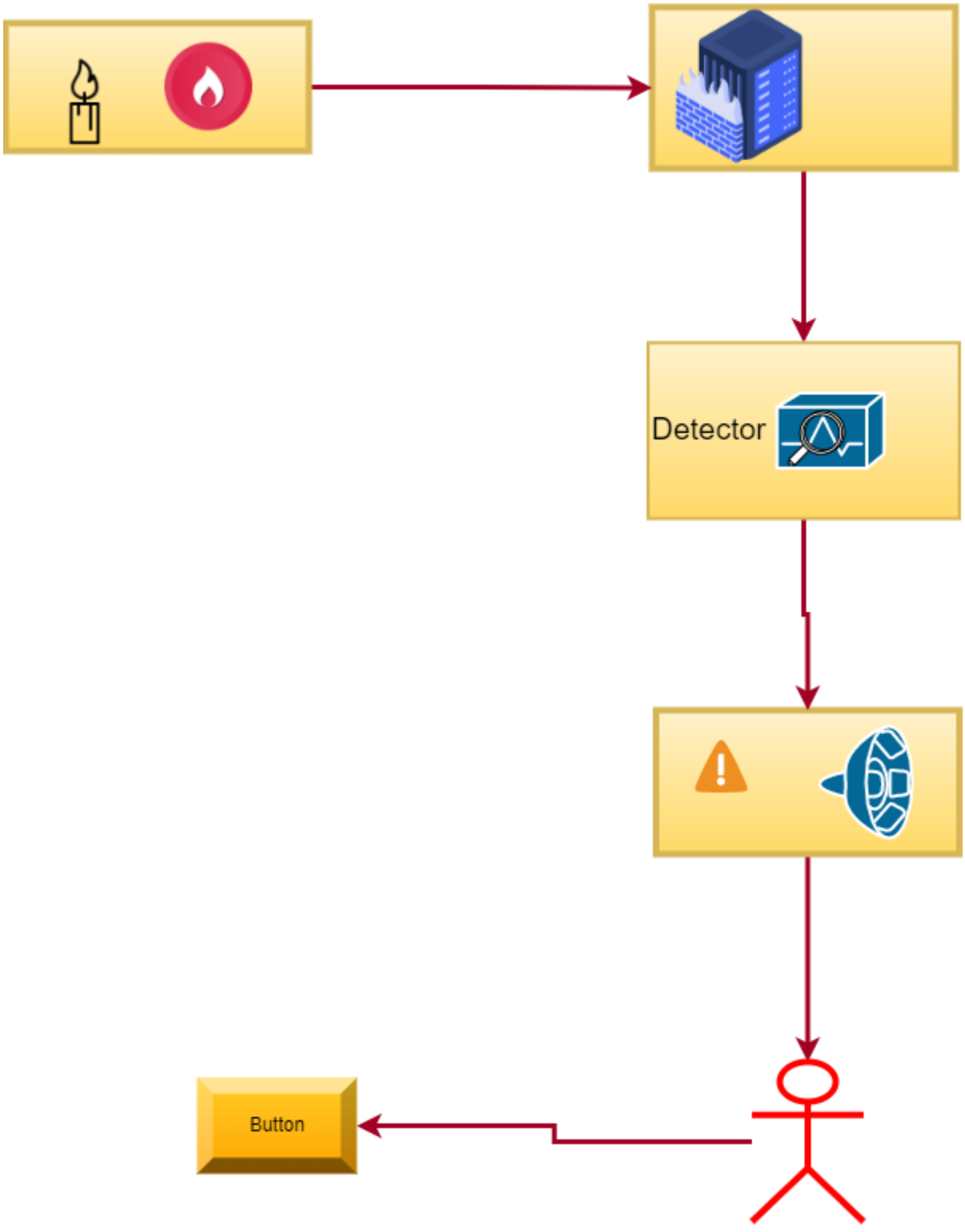
3.1 Structural Diagram



3.2 Behavioral Diagram



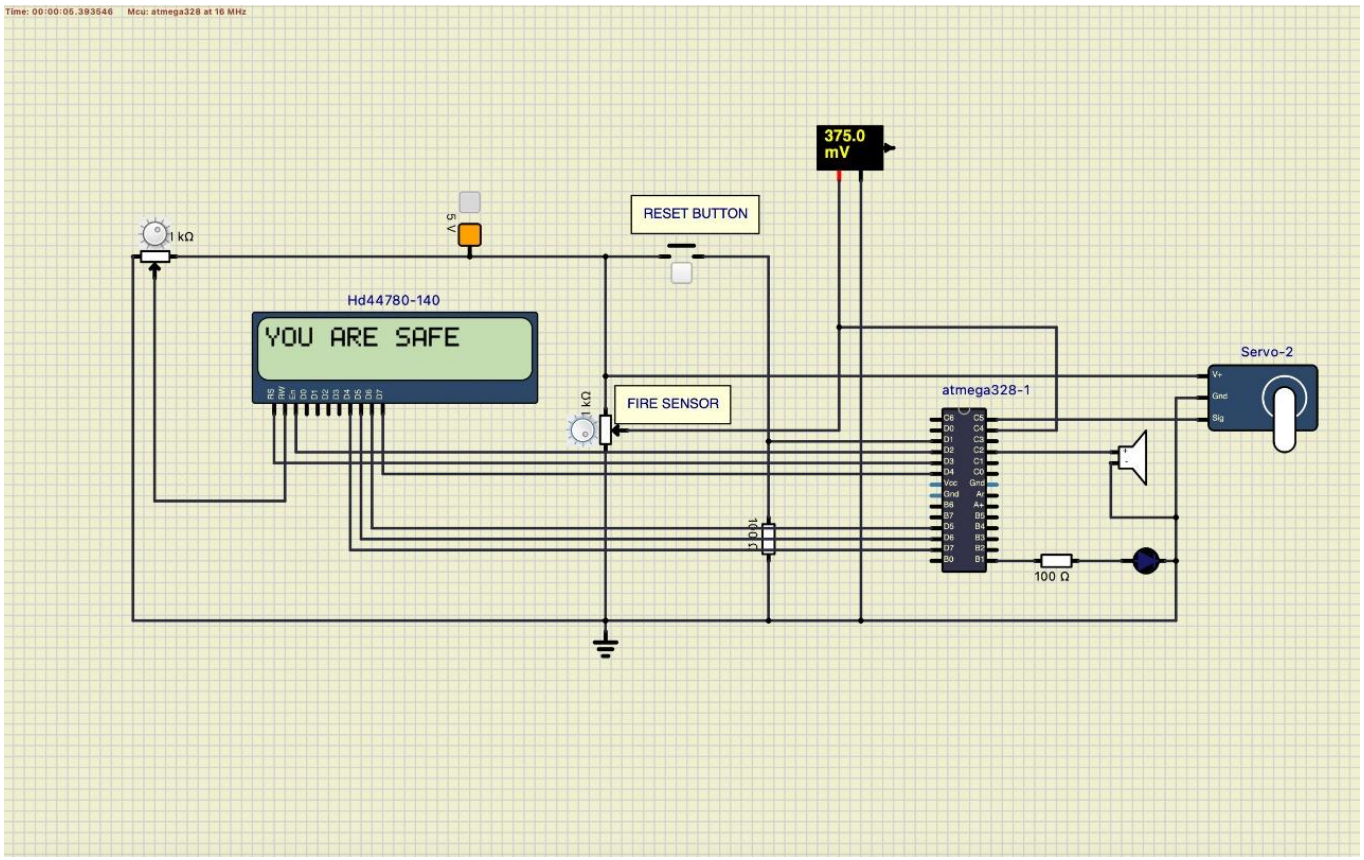
3.3 Behavioral Diagram

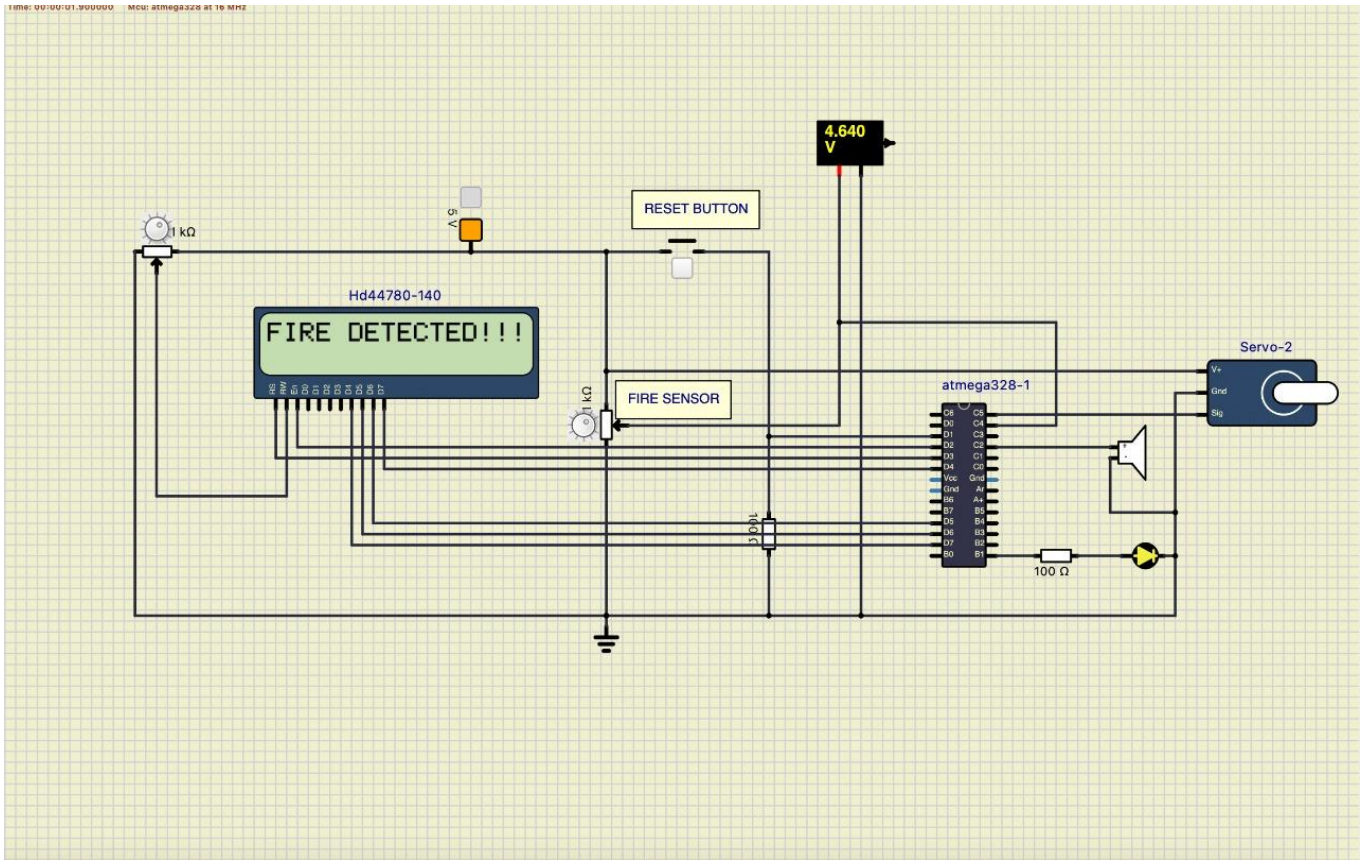


4.0 Test cases

Test ID	Description	Input	Expected output	Actual Output	Passed Or Not
01	Potentiometer(0 to 1024)	value < 200	fire not detected	fire not detected	✅
02	Potentiometer(0 to 1024)	value >200	fire is detected	fire detected	✅
03	servo motor	fire is detects	Door Opens	Door Opens	✅
04	servo motor	fire is not detects	Door Closes	Door Closes	✅
05	LED	fire detects	Light On	Light On	✅
06	LED	fire is not detects	Ligh Off	Light off)	✅
07	lcd display	fire detects	fire detecteed !!!	fire detected !!!	✅
08	lcd display	fire not detects	you are safe	you are safe	✅
09	buzzer	fire detects	sound on	sound on	✅
10	buzzer	fire not detects	sound off	sound off	✅

5.0 Simulation


Time: 00:00:05.393646 Mcu: atmega328 at 16 MHz
375.0 mV
RESET BUTTON
5 V
1 kΩ
Hd44780-140
YOU ARE SAFE
FIRE SENSOR
1 kΩ
atmega328-1
Servo-2
V+
Gnd
Sig
100 Ω
100 Ω



https://youtu.be/AUkeZzn_j1s

https://www.youtube.com/watch?v=AUkeZzn_j1s&t=1s