Software Explanations –

All sensors are collecting data and processing through the Arduino Nano 33 IoT to the web to google firebase.

Flame sensor, BME680, ambient light sensor, buzzer, LCD Module, MAX30102 sensor, TMP36, Arduino Nano 33 IoT with inbuilt 3-axis accelerometer and gyroscope and RTC.

The flame, BME680, MAX30102, TMP36 and ambient light sensors are all working passively, getting data from the environment and person and sends the data to the web with timestamp (RTC).

The flame sensor detects if there is a fire, if there is, the buzzer sounds.

The BME680 detects if there is bad air quality, if there is, the buzzer sounds.

The inbuilt accelerometer and gyro senses vibration, if over a threshold, the buzzer sounds.

Ambient light sensor is for detected room brightness and changes the backlight of the LCD.

The LCD displays all the data and has a clock feature.

When the rotary encoder is turned, the LCD will scroll through the data, basically displaying the data of the different sensors.

The push switch is also on the PCB for extra peripheral / redundancy.

All the sensor data will be sent to the web to google firebase.

Using polling / interrupts to get the data at specific intervals.