Industry-specific intelligent fire management system

1.INTRODUCTION

1.1.PROJECT OVERVIEW

Fire prevention and protection in industrial plant basically include procedures for preventing, detecting and extinguishing fires. There is much to be done to promote safe systems for fire prevention in India. The systems should be designed to protect the employees and property and to assure safe working systems. Fire prevention and protection in any industrial plant include fire detection system, fire alarm system, fire prevention plan and employing legal requirements relevant to fire and safety management.Fire alarm systems have been around for a long time, but until recently, they were only capable of detecting fire and sounding an alarm. Modern smart fire alarm systems are equipped with a variety of features that can do everything from automatically ventilating the building to alerting you via text message when a fire is detected.

1.2 PURPOSE

To prevent fire accidents in the plant by reducing the fire hazard to minimum.The main objective of the project is to eliminate the fire accident which further leads to work stoppage and loss of production.Fire dangers are the most hazardous of all because, if a fire breaks out in a building, it will not only destroy that portion but quickly spreads, possibly resulting in death. Though few fire incidents are avoidable and predicted early, the majority are not; thus, fire safety precautions are necessary.

2.LITERATURE SURVEY

2.1 EXISTING PROBLEM

Fire and gas detections are vital issues for all spheres of lives where precautions are very important. To ensure safety condition a system has been developed which is reliable in detecting fire and gas leakage and can even detect the specific room or floor in which the fault is present. Moreover, the system can send an alert message regarding the information of fire detection

or gas leakage to the nearest fire service station. An Adaptive neuro-fuzzy Inference System (ANFIS) is used i to calculate the maximum likelihood of the true presence of fire and generate fire alert. The novel idea proposed in this paper is to use ANFIS for the identification of a true fire incident by using change rate of smoke, the change rate of temperature, and humidity in the presence of fire.

2.2 REFERENCES

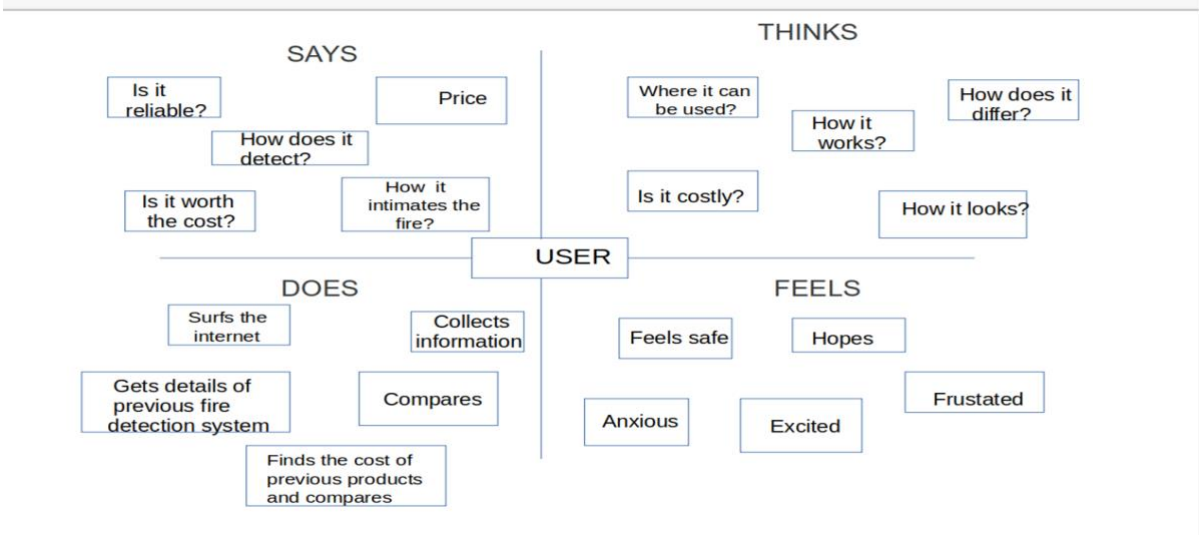
[1] Bu, F. and Gharajeh, M. S., “Intelligent and vision-based fire detection systems: A survey,” Image and Vision Computing, vol. 91, 2019, Art. no. 103803.
[2] Saeed F., Paul, A., Rehman, A., Hong, W. H., Seo, H., “IoT-based intelligent modeling of smart home environment for fire prevention and safety,” Journal of Sensor and Actuator Networks, vol. 7, no. 1, 2018, Art. no. 11.
[3] Saeed, F., Paul, A., Karthigaikumar, P. and Nayyar, A., “Convolutional neural network based early fire detection,” Multimedia Tools and Applications, vol. 79, pp. 9083-9099, 2020.
[4] Shokouhi, M., Nasiriani, K., Khankeh, H., Fallahzadeh, H. and Khorasani-Zavareh, D., “Exploring barriers and
challenges in protecting residential fire-related injuries: a qualitative study,” Journal of injury and violence research, vol. 11, no. 1, pp. 81-92, 2019.
[5] Kodur, V., Kumar, P. and Rafi, M. M., “Fire hazard in buildings: review, assessment and strategies for improving fire safety,” PSU Research Review, vol. 4, no. 1, pp. 1-23, 2019.

2.3 PROBLEM STATEMENT DEFINITION

Our project will be given the problem statement in Fire Management in industry using IOT.The most frequently used applications of the lot in the fire management system are for detecting fire and alerting fire departments over IOT.Fire management system includes application of multiple sensors with automatic water sprinkler which can help to detect fire and alert emergency services to protect lives and valuable assets.Fire detection systems increase response times, as they are able to alert the correct people in order to extinguish the fire.

3.IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



3.2 IDEATION AND BRAINSTORMING

The Forest fires are one of the most critical catastrophes which has been initiated mostly by global warming. Due to environmental pollution, nature can make this threat even worse by destroying themselves and mankind. In recent years, few works have been carried out on forest management using wireless sensor networks. However, forest management with the help of wireless sensor networks are still having issues in the quality of data, delay in arrival. Currently there is a big wave of IoT and Edge computing deployed in a lot of smart city applications for processing the data closer to devices for quick action rather than cloud. So, with this as basis, we propose an IoT-Fog based Forest Fire Monitoring system. The proposed IoT – Fog based framework for forest fire management system is used for monitoring and alerting to safeguard the trees and wildlife.

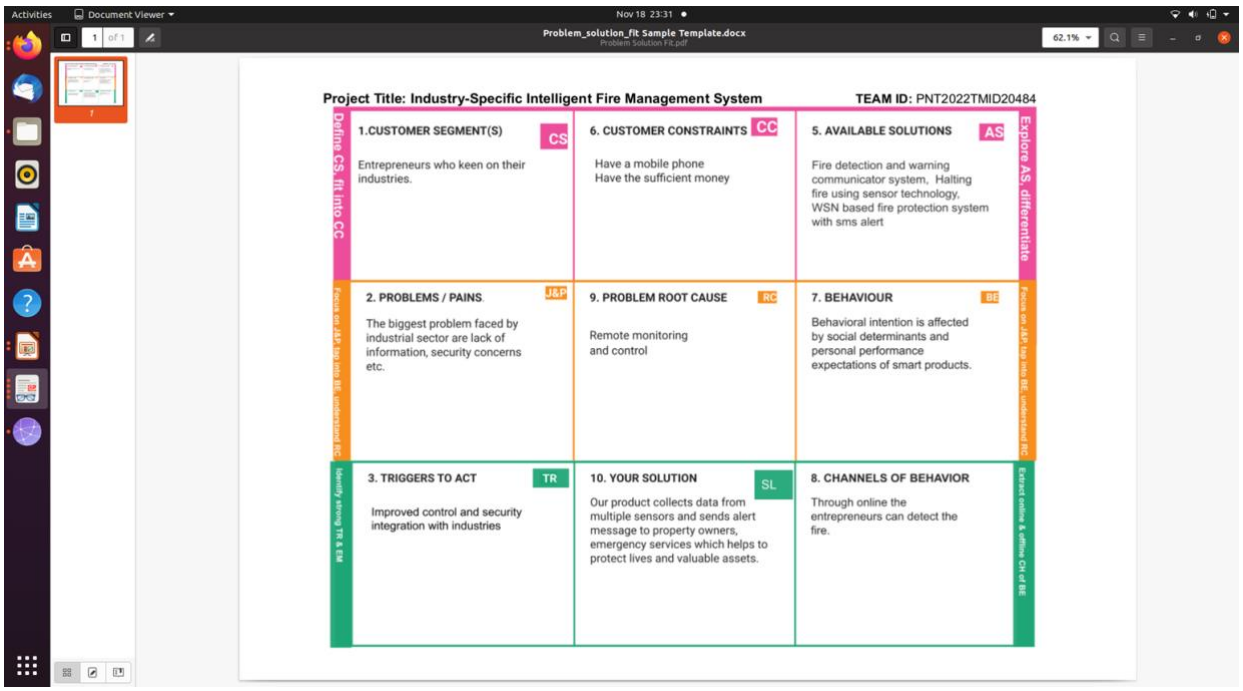
3.3 PROPOSED SOLUTION

The most frequently used applications of the Iot in the fire management system are for detecting fire and alerting fire departments over IOT.Certain substances commonly used in industrial settings can ignite with the slightest spark, or even by static electricity, so even a small leak can cause a fire.The proposed model employs different integrated detectors, such as heat, smoke, and flame.A smart fire system is generally made up of various components,

including fire alarms, smoke detectors, heat detectors and a method of fire suppression. A smart fire system will use these components to collect data, manage and notify the user of a triggered event, all through a smartphone or device.

S. No	Parameter	Description
1.	Problem Statement	Our project will be given the problem statement in Fire Management in industry using IOT.
2.	Idea/Solution description	The most frequently used applications of the Iot in the fire management system are for detecting fire and alerting fire departments over IOT.
3.	Novelty/Uniqueness	Fire management system includes application of multiple sensors with automatic water sprinkler which can help to detect fire and alert emergency services to protect lives and valuable assets.
4.	Social Impact / Customer Satisfaction	Certain substances commonly used in industrial settings can ignite with the slightest spark, or even by static electricity, so even a small leak can cause a fire.The proposed model employs different integrated detectors, such as heat, smoke, and flame.
5.	Business Model(Revenue Model)	A smart fire system is generally made up of various components, including fire alarms, smoke detectors, heat detectors and a method of fire suppression. A smart fire system will use these components to collect data, manage and notify the user of a triggered event, all through a smartphone or device.
6.	Scalability of the Solution	Fire detection systems increase response times, as they are able to alert the correct people in order to extinguish the fire.

3.4 PROBLEM SOLUTION FIT



4.REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

A functional requirement defines a function of a system or its component, where a function is

- described as a specification of behaviour between inputs and outputs.
- It specifies “what should the software system do?”
- Defined at a component level
- Usually easy to define
- Helps you verify the functionality of the software

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through mobile number
FR-2	User Confirmation	Confirmation via Email (OTP) Confirmation via OTP Through GSM
FR-3	Fire Detection Monitoring	In the industry we are monitor the Fire Detection using some sensors.
FR-4	Intimate the Fire in the Industry	In case of any fire in industry we intimate the related Management through the Web Application.

4.2 NON-FUNCTIONAL REQUIREMENTS

A non-functional requirement defines the quality attribute of a software system

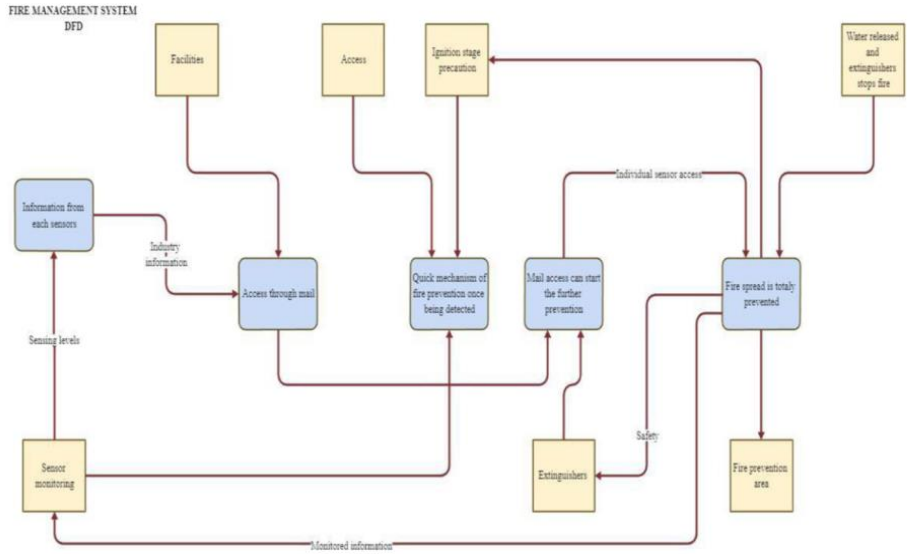
- It places constraint on "How should the software system fulfil the functional requirements?"
- It is not mandatory
- Applied to system as a whole
- Usually more difficult to define
- Helps you verify the performance of the software

Following are the non-functional requirements of the proposed solution.

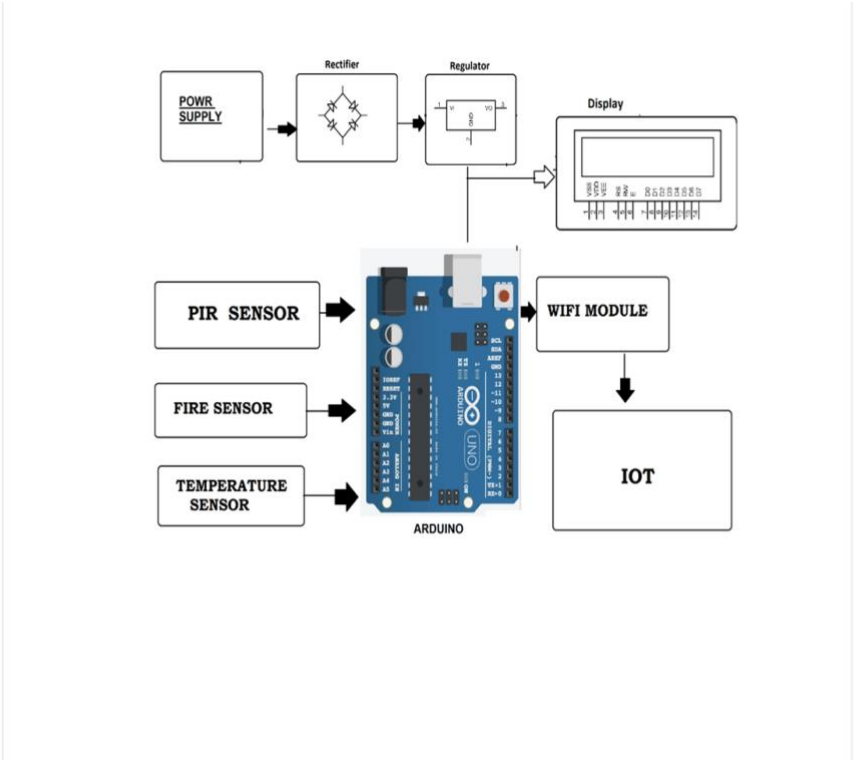
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	It is the simple and Economic Easy to use
NFR-2	**Security**	The Web application is highly secured.
NFR-3	**Reliability**	It has high Reliability. The application runs accurately.
NFR-4	**Performance**	Fire detection will intimate immediately through the web application and it also maintain the Records
NFR-5	**Availability**	In our project we are Monitoring the Industry in day and night (24/4). In case of Fire detect we intimate the management.
NFR-6	**Scalability**	We provide a high scalability our project/Application will use 'n' number of users.

5.PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS



5.2 SOLUTION & TECHNICAL ARCHITECTURE



5.3 USER STORIES

User Type	Functional requirement	User story number	User story/task	Acceptance criteria	Priority	Release
Customer (Mobile user, Web user, Care executive, Administrator)	Registration	USN-1	As a user, I can register for the application by entering my mail, password, and confirming my password	I can access my account/ dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
	Dashboard	USN-3	As a user, I can register for the application through internet	I can register & access the dashboard with Internet login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can confirm the registration in Gmail	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can login with my id and password	High	Sprint-1

6.PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANNING AND EXECUTION

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my Gmail, email then you can receive the OTP or Verification Code.	2	High	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed
Sprint-1		USN-2	As a user, I will receive confirmation Gmail or email once I have registered for the application.	1	High	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed
Sprint-2		USN-3	As a user, I can register for the application through Gmail and phone number.	2	Low	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
	Dashboard	USN-6	Once confirmation message received after login the system and Check Credentials After checking credentials, go to Manage modules.	2	High	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed
		USN-7	In this manage modules described the below functions like Manage System Admins Manage Roles of User Manage User permission and etc..	2	Medium	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed
	Logout	USN-8	Then check smoke level and electro magnetic radiation on the atmosphere after that logout or exist the application.	1	Medium	Muthu Lakshmi, Shirlin Jeno Wincy, Mohamed Anas, Nishar Ahamed

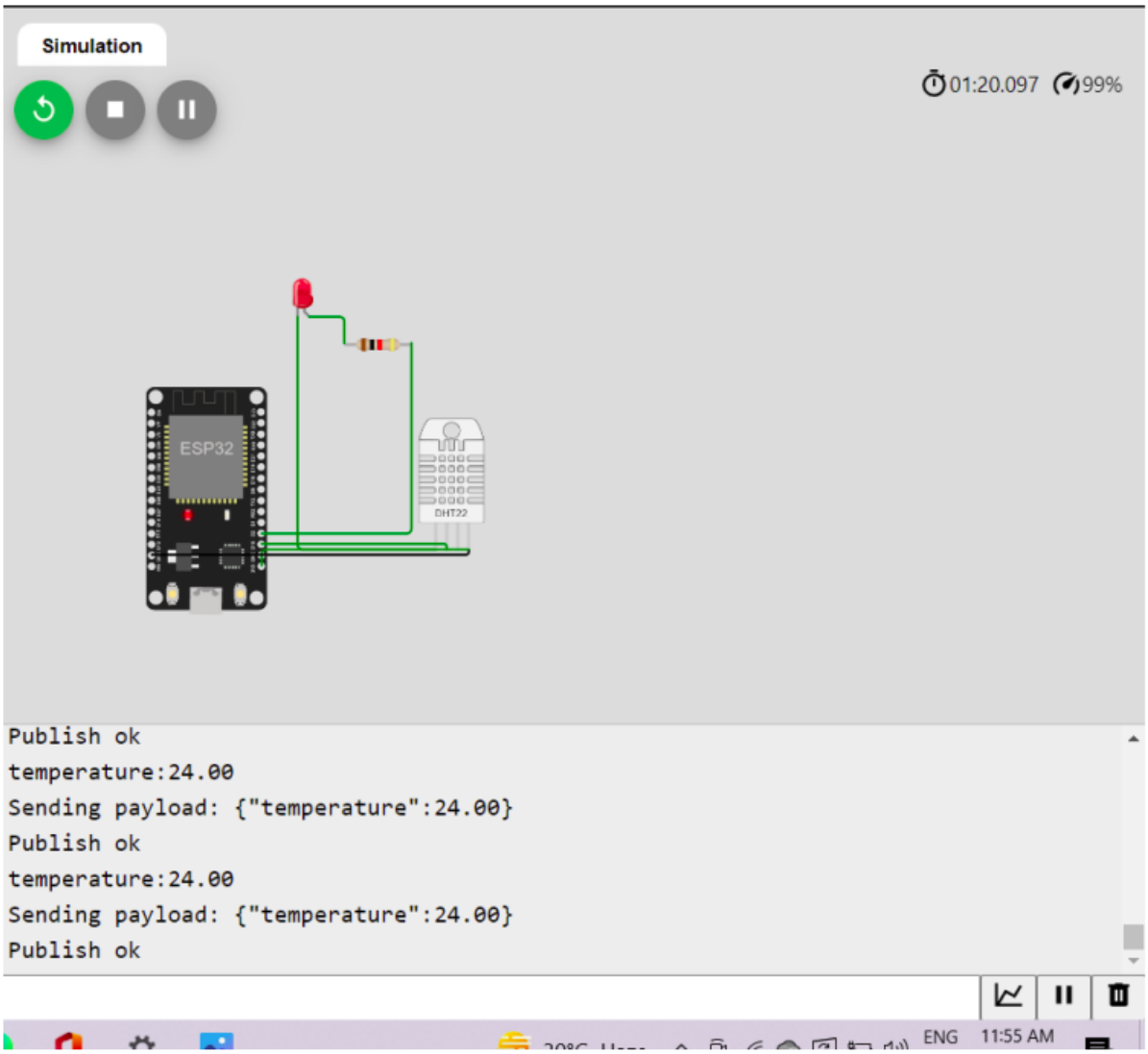
6.2 SPRINT DELIVERY SCHEDULE

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	35	31 Oct 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	45	05 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	50	07 Nov 2022

SPRINT 1

Display Temperature values :

https://wokwi.com/projects/348737733541233235



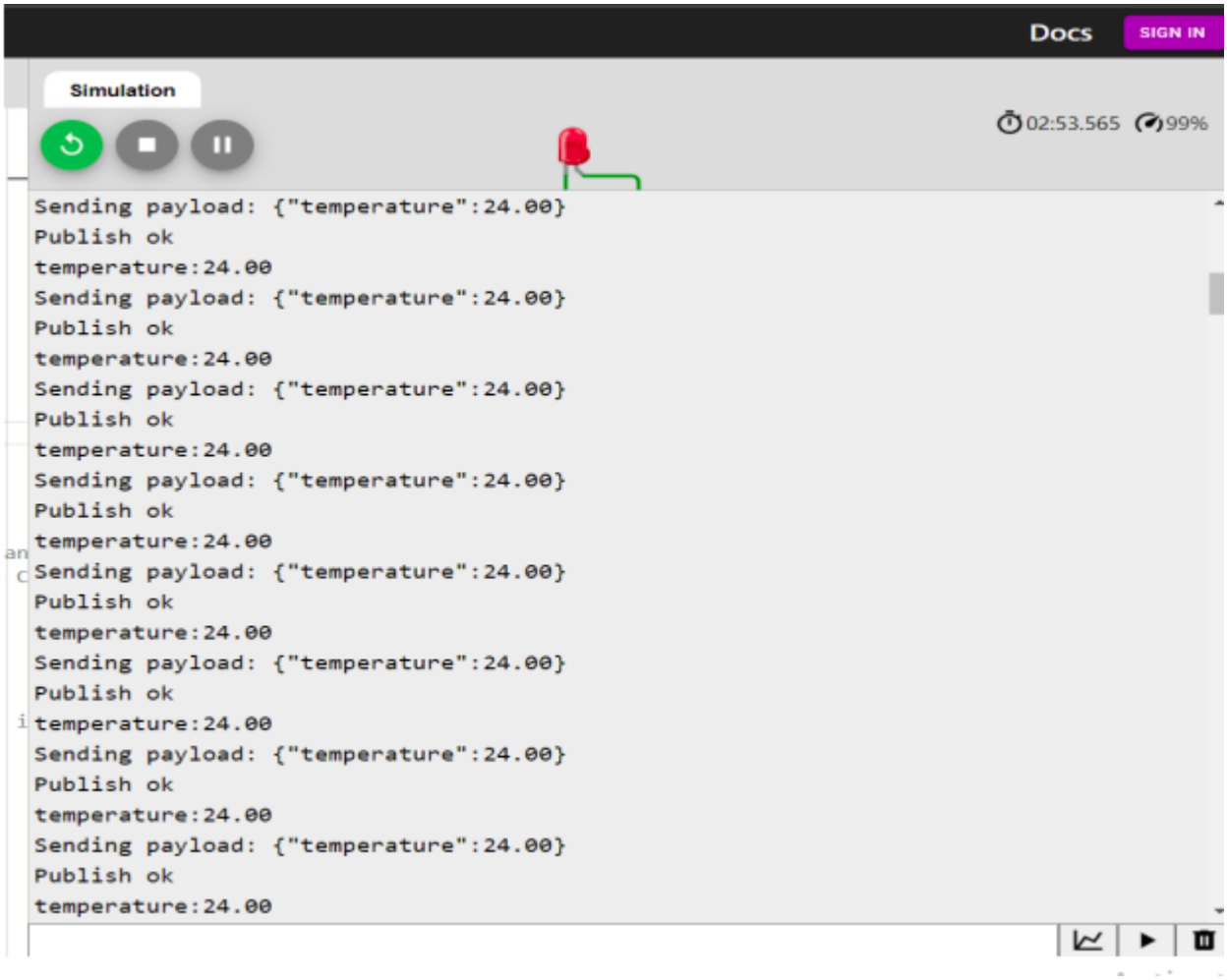

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include "DHT.h"// Library for dht11
#define DHTPIN 15 // what pin we're connected to
#define DHTTYPE DHT22 // define type of sensor DHT 11
#define LED 2
DHT dht (DHTPIN, DHTTYPE);
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//------credentials of IBM Accounts------
#define ORG "yzs5sj"//IBM ORGANITION ID
```

```
#define DEVICE_TYPE "fire_IoT"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "17082001"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "1911089abcdefgh" //Token
String data3;
float t;
//------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type ofevent perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd REPRESENTcommand type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
//-------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling thepredefined client id by passing parameter like server id,portand wificredential
void setup()// configureing the ESP32
{
 Serial.begin(115200);
dht.begin();
 pinMode(LED,OUTPUT);
 delay(10);
 Serial.println();
wificonnect();
mqttconnect();
}
void loop()// Recursive Function
```

```
{
t = dht.readTemperature();
 Serial.print("temperature:");
 Serial.println(t);
PublishData(t);
 delay(1000);
 if (!client.loop()) {
mqttconnect();
}
}
/*.....retrieving toCloud.....*/
void PublishData(float temp) {
mqttconnect();//function call for connecting to ibm
 /*
creating the String in in form JSon to update the data to ibm cloud
*/
 String payload = "{\"temperature\":";
payload += temp;
payload += "}";
 Serial.print("Sending payload: ");
 Serial.println(payload);
 if (client.publish(publishTopic, (char*) payload.c_str())) {
 Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it
will print publish ok in Serial monitor or else it will print publish failed
} else {
 Serial.println("Publish failed");
}
}
void mqttconnect() {
 if (!client.connected()) {
 Serial.print("Reconnecting client to ");
```

```
 Serial.println(server);
 while (!!!client.connect(clientId, authMethod, token)) {
 Serial.print(".");
 delay(500);
}
initManagedDevice();
 Serial.println();
}
}
void wificonnect() //function defination for wificonnect
{
 Serial.println();
 Serial.print("Connecting to ");
WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials toestablish the
connection
 while (WiFi.status() != WL_CONNECTED) {
 delay(500);
 Serial.print(".");
}
 Serial.println("");
 Serial.println("WiFi connected");
 Serial.println("IP address: ");
 Serial.println(WiFi.localIP());
}
void initManagedDevice() {
 if (client.subscribe(subscribetopic)) {
 Serial.println((subscribetopic));
 Serial.println("subscribe to cmd OK");
} else {
 Serial.println("subscribe to cmd FAILED");
}
```

```
}
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength)
{
 Serial.print("callback invoked for topic: ");
 Serial.println(subscribetopic);
 for (int i = 0; i < payloadLength; i++) {
 //Serial.print((char)payload[i]);
data3 += (char)payload[i];
}
 Serial.println("data: "+ data3);
 if(data3=="lighton")
{
Serial.println(data3);
digitalWrite(LED,HIGH);
}
 else
{
Serial.println(data3);
digitalWrite(LED,LOW);
}
data3="";
}
}
```


Docs
SIGN IN
Simulation
02:53.565
99%
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00
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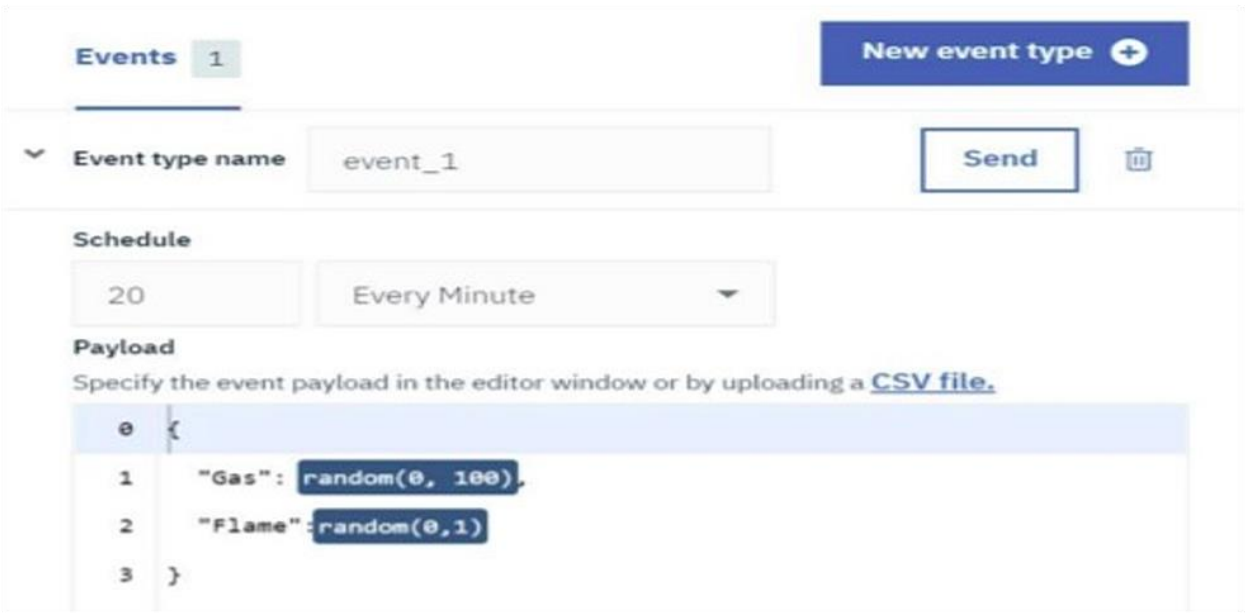
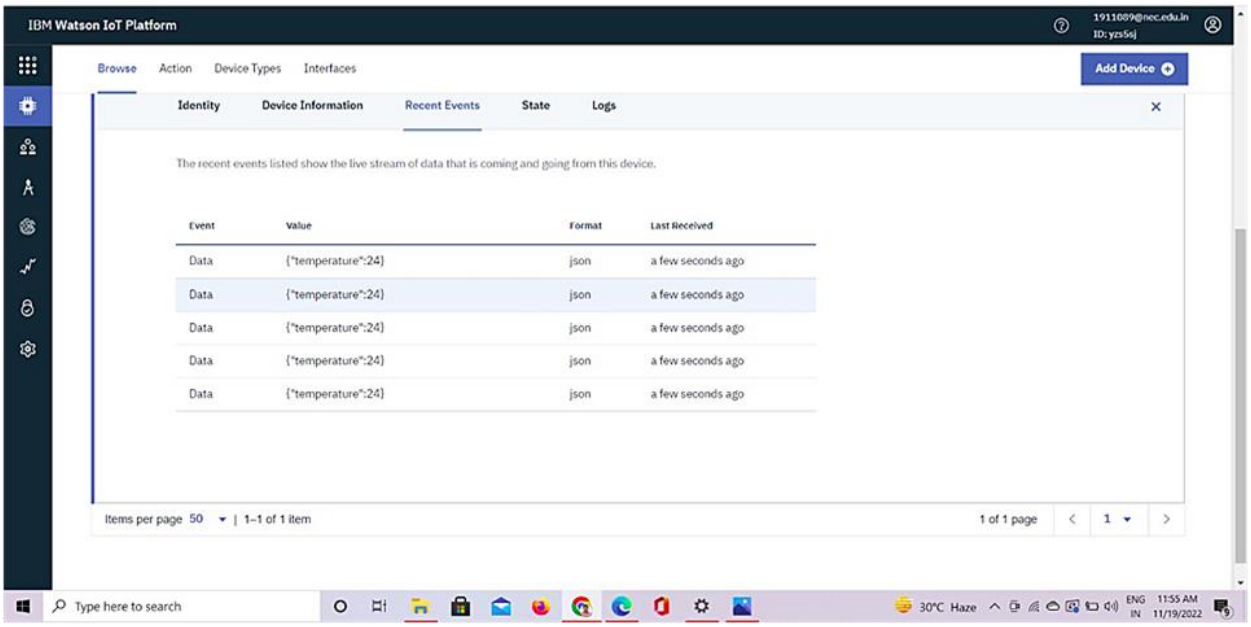
Publish ok
temperature:24.00
Sending payload: {"temperature":24.00}
Publish ok
temperature:24.00


Events 1
New event type
Event type name
event_1
Send
Schedule
20
Every Minute
Payload
Specify the event payload in the editor window or by uploading a CSV file.
0 {
1 "Gas": random(0, 100),
2 "Flame":random(0,1)
3 }

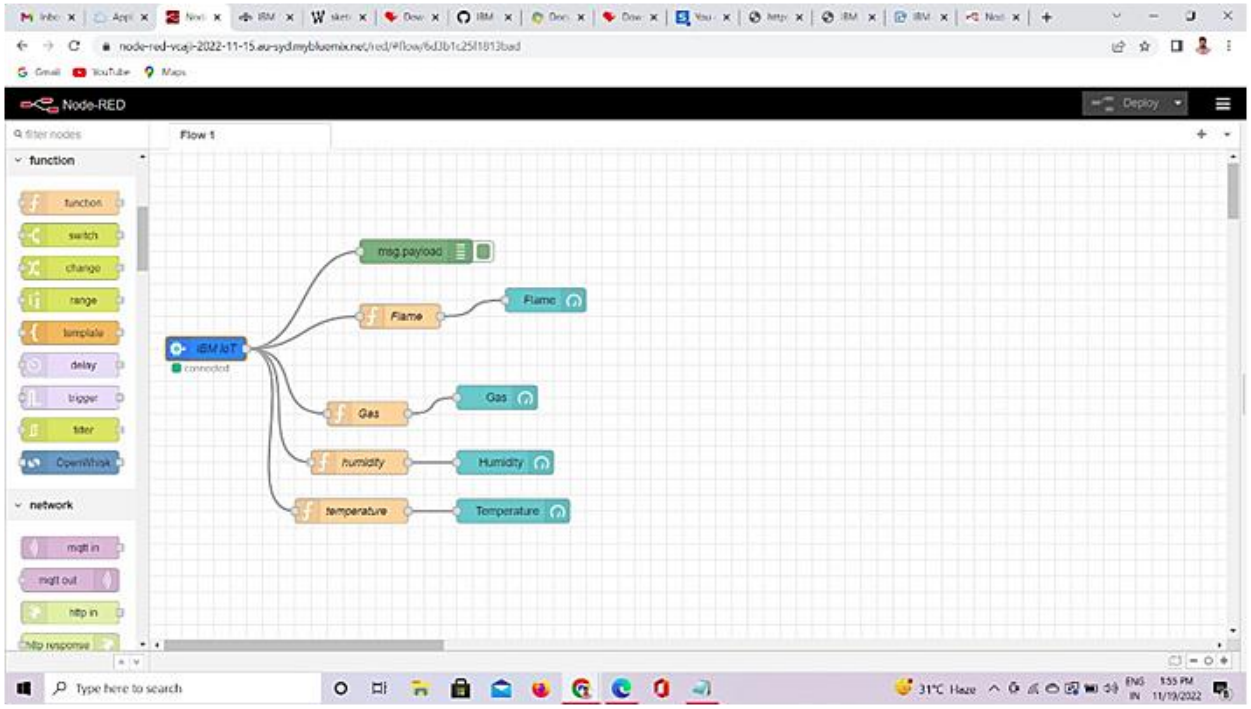


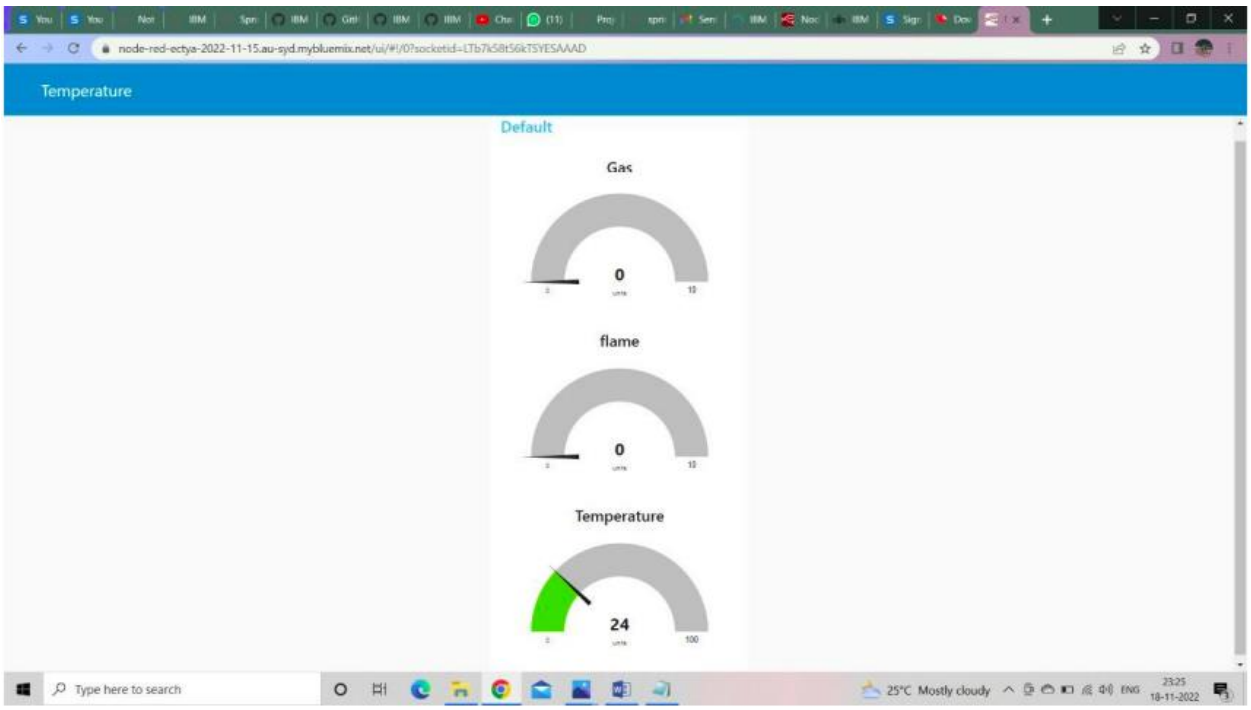
SPRINT 2

MONITORING SENSOR VALUES

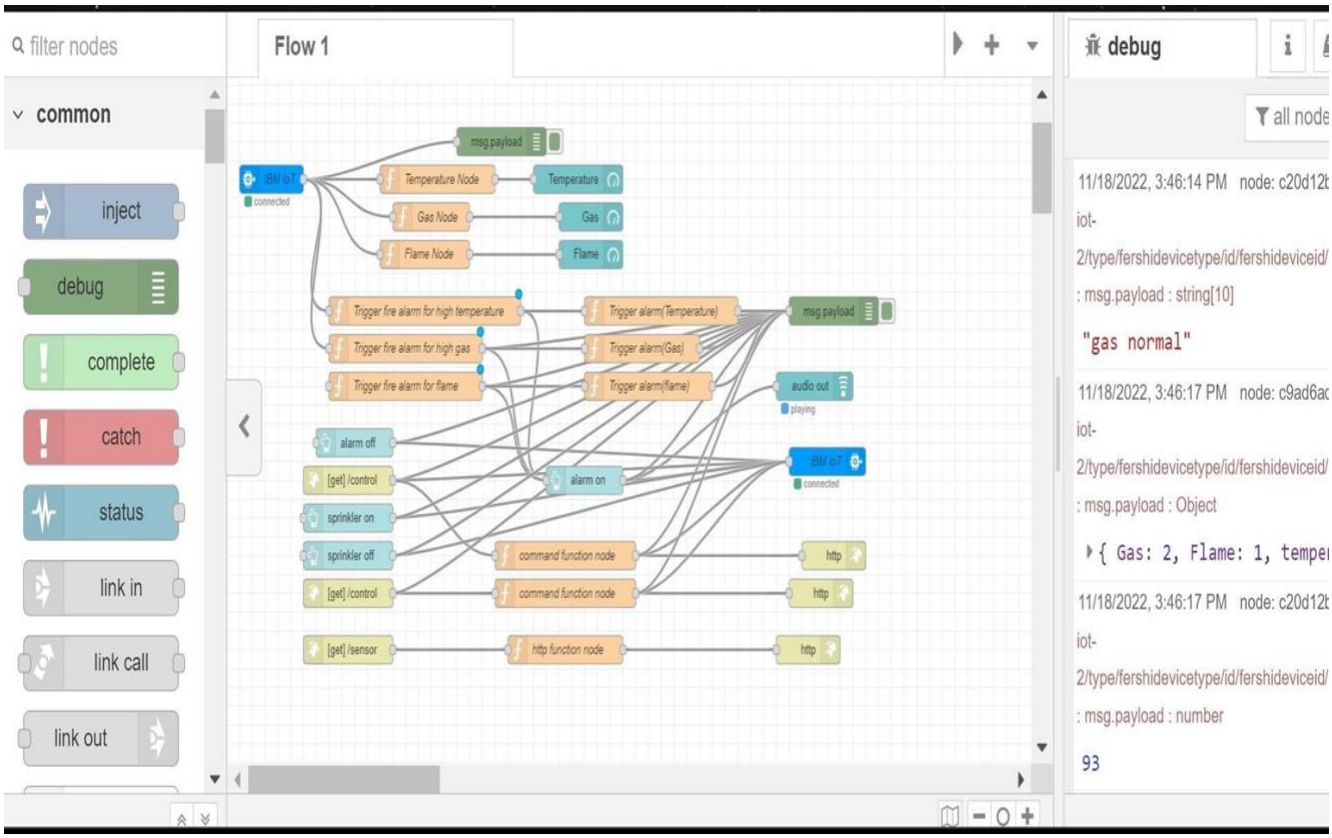
Display the temperature values,flame sensor,gas sensor in the dashboard:

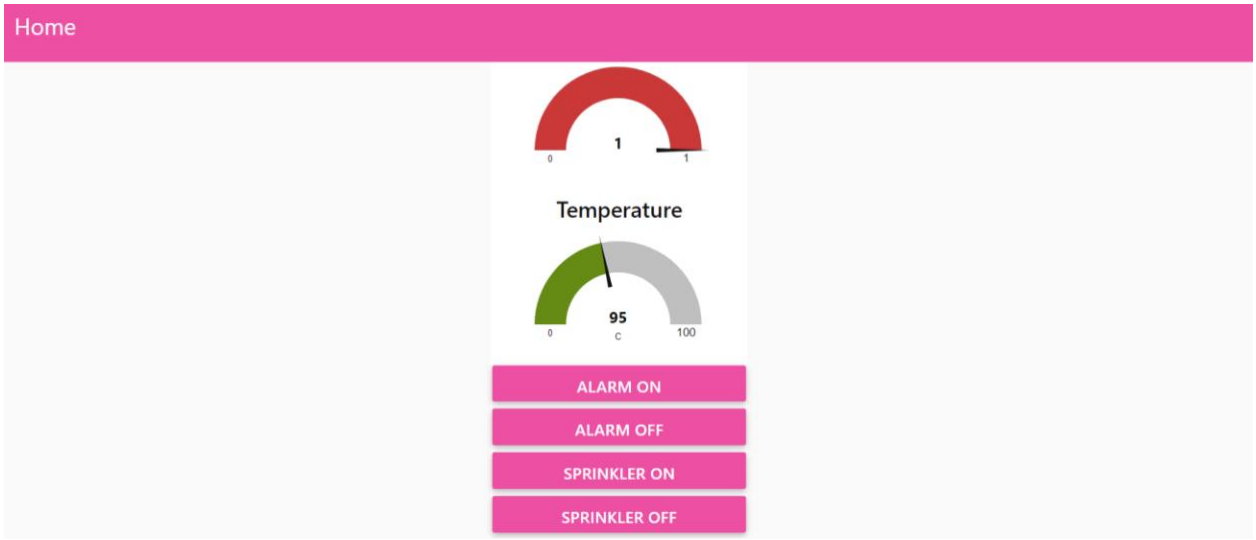
Display the temperature values,flame sensor,gas sensor in the dashboard:




Temperature
Default
Gas
0
flame
0
Temperature
24
Type here to search
25°C Mostly cloudy

SPRINT 3


filter nodes
Flow 1
debug
common
inject
debug
complete
catch
status
link in
link call
link out
msg.payload
Temperature Node
Temperature
Gas Node
Gas
Flame Node
Flame
Trigger fire alarm for high temperature
Trigger alarm(Temperature)
Trigger fire alarm for high gas
Trigger alarm(Gas)
Trigger fire alarm for flame
Trigger alarm(flame)
audio out
alarm off
[get] /control
alarm on
sprinkler on
sprinkler off
command function node
http
[get] /control
command function node
http
[get] /sensor
http function node
http
11/18/2022, 3:46:14 PM node: c20d12b
iot-
2/type/fershidevicetype/id/fershideviceid/
: msg.payload : string[10]
"gas normal"
11/18/2022, 3:46:17 PM node: c9ad6ac
iot-
2/type/fershidevicetype/id/fershideviceid/
: msg.payload : Object
{ Gas: 2, Flame: 1, tempe
11/18/2022, 3:46:17 PM node: c20d12b
iot-
2/type/fershidevicetype/id/fershideviceid/
: msg.payload : number
93


Home
1
0
1
Temperature
95
0
C
100
ALARM ON
ALARM OFF
SPRINKLER ON
SPRINKLER OFF


all node
11/18/2022, 3:47:14 PM node: c9ad6ad912607e2a
iot-2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/json : msg.p
{ Gas: 93, Flame: 1, temperature: 38 }
11/18/2022, 3:47:14 PM node: c20d12b97cbb6b1b
iot-2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/json : msg.p
38
11/18/2022, 3:47:14 PM node: c20d12b97cbb6b1b
iot-2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/json : msg.p
93
11/18/2022, 3:47:14 PM node: c20d12b97cbb6b1b
iot-2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/json : msg.p
"alarmon"
11/18/2022, 3:47:14 PM node: c20d12b97cbb6b1b
iot-2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/json : msg.p

: msg.payload : string[18]

"Temperature normal"

11/18/2022, 6:25:43 PM node: c20d12b97cbb6b1b

msg.payload : string[8]

"alarmoff"

11/18/2022, 6:25:43 PM node: c20d12b97cbb6b1b

msg.payload : string[8]

"alarmoff"

11/18/2022, 6:25:44 PM node: c9ad6ad912607e2

iot-

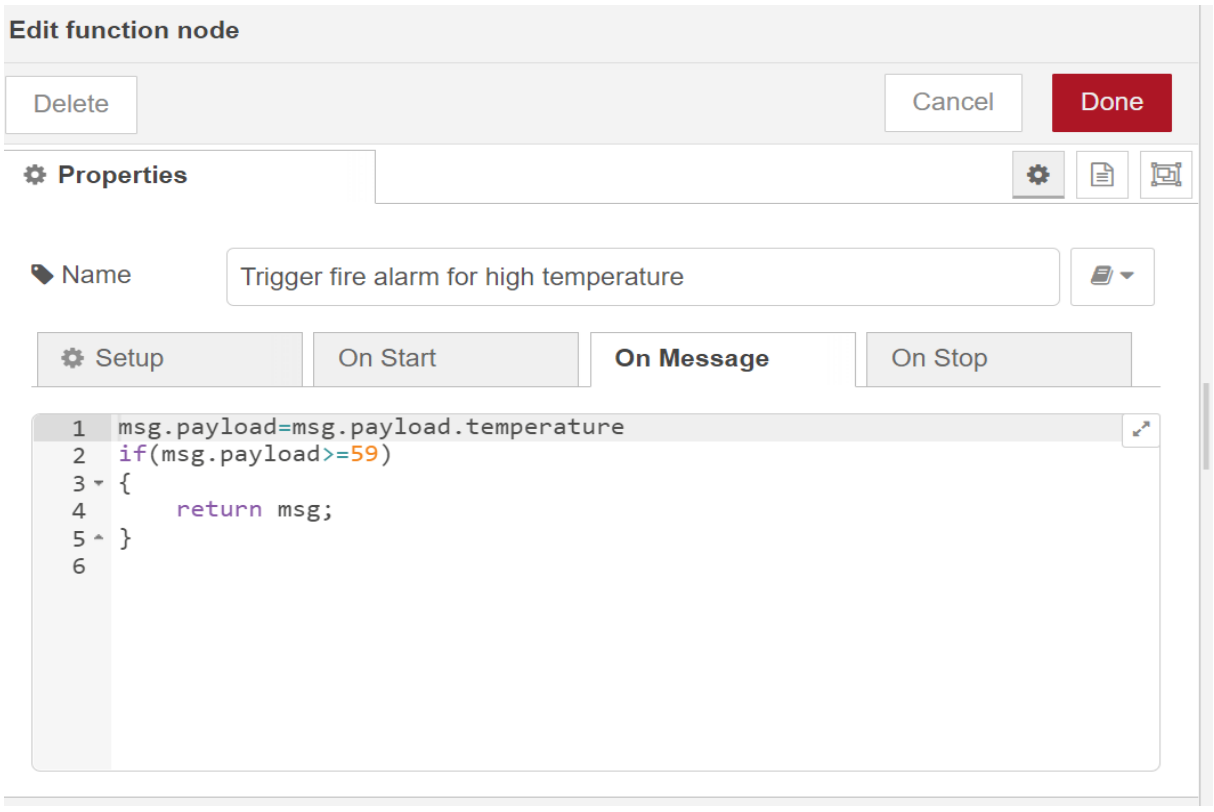
2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/js

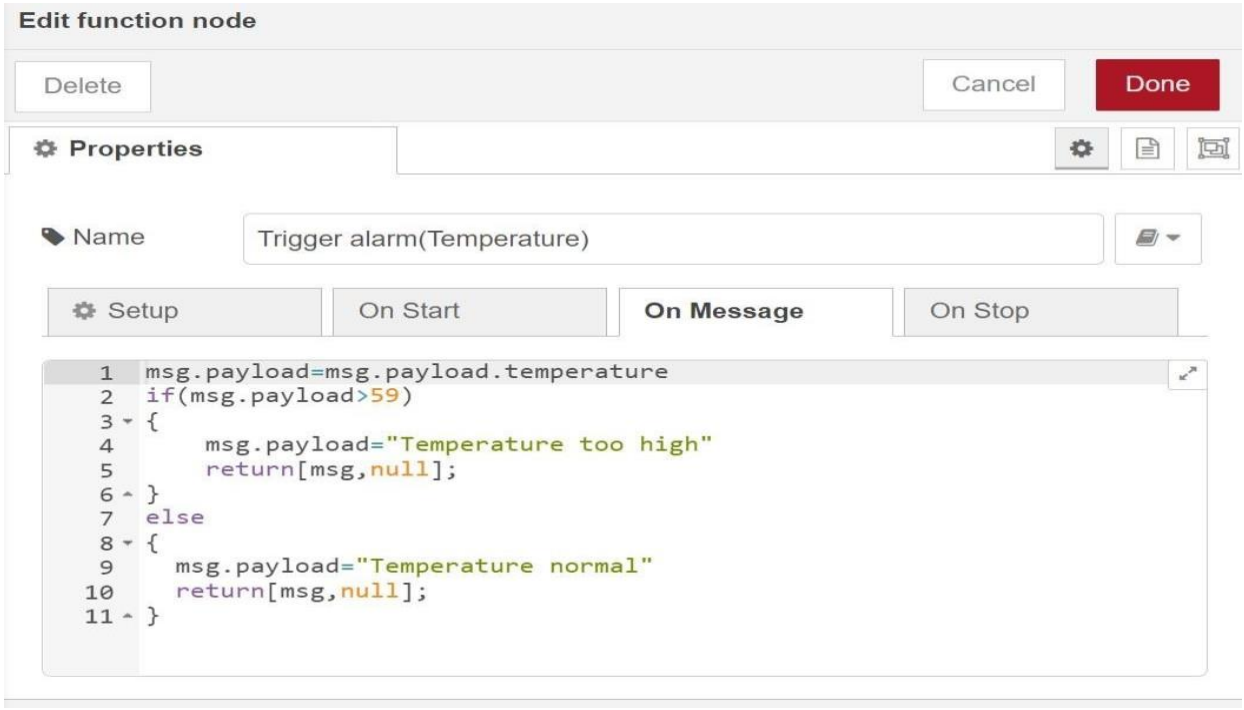
: msg.payload : Object

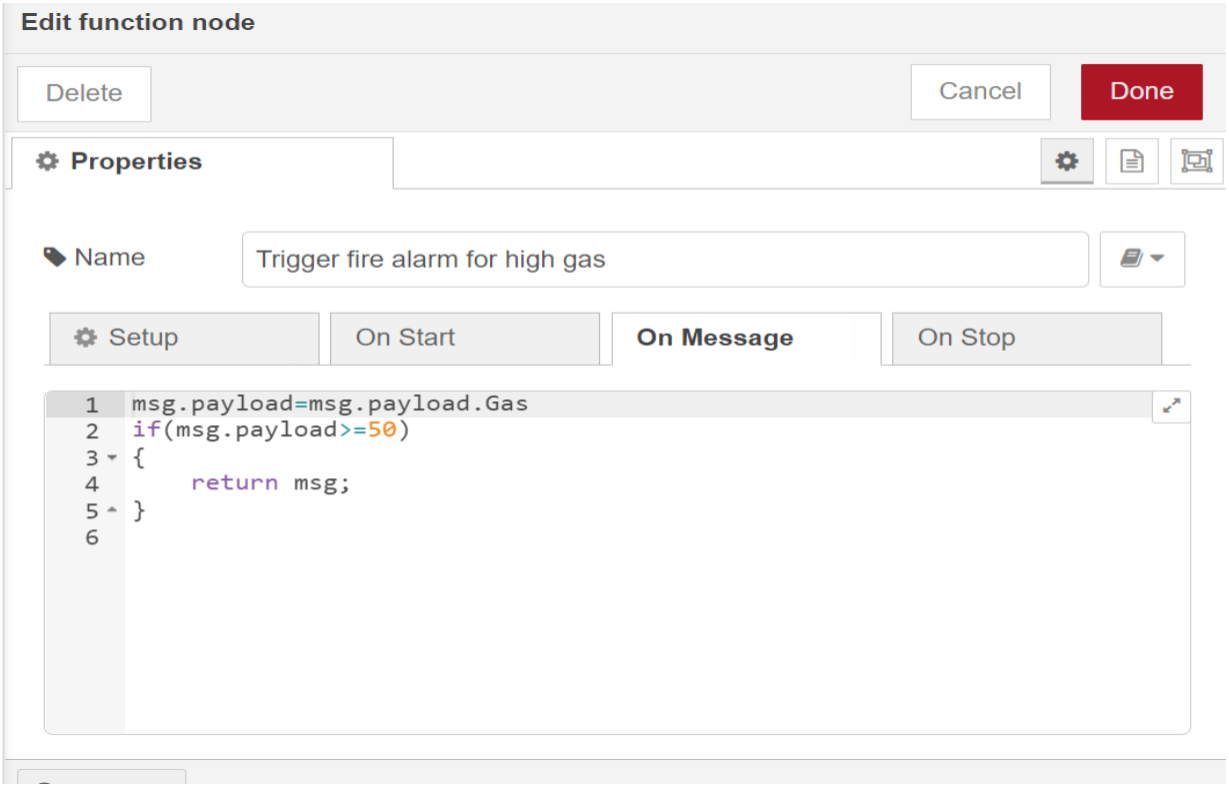
▶ { Gas: 62, Flame: 0, temperature: 35 }

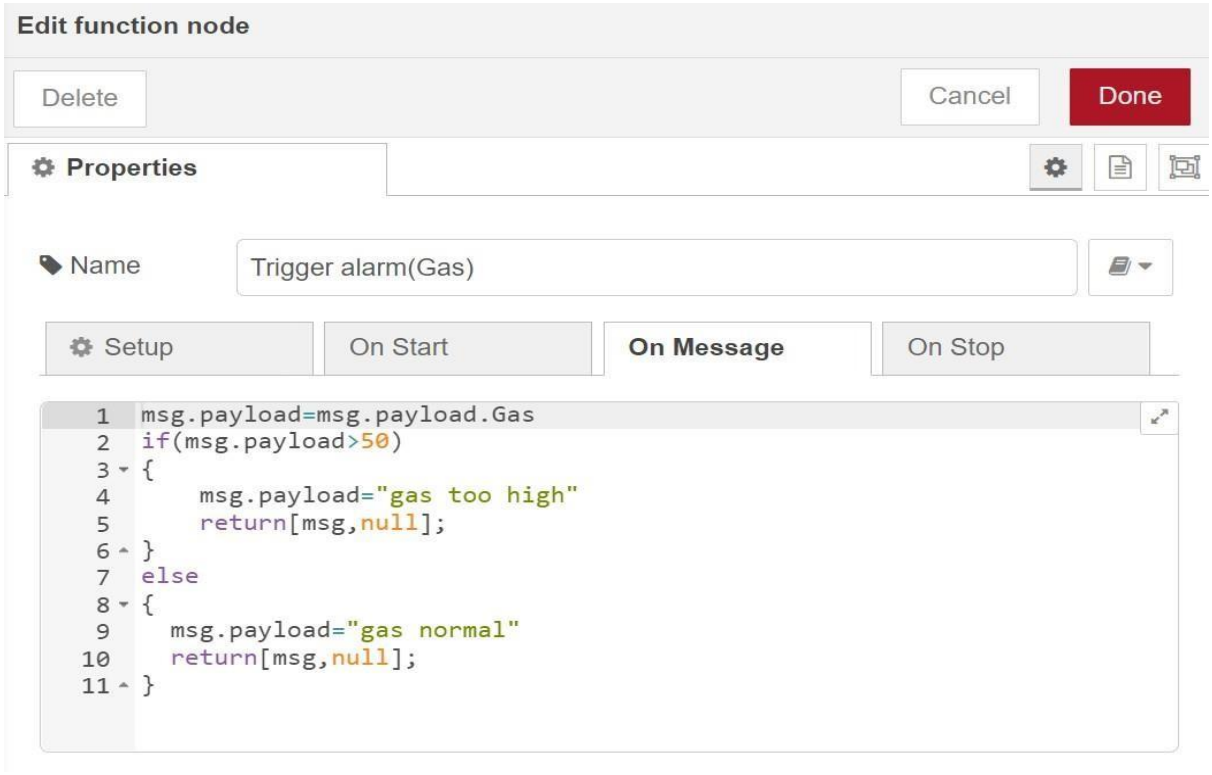
11/18/2022, 6:25:44 PM node: c20d12b97cbb6b1b

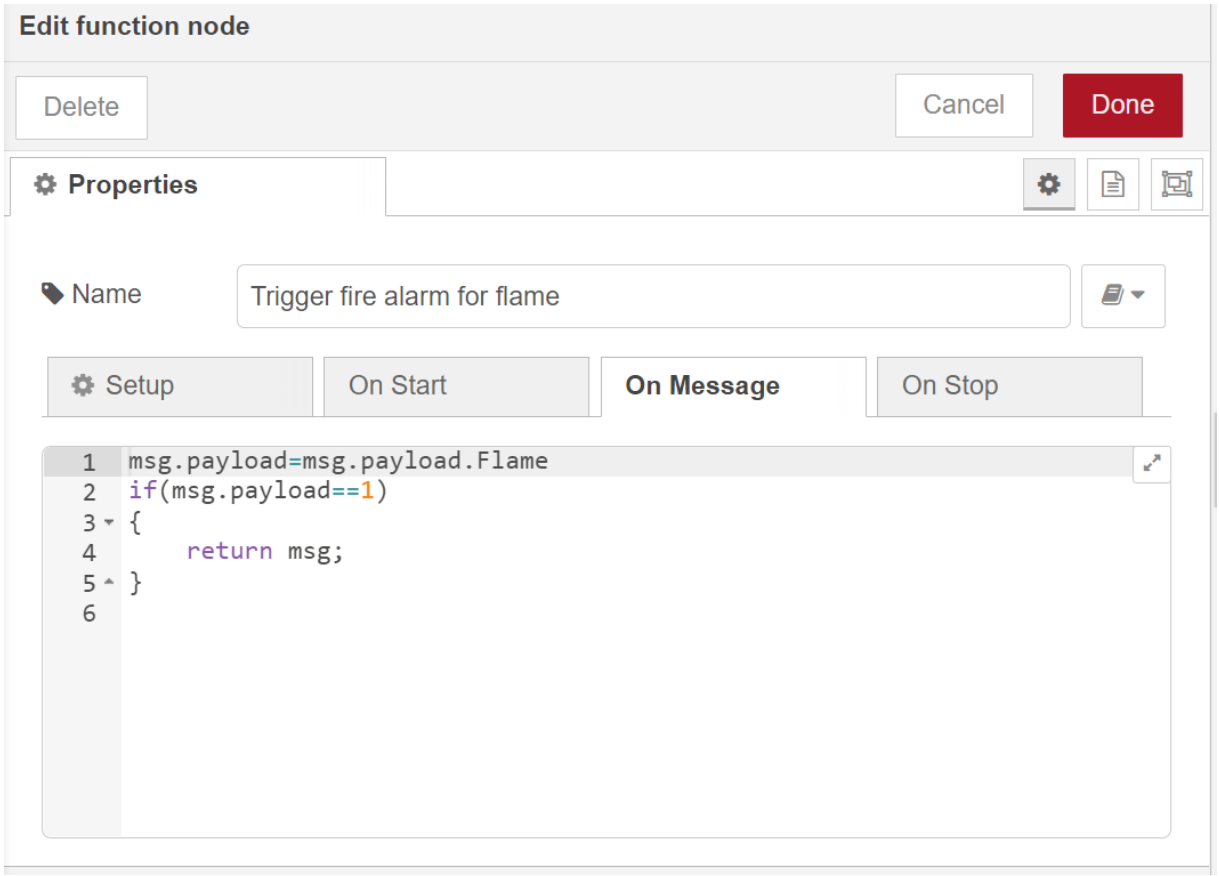
iot-

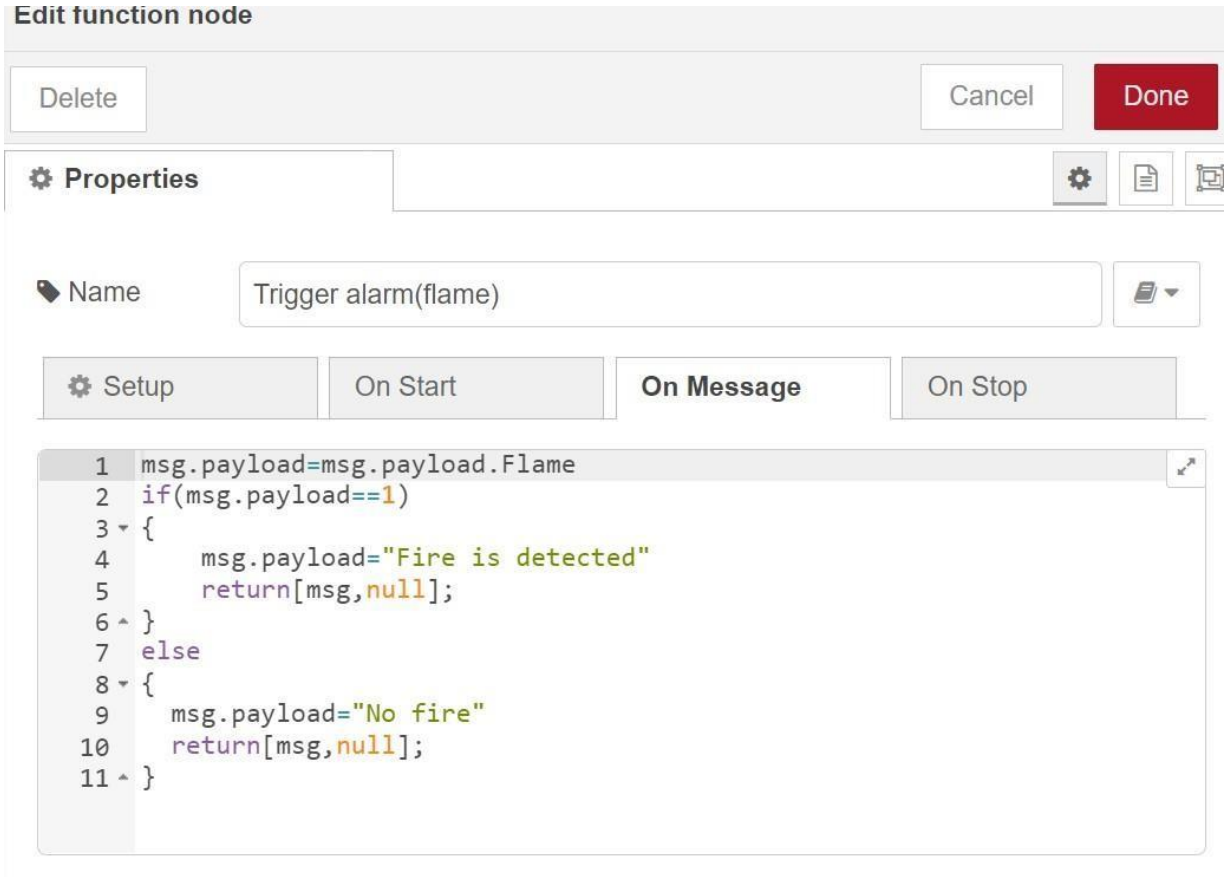



Edit function node
Delete
Cancel
Done
Properties
Name
Trigger alarm(Temperature)
Setup
On Start
On Message
On Stop
msg.payload=msg.payload.temperature
if(msg.payload>59)
{
msg.payload="Temperature too high"
return[msg,null];
}
else
{
msg.payload="Temperature normal"
return[msg,null];
}

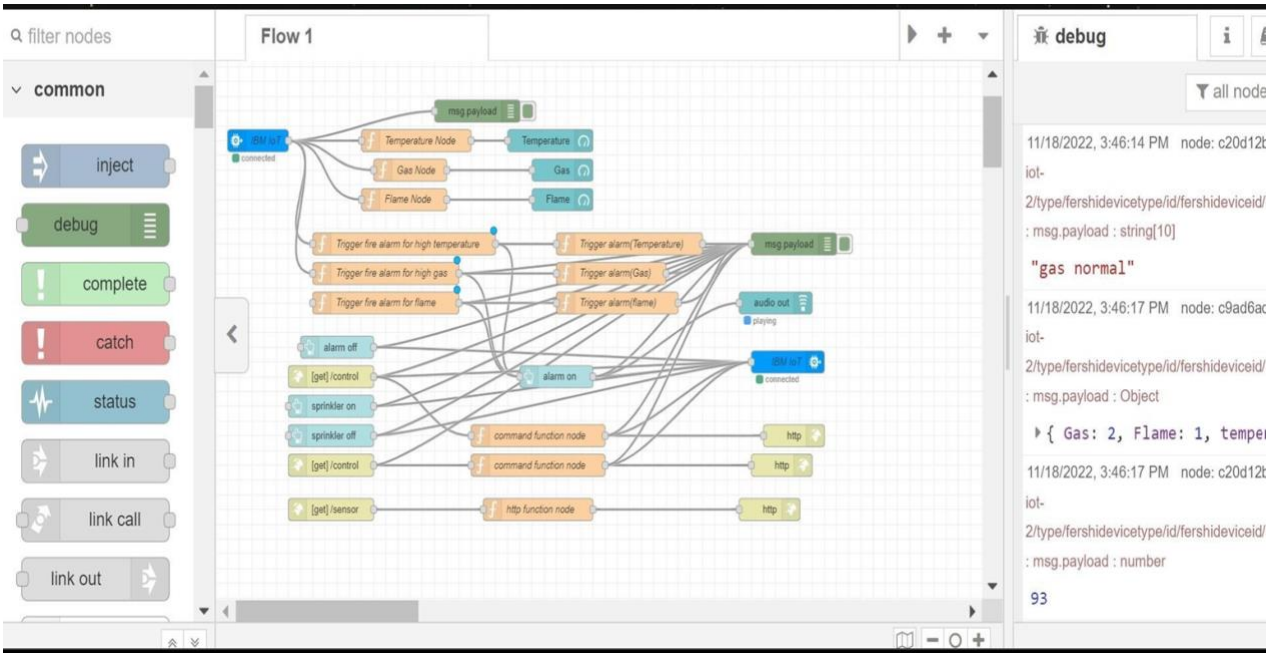

Edit function node
Delete
Cancel
Done
Properties
Name
Trigger fire alarm for high gas
Setup
On Start
On Message
On Stop
msg.payload=msg.payload.Gas
if(msg.payload>=50)
{
return msg;
}

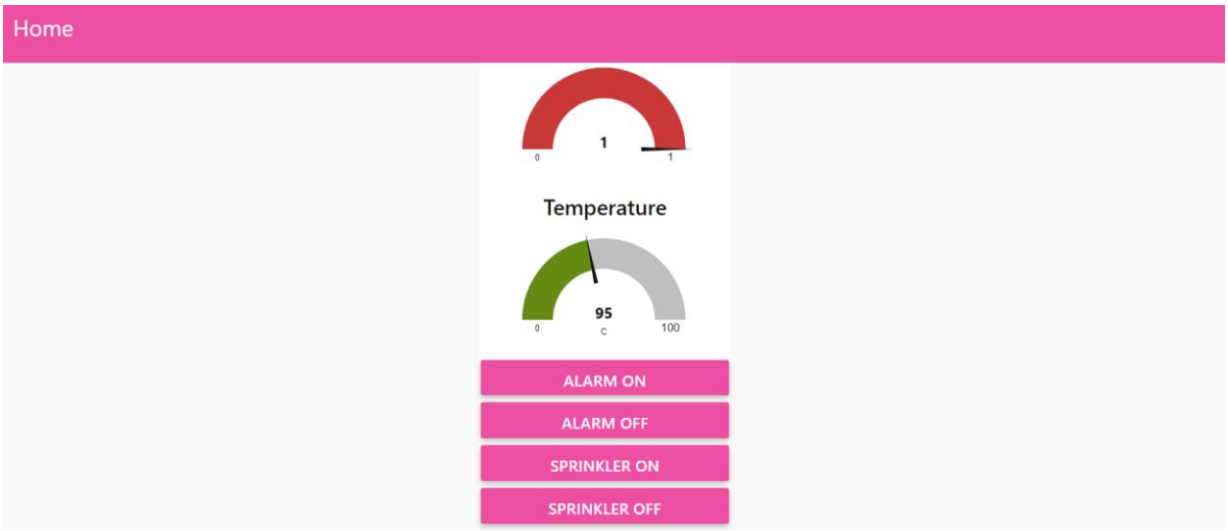

Edit function node
Delete
Cancel
Done
Properties
Name
Trigger alarm(Gas)
Setup
On Start
On Message
On Stop
1 msg.payload=msg.payload.Gas
2 if(msg.payload>50)
3 {
4 msg.payload="gas too high"
5 return[msg,null];
6 }
7 else
8 {
9 msg.payload="gas normal"
10 return[msg,null];
11 }


Edit function node
Delete
Cancel
Done
Properties
Name
Trigger fire alarm for flame
Setup
On Start
On Message
On Stop
1 msg.payload=msg.payload.Flame
2 if(msg.payload==1)
3 {
4 return msg;
5 }
6


Edit function node
Delete
Cancel
Done
Properties
Name
Trigger alarm(flame)
Setup
On Start
On Message
On Stop
1 msg.payload=msg.payload.Flame
2 if(msg.payload==1)
3 {
4 msg.payload="Fire is detected"
5 return[msg,null];
6 }
7 else
8 {
9 msg.payload="No fire"
10 return[msg,null];
11 }

Turning the sprinkler ON whenever temperature, gas, flame exceeds a particular value, Turningthe sprinkler OFF:

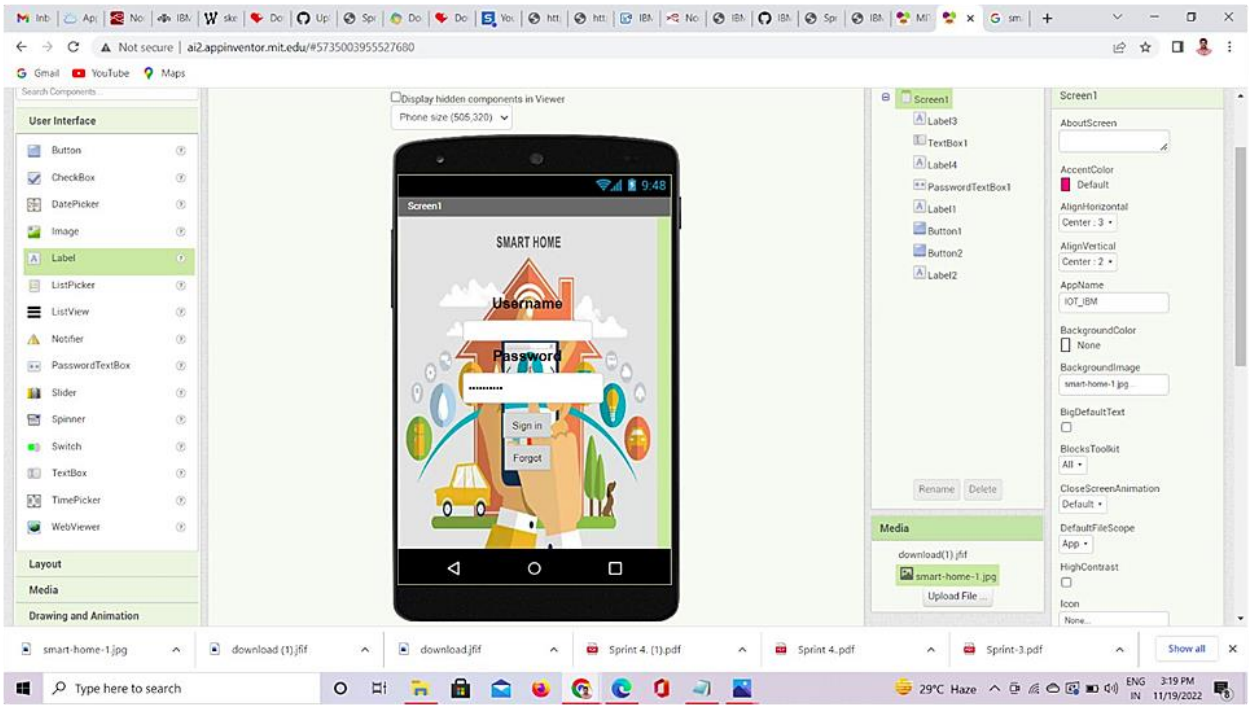





msg.payload : string[12]
"sprinkler on"
11/18/2022, 6:24:10 PM node: c9ad6ad912607e2a
iot-
2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/
: msg.payload : Object
{ Gas: 10, Flame: 1, temperature:
66 }
11/18/2022, 6:24:10 PM node: c20d12b97cbb6b1
iot-
2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/
: msg.payload : number
66
11/18/2022, 6:24:10 PM node: c20d12b97cbb6b1b
iot-
2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/


11/18/2022, 6:24:53 PM node: c20d12b97cbb6b1b
iot-
2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/j
: msg.payload : string[10]
"gas normal"
11/18/2022, 6:24:53 PM node: c20d12b97cbb6b1b
msg.payload : string[13]
"sprinkler off"
11/18/2022, 6:24:53 PM node: c20d12b97cbb6b1b
msg.payload : string[13]
"sprinkler off"
11/18/2022, 6:24:53 PM node: c9ad6ad912607e2
iot-
2/type/fershidevicetype/id/fershideviceid/evt/event_1/fmt/j
: msg.payload : Object
{ Gas: 29, Flame: 0, temperatur
47 }

SPRINT 4


Not secure | ai2.appinventor.mit.edu/#5735003955527680
Gmail YouTube Maps
User Interface
Button
CheckBox
DatePicker
Image
Label
ListPicker
ListView
Notifier
PasswordTextBox
Slider
Spinner
Switch
TextBox
TimePicker
WebViewer
Layout
Media
Drawing and Animation
Display hidden components in Viewer
Phone size (505,320)
Screen1
SMART HOME
Username
Password
Sign in
Forgot
Label3
TextBox1
Label4
PasswordTextBox1
Label1
Button1
Button2
Label2
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AboutScreen
AccentColor
Default
AlignHorizontal
Center : 3
AlignVertical
Center : 2
AppName
IOT_IBM
BackgroundColor
None
BackgroundImage
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BigDefaultText
BlocksToolkit
All
CloseScreenAnimation
Default
DefaultFileScope
App
HighContrast
Icon
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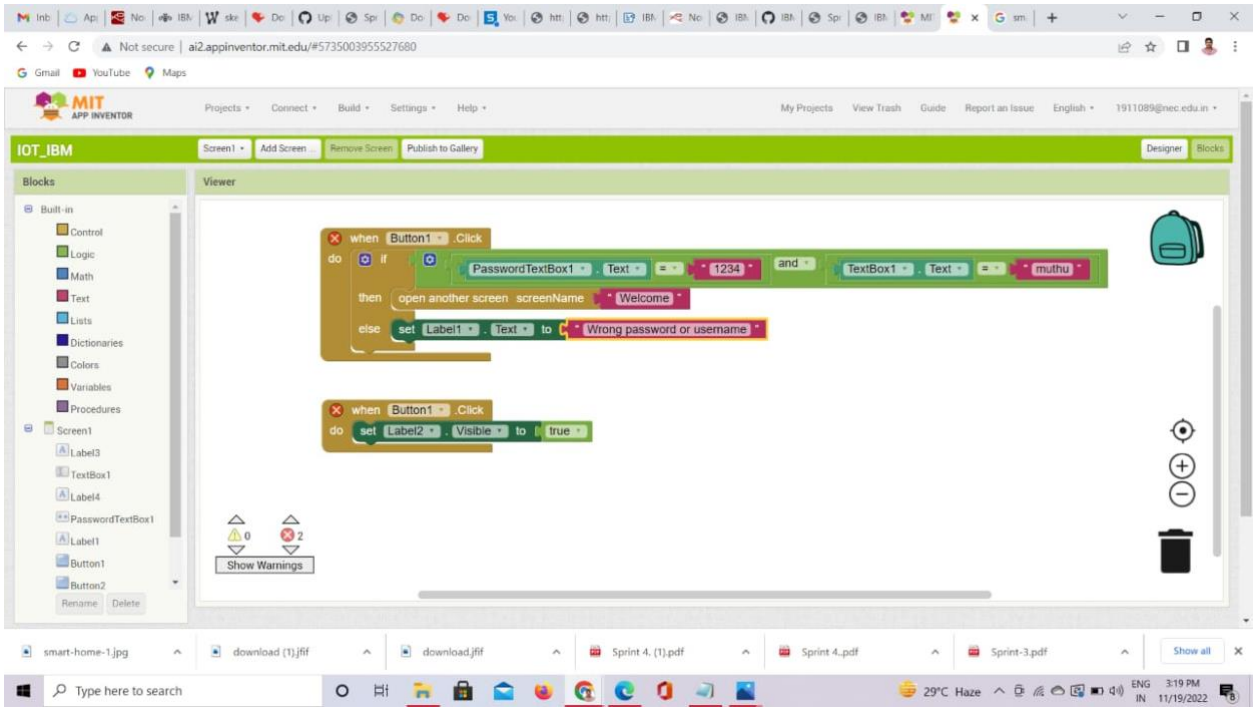
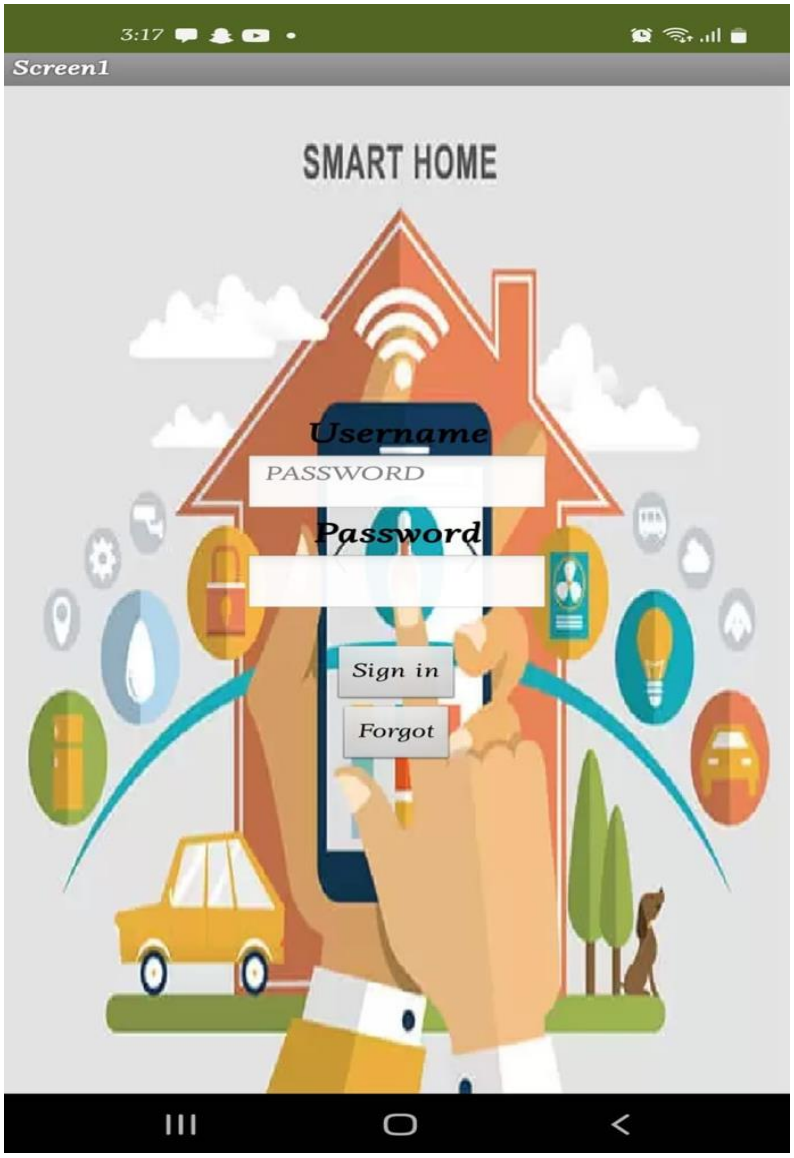
Sprint-3.pdf
Show all
Type here to search
29°C Haze
ENG IN
3:19 PM 11/19/2022


Not secure | ai2.appinventor.mit.edu/#5735003955527680
Gmail YouTube Maps
MIT APP INVENTOR
Projects Connect Build Settings Help
My Projects View Trash Guide Report an Issue English 1911089@nec.edu.in
IOT_IBM
Screen1 Add Screen ... Remove Screen Publish to Gallery
Designer Blocks
Blocks
Built-in
Control
Logic
Math
Text
Lists
Dictionaries
Colors
Variables
Procedures
Screen1
Label3
TextBox1
Label4
PasswordTextBox1
Label1
Button1
Button2
Rename
Delete
Viewer
when Button1 .Click
do if PasswordTextBox1 . Text = 1234 and TextBox1 . Text = muthu
then open another screen screenName Welcome
else set Label1 . Text to Wrong password or username
when Button1 .Click
do set Label2 . Visible to true
Show Warnings
smart-home-1.jpg
download (1).jfif
download.jfif
Sprint 4. (1).pdf
Sprint 4..pdf
Sprint-3.pdf
Show all
Type here to search
29°C Haze
ENG IN
3:19 PM 11/19/2022



7.ADVANTAGES AND DISADVANTAGES

ADVANTAGES

· ToMinimize the risk and consequences of an accidental event.

• The main advantage and function of a fire alarm system is to ensure ultimate safety. They help warn and keep people safe and reduce the amount of destruction to a building.

- Fire detection systems increase response times, as they are able to alert the correct people in order to extinguish the fire. This thus reduces the amount of damage to the property.
- Fire detection systems can be connected to sprinklers that will automatically respond when a fire is detected.

DISADVANTAGES

- If the physical device is damaged the entire operation is collapsed
- Need large database since many data is stored in cloud database every second

8.CONCLUSION

The fire detection systems proposed in the literature served fire stopping with no care of the responsiveness. Thus, this study considers the existing issues and build an efficient and effective fire detection system based on IoT technology, gas, temperature, and smoke sensors to collect the data accurately and rapidly. The continuous readings sent over WIFI modules to the central unit to analyze the data and trigger the water sprinkle. This system structure enhances the efficiency and effectiveness of fire detection. Meanwhile, the water pump activated to suck water from the tank and release it into the water sprinkler to minimize the fire until the property owners and emergency services reached. Hence, the proposed system overcame the challenges of the issues of affordability, effectiveness, and responsiveness. Machine learning may help the operators find and overcome the vulnerabilities in their building to prevent fire instead of detection only.

9. FUTURE SCOPE

The existing devices can be modified to work in different specialized environment as well as scale to house use to big labs[Since fire accidents can cause major loss in human lives in homes to big industries] as well as it can be used in public places , vehicles.

DEMO LINK:https://youtube.com/shorts/mIWzF_AR-xI?feature=share