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Hazardous Area Monitoring For Industrial Plant Powered By IOT

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ABSTRACT: To develop a system that will automatically monitor and control the industrial applications, generate alerts or alarms, and take intelligent decisions utilizing the concept of Internet of Things.Design the system to take intelligent decisions and control devices.For industries, the safety of people from raw gas leaks and fire are the most important requirements for security systems. A traditional security system sends alarm signals.

KEYWORDS: Smart Industry, IBM cloud, IBM cloudant DB, IBM IOT platform, IOT device.

I. INTRODUCTION

The safety of workers in industrial hazardous environments has become a crucial issue, especially in the Oil and Gas industry. As industries as well as domestic applications become increasingly automated, automation is becoming a necessity. Automation reduces the need for human effort by replacing it with self-operating systems. One of the ways of automating is through the Internet, through which new advancements are made through which it is easy for the user to monitor and control the system via the internet. By using the Internet, the system becomes secured, and live data can also be monitored using the IoT system. As a result, industries need to work on their security in order to provide security to those working within those industries. For example, if gas leakage or a temperature rise occurs, these alarm systems will turn on, notifying the employers and acting as a defender by managing a relay unit.

II. EXISTING SYSTEM

As a result of the proposed system, fire and explosion risks are reduced, so workers engaged in maintaining or inspecting gas storage units are safer. The monitoring system detects smoke, toxic gases, temperature, and humidity. Our goal is to assist people who work in hazardous areas whenever a risk arises.The existing system for controlling and monitoring industries is either a manual or remote-control process. The detection of this system can send a message to multiple users. This system can act as a defender whenever the sensors detect values over the threshold by controlling the relay units with or without any human support. This gas leakage security system is an embedded system for detecting and alerting hazardous gases. When the gas concentration exceeds the normal level, the alarm is activated immediately.

III. PROPOSED SYSTEM

This can be a might include creating policies of the project for device connections for white and black lists for the device's address, or looking at a countries rule.The detection of this system can send a message to multiple users. This system can act as a defender whenever the sensors detect values over the threshold by controlling the relay units with or without any human support. This gas leakage security system is an embedded system for detecting and alerting hazardous gases. When the gas concentration exceeds the normal level, the alarm is activated immediately.
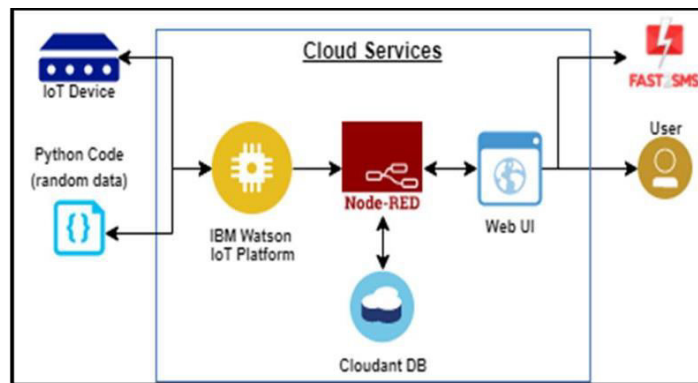
Fig:1Block Diagram

The detection of this system can send a message to multiple users. This system can act as a defender whenever the sensors detect values over the threshold by controlling the relay units with or without any human support. This gas leakage security system is an embedded system for detecting and alerting hazardous gases. When the gas concentration exceeds the normal level, the alarm is activated immediately. Another feature available on the platform is device management control. This feature makes it possible to create and remove devices, gateways, applications, and device types. It also makes it possible to check and trigger actions to the device, such as a firmware upgrade request or reset. You can manage the security in the hazardous aspects of a solutions using the IoT Platform in the device. This can be a might include creating policies of the project for device connections for white and black lists for the device's address, or looking at a countries rule. You can be managing the users and then they are permitted from managing system of the IoT organizations for the solution. Devices connected wirelessly to the Internet of Things are non-standard devices that can exchange data wirelessly. In addition to smartphones, laptops, tablets, and desktop computers, IoT devices expand the reach of the internet. The embedding of technology into these devices allows us to communicate and interact over networks, and they can be monitored and controlled remotely. The IBM Watson IoT Platform connects devices, gateways, and applications to create IoT solutions. In addition to supporting REST and MQTT protocols, it supports event processing, gateways, gateway applications, and administrative tasks. Using Cloud Foundry and Kubernetes, the IBM Watson IoT Platform is available on the IBM Cloud platform (formerly IBM Bluemix).

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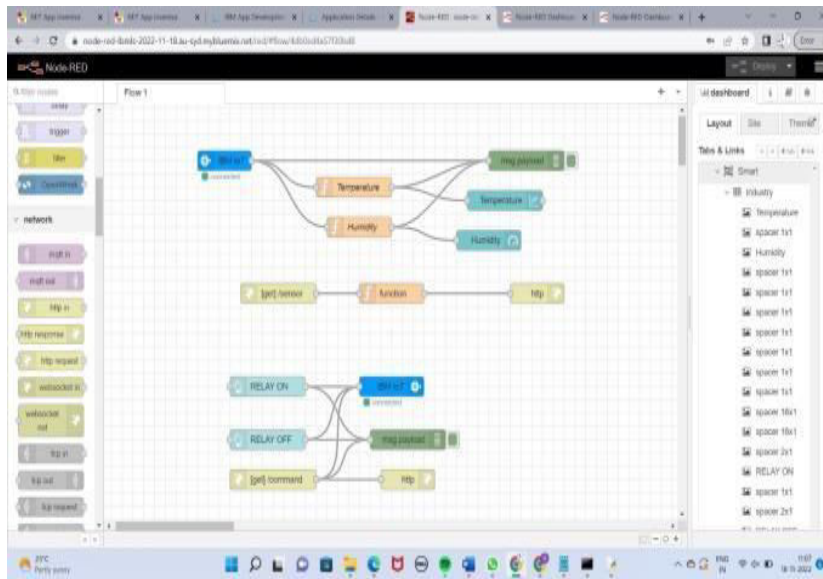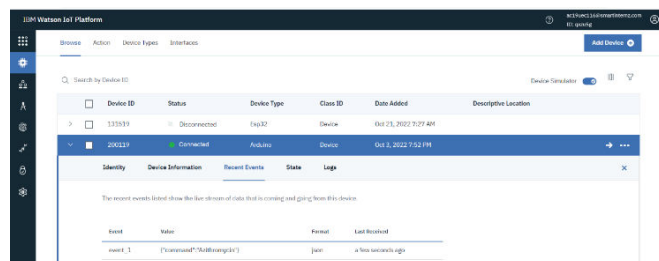
Fig: 2Node-RED

For storing temperature and humidity sensor values, we must first develop a web user interface. In the following image, the UI for the NODE-RED Web Application is shown. Through this UI, the user can determine the temperature and humidity at any time. This sends a message to the MIT App Inventor Platform when the temperature or humidity reaches the threshold. Temperatures and humidity values will be received on this platform.

IV. RESULT

It's primarily a cloud-based service offered by IBM's Cloudant software product. There is a service referred to as Cloudant, which is a distributed, non-relational database. There is a service referred to as Cloudant, which is a distributed, non-relational database. Based on the Apache-backed CouchDB and open-source Big Couch projects, Cloudant is a scalable database management system. Integrated data management, search, and analytics engine designed for web applications is offered by Cloudant. In addition to hosting, analyzing data, and providing commercial support for CouchDB and Big Couch, Cloudant provides administrative tools, analytics, and scales databases on the CouchDB framework.Using text-to-speech technology, digital text can be read aloud using audio. Technology that reads out loud is sometimes called "read aloud" technology. The technology converts words on a computer or other digital device into audio. Nearly all digital devices support TTS, including smartphones, computers, and tablets. You can read aloud almost any text document, including Word and Pages documents. For storing temperature and humidity sensor values, we must first develop a web user interface. In the following image, the UI for the NODE-RED Web Application is shown. Through this UI, the user can determine   the temperature and humidity at any time.

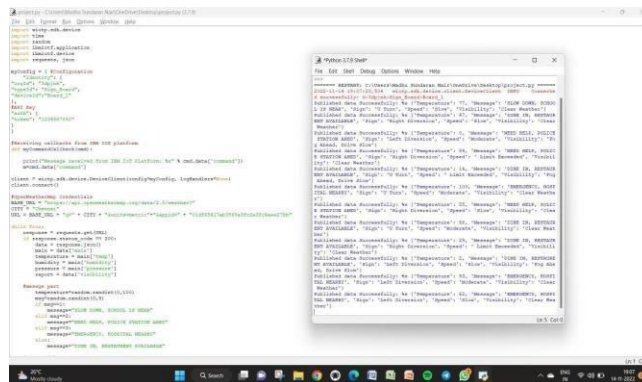Fig:3Temperature & Humidity value in IBM Watson

Fig:4Output

Through the IBM IOT Platform, the Web application transmits temperature and humidity to the MIT Application. Temperature is received by the application, and it informs the user whenever it crosses the threshold value.

V. CONCLUSION

Whenever it is determined that the temperature at the location has reached unsafe levels, the worker should be notified via SMS on their phone to leave the area. It is proposed in this proposal that an industrial fire detection system can be designed using Internet of Things to detect fires in hazardous areas.

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