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Design and Implementation of Real-Time Secured Industrial Monitoring System Using IoT with an Android Application

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ABSTRACT: With the fast increment in the quality of client of the internet over the previous decade has made the internet as a feature of the life and IoT is the most recent and developing innovation. Internet of Things (IoT) is developing systems of ordinary item from customer merchandise to mechanical machine that can share data and complete and while you are occupied with different exercises. This system is planned minimal effort and expandable permitting a variety of device to be monitored. In this project only sensors has been monitored for better result they has to be controlled wirelessly through IoT. This project presents the development of industrial monitoring system that monitors the environment conditions in an indoor space at remote location using the concept of IOT. In this system, sensors like temperature sensor and gas sensor are used and data collected from the sensor will be available remotely through WebPages and can view the data anywhere in the world and decisions will be taken based upon the measurement ,which has been implemented as a android application. SMS alert will be sent to the specific person.

KEYWORDS: Internet of Things, IOT, Industrial Monitoring, Power Efficient, Alerting Mechanism.

I. INTRODUCTION

Presently days, industrial monitoring has key part in industrial region to screen and control the industrial applications or gear. Industrial observing is utilized to know dynamic state of Industrial gadgets or machines. Industrial Monitoring is utilized to achieve quick preparing, limit control utilization, to enhance quality, reduce costly frameworks and worldwide administration of industry. There are part of strategies that are accessible to screen and control industrial procedures like ZigBee, PLC-SCADA, WSN, Internet of Things (IoT) and so on. Now-days, "Internet of Things" is a most ideal strategy for Industrial process checking. IoT is mix of inserted framework and correspondence framework in which Industrial supplies are associated with Internet with the assistance of remote sensor system and gadgets or industrial application can screen and control through mobiles and PCs. English innovation pioneer Kevin Ashton portrayed "Internet of Things" in 1999.

He portrayed that any physical protest on the planet can be associated with Internet by means of sensors. Presently assortment of items, sensors, gadgets and any physical question is associated with Internet effortlessly because of IoT. IoT is likewise utilized for trade and gather of information from physical articles or gadgets and show it on IoT dashboard through certain correspondence conventions. IoT is comprise of equipment gadgets like sensors,

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actuators and drivers which can be associated utilizing zigbee, WSN, Bluetooth, Ethernet, Wi-Fi and so forth to the Internet. For neighborhood availability LAN, MAN, WAN systems are utilized as appeared in fig.1.

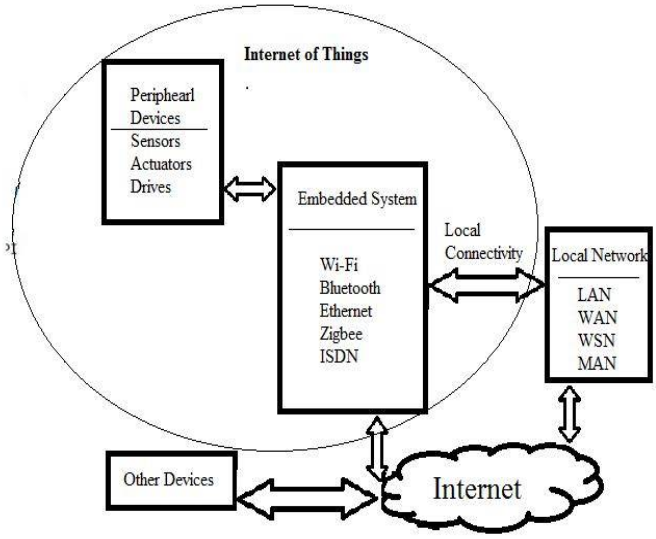

Fig.1 Proposed System Block Diagram

The following figure illustrates the Temperature Sensor view of the proposed system and that will be clearly illustrated by means of the following figure.

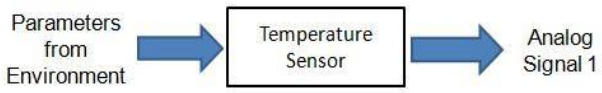

Fig.2 Temperature Sensor

The above figure explains the temperature sensor can acquire the analog values from environment related to temperature aspects and provide to the controller.

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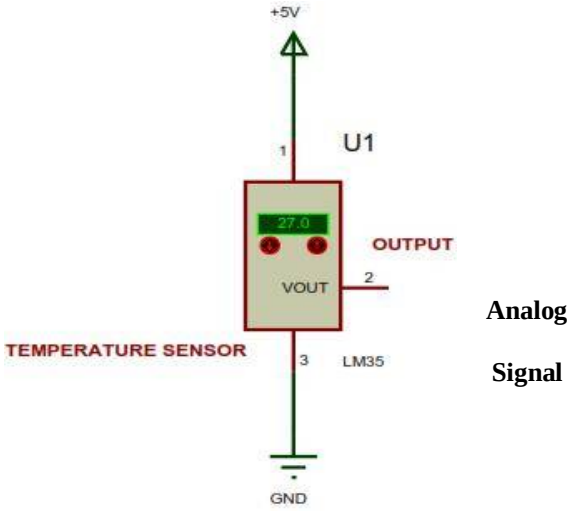

Fig.3 Temperature Sensor Module Perspective

The following figure illustrates the Gas Sensor view of the proposed system and that will be clearly illustrated by means of the following figure.

Fig.4 Gas Sensor

The above figure explains the gas sensor can acquire the analog values from environment related to gas aspects and provide to the controller.

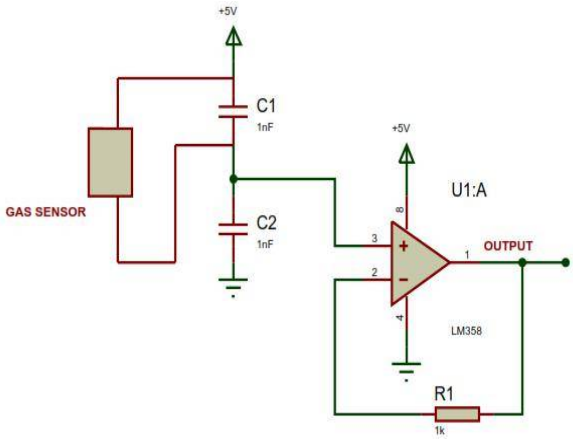

Fig.5 Gas Sensor Module Perspective

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The above figure explains the gas sensor can acquire the analog values from environment related to gas aspects and provide to the controller.

The following figure illustrates the Arduino processing stage of the proposed system and that will be clearly illustrated by means of the following figure.

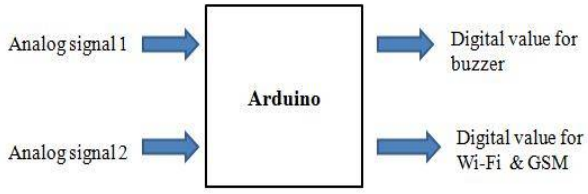

Fig.6 Arduino Processing

The following figure illustrates the WiFi Module Implementation nature of the proposed system and that will be clearly illustrated by means of the following figure.

Fig.7 WiFi

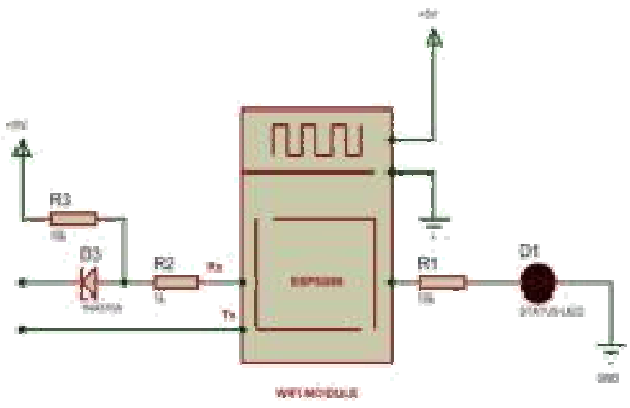

Fig.8 WiFi Module Perspective

The following figure illustrates the Buzzer Module Implementation nature of the proposed system and that will be clearly illustrated by means of the following figure.

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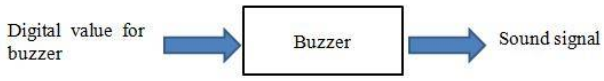

Fig.9 Buzer

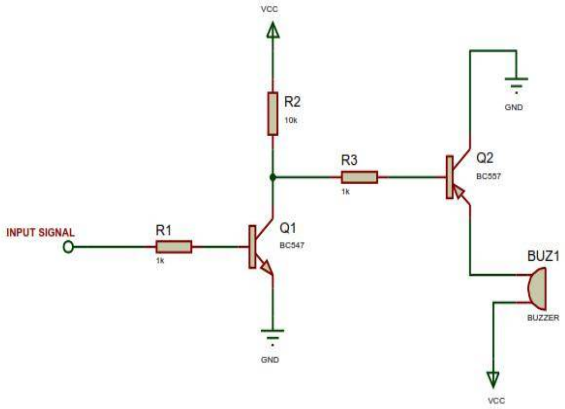

Fig.10 Buzzer Module Perspective

II. PAST SYSTEM – A SUMMARY

In existing system, a large number of efforts for developing monitoring solutions that benefit from the advantages provided by wireless sensing technology. Environmental monitoring which uses an ultrasonic sensor to detect the water level to provide prevention from flood. An integrated sensing systems for real-time indoor air quality monitoring which uses a humidity sensor to detect the level of gases. Automated irrigation system using a wireless sensor network and GPRS module was developed to optimize water use for agricultural crops. The past system implementation has several disadvantages, some of them are listed below: (a) Security is low, (b) Detection of defect or problem will be slow, and (c) Cost is high with low level of applications.

III. PROPOSED SYSTEM – A SUMMARY

The main objective of the proposed system is to manage the Process monitoring and management is done by using android application. Establishes the Mobility over applications. Enhance the Integrity of Multiple data with remote server. The core of this system is to provide Cost wise cheaper approach. And its Performance is highly efficient compare to all otehr existing approaches. The proposed system contains several advantages, in that some of them are summarized as follows: (a) Portability, (b) Cost efficient and (c) Global Support.

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IV. LITERATURE SURVEY

In the year of 2017, the authors "George Mois, SilviuFolea, and TeodoraSanislav" proposed a paper titled "Analysis of three IOT based wireless sensors for environmental monitoring", in that they described such as: the current changes in atmosphere have expanded the significance of ecological checking, making it a topical and exceedingly dynamic research territory. This field depends on remote detecting and on remote sensor systems for social event information about the earth. Late headways, for example, the vision of the Internet of Things (IoT), the distributed computing model, and digital physical frameworks, offer help for the transmission and administration of immense measures of information with respect to the patterns saw in ecological parameters. In this specific circumstance, the present work presents three distinctive IoT-based remote sensors for ecological and encompassing checking: one utilizing User Datagram Protocol (UDP)- based Wi-Fi correspondence, one conveying through Wi-Fi and Hypertext Transfer Protocol (HTTP), and a third one utilizing Bluetooth Smart. The majority of the exhibited frameworks give the likelihood of recording information at remote areas and of envisioning them from each gadget with an Internet association, empowering the checking of geologically huge territories. The advancement points of interest of these frameworks are depicted, alongside the significant contrasts and similitudes between them. The attainability of the three created frameworks for actualizing checking applications, considering their vitality self-sufficiency, usability, arrangement unpredictability, and Internet network office, was investigated, and uncovered that they make great contender for IoT-based arrangements.

In the year of 2016, the authors "N. Harris, A. Cranny, M. Rivers, K. Smettem, and G. Barrett-Lennard" proposed a paper titled "Application of distributed wireless chloride sensors to environmental monitoring", in that they described such as: throughout the following 30 years, it is expected that the world should source 70% more nourishment to accommodate the developing populace, and it is likely that a lot of this should originate from flooded land. Be that as it may, the nature of water system water is additionally vital, and estimating the nature of this water will enable administration choices to be made. Soil saltiness is a vital parameter in edit yield, and in this paper, we portray a chloride sensor framework in light of a minimal effort strong screen-printed chloride particle sensor, reasonable for use in appropriated sensor systems. Beforehand, this sensor has been utilized as a part of controlled research facility based investigations, however here we give prove that the sensor will discover application outside of the lab in field arrangements. We write about three examinations utilizing this sensor; one with a dirt section, one utilizing a fluvarium, lastly on an investigation in a nursery. All these give a knowledge into the development of chloride over little separations with high fleeting determination.

These underlying tests represent that the new sensors are practical and usable with moderately basic gadgets, and albeit subject to continuous improvement, they are as of now equipped for giving new logical information at high spatial and worldly resolutions. Along these lines, we infer that such chloride sensors, combined with a conveyed remote system, offer another worldview in hydrological checking and will empower new applications, for example, water system utilizing blends of consumable and saline water, with noteworthy cost and asset sparing.

In the year of 2015, the authors "M. Collotta and G. Pau" proposed a paper titled "A novel energy management approach for smart homes using Bluetooth low energy", in that they described such as: brilliant matrices are an advancement of the current electric appropriation frameworks because of the developing interest of vitality, the extension in the utilization of sustainable power sources, and the improvement of novel and inventive data and correspondence innovations (ICT). The establishment of frameworks in view of remote systems can assume a key part in the augmentation of the savvy lattice toward keen homes,that can be regarded as a standout amongst the most essential segments of shrewd networks. Truth be told, observing and control applications, vitality gathering, and creative

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metering procedures through keen remote gadgets are ending up progressively critical.

This system proposes a novel vitality administration approach for savvy homes that consolidates a remote system, in light of BLE, for correspondence among home machines, with a home vitality administration (HEM) conspire. The proposed approach tends to the effect of standby machines and high-control rating loads in top hours to the vitality utilization charges of customers. Reproduction comes about demonstrate that the proposed approach is productive regarding lessening top load request and power utilization accuses of an expansion in the solace level of purchasers.

V. EXPERIMENTAL RESULTS

The following figures illustrate the Overall Circuit view of the proposed system.

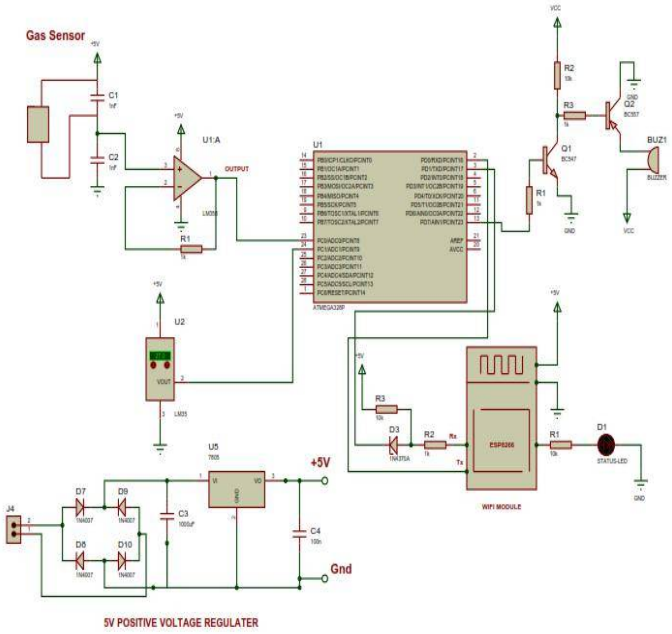

Fig.11 Overall Circuit Design of the Proposed System

VI. CONCLUSION

This use case could be extended for a multiple number of industrial devices connected to the IoT hub. We could also consider the performance, reliability, scalability etc. of the above approach for more number of devices communicating concurrently at real-time. Thus the proposed system is very efficient way of monitoring various parameter. The system communicates with the user via application and text message with the help of GSM. The system is cost efficient with high security. The process time is less hence the damage due to the accidents will be reduced

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