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APPLICATION FOR INDUSTRIAL PLATFORM USING IoT ENVIRONMENT THROUGH WSN

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Abstract **– A wireless sensor network (WSN) is a device is collecting the data from industrial of different parameters and by using IoT environment feature. Already We had an existed system by using it we should manually measure physical parameters in the industry like temperature, Co2, color sensor and light detection which is very difficult and inaccurate. To avoid this difficulty we are going for our proposed system. The proposed system describes the implementation of a wireless industrial environment measuring temperature, humidity, and light detection. Where the wireless connection like GSM is implemented to obtain data from the different sensors, in addition to allow set up complexity to be as minimized. Then with GSM equipment we send the sensors values to server. We can add some safety features to proposed system.**

Key Words: **Wireless Sensor Network (WSN), Internet of Things (IoT).**

I. INTRODUCTION

Remote Sensor Networks (WSN) has been utilized to gather information about physical marvels in different applications, As a developing innovation achieved fast advances in present day remote telecom, Internet of Things (IoT) has pulled in a great deal of consideration and is required to bring advantages to various application territories including modern WSN frameworks, and medicinal services frameworks producing.WSN frameworks are well-suited for long term modern ecological information securing for IOT representation[1], Sensor interface gadget is vital for identifying different sorts of sensor information of modern WSN in IOT situations [2], the securing interface gadget can gather different sensor information in the meantime, so that more precise and various information data can be gathered from modern WSN. With fast improvement of IoT, major producers are devoted to the examination of multi-sensor obtaining interface gear [3], ARM7 has right now turns out to be better known than MCU in multi-sensor information securing in IOT environment. On the other hand, in IOT environment, distinctive mechanical WSNs include a great deal of mind boggling and differing sensors. In the meantime, every sensor has its own particular lar prerequisites for readout and distinctive clients have their own particular applications that require diverse sorts of sensors [4], Sensor information obtaining surface gadget is the key some portion of study on mechanical WSN application [5], With a specific end goal to institutionalize an extensive variety of smart sensor interfaces in the business sector and take care of the similarity issue of wise sensor,

The IEEE Electronic Engineering Association has additionally propelled IEEE1451 brilliant transducer (STIM) interface standard convention suite for the future advancement of sensors, The STIM interface standard IEEE1451 empowers sensors to automatically pursuit system, and the STIM advances the change of modern WSN , Yet, the sensors with the convention standard have a high cost and still need prevalence in modern WSN in IOT environment. All things considered, at present, illustrations of intelligent sensors accessible available and consistent with this standard are still constrained. To take care of these issues, some devoted equipment interfaces taking into account the IEEE 1451 have been as of late proposed, and they are equipped for interfacing with diverse sense on the other hand typologies, FPGA is utilized as the center controller to discharge the confinement on the all inclusive information securing interface, and acknowledge really parallel procurement of sensor information. It has not just enhanced the n sensor information accumulation effectiveness of modern WSN.

II. EXISTING SYSTEM

We manually measure physical parameters in the industry like temperature, Co2, humidity sensor and light detection which is very difficult and inaccurate. A normal person cannot show any interest to measure those physical parameters value. To avoid this difficulty we are going for

our proposed system. And also a very much more time taken for all monitoring of the sensors data in industries.

III. PROPOSED SYSTEM

The proposed framework was composed of a remote modern environment conditions measure temperature, moistness, barometrical weight, and light identification. Where the remote inserted associations is executed to taken information from the all sensors, notwithstanding permit set up trouble to be as diminished. By utilizing GSM innovation we send the sensors information to approved server and who need to see the information of sensors that individual will see any wear by utilizing internet. Second thing hear we include some additional security elements like fan, motor and ringer. These gadgets are run when the data qualities is more prominent than edge esteem

BLOCK DIAGRM

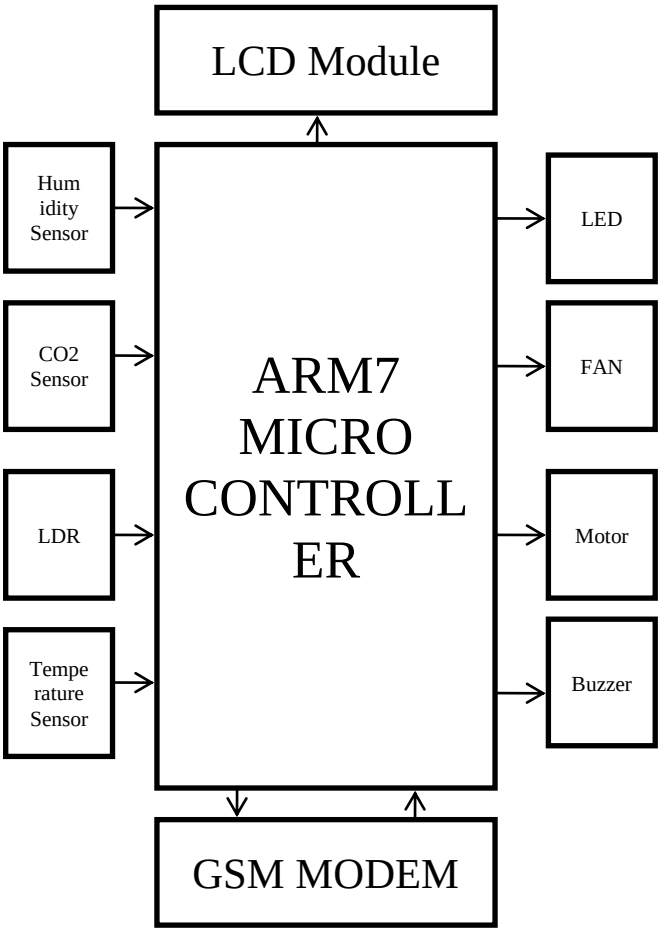


Fig 1: Block diagram of industrial monitoring system by using WSN in IoT Environment.

Here, the all sensors are connected to the ARM7 processor for monitoring the sensor values of environment LCD display is used to get the digital output of sensor results. We can add some safety features to like motor, fan, buzzer and LED.

IV. HARDWARE REQUIREMENT

With a specific end goal to execute the application of industrial monitoring system Sensor we utilized diverse apparatuses, which are

- ARM 7 LPC2148
- LCD Display
- GSM Module
- Sensors(Temparature,Humidity,Co2)
- LDR
- Motor
- Buzzer

A. ARM7 PROCESSOR:

The ASK 16/32-bit ARM7TDMI-S microcontroller Training board is particularly intended to help understudies to ace the required abilities in the range of implanted frameworks. The pack is composed in such way that all the conceivable elements of the microcontroller will be effectively utilized by the understudies. The pack bolsters in framework programming (ISP) which is done through serial port. ASK Board has new and advance alternatives which will give client the freedom of executing complex rationale utilized as a part of the configuration of Embedded Systems. The advancement experience on the ASK Board will represented a chance to exceed expectations in the field of Embedded Systems.

B. LCD DISPLAY:

Fluid Crystal Display likewise called as LCD is extremely useful in giving client interface and in addition for troubleshooting reason. The most usually utilized Character construct LCDs are situated in light of Hitachi's HD44780 controller or other which are good with HD44580. The most regularly utilized LCDs found as a part of the business sector today are 1 Line, 2 Line or 4 Line LCDs which have just 1 controller and backing at the majority of 80 characters, During the execution of the 1st instruction, the 2nd instruction being decode and the 3rd instruction is being fetch.

C. GSM MODULE:

Global System for Mobile Communications (GSM) is a mobile cellular network, to connect the mobile phones with in the some range of frequency in the nearer surrounding area. Mainly GSM networks are in the range of four types of frequencies such as GSM-900, GSM-1800, GSM-850 and GSM-1900, GSM-450. Favorable working range of GSM network is 900MHZ or 1800 MHZ band strengths are used in most countries of the world.

Fig 2: Diagram of GSM module

In our proposed system by using GSM module, send the sensors values to the server. From the server we can see sensors data from anywhere.

D. HUMIDITY SENSORS:

The module of HSM20 Gisessentia lf or those applications where the relative

Mugginess can be changed over to standard voltage yield

Fig 3: Humidity Sensors

E. CO2 (MQ2) SENSOR:

The Analog Smoke/LPG/CO Gas Sensor (MQ2) module uses a MQ-2 as the touchy segment and has an insurance resistor and a flexible resistor on board. The MQ-2 gas sensor is touchy to LPG, i-butane, propane, methane, liquor, Hydrogen and smoke. It could be utilized as a part of gas spillage recognizing types of gear in family and industry. The delicate's resistance part changes as the objective's grouping gas changes

Fig 4: CO_2 (MQ2) Sensor

F. TEMPARATURE SENSOR:

The above fig shows the temperature sensor with the model number LM 35.More sensors are use to measure temperature in centigrade grade only, but this sensor calibrated directly in Kelvin. The LM35 sensor Linear + 10-mV/°C Scale Factor and the temperature range between -50 to +150 degree centigrade. So the features of LM35 more suitable for remote applications.

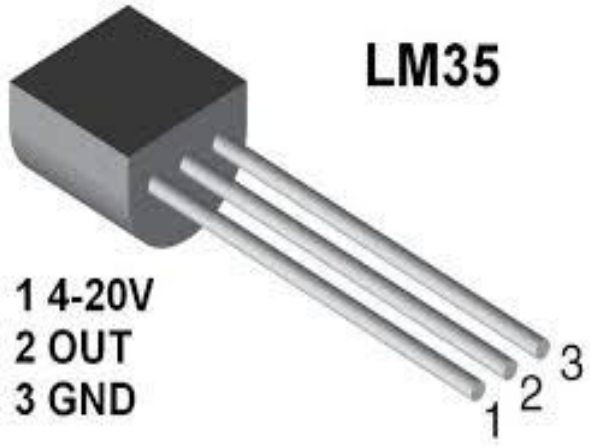
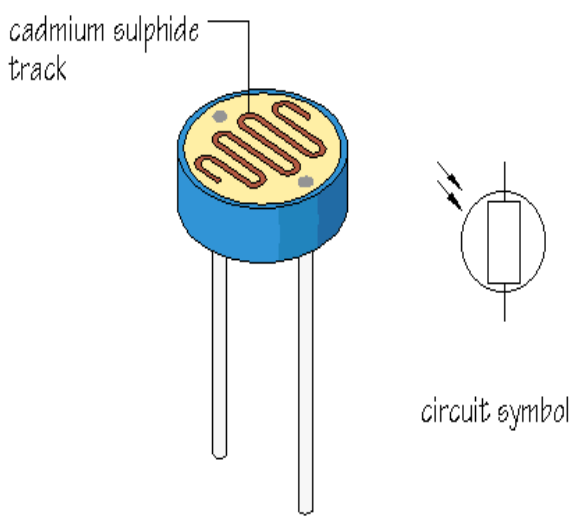


Fig 5: Temparature Sensor

G. LIGHT DEPENDENT RESISTOR:

Fig 5: Light Dependent Resistor

LDRs or Light Dependent Resistors are exceptionally valuable particularly in light/dim sensor circuits. Typically the resistance of a LDR is high, now and then as high as 1,000,000 ohms, however when they are enlightened with light, the resistance drops drastically. Hence in this undertaking, LDR assumes a vital part in controlling the electrical machines taking into account the force of light i.e., if the power of light is all the more (amid daytime) the heaps will be in off condition. Furthermore, if the force of light is less (amid evenings), the heaps will be switch



WSN is a distributed autonomous sensors to monitor physical and also environmental conditions, such as temperature, humidity, Co2, etc. and continuously pass their data through the network to a main location. In the proposed system we are using humidity sensor, temperature sensor, Co2 sensor, and ldr. We interface all these sensors to ARM7(ARM LPC214). Humidity sensor HSM20 is used to measure the humidity of environment the sensor will get the analog data. Temperature sensor (LM35) is used to measure the temperature of the environment.

Gas sensor is used to detect the harmful gases like Co2. We interface all the sensors to ARM7 to see sensor outputs.

Gsm module is also interface to ARM7 for monitoring the sensors data from wirelessly from anywhere. We can add some safety features after it exceeding the threshold values of the sensors outputs which are if temperature is increases automatically fan will be run. By increasing humidity level motor will be run. If Co2 Gas sensor detects the Co2 percentage increases buzzer will be ring. Ldr is used to operating the bulbs when the ldr is detects the light then bulb will automatically switch off and vice versa.

V. INTERFACING

All the Tools are connected and the program are developed in keil software and required threshold values are fixed in the program , all the components and their connection are given as per the table, After connecting the components together finally we give power source of dc 5v to the board, and another dc 5v to the GSM module ,Then we get the results in lcd screen in the board, In case temperature and humidity and CO_2 values are more than threshold values Then , the safety features run to minimize.

S.NO	DEVICES	ARM7 PIN OUT
1	HUMIDITY SENSOR	P0.29
2	CO2 SENSOR	P0.25
3	LDR (LIGHT DEPENDEN RESISTORT)	P0.26
4	TEMPERATURE SENSOR	P0.28
5	LED	P0.27
6	FAN	P0.4
7	MOTOR	P0.6
		P0.7
8	BUZZER	P1.24
9	GSM MODULE	UART0
10	LCD MODULE	P1.16
		P1.17
		P1.18
		P1.19
		P1.20
		P1.21

Table 1: All components interfacing details

VI. RESULT

In our project output will come in four cases, such as

Case 1.Temparaure is more the threshold (variable) value the fan will be run by automatically, if temperature will come down to threshold value fan automatically switched off.

Case2.Hear humidity sensor calculates humidity percentage levels in environment. Hear the humidity percentage more than threshold value motor will run by automatically, after humidity level comes threshold range motor will switched off automatically.

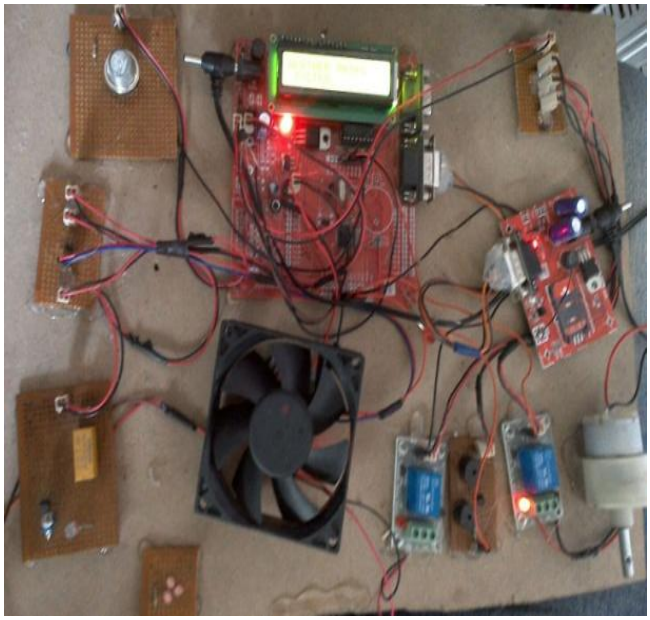
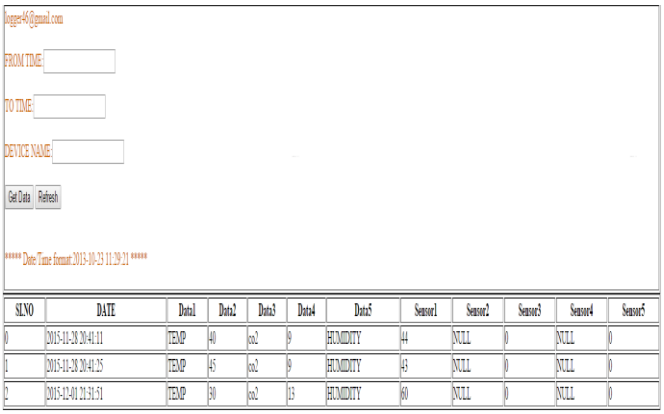


Fig 6: Final components connection

Case 3.gas sensor will measure harmful gasses present in the environment, this sensor identify the harm full gasses like CO2, LPG etc. present in air. The level of harmful gases level more than threshold value buzzer will be ring.

Case4.LDR will maintains the light ON and OFF conditions.there is no light intensity LED will glow, otherwise LED will off position.

All these values are send to server by using GSM module.We can observe all sensor values from anywear by using particular GSM module site.



SLNO	DATE	Data1	Data2	Data3	Data4	Data5	Sensor1	Sensor2	Sensor3	Sensor4	Sensor5
0	2015-11-20 20:41:11	TEMP	40	co2	9	HUMIDITY	44	NULL	0	NULL	0
1	2015-11-20 20:41:25	TEMP	45	co2	9	HUMIDITY	43	NULL	0	NULL	0
2	2015-12-01 21:21:31	TEMP	30	co2	13	HUMIDITY	60	NULL	0	NULL	0

Fig 7: Final result after GSM module uploads to web

Finally we can see the details of sensor value from any wear as shown in the above figure. Hear showing all sensor values of temperature, humidity and CO2.

VII. CONCLUSION

It describes a application of industrial platform for long term IoT environment through WSN networks the system can collect sensor data intelligently. Various sensors like temperature sensor, CO2sensor, light sensor, humidity are all connected to the microcontroller. hear each sensor has a some threshold value, if any parameter value has more the threshold value the safety feature like motor , buzzer, fan are activated. For example temperature more than 60 °C switched to the fan automatically, like this only all safety features are activated when sensor input values are more than threshold values.

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