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WIRELESS MONITORING OF HOME SENSORS USING WI-FI

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ABSTRACT

In our daily schedule we are very busy that we don't have the time to notice some important details like our room temperature etc. It is very useful if we already know that on which months we are having high temperature and on which months we are having low temperature. If we can estimate the approximate temperatures in our house we can take some precautions like making it cool in summer and we can keep worm in winter, not only temperature but we can also use some special other parameters for the precautions like humidity and some other precautions for the safety like fire and gas. In our project we are implementing the house monitoring system through Internet of Things. With our system user does not have to write down the values of specific intervals and our system directly read the readings and automatically sends those values to the cloud system so that user can login to the internet and see all the readings with easy understand the way using the graph. With the help of our system user can estimate the temperature and humidity at his house all over the year and he can take the precautions to reduce the temperature and higher humidity around his house. Since he can estimates long predictions he can take batter precautions like growing the trees around his house etc. The user can also estimates or detects any damage or emergency alerts like fire and gas so that he can alert the emergency services even though he is not in his house so that the dangers can be prevents in early stage. Since it takes very low data rates for the uploading to the internet and it directly uses the Wi-Fi the maintaining cost of the system is very low when compared other system like message alerting system etc. It does not require separate wiring request since we are directly connecting the Wi-Fi other than the wiring system.

I. INTRODUCTION

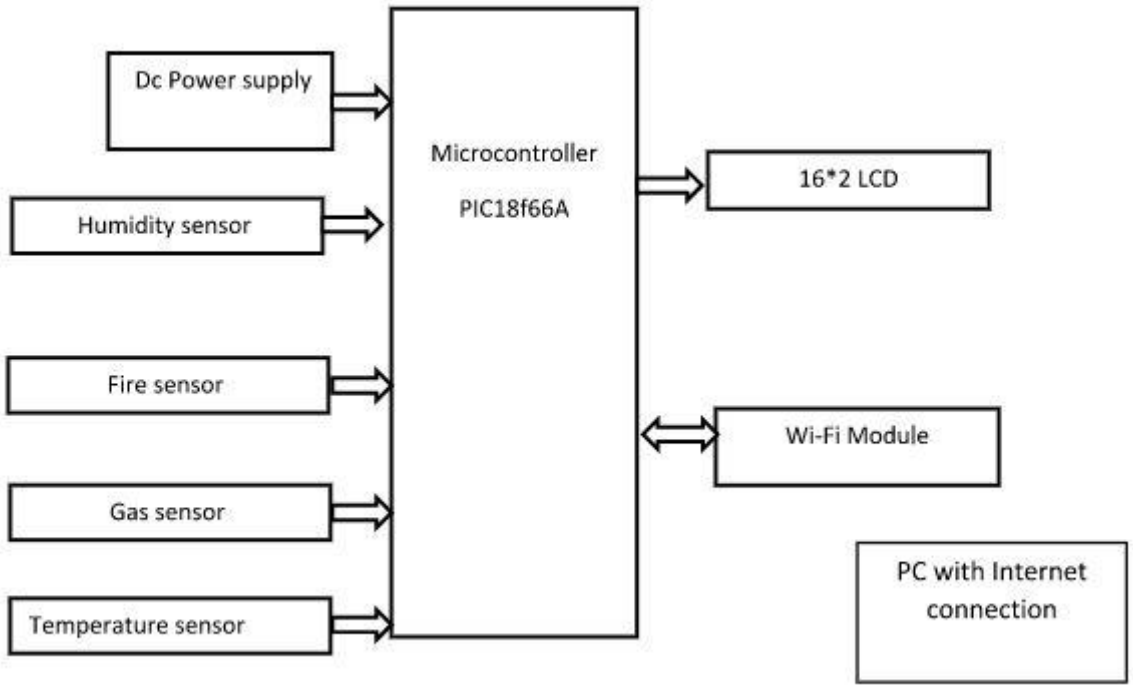
In our project we are using micro controller as the interface to the sensor which are temperature, humidity, gas and fire. The sensor status is uploaded to the cloud. We are using the digital sensor as the temperature sensor in which we are using DS1621 which directly communicates with the I2C protocol to read the temperature. The remaining all other three sensor states is also read and stored in the micro controller. When starting the project it first connects to the Wi-Fi module in which we have to place the working internet connection. Since we are already acquiring the API key of the web cloud we are uploading the sensor status throughout the clock and entire year and all the sensor status are stored in the web. The stored status can be read and used for the other purposes and can only through the web site and with the proper authentication.

II. LITERATURE REVIEW

To complete this project we need to refer some more developed concepts those are discussed in given below
In the present framework, the Wi-Fi is utilized to screen the home states of distinctive sort of sensors. The framework which gives just measuring information of relating sensors like humidity, temperature, gas and fire sensor. In this framework, the primary downside is range and power utilization we can monitor the device status at a longer range. It is difficult to checking the consistently information from sensors furthermore measure the information from cell telephone by means of Wi-Fi innovation inside of rapid scope of information. For specific reason our proposed framework comes to exit.

Keeping a few elements like unwavering quality, less power utilization separated Wi-Fi is a short range remote correspondence even share basic ISM band of 2.4 GHz. The data from the sensors will be upgraded on the PC through remotely by utilizing WIFI innovation. We can screen the distinctive sensors like mugginess, gas, light and temperature and so forth. The framework can likewise see the information from cellular telephone however it ought to require web association. Through web association by means of WIFI, we can without much of a stretch screen the information from sensors. The WI-FI module are of different manufacturing companies which we areusing ESP8266.it has inbuilt components, for example, GPIO, UART, SPI et cetera. Esp8266 is less cost, low power utilization, transportability and simple to impart the information progressively way.

III. BLOCK DIAGRAM



IV. HARDWARE

4.1 PIC Microcontroller

PIC (Peripheral Interface Controller) has most advanced architecture and it is having thirty three pin input and out pins and total of forty pins IC. It also includes 10 bit analogue to digital converters and on chip UART, SPI and I2C which helps us to fast access of data. Since micro controller consists of high temperature and low current tolerances it gives us more advantage in using real time applications compared to other controllers and advanced architecture allows us to access the data with the low power and high speed.

4.2 Power Supply

Power supply is a critical prerequisite in any electronic tasks so; it is expected to outline power supply for our undertaking. The force supply circuit gives 5vdc supply voltage to diverse pieces from the information voltage of 230V air conditioning. The primary pieces incorporate transformer, Rectifier circuit, channel circuit lastly Regulator to getting directed DC voltage small scale controller and different gadgets get power supply from AC to DC connector through 7805 controller. The connector yield voltage will be 12V DC non-directed. The microcontroller and different gadgets get power supply from AC to DC connector through 7805, 5 volts controller. The connector yield voltage will be 12V DC non-managed. The 7805/7812 voltage controllers are utilized to change over 12 V to 5V/12V DC.

4.3 LCD Display

A Liquid gem showcase is an aloof gadget, which implies it doesn't create any light to show characters, pictures, video and activities. In any case, it essentially modifies the light going through it. The inner development of LCD depicts how the light changed when it goes through it keeping in mind the end goal to deliver any characters, pictures, etc.LCD (fluid gem show) each day. They are surrounding us - in PCs, timekeepers and watches, microwave stoves, CD players and numerous other electronic gadgets. LCDs are normal in light of the fact that they offer some genuine focal points over other showcase innovations. They are more slender and lighter and draw a great deal less power than cathode beam tubes (CRTs).A LCD showcase comprises of numerous pixels, this is the thing that the determination remains for, the quantity of pixels. Each of these pixels is a LCD board, and it is seen as a multi-layer sandwich upheld by a fluorescent backdrop illumination. At the 2 far finishes of the LCD board are non-basic, straightforward glass substrates with smooth surface and free of surface scratches. The glass substrates are appended to polarizer film that transmits or retains a particular segment of energized light. In the middle of the 2 glass substrates is layer of the nematic stage fluid precious stones. There is additionally a shading channel containing the 3 essential hues (red, green and blue). Each of the energized glass is organized at right points to one another, so when electric current was gone through the LCD board, the fluid gems are adjusted to the initially spellbound glass experienced and will make a 90o turn when drawing closer the other enraptured glass toward the end. At the point when this happens, the light from the fluorescent backdrop illumination can go through and along these lines giving us a light pixel on the screen. At the point when there is no electric current, the fluid gems won't bend and accordingly the light won't go through and a dark pixel will be appeared. The reason we see the hued pictures are because of the shading channel, light goes through the sifted cells makes the hues.

Fig 2: LCD display

4.4 WI-FI Module

Associating your item to the web through Wi-Fi™ mix is improved with the utilization of pre-confirmed Wi-Fi™ modules from LSR. The modules' pre-ensured outline, little foot shaped impression, and rich components make them ideal for system applications, for example, brilliant vitality, home observing, sensor systems, and home diversion control. The ESP8266 Wi-Fi Module is an independent SOC with incorporated TCP/IP convention stack that can give any microcontroller access to your Wi-Fi system. The ESP8266 is able to do either facilitating an application or offloading all Wi-Fi systems administration capacities from another application processor. Each ESP8266 module comes pre-modified with an AT order set firmware, which means, you can essentially attach this to your controller gadget and get about as much Wi-Fi-capacity as a Wi-Fi Shield offers (and that is simply out of the case). The ESP8266 module is a to a great degree financially savvy board with an enormous, and regularly developing, group. This module has a sufficiently capable on-load up handling and stockpiling capacity that permits it to be coordinated with the sensors and other application particular gadgets through its GPIOs with insignificant improvement in advance and negligible stacking amid runtime. Its high level of on-chip joining takes into consideration insignificant outside hardware, including the front-end module, is intended to involve negligible PCB range. The ESP8266 bolsters APSD for VoIP applications and Bluetooth coexistence interfaces, it contains a self-aligned RF permitting it to work under every working condition, and requires no outer RF parts. There is a practically boundless wellspring of data accessible for the ESP8266, all of which has been given by astonishing group support. In the Documents segment underneath you will discover numerous assets to help you in utilizing the ESP8266, even guidelines on the most proficient method to changing this module into an IOT (Internet of Things) arrangement.

The ESP8266 Module is not fit for 5-3V rationale moving and will require an outer Logic Level Converter. Kindly don't control it straightforwardly from your 5V dev. board. This new form of the ESP8266 Wi-Fi Module has expanded the glimmer circle size from 512k.

Fig 3: Wi-Fi module.

4.5 Gas Sensor

Gas finders measure and demonstrate the grouping of certain gasses in an air by means of distinctive advancements. Ordinarily utilized to avert poisonous presentation and flame, gas indicators are regularly battery worked gadgets utilized for security purposes. They are produced as convenient or stationary (settled) units and work by meaning abnormal amounts of gasses through a progression of capable of being heard or unmistakable markers, for example, alerts, lights or a blend of signs. While a number of the more established, standard gas identifier units were initially manufactured to distinguish one gas, cutting edge multifunctional or multi-gas gadgets are equipped for identifying a few gasses on the double. A few finders may be used as individual units to screen little workspace regions, or units can be consolidated or connected together to make an insurance framework. As indicators measure a predetermined gas fixation, the sensor reaction serves as the reference point or scale. At the point when the sensors reaction surpasses a certain pre-set level, a caution will enact to caution the client. There are different sorts of identifiers accessible and the lion's share serves the same capacity: to screen and caution of an unsafe gas level. On the other hand, while considering what sort of indicator to introduce, it is useful to consider the diverse sensor innovations.

Fig 4: Gas sensor

4.5 Temperature Sensor(DS1621)

Temperature estimations require no outside segments Measures temperatures from in 0.5°C additions. Fahrenheit proportionate in 0.9°F additions Temperature is perused a 9-bit esteem (2-byte exchange) Wide power supply range to 5.5V) Converts temperature to computerized word in 1 second Thermostatic settings are client quantifiable and non-volatile Data is perused from/composed by means of a 2-wire serial interface (open channel I/O lines) Applications incorporate thermostatic controls, modern frameworks, purchaser items, thermometers, or any warm touchy framework 8-pin DIP.

V. WORKING

The sensors are connected to the PIC microcontroller and the data from the sensors are received by the microcontroller and transmitted to a website through the internet. Here the fire sensor detects the fire in an emergency cases and the gas sensor MQ2 detects dangerous gases and the Humidity detects the fog in the room and temperature sensor senses the accurate the room temperature.The data are stored in the thingspeak website and can be monitored at any place where the Internet is available.

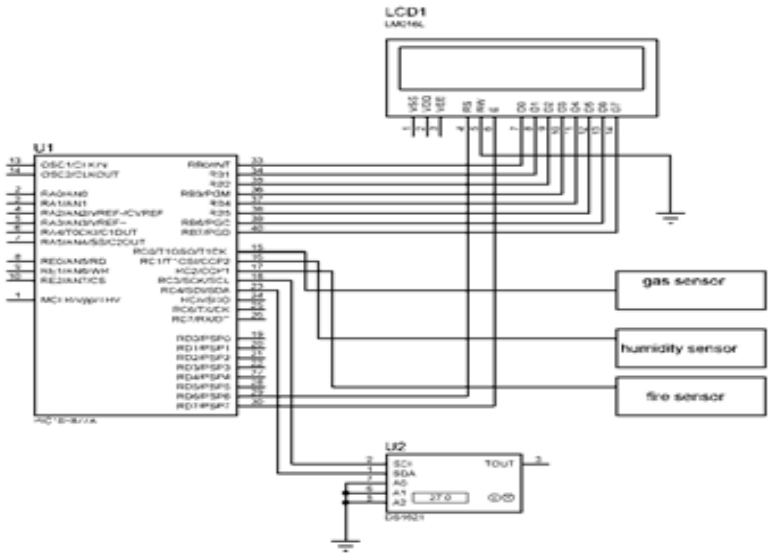


Fig 5: Schematic diagram

Here we are using PIC MICRO-controller. The LCD is connected to the PORTB. We are using 8-bit LCD. So we used 8-data lines. The register select is connected to the RD6 and enable is connected to RD7. So whatever the data we want we can display it on LCD. Here we are interfacing sensors like humidity, gas, temperature sensors to our PIC Microcontroller and these sensors are connected to port pins respectively. We are using Wi-Fi module for monitoring home sensor like humidity, gas, temperature sensor.

VI. RESULTS

Here the results are shown our project "WIRELESS MONITORING OF HOME SENSORS USING WI-FI". In proposed system home sensors are monitor through Wi-Fi module in web server. Humidity temperature and gas sensor conditions are updated time to time on website authorized person can check the sensor conditions where ever he stays. Below figures can show the results of the proposed system.

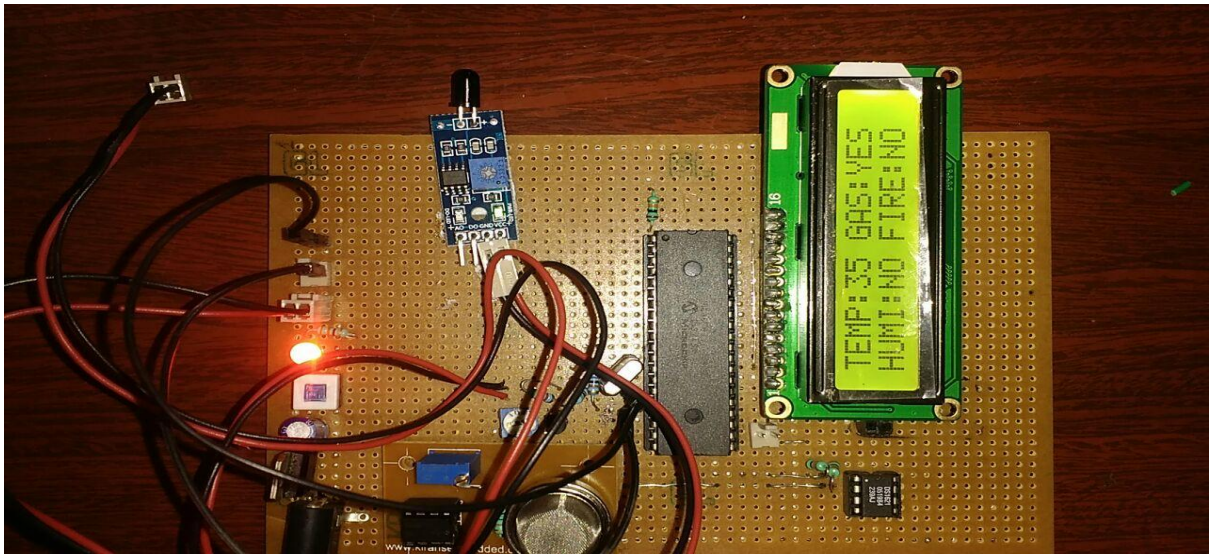


Fig 6: Result1hardware output

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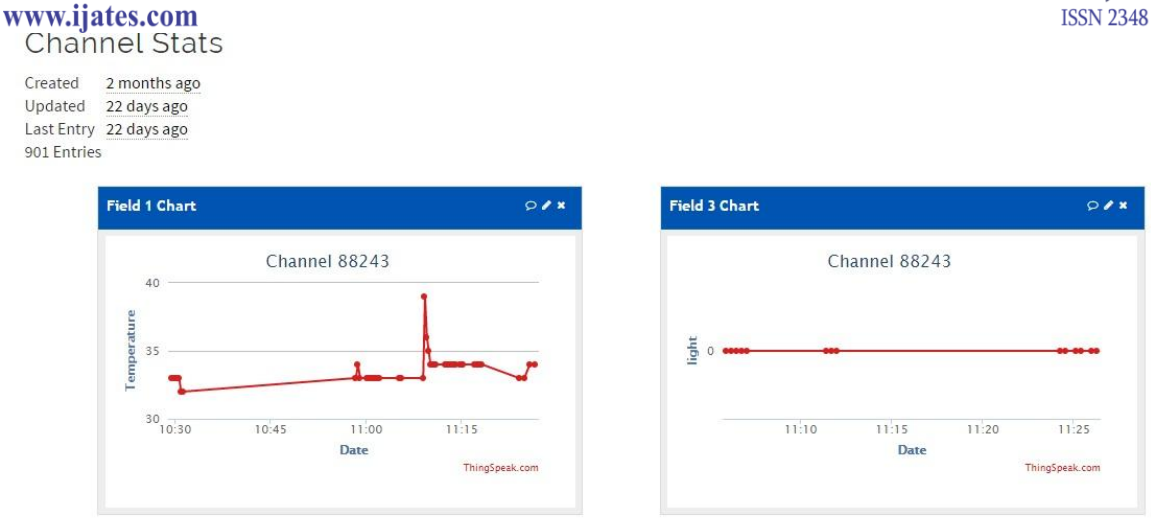

Fig 7: Result2 software output

VII. CONCLUSION

From this project we can conclude that Wi-Fi technology plays a major in our proposed system for monitoring the sensor conditions and through Wi-Fi. So the system can provide wireless information to the authorized person if needs to know about the sensor conditions without any human effort.

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