Room Temperature Monitoring System

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Abstract-

Internet of Things (IoT) plays a pivotal part in our daily life by controlling electronic devices using networks. The controlling is done by minutely observing the important parameters which generate vital pieces of information concerning the functioning of these electronic devices. Simultaneously, this information will transmit these vital statistics from the transmitting device as well as save the same on the cloud to access by the applications and supplementary procedures to use them. This scrutiny associates the outcomes of the environmental observances like the humidity and temperature measurements using sensors. The gathered information could be profitably used to produce actions like distantly dominant cooling, heating devices, or long-term statistics, which will be useful to control the same. The detected data are uploaded to the cloud storage through network and associate using android application. The system employs Nodemcu ESP8266 Wi-Fi module, DHT 11 Sensor, Breadboard and Jumping Wires. The experimental results show the live temperature and humidity of the surroundings. Nodemcu ESP8266 Wi-Fi module is mainly used here for checking the temperature and humidity through the DHT 11 Sensor element. The sensors are used for measuring the temperatures from the surroundings, storing displayed information with different devices. Here, the ESP8266 Wi-Fi module has been used for data storing purpose.

I. INTRODUCTION

Internet of Things (IoT) plays a pivotal part in our daily life by controlling electronic devices using networks. The controlling is done by minutely observing the important parameters which generate vital pieces of information concerning the functioning of these electronic devices. Simultaneously, this information will transmit these vital statistics from the transmitting device as well as save the same on the cloud to access by the applications and supplementary procedures to use them. This scrutiny associates the outcomes of the environmental observances like the humidity and temperature measurements using sensors. The gathered information could be profitably used to produce actions like distantly dominant cooling, heating devices, or long-term statistics, which will be useful to control the same. The detected data are uploaded to the cloud storage through network and associate using android application. The system employs Nodemcu ESP8266 Wi-Fi module, DHT 11 Sensor, Breadboard and Jumping Wires. The experimental results show the live temperature and humidity of the surroundings. Nodemcu ESP8266 Wi-Fi module is mainly used here for checking the temperature and humidity through the DHT 11 Sensor element. The sensors are used for measuring the temperatures from the surroundings, storing displayed information with different devices. Here, the ESP8266 Wi-Fi module has been used for data storing purpose.

II. PROBLEM STATEMENT

In a Room, at every corner we may find different temperature. If we take an example of server room. Computing equipment generates a lot of heat. Therefore, cooling systems are needed to maintain a lower temperature and ensure the safety of the

machinery. Temperature monitoring can help managers achieve this goal. For instance, Computer Weekly contributor Clive Longbottom noted that monitoring for hotspots within the data center is critical to the prevention of fires.
So That's Why, Monitoring the temperature in the server room can make a difference when companies are trying to both save money and reduce their carbon footprint in the long term. Temperature sensors placed at strategic locations around the server room can help provide data centre managers with real-time information about how hot, cool or humid the facility is. With this data, IT staff will know whether to adjust cooling mechanisms, potentially eliminating hot spots and preventing costly server room fires.

When companies invest in data centre monitoring technologies like the ones offered by Vertiv, it can make a difference in the long run for both energy efficiency and cost savings. Our humidity and temperature monitoring systems come with built-in alerts so that IT staff members know when to modify equipment. In this way, via alerts and tweaks of cooling systems, server room temperature can be easily managed, and data centres can achieve maximum efficiency.

III. METHODOLOGY

Based on our problem statement, we have created a prototype to implement a fire alarming system considering all things. The main components of the project are NodeMCU, DHT11 Sensor, Jumper wires and Breadbroad.Using Thingspeak software we can program NodeMCU
When power On this system, the Nodemcu board connect to the algorithm development system called MATLAB via the Thingspeak cloud. Through this, the values obtained from the DHT11 sensor can be viewed on the thingspeak interface as it is real time visualize.

1. COMPONENTS USED

A. NodeMCU

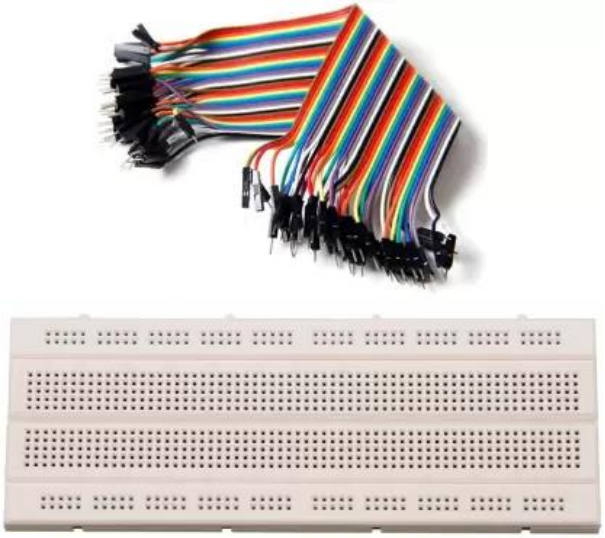
NodeMCU is an Internet of Things (IoT)-focused open-source Lua-basedfirmware and development board. It includes software for Espressif Systems' ESP8266 Wi-Fi SoC as well as hardware for the ESP-12 module. The majorargument for choosing this is that it is cheap and includes a built-in Wi-Fimodule. Because it is similar to Arduino, it can be programmed using the ArduinoIDE software. It has ten General Purpose Input/Output pins for connectingto external devices. A standard NodeMCU, complete with pin numbers.

B. DHT11 Sensor

The DHT11 is a basic, ultra-low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed). It's fairly simple to use, but requires careful timing to grab data. You can get new data from it once every 2 seconds, so

when using the library from Adafruit, sensor readings can be up to 2 seconds old. Comes with a 4.7K or 10K resistor, which you will want to use as a pullup from the data pin to VCC.

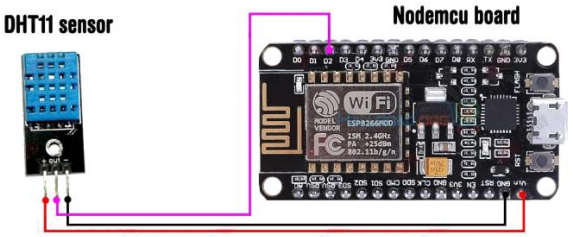
A. Jumper wires and breadboard



Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed. Fairly simple. In fact, it doesn't get much more basic than jumper wires.

A breadboard is a rectangular plastic board with a bunch of tiny holes in it. These holes let you easily insert electronic components to prototype (meaning to build and test an early version of) an electronic circuit, like this one with a battery, switch, resistor, and an LED (light-emitting diode).

IV. CIRCUIT DIAGRAM:



2. WORKING

A temperature sensor has been used to measure the temperature of the room using. The simulation of the system has been done on WI-FI Module and the graphs showing relationship between server room temperature and the digital value from the sensor to validate the accuracy of the system. When power on this system, the Nodemcu board connect to the algorithm development system called MATLAB via the Thingspeak cloud. Through this, the values obtained from the DHT11 sensor can be viewed on the thingspeak interface as it is real time visualize.

FUTURE SCOPE:

The future scope of this project is to integrate a current system with the various other sensors. So, that we can make project better compatible and fast as Possible. Smart Sensors has an undying future scope as in present it is solving out many problems and at the same time providing comfort to many people's life.

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3. CONCLUSION

The aim of the **Room Temperature Monitoring System project** was to automate and control temperature for a server room. The system is allowed entry of a desired room temperature within a prescribed range and to exhibit overshoot and steady-state temperature error of less than 1 degree displaying the value in real time. It can be applied in industries, auditoriums, green house buildings, server rooms and nuclear facilities. It is shown that the solution requires broad knowledge drawn from several engineering disciplines including electrical, mechanical, and control systems engineering.

A temperature sensor has been used to measure the temperature of the room using. The simulation of the system has been done on WI-FI Module and the graphs showing relationship between server room temperature and the digital value from the sensor to validate the accuracy of the system. Hardware implementation has been also done. The results of the research and Output waveforms have been investigated. Various design criteria, performance characteristics, comparison with different parameters.

4. ACKNOWLEDGEMENT

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The days we have spent in the institute will always be remembered and also be reckoned as guiding in our career.