

REAL TIME TEMPERATURE AND HUMIDITY MONITORING SYSTEM

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Abstract:

Indian industries majorly include Biomedical, agricultural and pharmaceutical which are the pillars of country economy. The monitoring of temperature and humidity are major areas for all these industries. Any kind of unbalancing in the environmental conditions or unset parameters can create financial loss in the productivity of pharmaceutical and agriculture industries. Monitoring of temperature and humidity are also required for biomedical industry for drugs and cell culture methods In this paper we are going to measure temperature and humidity by using Arduino tool and DHT11, which will be beneficial for balancing the environment to increase the productivity.

1. Introduction

There are so many embedded devices to interact with environment by connecting internet. The increment of these types of objects is achieving the development of microcontroller based systems which are replacing old complicated electronic circuits. By using IoT, we can control any electronic equipment in homes and industries. Moreover, we can read a data from any sensor and analyze it graphically from anywhere in the world. Arduino is a micro controller board which works as a tiny computer. Arduino is a platform to develop an interaction with required programming software. Arduino UNO is micro controller unit to fetch a data of humidity and temperature from DHT 11 sensor and process it and give it to a ESP8266 module (wi-fi module). In this

paper we have different sections to trace the temperature and humidity.

Section I defines the humidity and temperature by using humidity and temperature sensor DHT11, section II reads the DHT sensor module's output and extracts temperature and humidity values into a suitable number in percentage and Celsius scale, section III system displays humidity and temperature on LCD, Section IV defines analyzing and designing the system architecture, section V shows the result and future scope.

ARDUINO:

Arduino is a new open source hardware and software system. It has to take attention of a large technology design and community at affordable cost, which increases its use with advanced technology. Arduino hardware is a motherboard for making interaction between objects and suitable computer programming IDE (Integrated Development Environment)

DHT11:

This module features a humidity and temperature complex with a calibrated digital signal output means DHT11 sensor module is a combined module for sensing humidity and temperature which gives a calibrated digital output signal. DHT11 gives us very precise value of humidity and temperature and ensures high reliability and long term stability. This sensor has a resistive type humidity measurement component and NTC type temperature measurement component with an 8-bit microcontroller

inbuilt which has a fast response and cost effective and available in 4-pin single row package.

DHT11 module works on serial communication i.e. single wire communication. This module sends data in form of pulse train of specific time period. Before sending data to Arduino it needs some initialize command with a time delay. And the whole process time is about 4ms.

The single-wire serial interface makes system integration quick and easy. Its small size, low power consumption and up-to-20-meter signal transmission making it the best choice for various applications, including those most demanding ones. The component is 4-pin single row pin package. It is convenient to connect and special packages can be provided according to users' request



REQUIREMENTS IDENTIFICATION:

Technology that was used in past scenario was Evaluation Kit for digital Humidity Sensor EEH110 and EEH210. The

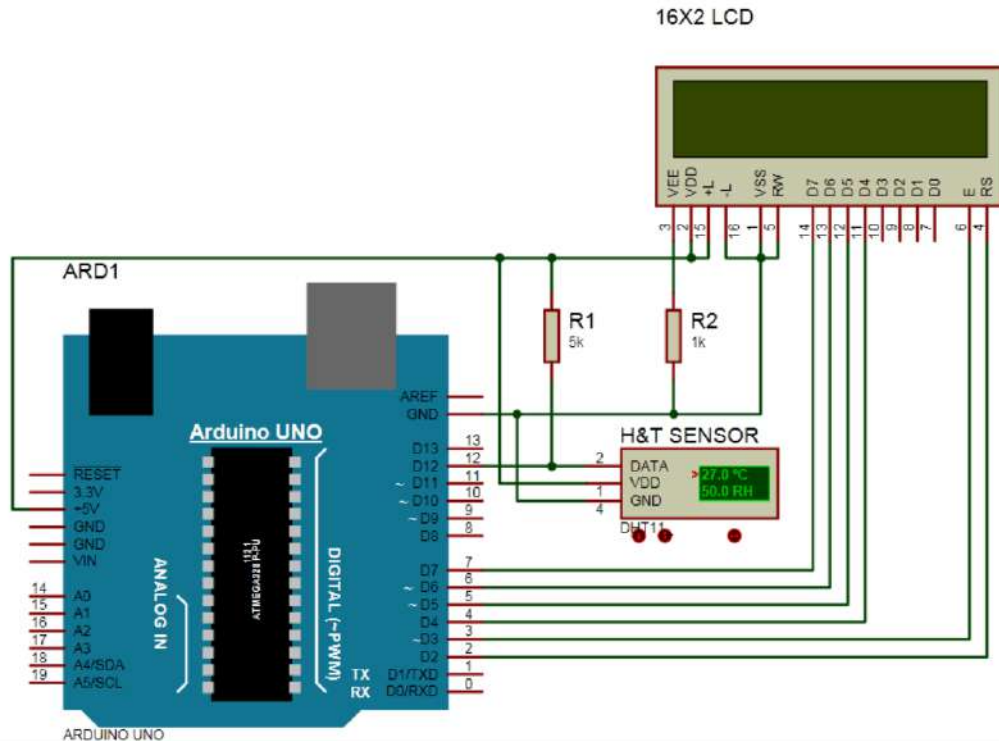
problems were as follows:

- It took comparatively more time to process.
- It required additional devices for operation.
- It required external clock.
- Programming for micro controller 8051 was difficult.



- For programming it required development system.
- Circuit size became large.
- PCB making became complex.

CIRCUIT DIAGRAM:



CONCLUSION

This proposed system can provide a convenient method for effective monitoring of temperature and humidity in real time. This system is compact to an extent and cost effective when compared to prices of instruments used to measure the environmental factors. From the above all analysis, it is ensured that the nested wired systems can be replaced by the wireless sensor networks to get an accurate data as well as to avoid many hazardous issues.

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