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RFID Based Attendance and Health Monitoring System

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Abstract: - *The Real time monitoring of Health simultaneously with attendance in the premises of school, colleges, offices, societies etc. has not been done so far and the Covid-19 pandemic has made it compulsory to monitor everyone's body temperature before letting them to enter the building which is done manually by the IR temperature gun. Therefore, to solve this major problem we came up with an idea and by implementing that idea we are designing the system whose primary focus will be to take attendance as well as monitor the body temperature, oxygen level, and pulse rate, as these are the most important factors to determine symptoms of covid. Hence, after achieving our objective we will be able to monitor and record the health along with attendance and by using IoT all the data will be sent to the cloud which will make data available for remote access across the globe.*

Keywords: IoT, Cloud, Covid-19, IR, RFID, NodeMCU ESP 8266, Arduino Mega 2560, etc.

I. INTRODUCTION

"Health is Wealth", a famous proverb says a lot and this goes for all human beings. Before going for work we study and for studying- everyone goes to school and colleges and once we are done with our education we step into real life where we provide our services to others and by doing so, we regulate the economy of the country and world and in this way international trades happen and then world becomes a Global village where everything is related to everyone.

So, if we can check the health of students or employees before they enter their required places, we will not only keep that person updated about their health but at the same time we will be keeping other students and employees safe and healthy which will boost the efficiency of the employees and will definitely improve the result of the students. The compounded outcome of these small changes in the daily curriculum will foster the growth of the nation such is the power of this system i.e., "RFID BASED ATTENDANCE AND HEALTH MONITORING SYSTEM".

Nonetheless research has been done on the topic of health monitoring and attendance monitoring separately however, they have not been combined and were never used in the way we are using, this makes our work unique whose implementation is not only mandatory for time being but will persist longer.

II. LITERATURE SURVEY

Students, Teachers, Researchers, and other Laureates from all across the World have worked on the relevant topic and have proposed their best work in different publications. After going through number of papers we have shortlisted few of them for the literature survey and these papers are divided into two parts and hence they have been discussed separately as follows-

1) Attendance Based

[1] proposed system aims to collect University attendance systems by using RFID, Cloud storage and IoT. RFID technology was installed in every classroom in the university to encourage that every student's presence is collected by chip instead of classroom roll call system. [2] focuses on proposing an RFID based Attendance Management System (AMS) and also information service system for an academic domain by using RFID technology in addition to the programmable Logic Circuit (such as Arduino), and web-based application.

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The proposed system aims to manage student's attendance recording and provides the capabilities of tracking student absentee as well, supporting information services include students grading marks, daily timetable, lectures time and classroom numbers, and other student-related instructions provided by faculty [3].

This paper is about taking attendance and saving time and efforts therefore he used relational database management system in real time with appropriate security measures to access, manipulate and represent the data on the basis of the unique RFID tags, which gets fast and easily scanned on the RFID reader. Their system consists of hardware and software with most trending implementation of a lightweight MQTT protocol in IoT technology; designed to take an attendance on the basis of RFID technology with NodeMCU firmware. [4] This work introduces a new paradigm of monitoring student attendance using Radio Frequency Identification (RFID) based on the Internet of Thing (IoT). Educational institutes are concerned about student irregular attendance. Truancy can affect a student's overall academic performance. RFID based attendance systems using IoT is one of the solutions to handle the problem. The proposed work comprises two most popular trends in technology research; IoT and RFID.

2) Health Monitoring Based

[5] The system uses Temperature and heartbeat sensors for tracking patients' health. Both the sensors are connected to the Arduino-uno. To track the patient health microcontroller is in turn interfaced to an LCD display and wi-fi connection to send the data to the web-server (wireless sensing node). In case of any abrupt changes in patient heart-rate or body temperature alert is sent about the patient using IoT. Their developed system also shows patients temperature and heartbeat tracked live data with timestamps over the Internetwork. The work done by them is effective and very useful for both patient and doctor. [6] Their system consists of two parts, portable measuring device and android application. The portable measuring device can measure the heart rate and body temperature. The device uses an Arduino board that connects to the heartbeat and temperature sensor. It shows the heartbeat and temperature readings on LCD displays and at the same time sends them to ThingSpeak IoT platform in real-time via Wi-Fi. When both readings were uncommon, the system sent the notification to the Line application. [7]

The proposed method is used to measure the physical parameters like body temperature, heart beat rate, and oxygen level monitoring with the help of biosensors. The experiments showed that interoperability between different IoT devices, standards, and protocols in a smart health system could be achieved using a specialized gateway device and that different web technologies could be used simultaneously in constrained and Internet environments [8] This system monitors patients pulse rate, vital sign and saline liquid level (if any). incase threshold is reached, there sensible device informs doctors or care taker and kindle corrective actions to save lots of patient's life.The attention blink device Heartbeat device and temperature device, Vibration device were used to monitor the health of a patient.

III. METHODOLOGY

Since, none of the surveyed paper and their authors worked on the combination of both the topic i.e. Attendance and Health Monitoring system therefore it was a great opportunity for us to make a unique system which is "RFID based attendance and Health monitoring system" which will help numerous organisations In this Project, we aim at making the process of taking attendance manually in a register, bringing it online giving it a new and much better experience both for users and the person who monitors it. And also adding the benefit of monitoring the user's basic health stats. This is avery new experience as it has not been ever implemented before in any institution. We are going to monitor the health and take attendance simultaneously and by doing this we will increase the efficiency of taking attendance in the workplace and educational institute using RFID based systems and we will also check the temperature of each employee/student. In this way, we will have the attendance and health their record at the same time which will be available to the administration and that will be accessible 24*7. This would also help to make the decision body of the campus aware in case of mild symptoms of any disease in any person through indications of temperature, based on the result precaution will be taken. RFID based attendance and health monitoring system by using temperature, will work on Arduino UNO, all the input and output will be done through the allotted pins on the board and for uploading data to the cloud we are using ESP8266. In this way, we will complete the cycle ofthe project and solve the problem mentioned in the problem statement.

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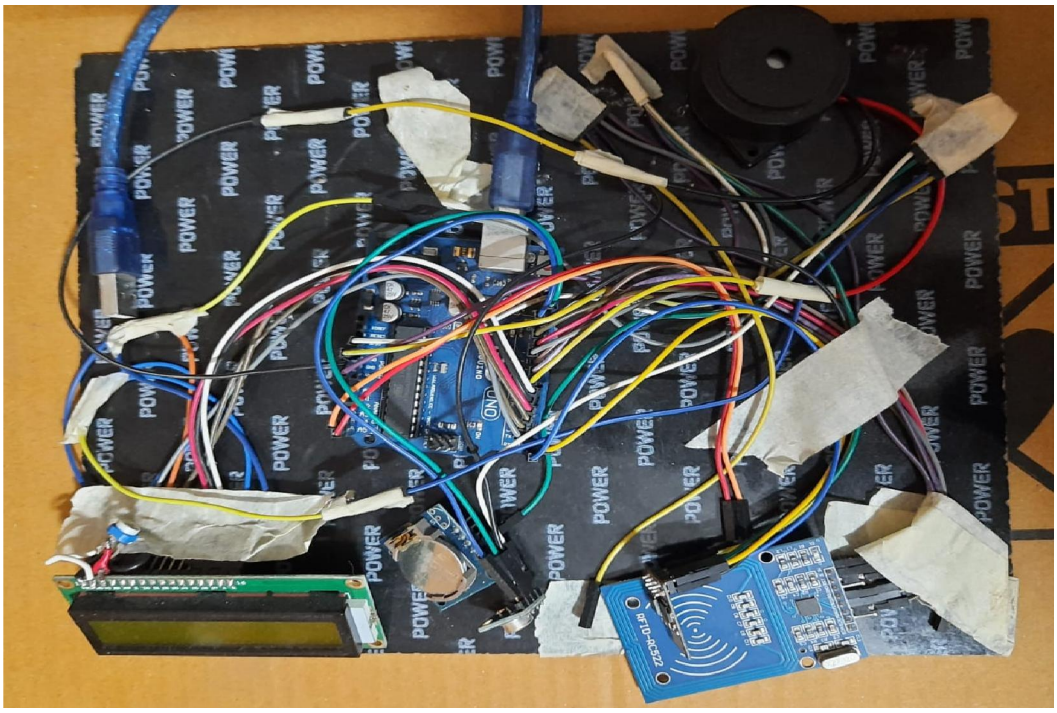

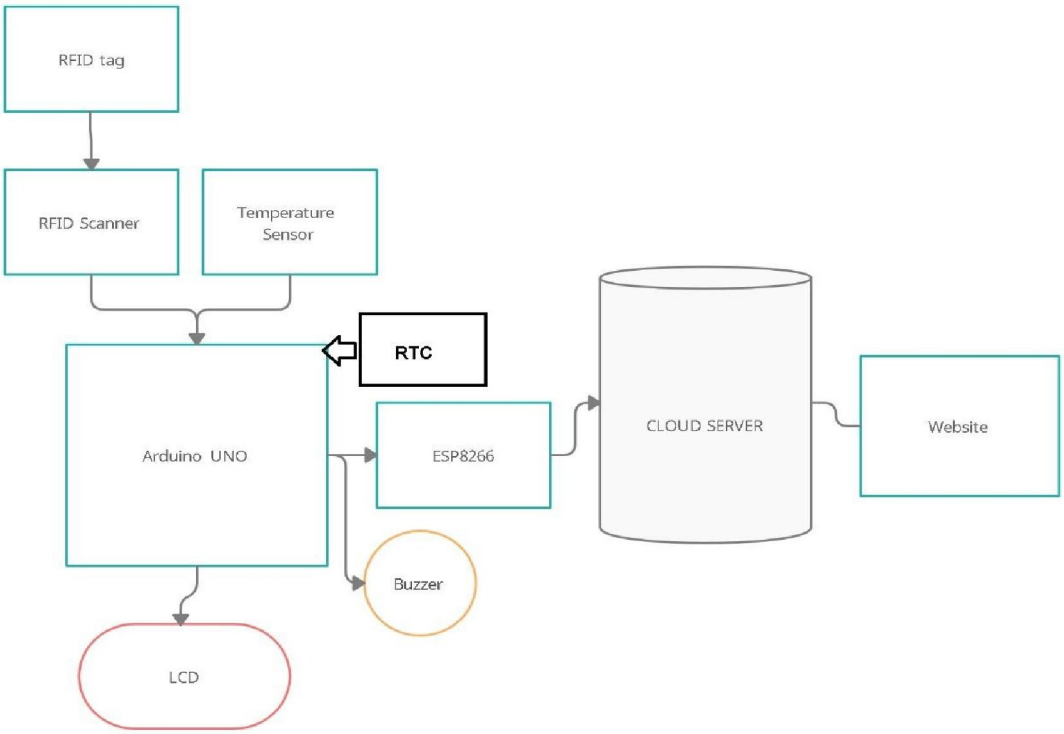

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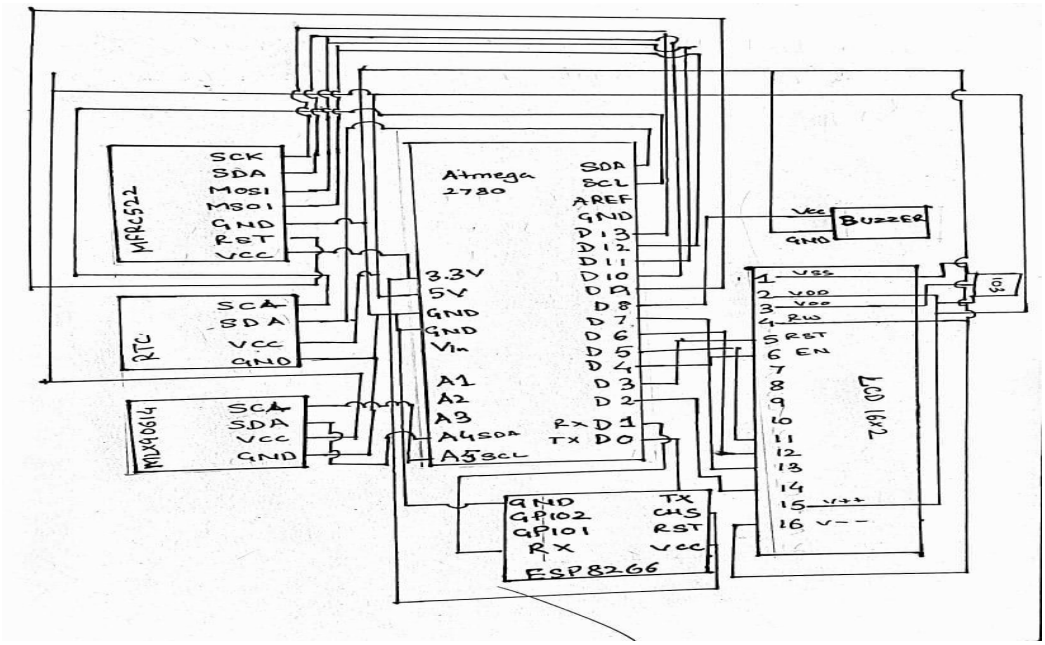

Block Diagram

ALGORITHM

1. Start
2. RFID scanner reads the tag.
3. The scanner will send the UID number to the microcontroller for processing and to checkits validity.
4. The signal is then sent to the LCD to display the processed answer, if it's a valid tag ornot.
5. If the tag is valid input to the IR temperature sensor is allowed.
6. The data from the sensor is again sent to the microcontroller which checks for thethreshold values of data inputs.
7. After processing the output is displayed in the GLCD stating if the user is fit to enter thepremises or not.
8. The data is also stored on the cloud server via the ESP8266, in the user's designatedlocation.
9. Where this data can later be accessed via a website.
10. End.

IV. Conclusion

RFID Based Attendance and Health Monitoring System is a unique way to monitor the attendance and Health in real time and according to the literature survey the hardware and technology which will be used to accomplish this project are Arduino Mega2560, IR temperature sensor, Pulse Oximeter MX30100 sensor, and Nodemcu ESP8266 module, for uploading data to cloud IoT and Wi-Fi will be used. Arduino programming will be done on Arduino IDE platform and the programs will be in C language. This will conclude the overall work which needs to be done to accomplish the result.

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[2] The proposed work by Wasim Ali, Manasa K.N & Dr. Basit. A. Darem. Students can be connected to the application through MAC address and results can be saved finally, they generated the report on a daily/weekly/Monthly basis.

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[6] Method proposed by Rajalakshmi.S S.Nikilla is to implement a prototype model for the real time patient monitoring system.
[7] Richa Gupta, Vinod Kumar Shukla, and Princy Agarwal in their paper "Attendance Monitoring System Through RFID, Face detection and Ethernet Network.
[8] Mr. T.H Feiroz Khan, Narendra Kumar Meel, Chetan Sharma, Arshad Ali, and Prakhar Gupta proposed a sensible embedded system device that monitors patients' health ceaselessly.