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STUDENT ATTENDANCE TRACKING SYSTEM USING RFID

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ABSTRACT

Most of the institutional authorities are concerned with the burdensome method of maintaining manual attendance of their students. The manual process of signing on a paper or calling out the names of each student is protracted and insecure. An efficient attendance monitoring system needs to be imposed at such places. Radio Frequency Identification (RFID) based attendance system provides us with a solution that provides to issues like proxy attendance. This paper describes the design of an RFID based attendance monitoring system which uniquely identifies each student based on their RFID tag. This makes the mechanism of recording the attendance effortless, quicker and protected as compared to orthodox method. The proposed system consists of both hardware and software components based on IoT technology. The hardware component consists of RC522 RFID card reader and RFID tags. The software component consists of the Web-based GUI for viewing the student's attendance, which is hosted on a web server and which stores the data in a database server. The students just need to place their RFID tag on the reader and their attendance will be recorded. Also, the attendance recorded will be more accurate as the system is synced with a real-time clock.

Keywords: RFID, IoT, Tags, Reader, Arduino, DBMS, GSM.

I. INTRODUCTION

Attendance or daily register of substitutes has turned into a vigorous assessment perspective in the current instructive framework in both universities and schools. The conservative attendance monitoring framework has a few obstacles with the trend and the technology gap. For instance, passing the everyday attendance sheet to a huge number of students in a class is extremely risky and it hinders the consideration of the students in the class. It is waste of time as well as a student can intentionally enlist forged attendance record in the attendance sheet. On the prospect, if the teacher loses these documents, all the significant attendance records are lost. Some students do not come to classroom due to one reason or the other and because of this they do not perform well in their examination, so there is a need to monitor the student attendance in the classroom to enhance their academic performance. The blue-collar method of taking attendance in schools and colleges in educational institutes over the years has become a thing of concern. In the manual method of taking attendance, students are required to write down their names and sign the attendance register. The problems associated with this method vary from unnecessary time wastage for the teachers and students to improper documentation, students forgetting to put down their names on the attendance list or students writing on behalf of other students that are absent for the class.

II. METHODOLOGY

The Arduino will read the RFID tag from the RC522 reader. It will retrieve the RFID detail from the RFID tag. We will extract the User ID of each tag whenever we place it near the RFID reader. The extracted User ID will then be sent to the ESP 8266 ESP-01 through the serial interface. The ESP8266 ESP-01 will then communicate with our application by passing the RFID User ID. Node MCU is a microcontroller unit, it is based on ESP8266 which can connect objects and let data transfer using the Wi-Fi protocol. Node MCU is built around an inexpensive system on a chip called ESP8266. Whatever the response from the application will then be sent back to the Arduino by serial interface also. The Arduino will then deconstruct the response and do the necessary action base on the message coming from the ESP-01. If the RFID tag is authorized then it could trigger other events such as sending commands to servo motors. The database will be accessed by the GSM, and a message will be sent to the concerned.