
STUDENT DATABASE MANAGEMENT AND ENQUIRY SYSTEM USING BARCODE SCANNER

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ABSTRACT

Student attendance plays a very important role in justifying the overall performance. Unfortunately, schools and colleges do not have automatic attendance systems for students. Several software applications are created to create stored data online and to manually access stored data. Stored computational data is more secure as it is protected with an encryption key. Thus, here is one attempt to develop such one system and to solve the existing problem. The main objective of the proposed work is to design a student database management system using Barcode scanner. In this work we convert the manual student database management into the computerized system for the data reliability and also easy accessibility. This system provides any information regarding students such as his/her Name, Roll No, Phone number, Attendance, Academic status. The system is user friendly with a graphical user interface and all instructions for accessing the system are displayed on the LCD screen. It can also accessible for the parents. Hence it is safe and less time to access.

Keywords: Barcode, SMS, Attendance, Enquiry, LCD Student.

I. INTRODUCTION

With the Posting of internal assessment report through postal method, this may not reach on time, lot of paper work, manual interaction is more, may lose of data, time consuming, all these can be avoided with the proposed automated smart system. Objective of the proposed system is to reduce the human efforts and to secure the data, and also to provide attendance awareness among the students. This proposed work makes it possible for the parents to gain total visibility into their children's academic status and attendance. Auto detailed information of attendance is sent to Parent/Guardian through email and through the SMS every month. Even if parents want to know performance of student, they can SMS and get reports through SMS. The parents can request for the report by sending SMS at any time (round the clock) and get performance of their children. This project implements an automated SMS response system using a Wi-Fi module. It works like when you scan your RFID tag it automatically displays student information through the LCD, also we can get the information through the SMS. Hence, we can able to see the student information through the lcd and Web server.

II. LITERATURE SURVEY

Attendance is the act or fact of attending (being present at) school. Also, attendance is used to define the number of persons present on a particular day at school. An attendance policy provides the guidelines and expectations for students' attendance at school as defined, written, disseminated, and implemented by the school. And the attendance can be recorded in many ways such as using web based, RFID, and bar code scanner. Since most of the application developed nowadays it requires the worldwide accessibility, web-based system is the most common attendance system that available. One of the higher Institution in Malaysia have used RFID to record the attendance of their student and the record sent to online server for an online accessibility [2]. Apart from that, there is plenty of educational institutions used RFID technology to record their student attendance. Since most of the application developed nowadays requires the worldwide accessibility, web-based system is the most common attendance system that available. One of the higher Institution in Malaysia have used RFID to record the attendance of their student and the records sent to online server for an online accessibility. Apart from that, there is plenty of the educational institutions are used RFID technology to record their student attendance. Easy connection Hema Subramaniam, Marina Hassan, proposed a Barcode

Based Student Attendance System (SAS) in this the data captured using bar code scanner sent to the attendance system for the purpose of recording and preparing attendance record.

III.EXISTING METHOD

It is a manual entry for the students, here the information is carried out in hand written registers. It may lead to errors and mistakes. If any records need to be updated then it has to be changed in every file so making it difficult to manage all the data. Hence this system is the tedious job to maintain records for the students as the human effort is more here.



Fig.1: Manual process of taking attendance

IV.PROPOSED METHOD

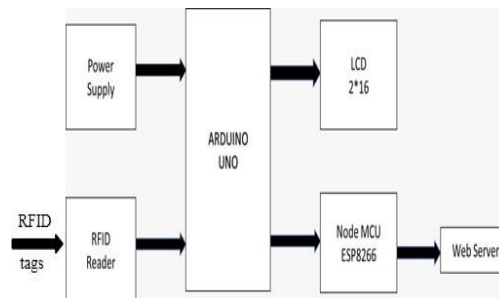


Fig.2: Block diagram of the proposed system

In proposed system, students can access their details when they feel to check, which is on the output window (LCD screen) or by a smart phone application. This system provides information about their respective student attendance and also student related data. And also, even if parents want to know performance of the student, they can SMS and get the information through the SMS. The information of students like their ID, roll number, academic status and attendance needs to be entered through the admin computer and then the entered data will be stored in database installed on a web server. Once all the information is entered, the user can view their data by just swipe/sense their college ID card at the barcode reader. This system is developed into two different modules. They are Student enquiry process and SMS enquiry process

A. Student enquiry process

Here the student can scan their RFID tag to EM18 RFID reader to view their information like attendance, academic status, roll number on a LCD screen. When RFID tag is scanned, unique ID is sent to the Arduino UNO and it is transferred to Arduino Mega. Lastly it displays the student information on the LCD Screen and also on the Web server

B. SMS enquiry process

This proposed prototype can be accessed by the parents just by sending SMS to the Admin panel. And the Information can be collected to the request ID mentioned and it is sent to the parent mobile as an acknowledgement through the SMS by the Admin panel. Therefore this about the SMS enquiry process which can be accessed by the parents

V. HARDWARE COMPONENTS

The required hardware components are: Node MCU ESP8266, 2x16 LCD display, Arduino UNO,

Power supply, EM18 RFID Reader, Buzzer. The additional components required are cardboard, transformer for the charging the battery, PCB and sol-dering gun.

1. ARDUINO UNO

Arduino UNO is a micro-controller board based on the ATmega328P. It has the 14 digital input/output pins (of which 6 can be used as PWM out-puts), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the micro-controller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.



Fig.3: Arduino UNO

2. NODE MCU

Node MCU is an open-source software and hardware development environment and that is built around a very inexpensive system on a chip called ESP8266. The ESP8266 is a highly integrated chip de-signed for the needs of a new connected world. It of- fers the complete and also the self-contained Wi-Fi networking solution.



Fig.4: Node MCU

3. 2X16 LCD DISPLAY

A liquid crystal display (LCD) is a thin, flat display device made up of any monochrome pixels ar-rayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules sus-pended between the two transparent electrodes, and two polarizing filters, the axes of the polarity of which are perpendicular to each other. Here in this proposed system, we used LCD for to display the certain infor-mation about the student. Here it displays the digital form of output as shown in below figure



Fig.5: 2X16 LCD Display

4. EM18 READER MODULE

EM18 is an RFID reader which is used to read RFID tags of frequency 125 kHz. After reading tags, it transmits unique ID serially to the PC or micro- controller using UART communication or Wiegand format on respective pins. RFID is the wireless non- contact with the use of radio-frequency electromag- netic fields to transfer the data, for the purposes of au-tomatically identifying and tracking tags attached to objects. There-fore these tags contain electronically stored Information. This EM18 RFID Reader modulereads the RFID tags and sends the unique ID to Ar- duino Uno. The below mentioned EM18 RFID Reader Module is used in our proposed system.



Fig.6:EM18 RFID Reader Module

5. BUZZER

A Buzzer or Beeper is an audio signal device, which may be mechanical, electromechanical. The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, computers etc. Based on the various designs, it can generate different sounds like alarm, music, bell, and siren. The whole thing is encased in a plastic case. This buzzer used to convert audio signals into sound signals.



Fig.7: Buzzer

6. POWER SUPPLY

A power supply is an electrical device that supplies electric power to an electrical load. The main purpose of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters. Here we used the Step-down transformer and 5v power supply to the prototype.



Fig.8: Power Supply

I. RESULTS



Fig.11: Display of Student Name and Phone Number

After successful Hardware Implementation of the circuit diagram in PCB following outputs will be obtained



Fig.12: Display of Student Academic status

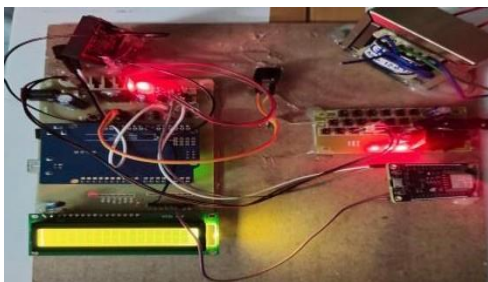


Fig.9: Hardware of the Project

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The project is designed in such a way that a RFID reader reads the RFID tag and then the unique ID is monitor by Arduino UNO microcontroller and displays student information as shown in figure 8. This system integrates a embedded platform with Ar-duino UNO Where the Arduino UNO Collects the in-formation and received by the Node MCU. The LCD displays the information regarding student attendance,academic status etc. The student can able to check theInformation through the webserver or through theLCD. So that it can be easy for the staff to monitor thestatus of the student. And it can be monitor by student parents through the webserver. In addition, the use ofa barcode scanner can also reduce human efforts, as it eliminates the need for manual data entry. This makes the process of recording and retrieving student infor- mation faster and more reliable.

➤ **DISPLAY OF STUDENT INORMATION**



Fig.10: Display of Student Roll Number

II. CONCLUSION

This work describes about the related stu- dent information management system with using the barcode technology. It then demonstrates the po- tential application of the using digital barcode to con-vey the useful information, and then however this sys-tem can be useful in providing information to users. There the system facilitates a semi-automated ap- proach for study any information related to its stock exchange that is ask students to present their col- lege ID card to the bar-code readers.



Then he can view the data he wants on the LCD screen. And also, First, all there the first processes for managing there for the enough student database records such as Roll number, department, attendance, academic status, name and the other resources are also done online, and then allowing administrators and also for the entire teachers to user data from any of the computer or browse the web. The browser can be modified and with an admin password through an admin panel and developed using the .net. This way, no specific software needs to be installed. Student data is also processed and analyzed automatically with the less risk of the data loss than the manual grading methods. Although the student database management module and was not fully integrated into the system and used in the real time, therefore this prototype of the system demonstrated easy navigation and how the system stores data. Overall, there the efficiency increased and workflows are streamlined. Although all objectives have been achieved, there that has the system can still be improved. The system is robust and flexible enough to be upgraded in the future with state-of-the-art technology and equipment.

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