

Smart Class and Lab Attendance Marking and Monitoring Using IOT

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ABSTRACT: Nowadays education system going smart, the learning system is going advance for improving the student education level and developing practical knowledge. For that student present is must in schools and colleges. The main objective of our project is monitoring student's presence in class using IOT based attendance system. We are verifying attendance using RFID card reader; the individual student id is stored in RFID card. The individual student details are stored in Arduino microcontroller. The student show a RFID card the RFID reader can read and put present for that student and teacher also monitor student daily, monthly attendance details is stored IOT server . Automatic class room light and fan control using IR sensor. The student present details message is sent to parents via using GSM interface with Arduino microcontroller. RFID utilization in education is student attendance monitoring system, by using Internet of Things (IoT) and Cloud technology; it will produce a real time attendance monitoring system that can be accessed by various parties, such as lecturer, campus administration and parents. With this monitoring system if there are students who are not present can be immediately discovered and can be taken immediate action and the learning process can run smoothly.

KEYWORDS: RFID, Internet of Things (IoT), Arduino microcontroller, GSM.

I. INTRODUCTION

One of the factors that support the success of the learning system is the presence of students, because if students are often absent then the material they received becomes less and can't understand the material that has been taught, one that causes the absence of students is they ditch, so the attendance monitoring system becomes very important because with this process the attendance of students can be monitored properly. Various kinds of presences can be used from manual way to automatic way using electronic equipment, if the monitoring system attendance using electronic equipment so the recording of attendance data becomes easier, fast and accurate. In this research, attendance monitoring system using RFID technology and with the application of Internet of Things (IoT) and cloud technology will be obtained a presence system that can run and monitored in real time, so that all parties who need information such as lecturers, parents, and energy the administration can immediately find out if there are students who skip classroom, it can immediately be prevented so that the next meeting does not ditch again.

ADVANTAGES

- Improving students presence in school
- High efficiency
- Low cost
- Low power consumption

APPLICATIONS

- Used in school colleges
- Reduce time to take attendance
- Student presence is monitored by parents.

The security system is basically an embedded one. Embedded stands for hardware controller by software. Here software using microcontroller controls all the hardware components. The microcontroller plays an important role in the system. The main objective of the system is to uniquely identify and to make security for a person. This requires a unique product, which has the capability of distinguishing different person. This is possible by the new technology called RFID. The main parts of the RFID system are RFID tag and RFID reader. In this system the RFID reader and RFID tag used are operating at 125 KHz. The microcontroller internal memory is used for storing the details. This report provides a clear picture of hardware and software used in the system. It also provides an overall view with detailed discussion of the operation of the system. There have been rise in the number of applications based on Radio Frequency Identification (RFID) systems and have been successfully applied to different areas as diverse as transportation, health-care, agriculture, and hospitality industry to name a few. RFID technology facilitates automatic wireless identification using electronic passive and active tags with suitable readers. In this paper, an attempt is made to solve recurrent lecture attendance monitoring problem in developing countries using RFID technology. The application of RFID to student attendance monitoring as developed and deployed in this study is capable of eliminating time wasted during manual collection of attendance and an opportunity for the educational administrators to capture face-to-face classroom statistics for allocation of appropriate attendance scores and for further managerial decisions.

The main aim of this paper is to develop an accurate, fast and very efficient automatic attendance system using fingerprint verification technique. We propose a system in which fingerprint verification is done by using extraction of minutiae and the system that automates the whole process of taking attendance, manually which is a laborious and troublesome work and waste a lot of time, with its managing and maintaining the records for a period of time is also a burdensome task. For this purpose we use fingerprint verification system using extraction of minutiae techniques. The experimental result that our proposed system is highly efficient in verification of user fingerprint.

II. EXISTING SYSTEM

The security system is basically an embedded one. Embedded stands for hardware controller by software. Here software using microcontroller controls all the hardware components. The microcontroller plays an important role in the system. The main objective of the system is to uniquely identify and to make security for a person. This requires a unique product, which has the capability of distinguishing different person. This is possible by the new technology called RFID. The main parts of the RFID system are RFID tag and RFID reader. This report provides a clear picture of hardware and software used in the system. It also provides an overall view with detailed discussion of the operation of the system.

Drawbacks

- They are not monitoring a student's attendance in real-time.
- The student presence is not monitored parents

III. METHODS AND MATERIALS

- ARDUINO MEGA
- LCD DISPLAY
- RFID READER
- IR SENSOR
- WIFI
- GSM
- RELAY

Arduino Mega

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560 (datasheet). It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.

LCD Display

A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals (LCs). LCs do not emit light directly.



Fig 1 LCD Display

RFID Reader

The Transponder or tag is fixed on to the baggage to be tracked in the airport. When this tag comes within the range of the reader or integrator, the tag is energized. Now, this tag transmits the data to the reader.



Fig 2 Different types of tags

IR Sensor

An Infrared sensor (IR sensor) is an electronic device that measures infrared (IR) light radiating from objects in its field of view. Apparent motion is detected when an infrared source with one temperature, such as a human, passes in front of an infrared source with another temperature, such as a wall.

Wi-Fi

A Wi-Fi-enabled device, such as a personal computer, video game console, smart phone or digital audio player, can connect to the Internet when within range of a wireless network connected to the Internet.



Fig 3 Wi-Fi

GSM Modem

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone.



Fig 4 GSM Modem

Relay

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are double throw (changeover) switches.



Fig 5 Relay

IV. RESULTS AND DISCUSSIONS

It will produce a real time attendance monitoring system that can be accessed by various parties, such as lecturer, campus administration and parents. With this monitoring system if there are students who are not present can be immediately discovered and can be taken immediate action and the learning process can run smoothly.



Fig 6 Result

V. CONCLUSION

In this way, we are monitoring The main objective of our project is monitoring student's presence in class using IOT based attendance system. The student present details message is sent to parents via using GSM interface with Arduino microcontroller. RFID utilization in education is student attendance monitoring system, by using Internet of Things (IoT) and Cloud technology; it will produce a real time attendance monitoring system that can be accessed by various parties, such as lecturer, campus administration and parents. With this monitoring system if there are students who are not present can be immediately discovered and can be taken immediate action and the learning process can run smoothly. The student present is important for student's career and education level of the country is improved only because of all student must come for school for that creating this technology.

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