NOVEL E-ATTENDANCE SYSTEM USING NFC

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ABSTRACT

This paper introduces a Near Field Communication (NFC) supported school attendance supervision system for school children. Traditionally, teachers conduct students attendance monitoring every time with manual roll calls, and mark absences and thenenter in the backend system. This requires time and effort on every school day. In addition, children beginning school/college travel to school/college independently, either on foot, by motorcycle, or by bus. Therefore, parents of young students regularly call to their children or teachers or institutes on cell phones to ensure that the child has made his/her way to school safely. Answering parents calls takes up teachers time that could be used for teaching or staffs time that could be used for management. The NFC-enabled school attendance supervision system has been designed to simplify attendance monitoring. The system replaces manual roll calls and gives parents information of their childrens attendance in real-time.

KEYWORDS: NFC Tag ,Radio Frequency Identification , OTP (One Time Password) , E-attendance

Introduction

In a small town in the United States , a public school children's whereabouts on campus were monitored by a system that used RFID (Radio Frequency Identification) technology. Children wore badges around their necks that contained a photo, grade level and name of the pupil.

Also a Rhode Island school district has announced a pilot program to monitor pupil movements by means of RFID chips implanted into the schoolbags of 80 children. Each chip would be programmed with a pupil identification number, and would be read by an external device installed in two school buses.

The parents criticized the plan as an invasion of childrens privacy and a potential risk to their safety.Various methods were designed to overcome these issues. The NFC protocol was standardized by the International Organization for the standards in 2003.The motivation behind choosing NFC is based on identification. NFC is a wireless proximity communication technology protocol based on inductive coupling , for transferring data upto 10 cm. The field is generated on 13.56MHz.
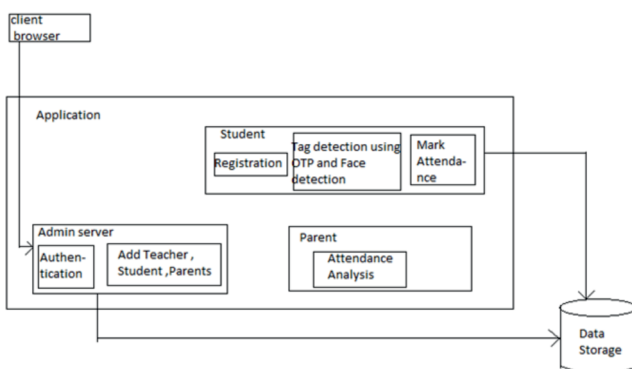
Materials and Methods:

Fig 1 . Architecture

The system is connected to the server which registers students , parents and teachers . The student will be given an NFC tag which will contain its information and the teacher will also have a NFC based mobile phone . During marking attendance the NFC tag is brought close to NFC based mobile phone . The tag gets detected to the phone which is connected to the server and the unique identification number of tag and the data stored in the system is matched.

When the unique identification number is matched the server sends an image of the student to the application on teachers phone.

If the image is the same of the student marking attendance then OTP(one time password) is generated which will be send to the students mobile phone .The OTP will be verified and the attendance will be marked.

This also sends the parents a message about the student attending the school/college which will help the parents to keep a track record of students.

Results:

The system will simplify attendance monitoring and replace teachers manual roll calls.It evaluate how various aspects identified in new technology adoption affect the design processes of home-school interaction systems by examining the findings from the viewpoint of three end-user groups (children, parents and teachers). And it also shows that a technology supported attendance supervision system can bring value for all end-user groups and the system will serve primarily the teachers and the parents.

Discussion:

The Rhode Island school and The Public School of United States implemented RFID for attendance marking and keeping the track of students. But the proposal died after protests by parents and privacy and civil-liberties advocates, including the American Civil Liberties Union (ACLU).

Near Field Communication (NFC) is the set of protocols that enable electronic devices to establish radio communication with

each other by touching the devices together, or bringing them into proximity to a distance of typically 10cm or less.NFC basically works as when two compatible devices are broad together less than four centimeters or simply by touching themselves. When one device is transmitting the other one has to listen first and should start to transmit after the first one finishes.

The NFC technology has an advantage is that mobile device can be use both as an information storage or an NFC reader.Advantages of NFC technology:

1. This technology is compatible with existing RFID structures, existing RFID and controller smart cards.

2. It is easy to use and familiar to people because users don't need to have any knowledge about the technology. All have to bring the device together to start communication.

3. The transmission range is too short that, when the users separate two device, the communication is cut. This brings inherent security of there isn't any other device close there is no other communication.

Conclusions:
This system replaces the manual roll call system with help of NFC tag . The attendance will be marked only after verification of student in two step . The first is the image verification and the other is OTP which will prevent proxy and will eventually also decrease the workload of the teacher.

Also using a parent module in which the pupils attendance will be sent to respective parent through message.

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