Sensor based Attendance Management System

Safnaz K[1] ,Sony G Kotian[2]
Veerabhadra Swamy M B[3],Umesh Pujar [4], Vasudev Shahapur[5]

***Abstract*— Attendance plays a vital role in evaluating a student. In the current scenario of our education system we find that there are lot of technologies to use but still we are following the traditional system. Currently in the universities and schools, the lectures themselves take the attendance and update it manually in the database. This traditional method of taking attendance manually is very time consuming and often leads to human error. If we talk about the technologies we find that there are lot of tools available to reduce the burden of lectures. Using RFID is one example of that. If we combine RFID and IOT we can do the work automatically and there is no need to do it by lectures. Here we are planning to use the cloud as storage for better performance. Using IOT and cloud we can access it from anywhere and anytime which will provide us the better proficiency and flexibility. This attendance system aims at facilitating colleges and schools to capture the attendance automatically with the help of RFID. The system should store the data in the centralized database system so that an intelligent system can be built over the same to make it convenient and to eliminate existing problem such as period level attendance, approval of attendance , issues due to change in periods.**

Keywords—RFID, sensor, IOT

I. INTRODUCTION

This attendance system aims at facilitating colleges and schools to capture the attendance automatically with the help of RFID. The system should store the data in a centralized database system so that an intelligent system can be built over the same to make it convenient and to eliminate exiting problems such as period level attendance, approval of attendance, issues due to change in periods.If we talk about the attendance system in universities and schools, lecturers did that work manually. Lecturers take the attendance and update it manually in the database. If we talk about the technology we found that there are lot of tools to use and reduce the burden of lectures. Using RFID is the one example of that. If we combine the RFID and IOT (Internet of Things) then we can do it automatically and there is no need to do it by lectures. Here we are planning to use the Cloud as storage for better performance.

III . PROBLEM STATEMENT

Sometimes people don't want to use technologies because of the high cost of that. After doing a lot of research that how can we use the technology at low cost we found RFID which is cheaper in price and can be useful for the attendance. RFID stands for radio frequency identification. Another important quality is battery less tags system of RFID.

Another important quality is battery less tags system of RFID. RFID is mainly combination of tags, an antenna and IC chip which is having the Unique Identification number. To detect that we have the RFID Reader, Which will read the unique ID of the RFID card.

II. MOTIVATION SCOPE AND OBJECTIVES

Motivation: In the current process the attendance system than there are lots of disadvantage of this system. The biggest drawback is if we are going to use this system than there are chances that students can mark proxies easily. To overcome this RFID tag can be used to read the attendance of the students.

Scope: The system after getting the comparison result we are retrieving the details of student which have the details like RFID unique no, Name, Branch, and Address. Now we have the result from RFID reader. Here our main task starts, read the student id and updates it to the server. This type of system is suitable for all age categories. There are few points that justify the need for this system.

- Easily accessible
- Central place for all tasks
- Easy to use
- Faster and less work
- Saving of time

Objectives: To reduce the time involved in managing attendance. Hence overall operation cost for the college. 1) To improve the quality of attendance system. 2) To track fraudulent behaviour of student and timely report to parents.

3) To improve the quality of education system.

IV. EXISTING SYSTEM AND PROPOSED SYSTEM

Existing System: The existing system is based on manual system, which takes a lot of time to get course done. In the manual approach all the details of the topic are maintained which is not really necessary. Also there is a chance of errors. In the current approach, students and teachers have less communication between them and other staffs within the institution, also there is no provision for an information dissemination medium from the management of the institution to the students.

Disadvantages:

- Lot of paperwork
- Colleges have to maintain log of students and their applications.
- Consumes lot of time.
- More staff required
- Slow procedure
- Unnecessary competition among students.

Proposed System: In this system the tag will be attached to the student's cloth, whenever the student passes in front of the sensor which is placed in the entrance of the classroom, the reader reads the tag and update the attendance of the student to the server. Once the teacher enters the classroom attendance of the present students will be finalized. In the proposed system the teacher has a privilege to access the database and exchange the class with another faculty if necessary.

Advantages:

- Less work for teachers.
- Easy to handle and feasible
- Easy to operate
- Cost reduction
- Fast and convenient
- Less manpower required
- Accessible anytime and anywhere

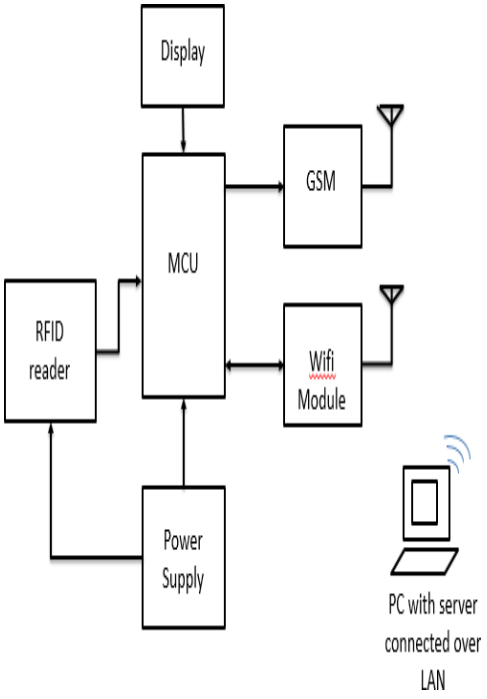

Fig.1 Proposed System

V. LITERATURE SURVEY

RFID based students attendance management system

Arulogan O. T., Olatunbosun, A. Fakolujo O. A. and Olaniyi

O. M.

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.

An Automatic Attendance Monitoring System using RFID and IOT using Cloud

Tarun sharma, Mrs. S. L. Aarthy

In this paper they have combined the RFID and IOT (Internet of Things) than we can do it automatically and there is no need to do it by lectures. Here they are planning to use the Cloud as storage for better performance. Using IOT and Cloud helps to access the information from anywhere and anytime which will provide the better proficiency and flexibility.

Automatic Attendance Management System Using Active RFID and GSM"

S.Rubendran, M.Joly

The proposed work of this paper is to automatically record the attendance of the students, using active RFID tags. Each student is provided with his/her authorized RFID tag. The serial number of each tag is associated with each student's database. The active RFID readers are capable of detecting the tags within a predefined perimeter. The system is incorporated with a GSM module which is used to send reports of the absent students to their parents and by this, the parents are aware of the activities of their wards. This increases the credibility of the system. According to the space of the classroom the range of the reader is determined. This system can be used to create many types of reports like daily attendance details, monthly, weekly and real time feedback to parents. The attendance score calculation can be automated using the collected data. The lecturer can grade the student's attendance scores in a particular course based on some specific metrics like frequency of presence in class, duration of stay in class, punctuality as the database will also contain the details of the student's entry and exit time. The concerned faculty can de-assign students from their specific tag, and reassign the tag to other students if needed. And hence the same tag can be used by many students once the course duration of one student is over. The application of RFID to student attendance monitoring as developed and deployed in this project 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.

VI. SYSTEM

DESIGN Hardware requirements:

- Display
- Microcontroller unit
- RFID reader
- Power Supply
- GSM
- Wifi Module
- PC with Server Connected over LAN

Fig 2 Hardware Design

Use Case Diagram: A use case diagram in the Unified Modelling Language (UML) is a type of behavioural diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and dependencies between those two cases

The following are the actors

- Student : Who's attendance is captured
- Parent: Actor interested in attendance report
- Teacher: Can configures student, period and can approve student attendance
- Administrator: Can control all the actors and configures most of the master data.

The figure shows the use case diagram. It contains four actors namely Admin, Teacher, Student and parent. When the student enters the class his/her ID will be read by the RFID reader and attendance will be updated to the server. Once the teacher enters the classroom attendance of the present student will be finalised. The teacher can alter the class with another teacher by making changes in the database. The admin will be looking after all the modules. The parents can access the student attendance report.

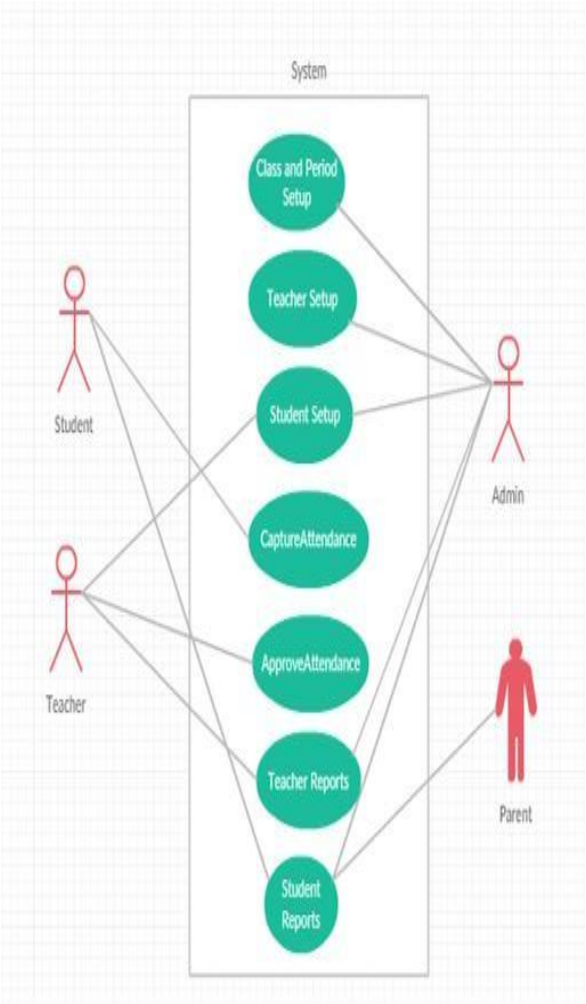

Fig. 3 Use case Diagram

Sequence Diagram: A sequence diagram in the Unified Modelling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a message sequence chart. Sequence diagrams are sometimes called event diagrams, event scenarios and timing diagrams.
Sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. The figure 4 shows the sequence of activities performed by four actors namely Admin, Teacher, Student and Parent.
The figure 3.2 shows the sequence of activities performed.

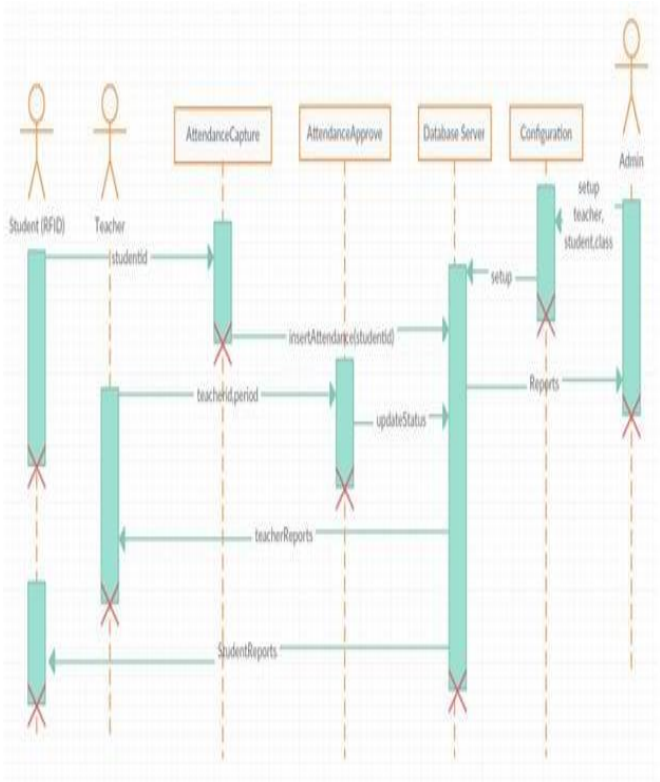

Fig 4. Sequence Diagram

VII. CONCLUSION

In this system the tag will be attached to the student's cloth, whenever the student passes in front of the sensor which is placed in the entrance of the classroom, the reader reads the tag and update the attendance of the student to the server. Once the teacher enters the classroom attendance of the present students will be finalized. In the proposed system the teacher has a privilege to access the database and exchange the class with another faculty if necessary. This intelligent system can be built to make work convenient and to eliminate existing problem such as period level attendance, approval of attendance , issues due to change in periods.

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About the author

1. **Safnaz K** is currently pursuing the B.E degree in computer science in alvas institute of engineering affliated to visvesvaraya technical university,belagavi,karnataka.The area of interest is on cloud computing,website development,app development .
2. **Sony G Kotian** is currently pursuing the B.E degree in computer science in Alvas institute of engineering affliated to visvesvaraya technical university,belagavi,karnataka.The area of interest is on.networking, cloud computing, app development.
3. **Veerabhadra Swamy M B** is currently pursuing the B.E degree in computer science in Alvas institute of engineering affliated to visvesvaraya technical university,belagavi,karnataka.The area of interest is on networking,app development .
4. **Umesh pujar** is currently pursuing the B.E degree in computer science in Alvas institute of engineering affliated to visvesvaraya technical university,belagavi,karnataka.The area of interest is on app development.
5. **Vasudev Shahapur** is currently the assistant professor of computer science department in Alvas institute of engineering affliated to visvesvaraya technicaluniversitybelagavi,karnataka.
The area of interest is on cloud computing, app development.