

# Online Student Tracking and Attendance System

Saba Ahsan  
Computer Engineering Department  
Sir Syed University of Engineering  
and technology  
Karachi, Pakistan  
sabakiz@yahoo.com

Bushra Alam  
Computer Engineering Department  
Sir Syed University of Engineering  
and technology  
Karachi, Pakistan  
bushra.alam21@gmail.com

Shumail Javed  
Computer Engineering Department  
Sir Syed University of Engineering  
and technology  
Karachi, Pakistan  
khanaleena939@gmail.com

Muhammad Habib Yousuf  
Computer Engineering Department  
Sir Syed University of Engineering and technology  
Karachi, Pakistan  
habibyousof94.hk@gmail.com

Syed Qasim Athar  
Computer Engineering Department  
Sir Syed University of Engineering and technology  
Karachi, Pakistan  
syedqasimathar@yahoo.com

**Abstract-** Attendance Management is a key tool to determine any organization success and performance. Considering this, it is very difficult for an organization to maintain large records manually. The ability to compute the attendance percentage becomes a major task as manual computation produces errors, and wastes a lot of time. Moreover, the under age students easily gets involved in unwanted activities and bunk their classes. For the proposed reason, a systematized Web-Based application for students is designed to manage and track student's attendance and their activity in the class. The system is implemented using The Asp.Net framework. In addition, CSharp provides dynamicity to the application. The database used is SQL Server. Here the software using a microcontroller controls all the hardware components. In this system students are able to mark their attendance online by the use of a card. With the same card their location will be tracked and they can be easily monitored inside the school. This is possible by the use of latest technology i.e. RFID (Radio Frequency Identification). This online system is designed in a way that the students attendance, tracking, result records and all the important notices will be uploaded on to the application as well as into the database. Therefore, parents will not be bothered for non-pertinent meetings with the teachers as they are already aware. Through the test case it is proved that the system is working efficiently and prepared to serve its benefits to any organization.

**Keywords:** Attendance Management, Web-Based Application, RFID (Radio Frequency Identification), location tracked, monitored.

## I. INTRODUCTION

Many institutions today, face problems of keeping large attendance records because the sheets in which they keep the attendance and other students records may lost. It has become very difficult to maintain it manually. Further, to keep students record manually is time taking and proportional of taking a chance with it. Attendance

record in most of the institutions is required in assessments. This becomes the challenge for teachers as well as students who can claim of short attendance at any point. Students result records and important notices often expose to the parents after they have met their due dates. The solution doesn't lie in being more optimistic and present for such activities, again wasting time and effort instead, to get the things done automatically.

Hence, Student tracking system and online attendance is a great replacement of usual systems in which all the records are updated and stored on to the application as well as the database. It minimizes all kinds of risks that were possible before.

This Web-based application system will mark attendance and start tracking students location on entering the school. Also helps in generating online reports. Thus, it saves time, work load and material resources by improving students learning and buildout.

## II. RELATED WORK

As our project is concerned there are many related works done in the past. Some of which include RFID based attendance system. They design a prototype system to facilitate the authority by the automation of attendance using RFID technology[1].

According to [2] Face Recognition Based Attendance System Using Machine Learning in which students roll is called through face recognition. This system uses Viola and Jones framework which makes use of Integral Image and AdaBoost learning algorithm as classifier that gives better results in different lighting conditions.

Attendance Management System Using Barcode Identification. They develop a system that uses barcodes. Student attendance will be taken by swiping the card on barcode reader. The barcodes would be attached at the back of each student's ID card and the information that would be embedded in the barcodes will contain unique data of the student and all the necessary information about the student[3].

Attendance recording and consolidation system using Arduino and Raspberry Pi. This system is implemented using Arduino and Raspberry Pi microcontroller boards. Arduino is used to implement the attendance recording device Raspberry Pi is used as a Web server. ZigBee technology is used for transmitting the attendance from the ARD to the server. A web page is also created to display the aggregate percentage of attendance of each student[4].

A system in which input data is taken through cameras capable of rotating in all the directions. They capture the facial images to mark the attendance and also helps to predict the behavior of students. The efficient system was capable of generating reports to the teachers and students both. However, the success rate in recognizing the facial expressions was 85%, though it needs improvements in it but at the same time very coherent system [5]. Another efficient fingerprint recognition system works by processing and verifying the fingerprints very fast for biometric identification [6]. A wireless system using RFID, Biometrics, and GSM Modem is an automated and well designed approach to detect and maintain the attendance and location of a student. The system provides authenticity in such a way that the students Radio-frequency identification (RFID) card is matched against the database and only finalized once his fingerprint is verified using the biometric fingerprint scanner. Also, the sms will be sent through the GSM. Attendance records of both the students and staff members will be maintained through this applied system [7].

### III. DESIGN AND IMPLEMENTATION

Student tracking system and online attendance is designed and implemented using the RFID technology, CSharp and Asp.Net framework. For the application to be more appealing HTML and CSS languages are also used.

### IV. DATABASE

### VI. GRAPH

The two systems i.e. (the manual and the automatic attendance and tracking system) comparison is illustrated

MYSQL language along with the SQL Server is used for the system.

### V. SYSTEM FEATURES

The innumerable features of the web application include Online attendance, monitoring through tracking and records updation. In wide it contains Admin, Staff and Student functionalities. For attendance students have to swipe their RFID cards on to the reader and instantly attendance notification will be send on to the server and web application. Thus, it saves the time and inaccuracy. Students safety is the most important and tracking is the solution. To avail this feature students have to swipe their RFID cards again on to the reader placed at the entrance of school and their tracking will start. Thus, parents will remain well aware about their children. All course related and foremost considerations will be displayed onto the website.

When it comes to functionalities:

The Admin is a person who run and manage the system, in this project the owner or director of the school has rights of admin. Admin can Add standard, Division/Classroom and can also add staff. He will manage all the complains and reports and also leave reports.

The main aim of the attendance system is fulfilled by staff. Staff can add student detail and fill the attendance daily for his division. The staff can only fill attendance for his division students and he can manage leaves and complains made by only his division student.

All students have unique username and password to access the system. After login into system student can view his attendance reports and manage his account. If any student has any problem regarding education, he can directly make complain to his class teacher using this system. Student can apply for leave through the system and he can get reply from his class teacher about his leave status.

As in the case of forgetting the password, there is an option of change password for the Staff and the Student.

The system is designed in a way that it saves the time and inaccuracy. Both parents and students will be benefited by the use of this application. Also, parents will not be bothered for irrelevant meetings with the teachers as they are already aware.

by the following graph. In graph, it is clearly seen that Automatic system works more efficiently and has come out with far better results than the manual system.

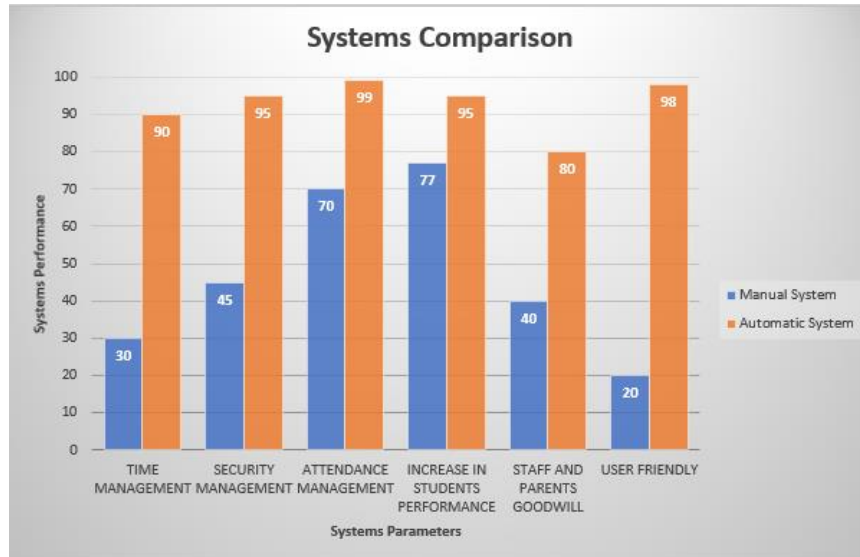


Fig-1: *Systems Comparison Graph*

## VII. INTERFACE

The application is designed by using the software interface along with Menu driven and GUI(Graphical user interface) user interfaces. The system uses ASP.Net

framework within it to increase instinct approach to the user.

## VIII. SYSTEM DIAGRAM

Students swipe their RFID cards onto the reader, on swiping the card, their attendance is marked online which get saved into the system and application.

As the student walks into the school, he again has to swipe his card from where his location will be tracked and uploaded onto the application so the parents can remain aware of their activities. School

staff can upload important notices and result updates onto the application which is visible by both the parents and the students.

Other important activities are also performed by the staff, Admin and Students on the application.

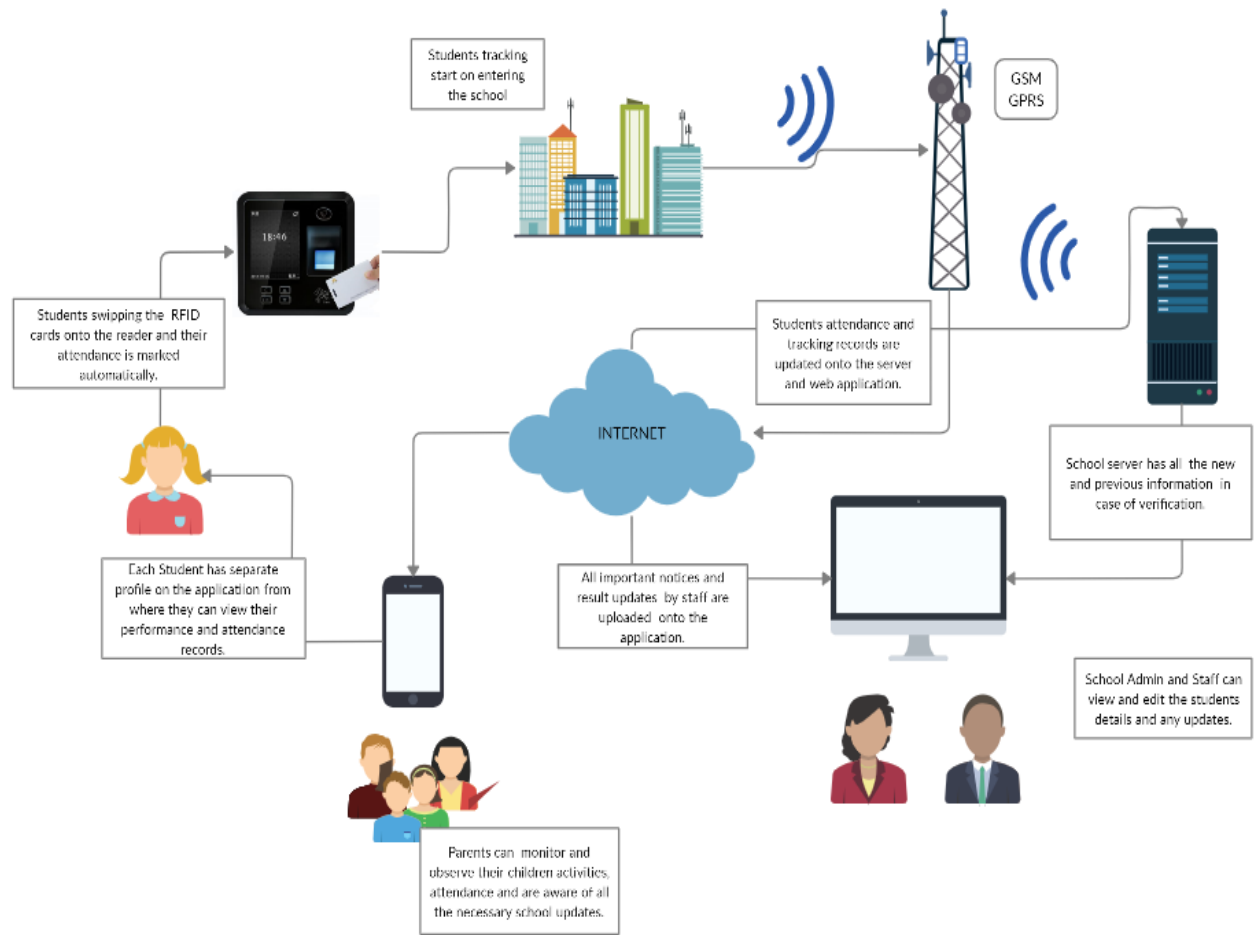


Fig-2: System Diagram

## IX. CORE OF THE SYSTEM

The system is mainly divided into three sections i.e. Admin, Staff and Student.

### A. Admin

The Admin has all the main rights of the system. Admin can add division/classroom and standard of students, staff, and has authority to reply to all the coming complains and leaves.

### B. Add Division

While adding the division Admin can fill the student section name, seat number and select the standard.

### C. Add Staff

Admin can add staff in which all the needed details of staff (email, qualification, cell #, address, city) are required. Staff username and password are also allocated by the Admin.

### D. Display Panel

All the added or sent details are visible onto the Staff report, complain, Leave, Student reports, and feedback menus.

### E. Staff

The staff can edit and handle details for his division students only as the requirement of the system. From the home page of the web application Staff can login by entering their username and password. As they login, their profile is displayed on the front which they can also edit. Staff menu also has multiple required options.

### F. Add Student

Students along with their complete bio-data can be filled in by the Staff as they have authority to add student of their division only.

### G. Attendance Report

Students attendance of each day, month and year is properly visible here. Staff can view which student is absent or present on which date of his division only.

### H. Complain

In complain menu Staff can view the number of complains arrived.

### I. Leave

From new leave report menu all the coming leaves can be viewed. Staff also has the right to approve or reject any leave.

#### *J. Student*

As the Student login into the system, his/her attendance, leaves and complains are shown on the home page automatically without selecting any option.

#### *K. Apply for Leave*

The Student can apply for leave after selecting leave from the menu and from the Leave Reason menu student can define his/her reason of the leave and also leave days. From the status bar student can check that whether his/her leave is approved or not.

#### *L. Complain*

If the student has any complain regarding his studies or school, he can directly send complain message with its title to the admin. Student can also view and receive the reply from admin.

#### *M. Attendance Report*

From Attendance report portal students can check their attendance of any month. Hence, it also helps them to avoid further absences if they have already reached the limit.

### **X. CONCLUSION**

The significance of this system for our society lies as under: When students enter into school their location is tracked and their parents can observe their activity. By online attendance through RFID (Radio Frequency Identification) cards and readers, staff don't need to be worry about attendance accuracy any more. Online student record updates, important notices i.e. parents will remain well-informed about their children status. This system can be used in any educational institution. However, any where this system will be applied, it will surely serve benefits.

All necessary modifications like updation, insertion, deletion can be done very easily without disturbing the system architecture. To make the system user friendly and easy to handle, Csharp, HTML, CSS and ASP.Net framework is used.

In this era of fast and high-tech technology there is a need for every organization to update their usual systems and make it potent and decisive. This Web-based application system is working well and is prepared to serve any educational organization. Any organization can become popular and well efficient by employing this system.

### **XI. Future Work**

Since, our system is well developed using the emerging technology of RFID (Radio Frequency Identification) but there are some other options also on which the work can be done in future to make it extra active and efficient like face recognition and NFC mobile devices.

### **XII. REFERENCES**

- [1] Hasan U. Zaman, Jannatul Siffat Hossain, Tasnim Tamanna Anika, Deboshree Choudhry: RFID based attendance system. In IEEE; 2017.
- [2] Dr.Shrija Madhu, Ms. Anusha Adapa, Ms. Visrutha Vatsavaya, Ms. Padmini Pothula: Face Recognition Based Attendance System Using Machine Learning. Int J Mgt Tech Eng. Volume IX, Issue III, MARCH/2019. ISSN NO : 2249-7455
- [3] Y.K. Saheed, Moshood A. Hambali, Abdulmumeen A. Adedeji, I.A. Adeniji: "Attendance Management System Using Barcode Identification". Pac J Sci Tech. Volume 17, Number 2. November/2016.
- [4] Dhiraj Sunehra, V.Surender Goud. Attendance recording and consolidation system using Arduino and Raspberry Pi. In IEEE; 2017.
- [5] Aditya Rama Mitra, Samuel Lukas, Ririn Ikana Desant and Dion Krisnadi, "Automated Student Attendance Management System Using Multiple Facial Images" 2nd International Conference, on Computational Modeling, Simulation and Applied Mathematics. ISBN: 978-1-60595-499-8 2017.
- [6] Sifatnur Rahman, Mahabur Rahman, Md Mijanur Rahman, "Automated Student Attendance System using Fingerprint Recognition", Edelweiss Appli Sci Tech 2. Volume 2, Issue 1, pp. 90-91, January/2018.
- [7] G.Ravi kumar, V.Sridhar, T.Venu Gopal, G.Nagendra, "Three Level Authentication for Student Attendance Management System", International Journal of Pure and Applied Mathematics. Volume 119, No. 15, p. 1998, 2018.