Advanced Attendance Management System

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Abstract- *Advanced attendance management system deals with the maintenance of the student's attendance details as well as curriculum details of the students. All the details can be accessed through android application. This generates the attendance of the student on basis of presence in class.There will be four modules in this project admin module, faculty module,student module and hardware module. Faculty's will be provided with a separate username & password to mark and view the student's status. The staffs handling the particular subjects is responsible to confirm the attendance for all students. Only if the student is present on that particular period, the attendance will be calculated. The students attendance reports are generated on daily basis. The attendance will be taken by RFID card that will be present in the student's id cards. Along with attendance details there are other features built into the app such as E-circular, displaying result, chat and E-notice board. The android app is very intuitive and easy to use*

Keywords- Attendance management system, Android application, student attendance report,RFID card.

I. INTRODUCTION

Information Technology (IT) has played a big role in developing several aspects in academic sectors and domains like student monitoring and management systems. Therefore, it's a critical subject to tracking and manages student's attendance in class, college, and university environment. Since it is often helped to urge students to attend on time, amend the efficiency of the training, increase learning grade, and eventually boosting and improving the education level. Calling student's names or taking student's signature are two traditional methods for tracking the attendance of the scholars within the classroom and that they were more time-consuming. Nevertheless, the tutorial performance influenced by the student's presentation. So, there's a requirement to manage the scholar attendance records automatically by using the Advance Attendance management system during a faculty to help to maintain attendance. Hence, the attendance systems are often useful to scale back administrative complexity and price instead of increasing the efficiency of education. within the digital era, technologies are developed and emerged recently, which could change the longer term of sciences to affect people's lifestyles like Wireless Sensor Networks

(WSNs). Biometric verification techniques are identified using various ways like face recognition, signatures, fingerprint, voice recognition, irises, barcode, Bluetooth, etc. RFID is an automation technology used for identifying and positioning an object. Many industries like the Healthcare industry, financial institutions, cars, books, mobile phones, computer equipment, are several applications that they used RFID technology to managing people, assets, and inventory. The advanced attendance management system includes an RFID card detection device and an android app developed for taking and monitoring daily students' attendance in colleges and institutes.RFID, which is an acronym for frequency Identification, isn't a replacement technology. it had been first utilized in the late 1960s, but it's only become more widespread with advances in technology. RFID Systems contains a transponder, also referred to as a tag, which is essentially a microchip connected to an antenna. The tag is mounted to an item, like a pallet of products during a warehouse, and a tool called a reader communicates with the tag via radio waves. counting on the sort of tag that's used, the reader can receive detailed information or it can receive data as simple as a number. RFID is analogous to barcode systems during which data, like a price, is accessed when the barcode is read. Advance Attendance Management System includes various features like E-circular, displaying the results of the exams, live chat, and digital notice board. It facilitates to access the attendance information of a specific student during a particular class. the knowledge is sorted by the admins, which can be provided by the schools for a specific class. this technique also will help in evaluating the attendance eligibility criteria of a student. the aim of developing an attendance management system is to computerized the normal way of taking attendance. Another purpose for developing this software is to get the report automatically at the top of the session or within the session. The application will perform various tasks related to handling student details and daily reports, thus helping the universities to make the sure smooth working of those processes.

II. PROPOSED SYSTEM

In old days, a professor enters the classroom and verbally calls out student names or roll numbers in order to mark the student's attendance or passing a sheet of paper where students need to mark their name or check in it. Both

practices have their own disadvantages. On the first case, if the entire strength of the students attends the lesson then verifying individual students by their name and last name might reduce the intended lecture time, also friends of absent students may attempt to mark their attendance. These practices place lecturers or professors and their colleges at considerable disadvantages when it comes to taking attendance. To correct these flaws, Advance attendance management system is being introduced. The system includes hardware system and a software system hardware system includes RFID scanner and ESP8266(NODE MCU). Each RFID card features a unique identity (ID) which can't be duplicated. These RFID cards are given to all or any the scholars of each department in college within the sort of college ID card. Whenever students enter the classroom, they should touch their RFID cards to the RFID scanner enabled with the respective faculties for the particular lecture. The RFID reader/scanner device will read the individual cards, identify and verify the student from their respective ID cards and send the collected attendance data from the device to the main database with the help of Node Mcu chipset by the end of the lecture or by the day end according to the preference of professor. This leads to saving of precious lecture time of the professor. This data can be accessed by the faculties and students by logging in the mobile app. The mobile app consist of login's for students, and faculty.The app provides easy and simple user interface for easy using and provides password security for individual users. The system provides many more features apart from attendance taking and monitoring , Thus provides features like Anonymous chat , e-notification portal, subject wise statistics, Leave application, managing complaints,etc.

SYSTEM DESCRIPTION: The system consists of RFID reading device and android application which includes logins for students and staffs .The process is such that initially the student taps his/her id card(RFID) on the RFID reading device. Thus the card will be read by device and with the help of ESP8266 sensor which is embedded inside the device, the details will be send to the database of the android application which is Google firebase. Finally the data will be displayed on the mobile application dashboard. Hence students will login into their respective portal to have access to their attendance and all other features. Similarly faculties and admin have their own portal for their use. All individual will be given access to put up their own credential in the form of username and passwords for the secure process.
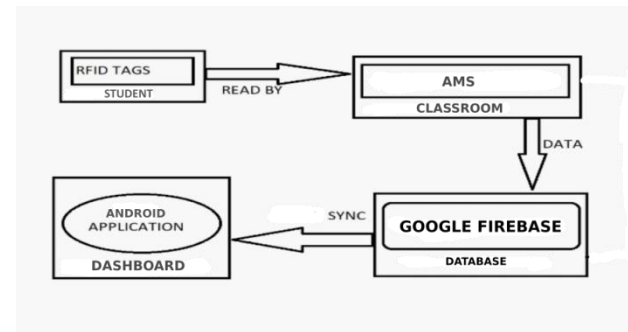

Fig 1: System Block Diagram

MODULE DESCRIPTION: In project, modules play an important role such that through modules everyone get a clear idea about the project. The project is divided into different modules based on their purpose.

Here the modules are mainly divided into four. They are:

- Student Module
- Faculty Module
- Admin Module
- Hardware Module

A. Student Module :

This module mainly deals with the students where he or she interacts with the system. Under this module comes an android applications. The android application includes Three login for student, faculty and admin as mentioned. Application is designed in a way so that the user can interact with the application in comfortable manner. The students can log into their portals by the credential provided by the admin with full security. In this module students have their own feature to view the attendance in simple manner apart from that students have access to view the notice circulated by the officials through E-Notice board ,Students can see their series and university marks through the portal and have freedom to ask doubts or clarifications with the corresponding faculties through anonymous chat board.The students can also apply for leave through the portal.

B. Faculty Module:

Under this module comes a login portal for the faculties within the same android application.It assists the staff to mark attendance of the students for their subject. This will authenticate the staff before making the entry.After admin, The application has more access to the faculties. This module includes all features which are already present in students module ,like daily attendance tracking , E-Notice board, chats, etc. Apart from that faculties have access to manage leave and

complaint of the students. Faculties can view daily attendance statistics on their portal. The module has the feature of consolidate report,faculties can get all students attendance details from starting date to ending date status, which helps for the eligibility criteria of the student to attend the examination.

C. Admin Module:

The Admin module is the one who have control over the whole application. The Admin module have the ability to add/remove users, manage student details and lot of other functions.In our application the Admin module is the firebase system. The firebase is the whole backend of our application. The firebase stores the whole data needed for the application. There are number of functions inside the firebase which are utilized in our application. Admin module is the one which helps us to connect the application and our hardware modules. Inside Admin module the data's are stored as number of collections. Users, leave, uid, notification etc are some of this collections inside the Admin module. The only module in our system which as the power to add and remove user is the Admin. The Admin as the power to edit any of this collections. The Admin is the one who puts up the notification and circular. As the Admin module is the backend of the application it has the whole needed data for the perfect working of applications. The data from the hardware unit is entered into the Admin module inside an place known as real-time data the application works with the help of the cloud store so an function is running inside the Admin module to take those data from the real-time to cloud store so that the application can use those data's.

D. Hardware Module :

This module mainly deals with the hardware device. This device is controlled by the Faculties of the corresponding class. The hardware system consist of RFID reader which is connected with Node Mcu for the data transfer from the device to the database through internet. The circuit diagram is shown in Fig 2.
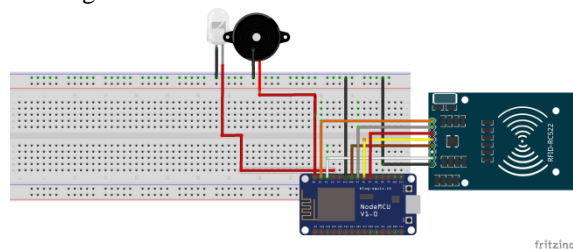

Fig 2 : Circuit Diagram

III. RESULT AND DISCUSSIONS

The whole idea behind the application is to make a revolution in the attendance process. Current systems are more focused towards more human efforts, where we are trying to change those by introducing our system which is very less human effort needed. The current system is very time consuming and not that accurate. The system currently in use has many flaws like malpractice, needs to calculate attendance percentage manually etc. Our advance attendance management system was introduced. We uses the new age technology to replace this old systems, we are using things like android applications, database, hardwire units to make this attendance management more simple and easy to use. Our android application has and very simple UI which helps every one to use the application in an easy manner. In order to stop malpractice we use RFID base cards to take attendance which are provided to the students. We uses highly encrypted database for protection of our system.

We believe in if we have to do something then it has to done in an perfect manner that is why our system is loaded with tons of features. Our system is with you from taking the attendance to viewing your attendance percentage. The system is not just about taking care your attendance it is lot more. It has features like anonymous chat, notifications, e-circular, series marks, viewing faculty details etc. The system in an perfect tool to take care all of your academic side.

IV. CONCLUSION

Attendance management is significant to all organizations such as educational institutions. It can manage and control the success of any organization by keeping track of people within the organization such as students to maximize their performance. The proposed system offers the process of monitoring attendance of students, it aims to help the teacher in the classroom or laboratories to manage and record students' presence electronically and directly without the need to list on paper so it will save time and effort. The system can analyze the data and displays statistics about the student's absences, printing report about absence percentages and students warnings for the specified period. The developed system easy to use and friendly that has an attractive and simple UI design so that insertions, deletions, and changes of data can do easily without interacting with the tables, so it was designed with the . The application's test case revealed that the system is working exciting and is ready to use to manage students attend for any department of the University, College or Institute. Since our system is modular and can extend effortlessly, the future work ambitions are to make the system takes attendance by other methods such as face recognition and using Biometrics (fingerprint) techniques, NFC mobile devices,etc.

The main motive of the system is to make the entire process in a digitalized way.

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