



Smart Offline Attendance

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ABSTRACT

The smart offline attendance system is created for contactless attendance at offline places such as college, school, offices, conference hall etc. Due to covid situation scanning QR or tickets also have risks so this project will help in taking contactless, easy attendance. The person needs to download the App and then their device will be registered on the portal after that their unique ID will be stored in the device itself and is non-transferrable. And when they come in contact with the wifi network of the system then their attendance will be marked automatically and a notification will be sent to the user. The whole process will use Wifi module and WiFi network as WiFi is easily accessible which is also cost effective and safe method during Covid situations.

Key words: Smart Offline Attendance, Wifi module and WiFi network

INTRODUCTION

In general, Attendance will play a major role in determining the Academic performance of an institute. Most of the institutes mark Student attendance manually, using a paper-based system. Manual Attendance system is inefficient as it will consume a lot of student - lecture hours and prone to errors, data manipulation and frauds. Student attendance consolidation is another tedious and time consuming process for every teacher which will take hours and days to build the reports.

However, most of the attendance systems have their own limitations with respect to discussed above and besides this it only covers high level use cases of university Attendance system.

We have created our system to solve all these problems, where the attendance is not only limited to university attendance but we can use the system at any place where the attendance or contact-less attendance is required. Where the system has a hardware capturing device and an android app with which the user is registered on the system.

LITERATURE SURVEY

[1] Mohammad Ausaf Anwar, Durgaprasad Gangodkar, "Design and Implementation of Mobile Phones based Attendance Marking System", Department of Computer Science Engineering, Graphic Era University, Dehradun, Uttarakhand, India, 2015.

In this paper, the architecture and design specifications of Student Attendance Marker Application on an Android platform are presented. They have used PHP and MySQL database to store the data.

[2] Ekta Chhatar, Heeral Chauhan, Shubham Gokhale, Sompurna Mukherjee, Prof. Nikhil Jha, "Survey on Student Attendance Management System", S.B. Jain Institute of Technology, Management and Research, Nagpur, 2016.

In this paper, the system deals with the maintenance of the student's attendance. It generates the attendance of the student on the basis of presence and absence in class.

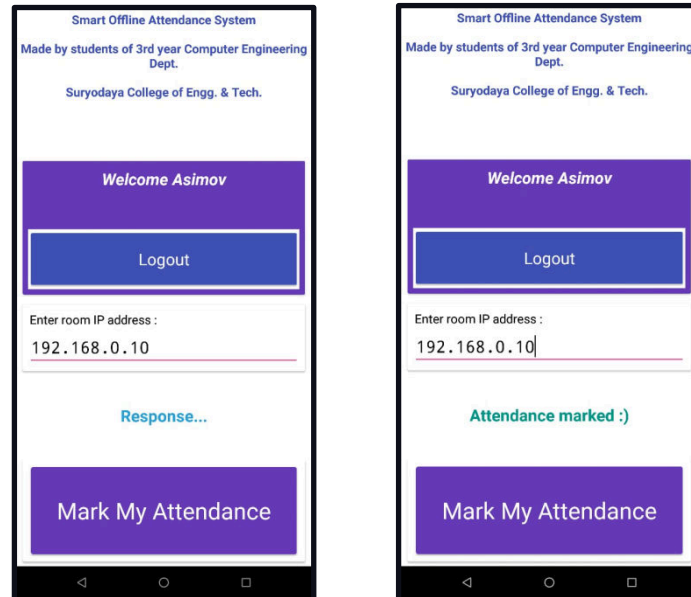
[3] Sai Ba Oo has proposed NFC-RFID based attendance marking system for their employees, to monitor late arrivals, early departures, and time taken on breaks etc but it will not capture the attendance for field

officer who is working outside the campus.

PROPOSED SYSTEM

There will be a single entry and exit for the entire classroom complex. Students or teachers need to show their id card record to Active/ Passive RFID Device to record their entry or exit time into/out of the campus. The device reads Unique ID information from ID-Card and sends that information to the server with current timestamp details. Same process follows when a student or teacher leaves the campus.

Screenshots:



EXISTING SYSTEM

QR CODE

A QR code system which is being displayed for students during or at the beginning of each lecture. For the attendance The students will need to scan the code in order to confirm their attendance.



Fig. 1 QR code

RFID Tag

RFID tags are types of system for a tracking device system that uses radiofrequency to search, identify, track and communicate with items.[1]

RFID tags are of two types

Passive Tag

It is the cheapest version of an RFID tag without a battery. This is nearly attached to the RFID reader because the passive tag has used the battery of the RFID reader, cost of this tag is very low compared to the active tag.

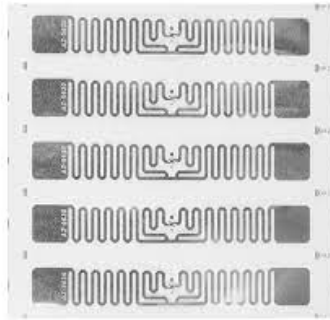


Fig. 2 RFID Passive Tag

Active Tag

These tags have the inbuilt battery and we attached this costly as compared to the passive tag, we do not need to attach this tag nearest to the reader.



Fig. 3 RFID active tag

HARDWARE

LED

A Light Emitting Diode (LED) is the semiconductor light source that emits light when current flow through it.



Fig. 4 LED

BUZZER

A Buzzer is an audio signal device. Confirmation of the input by the user.

ESP 32

ESP32 can perform complete independent hardware completely controlled by a host MCU, reducing communication stack overhead on the main application processor. ESP32 can interface with other systems to provide Wi-Fi and Bluetooth functionality through its SPI / SDIO or I2C / UART interfaces.

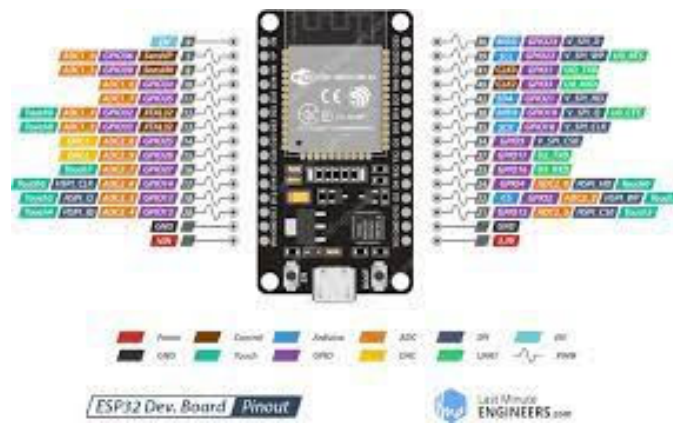


Fig. 5 ESP 32

ESP32's Wi-Fi Range Extended to 10 km with a Directional Antenna.

ESP 8266

The ESP8266 is a low-cost Wi-Fi microchip, with built-in TCP/IP networking software, and microcontroller capability. The module has a wireless WiFi with frequency range of 2400-2484 MHz in the IEEE 802.11 b/g/n standard, the ESP 8266 support for TCP/IP communication protocol stack and The ESP8266 is a low-cost Wi-Fi microchip.



Fig. 6 ESP 8266

SOFTWARE

Arduino IDE

The Arduino IDE (Integrated Development Environment) is the most widely used for designing Arduino microcontrollers. It is a combination of C standard library and C++. Github is used to host the active development of Arduino IDE. The new version of Arduino IDE is faster, powerful and compatible. It has features like auto completion, code navigation and live debugger. The Arduino IDE 2.0 is moving stably with a series of Release Candidate (RC) builds.



Fig. 7 Arduino IDE

PHP server

A PHP server is a collection of tools that is used for making hosting at local servers possible for building or developing Web Apps on the computer. Starting a Web application using a PHP server is best as it is very much compatible to use. LAMP uses Apache and LEMP uses Nginx as a web server.

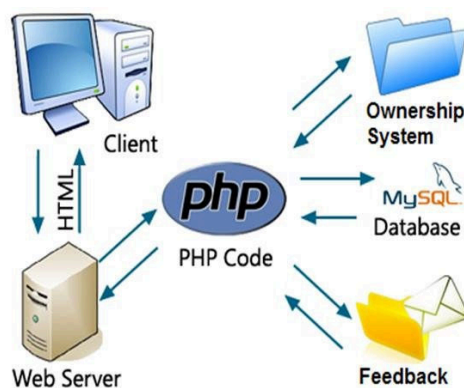


Fig. 8 PHP server

My SQL Database

My SQL is a relational database management system (RDBMS) used worldwide. It is free as well as open source and ideal for small and large applications. It tops the list of robust transactional database engines available in the market. My SQL contains features such as complete atomic, consistent, isolated, durable transaction support, multi-version transaction support and unrestricted row level locking. It is the solution for full data integrity.

ADVANTAGES

- Can be used in Crowded areas
- Central access
- Increase in physical attendance
- Saves paper
- Cost effective
- Usable in no network areas also
- Effective in covid-19 protocols

INFORMATION ON TERMS USED:

- Wifi: Wifi id Wireless Network Protocol based on the IEEE standard, which is commonly used in the local area network, allows the network to exchange their data by radio wave. This is the most widely used network in the world, used in home, laptop, desktop, office, tab, smartphone. The range of wifi is 2.4GHz.
- Cryptography: Cryptography is a practice and study of secure communication. Cryptography is about constructing and analysing protocols that prevent the public from reading private message. It is used for information security.
- TCP/IP: The internet protocol commonly known as TCP/IP, is the communication used in the internet and computer network. The internet protocol used end to end communication.
- Networking: Networking is the exchange of information with other people with special interests.

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