

IOT BASED AUTOMATED ATTENDANCE MANAGEMENT SYSTEM

Dr.M.Rajaiah, Dean Academics & HOD, Dept of CSE, Audisankara College of Engineering and Technology, Gudur.

Mr.V.Chandrasekhar, Associate Professor ,Dept of CSE, Audisankara College of Engineering and Technology, Gudur.

Mr. Parlapalli Pavan Kumar Reddy, UG Scholar, Dept of CSE, Audisankara College of Engineering and Technology, Gudur.

Mr.Posina Praveen , UG Scholar, Dept of CSE, Audisankara College of Engineering and Technology, Gudur.

Ms. Menakuru Uma Maheswari,UG Scholar, Dept of CSE, Audisankara College of Engineering and Technology, Gudur.

Ms. Kudiri Swetha,UG Scholar, Dept of CSE, Audisankara College of Engineering and Technology, Gudur.

ABSTRACT

The use of Radio Frequency Identification (RFID) systems in industrial technologies, health, agriculture, transportation, etc. has suddenly increased in recent days. The internet of things is flourishing. With the help of the Raspberry Pi 3 and RFID Technology, the attendance management system uses the Internet of Things to speed up the time-consuming process of documenting daily attendance in schools and other institutions. Thus, everything in this place becomes mechanised. The creation of an Android application (app) to enable students to view their attendance from any location has also been attempted.

Keywords : RFID, Internet of Things (IoT), RFID Reader and Tags, Raspberry Pi, and PIR Sensor

INTRODUCTION

Since the beginning, attendance has always been tracked manually. Even though this develops the student-teacher relationship and binds them together, it is time consuming and prone to human errors. This also becomes sometimes tense

Automatic Attendance Management System implementation is required to make it error-free and minimise time wasting, making it more effective and efficient.

Radio Frequency Identification (RFID)

The technology that most appropriately meets our needs. It is a system for automatically collecting and identifying data. Even if it isn't a brand-new concept, computer

professions have recently been more interested in it. RFID uses radio frequencies and microchip technology to create a system that can be used to track, protect, and inventory objects. It is composed of a chip with distinctive information that may be utilised as identification when discovered by an RFID Reader.

RFID consists of three parts: RFID card or tag, an RFID reader and computer with a specially designed database. Depending on the reader, RFID enables data transfer across a distance of around 10 metres depending on the type of tags/cards used. Here the information is transferred using Radio waves and many number of tags can be read simultaneously. RFID technology has already found usage in person identifications, passports, in grocery stores, shopping malls, finding lost pets, household material placements, etc.

Internet Of Things (IOT)

The Internet of Things (IoT) is the inner connection or network of various physical devices like vehicles, apartments, which are embedded with sensors, software, electronics and connectivity that helps to retrieve and exchange information. It allows the objects to be sensed and controlled through the available network infrastructure resulting in the integration of physical environment and its objects with the computer systems. It offers advanced connectivity among devices and systems that go beyond a machine-to-machine relationship.

LITERATURE SURVEY

This work introduces a new paradigm of monitoring student attendance using Radio Frequency Identification (RFID) based on the Internet of Thing (IoT). Educational institutes are concerned about student irregular attendance. Truancy can affect a student's overall academic performance .The traditional method of taking attendance by calling names or signing on paper is very time consuming and inefficient. RFID based attendance system using IoT system is one of the solutions to handle the problem. The proposed work comprises of two most popular trend in technology research; IoT and RFID. [2] If we talk about the current scenario of our education system than we found that we have lot of technologies to use but still we are following the traditional system. We if we talk about the attendance system in and schools, lecturers did that work . Lecturers took the attendance and update it manually in the database. If we talk about the to use and reduce the burden of lectures. Using RFID is the one example of that. We if combine the RFID and IOT (Internet of Things) than 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. Using IOT and Cloud we can access it from anywhere and anytime which will provide us the better proficiency and flexibility. [3] Attendance is a must for students.

EXISTING SYSTEM

Biometric system that reads finger prints to monitor attendance in an institution .But this systems are not efficient to consider the post Covid pandemic. There are also

several projects and existing models that uses barcode for this attendance tracking. Smart phones can also to make fraudulent access in the system. Many types of the research proposed video and image- economically feasible and depend on location of the camera, the posture of the student and sometime it may fail when there are two or more students with similar facial features.

PROPOSED SYSTEM

An Arduino Uno (Atmega328p) is connected with MFRC522 Reader, a Wi-Fi module connected with MFRC522 Reader, a Wi-Fi module controller, the location of the RFID card which gets read by the reader and send location to the database .A Passive RFID card is read by the RFID reader and the data is sent to the database . The Wi-Fi module Node MCU ESP8266 is selected transferred to the Google Server Cloud. Database of students is designed using My SQLite and the details are stored by class, section and department wise. The student database is designed in such a way that the parallel attendance monitoring at the different entrance of an institution and never produce any redundant data.

SYSTEM OPERATION:

There are two stages to this attendance system's overall operation:

Registration Phase: Information about the student, including name, USN (University Serial Number), topics registered for the semester, etc., are collected during this phase. A matching RFID card with a unique identifier (UID) will be issued for each pupil and entered into the computer's memory.

Recognition Phase: The student's desire to attend the lecture triggers this phase. He only needs to touch his or her RFID card against the RFID Reader. The reader will identify the card and enter the attendance data into the database of the relevant faculty. This is accomplished with the help of an IoT-synchronized Raspberry Pi 3, and the necessary data is then made to appear on an LC display

RASPBERRY Pi 3

It consists of a 40 pin extended GPIO, 4x 2 USB ports, 10/100 LAN, microSDcard slot, micro USB power supply and many more slots.

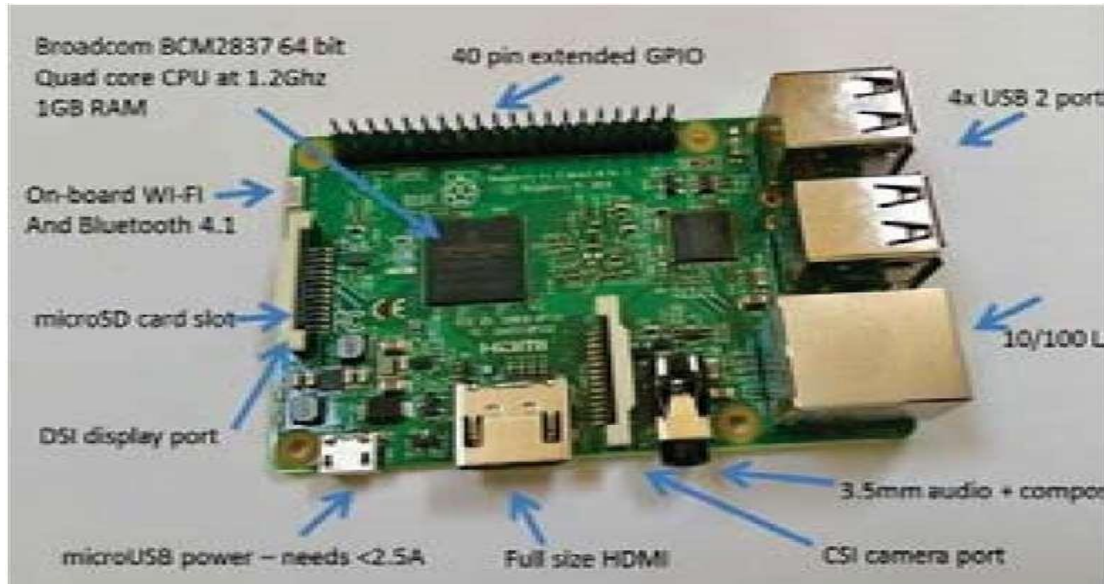
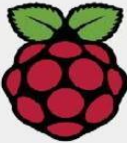


Fig 1: RASPBERRY Pi

WHY RASPBERRY Pi3

The Raspberry Pi 3 is compared to all previous Pi models currently on the market in figure 2 below, along with a summary of its advantages.

	Raspberry Pi 3 Model B	Raspberry Pi Zero	Raspberry Pi 2 Model B	Raspberry Pi Model B+
				
Introduction Date	2/29/2016	11/26/2015	2/2/2015	7/14/2014
SoC	BCM2837	BCM2835	BCM2836	BCM2835
CPU	Quad Cortex A53 @ 1.2GHz	ARM11 @ 1GHz	Quad Cortex A7 @ 900MHz	ARM11 @ 700MHz
Instruction set	ARMv8-A	ARMv6	ARMv7-A	ARMv6
GPU	400MHz VideoCore IV	250MHz VideoCore IV	250MHz VideoCore IV	250MHz VideoCore IV
RAM	1GB SDRAM	512 MB SDRAM	1GB SDRAM	512MB SDRAM
Storage	micro-SD	micro-SD	micro-SD	micro-SD
Ethernet	10/100	none	10/100	10/100
Wireless	802.11n / Bluetooth 4.0	none	none	none
Video Output	HDMI / Composite	HDMI / Composite	HDMI / Composite	HDMI / Composite
Audio Output	HDMI / Headphone	HDMI	HDMI / Headphone	HDMI / Headphone
GPIO	40	40	40	40
Price	\$35	\$5	\$35	\$35

BLOCKDIAGRAM REPRESENTATION:

The system has been shown as a block diagram in figure 3 below.

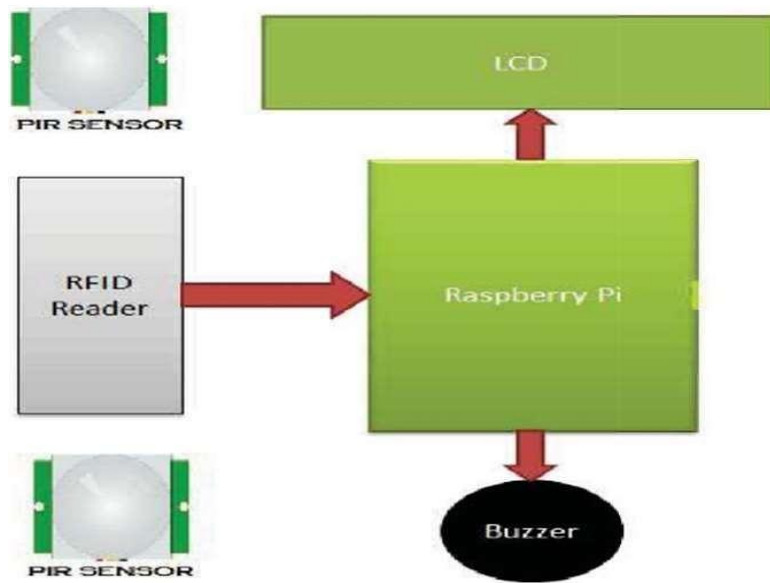
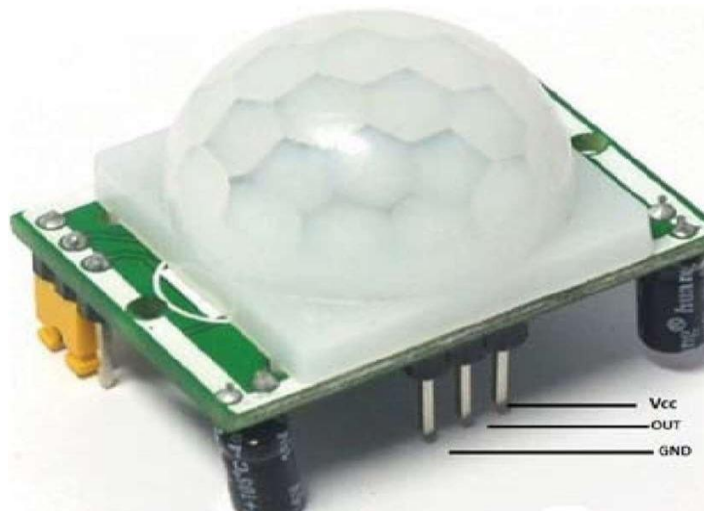


Fig3: Block Diagram

PIR SENSOR:

PIR Sensor is a Passive Infrared Sensor monitors infrared radiations in its access/view range. The temperature, kind of surface, and other factors affect how much infrared is present around the sensor. The sensor picks up on this movement and transmits it as electrical output voltage, which sets off the detection. A typical PIR sensor has a Fresnel lens surface, a 180 degree field of vision, and a range of roughly 10 metres. In figure 4, a PIR sensor is seen. The three terminals, VCC, Ground, and Output, are also displayed.

SYSTEM IMPLEMENTATION AND METHODOLOGY

The RFID reader will be engaged and only take one card at a time until the other PIR Sensor scans the person, according to the project's approach, as soon as the PIR sensor 1 reads the entering. This implies that the database will not be updated with the attendance information until PIR Sensor 2 detects a person moving within the classroom. Here, we utilised the XAMPP programme to set up the database in the Apache server's PHP script.

On that website, the, attendance will immediately be update.

The following stages have been used to explain the proposed system:

STEP 1: Start the RFID Reader.

STEP 2: Initialize the LCD Screen.

STEP 3: Launch the Universal Asynchronous Receiver-Transmitter (UART).

STEP 4: Send data from an RFID card's scanned UID to a Raspberry Pi model.

STEP 5: Search and match the UID to extract the pertinent student information.

STEP 6: Compare the detected student ID, date, and time with the class schedule, and if a match is established, indicate the presence.

To address the issue of proxy attendance, we additionally deployed two passive infrared sensors. The first PIR sensor will initially identify a person's mobility by identifying his or her body heat and will output 1. When the PIR output is 1, the RFID Reader is designed in such a way that it can only read one RFID Card up until the student crosses the second PIR.

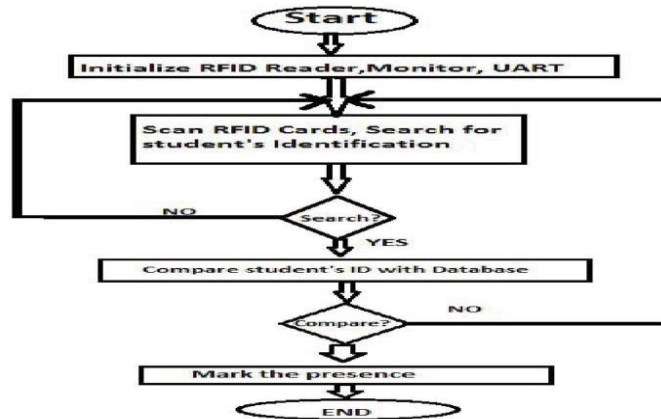
The student will tap just their or her card at this point, not the absent students, and when they enter the classroom, the second PIR Sensor will register high. When the second PIR rises, the participation of the student for that particular subject will be marked and the count will increase by

Similarly if the second PIR reads first and then the first PIR then the count will decrease by one and the faculty will know there is a proxy since the counts will differ.

Now the data from Raspberry Pi will be updated in the teacher's database directly and the need not do the hard work for entering the attendance into the merit. All teachers will have their own username and password for the database login. We have also developed an ANDROID APP for the purpose of students so that they can see their daily attendance in their mobile phone itself hence easing their work of constant check on the attendance percentage. This Android App has the details about the student, his name, USN, registered subjects, the number of classes attended, the list and number of classes taken and the eligibility status thus facilitating the student to keep a track of the attendance status and thus stay conscious. This is an open platform and can be viewed by any person just by entering the name of the student and the subject whose attendance he would like to know.

FLOW CHART:

The flow of events can be depicted by a flow chart as shown in figure 5.

**CONCLUSION**

Easy attendance recording. Autogenerated various types of reports f class or students attendance Increased security and confidentiality. Ethical enhancement of staff & students current traditional attendance method, which involves calling names or signing on paper to indicate attendance, is highly time-consuming and unsafe, making it ineffective. As a result, an IoT based attendance management system based on the Raspberry Pi 3 has been suggested. With the database created, the system may be expanded to accommodate more students and classes. It can be said that by combining the Raspberry Pi Model with Radio Frequency Identification to replace a manual and unreliable method, a dependable, secure, quick, and efficient solution has been presented (RFID). In the future, the work can be expanded with a Web camera, Fingerprint module, or Retina Scanner that uses image processing to automatically calculate and maintain a student's attendance in a college or other institution.

REFERENCES

- 1) Chitresh S and Amit K (2010), "An efficient Automatic Attendance Using Fingerprint Verification Technique", International Journal on Computer Science and Engineering (IJCSE), Vol. 2 No. 2, pp 264-269.
- 2) Longe.O.(2009), "Implementation of Student Attendance System using RFID Technology", B. Tech Project Report, LadokeAkintola University of Technology, Ogbomosho, Nigeria.
- 3) SeemaRao and Prof.K.J.Satoa (2013), "An Attendance Monitoring System", Volume 3, Issue 4ISSN: 2277 128X.

AUTHOR PROFILES



Dr.M.Rajaiah , Currently working as an Dean Academics & HOD in the department of CSE at ASCET (Autonomous), Gudur, Tirupathi(DT).He has published more than 35 papers in, Web of Science, Scopus Indexing, UGC Journals.



Mr.V.Chandrasekhar Currently working as an Assistant professor in the department of CSE at ASCET Autonomous),Gudur, Tirupati(DT).



Mr.Parlapalli Pavan kumar Reddy , B.Tech student in the department of CSE at Audisankara College of Engineering and Technology, Gudur.



Mr.Posina Praveen, B.Tech student in the department of CSE at Audisankara College of Engineering and Technology, Gudur.



Ms.Menakuru Uma maheswari , B.Tech student in the department of CSE at Audisankara College of Engineering and Technology, Gudur.



Ms.Kudiri Swetha, B.Tech student in the department of CSE at Audisankara College of Engineering and Technology, Gudur.