International Journal of Engineering, Management and Humanities (IJEMH)
Volume 4, Issue 3, May-June, 2023 pp: 97-105 www.ijemh.com

Smart Card for Various Application in Institution Using NFC

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Date of Submission: 09-05-2023 Date of Acceptance: 20-05-2023

Abstract: Most of school chairmen are worried about the unpredictable participation of understudies. An understudy's scholarly presentation might be impacted by delinquency. Calling names or marking a piece of paper to gather participation is a tedious and unstable strategy that is wasteful. A radio frequency identification (RFID)- based participation framework is one expected answer for this issue. Following understudies' participation at school, school, and colleges is conceivable with this technique. Also, checking representative participation at work can be utilized. Gauging participation is quicker, simpler, and more secure with this technique since it can definitively distinguish every individual in light of their RFID tag-type ID card. To have their participation recorded, representatives or understudies basically have to put their ID card on the peruser. Since the hour of the participation will be recorded utilizing the framework's ongoing clock include, the participation taken will be more exact. The device may be associated with a PC through a Raspberry pi or USB interface and the cooperation data can be taken care of in an informational collection. The participation records can likewise be seen with the HyperTerminal program. The model of the framework has been built effectively.

Index Terms : *RFID, USB, Raspberry pi.*

I. INTRODUCTION

The utilization of radio frequency waves to distinguish and follow a label implanted in an item or living being is known as RFID [1-3]. A remote specific methodology includes electromagnetic and electrostatic coupling in the radio repeat part of the reach to confer among peruser and name using different change and encoding plans [4]. To move data, tweak is the most common way of modifying the plentifulness, recurrence, or period of a high-recurrence transporter signal. The technique engaged with changing information beginning with one plan then onto the following is known as encoding. A RFID peruser and a tag commonly make up RFID frameworks. It is very significant in light of the fact that the label it has can remarkably distinguish an individual or an item. It tends to be done rapidly, regularly in less than a second. The model of the framework has been planned and built. The framework's uninvolved RFID peruser has a greatest recognition scope of roughly 5 centimeters over the peruser. It has a 12V power source and a recurrence of 125 kHz. The innovation can recognize every person and record participation for them. To check investment, clients just put their RFID mark on the scanner. To find their name, they don't need to glance through an extensive rundown. It saves time therefore. Participation will be recorded assuming the checked encoded label ID matches the label ID in memory. For this situation, a mistake message will show. Participation will be more precise when the framework incorporates a continuous clock. The framework can show a particular individual's participation and data on a PC because of the RS232 and USB ports. PC). The framework's chronic developer and In-Circuit Serial ProgrammingTM (ICSPTM) pins make it conceivable to refresh the microcontroller's firmware consistently. The power supply framework will promptly change to battery power assuming the air conditioner power is switched off. The device is believed to be little. The framework can be brought to class or different areas on account of these two highlights.

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Fig 1 Example Figure

RFID (radio frequency identification) is a far off development that contains two sections: perusers and labels The peruser is a gadget that broadcasts radio waves and gets signals from RFID labels. It might have at least one radio wires. Labels can be aloof or dynamic and utilize radio waves to send their ID and other data to local perusers. The peruser powers uninvolved RFID labels, which have no batteries. Dynamic RFID labels are fueled by batteries. Data on RFID labels can go from a solitary chronic number to various information pages. Perusers can be on a post or suspended from the roof, or they can be versatile and conveyed the hard way. A bureau, room, or building's plan may likewise incorporate peruser frameworks.

RFID frameworks utilize radio waves at different frequencies to send and get information. The accompanying medical care and emergency clinic related applications utilize RFID innovation: Stock administration Hardware observing Fall identification and up location Representative following Guaranteeing that patients get the proper prescriptions and clinical gadgets Forestalling the conveyance of fake drugs and clinical gadgets Patients are being checked Gathering information for electronic clinical record frameworks The FDA doesn't know about any issues with RFID. Be that as it may, there is concern in regards to the chance of radio recurrence transmitters like RFID causingelectromagnetic interference (EMI) to electronic clinical gear. EMI, which brings about a diminishing in the exhibition of frameworks or gear (like clinical gadgets), is brought about by an electromagnetic unsettling influence.

II. LITERATURE SURVEY

New approach for Attendance System using Face Detection and Recognition

One of the most important uses of image processing in today's technological world is face recognition. In the authentication industry, face recognition is a common topic, particularly when it comes to monitoring student attendance. High-definition surveillance and other computer technologies that make use of face biostatistics are used in a face recognition attendance system to identify students. The development of this system aims to digitally replace the traditional approach of calling names and keeping paper records to record attendance. The current methods for gathering attendance are time-consuming and inefficient. This article aims to use the OpenCV library to create an attendance management system that can recognize faces and store them in a database for colleges, businesses, and other organizations to track attendance. The face in a border box will be identified with an accuracy of 99.38 percent using a hybrid approach that combines Open CV and the HOG library. In addition, it has proposed a novel idea for implementing these techniques in all classrooms and labs of any educational establishment to precisely record student attendance.

An Efficient Student Attendance Scheme Based On QR Code and Device Identifier

Cell phones have as of late been recognized as the things that are used the most often in our day to day routines. Utilizing a cell phone, you can rapidly tackle numerous issues, such as conversing with somebody, interfacing with the web, and snapping a photo with a versatile application. Our lives have been made simpler and more helpful thanks to the far reaching utilization of cell phone applications. This study resolves the issue of participation following utilizing the above strategy. Most of universities have physically followed participation for a long time. An understudy participation framework is based on a quick reaction code to address the previously mentioned issue. There are two kinds of uses in the proposed framework: a portable application for gathering participation by examining the educator's made QR code and a site for teachers to make QR codes. The instructor makes a QR code for the understudies to filter when they enter the study hall. The proposed arrangement works disconnected on a Local Area Network(LAN) to try not to lose Web access. Utilizing the understudy's login and secret phrase as a first component and the

IMEI number related with an understudy's cell phone as a subsequent element, this work really takes a look at the understudy's ID to forestall false participation. The trial results recommend that this proposed framework enjoys the benefit of wiping out tedious participation checking and having negligible equipment costs in contrast with other comparable frameworks. Furthermore, a savvy participation framework in light of QR codes is very reliable and gives fast outcomes.

Blockchain-based Attendance Management and Payroll System using Hyperledger Composer Framework

At an organization or office, participation information is regularly kept in a neighborhood or cloud data set. This sort of capacity raises various worries, including security and information trustworthiness, on the grounds that numerous gatherings will totally oversee them. An information stockpiling framework that can give protection, security, and information trustworthiness is expected to save the realness of delicate information. The objective of this study is to create and utilize blockchain innovation to store HR division worker participation information. The Hyperledger Arranger permissioned blockchain engineering is associated with the Rakish web application, from which the participation information for representatives are determined. Hyperledger Arranger was utilized in this concentrate because of its short approval time. The Hyperledger blockchain can speak with different parts thanks to the writer rest-server Representational State Transfer Application Programming Interface (REST API) in Hyperledger Arranger. The consequences of the establishment demonstrate the way that the finance and participation the board frameworks can involve Hyperledger Writer as an information store framework. Besides, Hyperledger Arranger execution is assessed utilizing block exchange timings. There are three methods for assessing the Hyperledger Writer: straightforwardly from inside the Hyperledger Arranger, through the REST Programming interface of the Rakish web application, and by means of the REST Programming interface of JMeter. Subsequently, the Hyperledger Author exchange block test takes 1 to 17 milliseconds, the JMeter-based REST Programming interface takes 5 to 296 milliseconds, and the Precise Web Application takes 1 to 4270 milliseconds to test. The outcomes show that the writer rest-server's REST Programming interface performs quicker than Ethereum. Because of these discoveries, author rest-server can deal with casting a ballot frameworks, wellbeing observing, and Internet of Things (IoT) applications that require speedy exchange times, for example,

An Overview of Radio Frequency Identification systems

The technology behind the Internet of Things (IoT) relies heavily on RFID. Agriculture, transportation, tracking systems, and other fields have benefited greatly from RFID and other sensor systems. The term "radio frequency identification" refers to a system that generates a distinct identifying signal and is primarily employed in automated identification technology. A brief synopsis of the most recent advancements in RFID technology can be found in this document. It covers a wide range of RFID systems, applications, benefits, and drawbacks.

Transport Fee Management System for Educational Institutions

One of the most important departments in any educational establishment is the transportation department. The administration and collection of fees in this department take a lot of time. The driver lets the student get in the car. Regardless, he has no idea about the fees. Automation is essential if students and management are to remain engaged. Guardians whose kids are moved by establishments every now and again experience nervousness in regards to their youngsters' boarding and takeoff status. For these reasons, a web application might be used. Utilizing a RFID scanner that is associated with the ESP8266 equipment, the administration decides the situation with the charge installment by filtering the RFID tag. Moreover, an email notice of the understudy's confirmation and leave is shipped off the understudy's folks.

Smart Attendance System Using RFID and Face ID

Proper and productive participation the executives is basic in the business area. The administration of the university is able to keep attendance forms from becoming damaged, such as lacerated, or lost, thanks to the use of RFID technology. An assortment of radio recurrence recognizable proof (RFID) and other robotized distinguishing innovations have filled in notoriety. Numerous applications and a lot of research have been done to get the most out of this technology while also pointing out many of its drawbacks. RFID is a far off development that uses radiofrequency waves to send data from an

electronic tag, generally called a RFID tag or an imprint, to a RFID peruser for conspicuous evidence. In this task, RFID recipients will be set in the suitable courses for the Participation cycle, and RFID labels will be integrated into understudy ID cards. In this occurrence, a novel UID is doled out to every individual ID card. This framework would look for individual information by using miniature regulators like the Arduino or Raspberry Pi. Assuming the singular enters the class wearing that ID card, their participation will be recorded consequently. Face ID is used for affirmation to hinder go-between cooperation. Moreover, it produces a Succeed Sheets-design participation report.

Attendance Marking System based on Hog Descriptor Algorithm

People's perspectives in the work environment are a fundamental part of ordinary administration. On the other hand, attendance is a method for tracking attendance and absence. Students' attendance has been recorded on paper for decades. For a long time, this method of attendance has been used. This method may be alright and helpful for few guests, but it requires venture and effort for a greater get-together. The disadvantages of this technique are prominent and clearly known: the opportunity has arrived consuming, leaned to mistakes, and there is by and large the chance of delegate cooperation. We present a popular and viable technique for recording participation that utilizes facial acknowledgment innovation. The framework will perceive an individual's face and contrast it with an information base to decide if they are available. In addition, a student's information and time are recorded on an attendance sheet that can be manually adjusted if necessary. This method can be used to deal with the problem of proxies and false attendance.

eSAM: Atendance System Using QR Codes in Romblon State University-Cajidiocan Campus

The manual process of checking students' attendance has been replaced by an automated one thanks to technological advancements. The Participation Framework plays had a significant impact in setting up participation conventions that let the school make participation reports consequently. An eSAM framework in view of a server and cell phone, as well as a QR code circulated to understudies toward the start of talks, are the thoughts introduced in this paper. The course, segment, point, date, and IN/OUT data are remembered for the QR codes created by the framework. Students will check a QR code on their PDAs to confirm cooperation and present the data to a server. Students ought to snap facial pictures and send them to a server with the objective that they may be saved in the system. On a day to day or month to month premise, the framework produces rundowns of understudy participation for educators and the school. This assists keep an electronic record of understudies' participation and keeps with papering use to a base. On a particular day, understudies are informed by means of email that they went to the talk effectively. It was found that by using the eSAM system, teachers or school leaders can create summary reports of students' support status, including the date, time in/out, and number of present, missing, and late students in each subject or fragment dealt with by the educators, as well as give a copy of the summation reports in succeed or pdf plan.

Machine Learning Algorithm for Developing Classroom Attendance Management System Based on Haar Cascade Frontal Face

An individual's face is perhaps of their generally significant trademark in reality; Separating between at least two individuals' personalities is utilized. Various portions of the body have been adjusted actually to guarantee that principal the authentic individual methodologies their specific records, both certifiable and virtual. The fact that has been created makes biometrics, which incorporates distinguishing proof techniques like fingerprints, palm veins, Dna, palm prints, and facial acknowledgment, one methodology. Along these lines, this review will show how to develop a gadget that can perceive understudies' front facing faces in a homeroom by consolidating picture handling with facial acknowledgment calculations. An individual's or a creature's face is the forward portion of their head from the temple to the jawline. Since it contains significant data about an individual or association, the face is the main component in human encounters. People can perceive others by their appearances. The objective of this review is to foster a functioning model of a framework that can recognize understudies' front facing faces from a study hall photo and help educators at the Specialized Informatics School of Akre in homeroom the executives. As of late, testing has prompted the advancement of face acknowledgment and distinguishing proof innovations. A large number of them are utilized by banking applications, interpersonal interaction destinations, and government organizations like

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Facebook and the Metropolitan Police Administration.

Smart Attendance System in an Enterprise-Based Access Point Environment

Cooperation is fundamental in our ordinary activities since it impacts execution, productivity, and commitment in associations, classes, and various affiliations; In any case, this has demonstrated to be a difficult endeavor, especially for huge organizations. It has been exhibited that the exit plan is to interface a client's shrewd gadget's Media Access Control (MAC) address to the Received Signal Strength (RSS) at a Wireless Access Point (WAP).Nevertheless, various limits, for instance, the region of a WAP, the kind of Wi-Fi development used, security issues, the Angle of Arrival (AoA) of the got signal, and so on, were not considered for arranged accuracy updates. An endeavor AP-based shrewd participation framework is portrayed in this article for an association. To further develop results and precision, the proposed participation framework utilizes RSS and AoA. The edge RSS worth and participation exactness of the IEEE802.11a and IEEE802.11g Wi-Fi conventions are likewise analyzed in this review.

III. METHODOLOGY

Inaccuracies may result from paper-based university attendance. Hand-taking attendance takes more time. As a result, we used an RFID MFRC522 module and an Arduino to create an RFID-based attendance system for this project. Each student has an RFID card that they can use as an identification card in this system. At the point when they contact their card to a RFID peruser, their attendance is followed.

DRAWBACKS

It employs a large number of users only when security is essential but hard to provide.

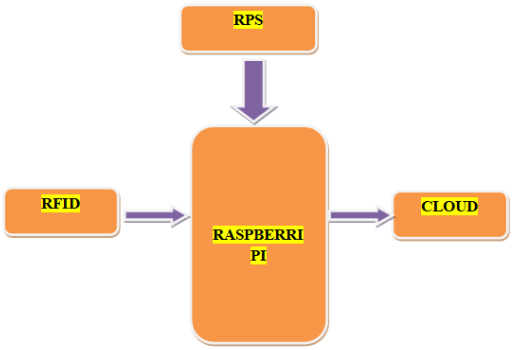

Fig 2 Block Diagram

The design must demonstrate the benefits of developing an RFID-based attendance automation system. This includes creating a scale model of the system to show how it works and how scalable the design is for use in the real world.

BENEFITS

A significant factor in a consumer's decision to purchase a product is the system's advantage over other similar products on the market.

This undertaking's RFID-based participation framework offers specific advantages over other similar market contributions.

It costs less than other systems currently on the market.

RASPBERRY PI: To assist schools and immature countries with showing essential software engineering, the Raspberry Pi Establishment in the Unified Kingdom fostered a line of little single-board PCs. The underlying model was considerably more fruitful than expected, selling out of its planned market for advanced mechanics, for example[10]. It is progressively being utilized in weather conditions checking research projects because of its minimal expense and versatility. Cases and different extras, similar to consoles and mice, are excluded. Notwithstanding, a few extras have been remembered for both authority and informal bundles.

Eben Upton was appointed CEO of Raspberry Pi Trading and given responsibility for technical development by the Raspberry Pi Foundation following the introduction of the second board type. The Foundation was reestablished as an educational foundation to support the teaching of fundamental computer science in schools and underdeveloped countries.

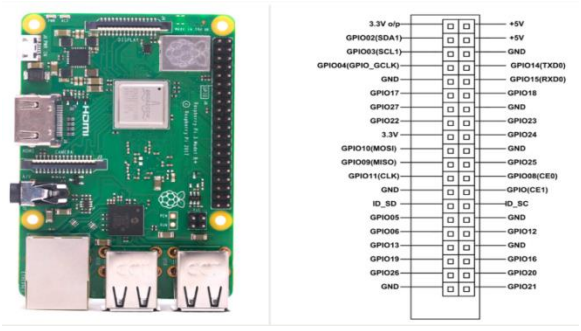

Fig 3 raspberry pi

RFID: RFID, or radio-frequency identification, utilizes electromagnetic fields to recognize and follow labels joined to things consequently. A RFID structure is involved a little radio

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transponder, a radio gatherer, and a radio transmitter. Computerized information, normally a stock number, are sent back to the peruser when the tag is initiated by an electromagnetic cross examination beat from a close by RFID peruser gadget. You can utilize this number to follow stock things. Inactive labels are fueled by the testing radio waves produced by the RFID peruser. Dynamic marks are powered by a battery and may as such be examined from a greater distance, up to many meters, from the RFID peruser. The tag can be implanted in the checked thing on the grounds that, not at all like a scanner tag, it needn't bother with to be apparent to the peruser.

Fig 4 RFID

CLOUD: Little fluid drops, ice gems, or different particles drifting in the climate of a planet or comparable space structure a noticeable spray called a cloud. The drops and valuable stones might be made of water or various substances. Whenever air is chilled to its dew point or when it gets sufficient dampness (normally as water fume) from a close by source to raise the dew highlight encompassing temperature, mists structure on The planet. The World's homosphere, which incorporates the lower atmosphere, stratosphere, and mesosphere, may contain mists. The area of meteorology known as cloud physical science incorporates nephology, which is the investigation of mists.

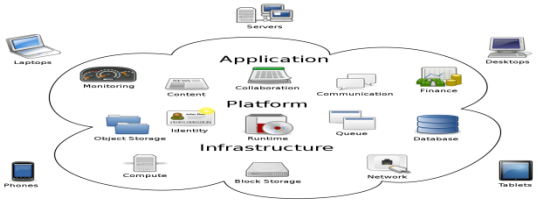

Fig 5 Cloud

POWER SUPPLY (RPS): A directed power supply is expected for all computerized hardware. How to get a controlled positive supply from the mains will be discussed in this post.

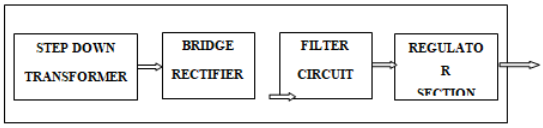

Fig 6 RPS

IV. IMPLEMENTATION

The Raspberry Pi is a pocket computer that costs very little and is very affordable to buy. It may function as a full-fledged computer in certain circumstances, such as when working with basic apps or playing low-end games. It is about the size of an ATM card. It was first released in 2012 by the Raspberry Pi foundation with the intention of making computer education easily accessible to everyone. It could set you back $5 or as much as $100. which is unusual).

The Raspberry Pi is a computer that can be moved around and is inexpensive. Be that as it may, since it is in a particularly small structure factor, it is restricted by the kind of equipment utilized in its development, making it hard to run standard working frameworks on it. Consequently, distinct operating systems were developed for the Raspberry Pi; Some were completely brand-new, while others were based on well-known operating systems. The majority of the Raspberry Pi OS is based on Linux, but there is also a Windows 10-based Raspberry Pi OS (Windows 10 IoT core) made just for devices like this one that only use a small amount of power.

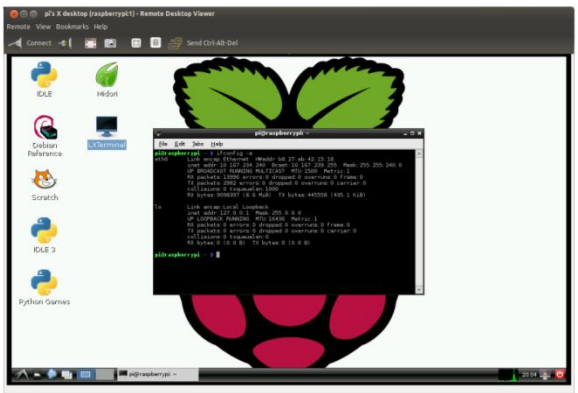

Fig 6 Raspberry pi download

The specialized term for working framework is A working framework is a connection point between a machine's equipment and the individual who utilizes it, however what precisely does this mean? It is, generally, the channel by

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means of which we interface with our PC hardware. It doesn't matter whether our system is the fastest in the world; That is essentially just hardware, an object; We also don't know how to use it, so we need a medium that acts as a bridge between us and the computer. For example, when we press CTRL on our keyboard, it should tell the computer what to do in response; It ought to provide us with a means of opening an application by listing Raspbian: Raspbian, also known as Raspberry Pi OS, is an operating system based on Linux that was made just for the Raspberry Pi. It has all of the features and tools you need to use it every day. Due to its significantly smaller form factor and computational power, it may function on all Raspberry Pi boards, with a few exceptions, such as the Raspberry Pi pico edition.

A OS installer for the Raspberry Pi known as NOOBS, or New Out of the Container Programming, comes generally on a SD card and incorporates various OS from which we can choose one to introduce on our Raspberry Pi. It is made for people who have never used a Raspberry Pi before and don't want to deal with the difficult process of burning an OS image to an SD card. Every new Raspberry Pi that is purchased comes with NOOBS. The user of NOOBS must first turn on their Raspberry Pi by connecting it to a screen and keyboard; NOOBs will fall over. There, we can select the operating system to install, and NOOBS will install it within a few minutes on the same SD card.

Some additional operating systems include: Outside of the Raspbian OS, let's take a look at some other operating systems that can be booted on the Raspberry Pi.

Minibian: In terms of operating systems, Raspbian OS is pretty light, but Minibian OS might be a better option if we want something even simpler. It is a simplified version of Raspbian intended for use with Raspberry Pi computers. Minibian's current version is compatible with all Raspberry Pi models and is based on the most recent Raspbian release. Minibian differs from Raspbian in many ways, the most important of which is that it is intended for electronics enthusiasts rather than computer builders. The core system and a few fundamental applications, such as web servers, electronics apps, and so on, are included in Minibian. It is a good choice for embedded applications because it lacks a graphical user interface for interaction. As a result, we have a working operating system that only requires 30MB of RAM and occupies less than 500MB.

For the Raspberry Pi, Raspbian Lite is a lightweight operating system with a limited number of packages. Because it lacks a graphical user interface, it is only recommended for experienced users who are able to establish ssh connections and remote administration via the command line. It's more like an operating system that runs from the command line, so we'd have to type in commands to control our Raspberry Pi. Its low CPU and RAM requirements are one of its advantages. It is important to note that Raspbian in light OS can be transformed into a full desktop environment with a graphical user interface by installing the appropriate packages.

The first open-source operating system for ARM processors was RISC OS, which was developed in Cambridge in the 1980s. Since it is unrelated to Linux, Windows, or any other operating system, investigating it will disregard our previous operating system experiences. We will have to get used to using the RISC OS, which will be a completely new experience for us.

Windows IoT Core is a Raspberry Pi-specific version of the Windows operating system, particularly Windows 10. It's helpful for Windows fans who want to use the Raspberry Pi platform for projects. Most of the time, it is used to design and build Windows 10 IoT prototypes. The networking, security, and cloud integration of the Raspberry Pi are the primary areas of focus in this version of the operating system.

V. EXPERIMENTL RESULTS

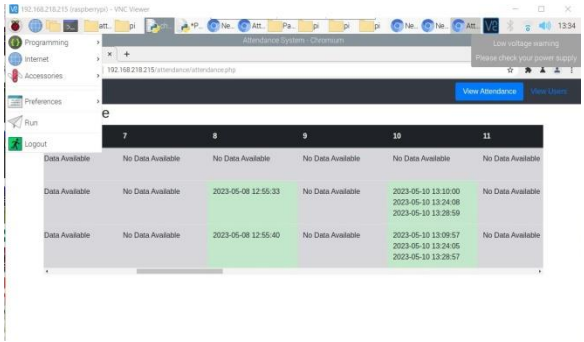

Fig 7 Output Screen

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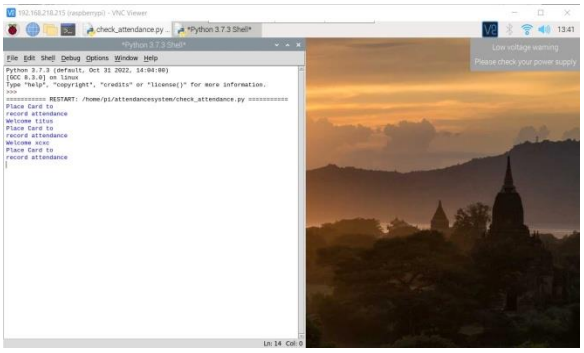

Fig 8 Output Screen

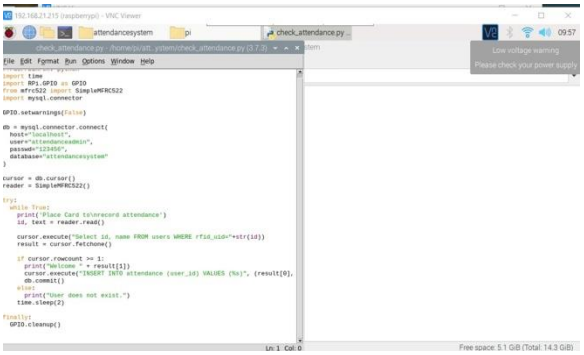

Fig 9 Output Screen

VI. CONCLUSION

An effective model of a RFID-based participation framework has been built. The model of the framework has various benefits over the old technique for gauging participation in class. This undertaking's model is lightweight and little. Moreover, it very well may be controlled by a battery or a power connector. Thus, it very well may be brought to class to gauge participation since it is generally versatile. The participation is secure and exact because of the Wiegand 26-piece design used to encode the label ID. The model has clear switches and correspondence connectors, making it simple to utilize. It is easy to save and recover participation. The innovation's speedy distinguishing proof and confirmation is another benefit. Since absolute working hours can be followed, this strategy can be utilized in the two study halls and work environments.

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