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DEVELOPMENT OF AN AUTHENTICATED AND OPTIMIZED EXAM HALL ACCESS SYSTEM

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Abstract: In India large numbers of higher educational institutions are available. Most of the universities conducted the exams in manual ways. It is a very difficult task to conduct the exam for large number of students. The information communications techniques are used in various fields. Communications technologies are used in educations institutions also for storing student data, faculties' data, execute the exams etc. Now the exam seating setup was created and uploaded on the internet. The students gave the register number as the input and collect their exam location. It was a very difficult and time consuming task. To avoid this problem a new system is proposed called Exam Hall Maintenance System using RFID technology. It is the new method for exam location management. Using this system the students are able to identify their exam location easily and avoid unauthorized person to enter inside the exam hall. In this project RFID card will be provided to the students those who are going to write the exams. The card reader read the data from the student RFID tag and display the proper floor and location on the LCD screen to the authorized students.

Keywords- RFID tag, RFID reader, controller, seating, location management.

I. INTRODUCTION

In most of the higher educational institutions the exams were conducted by using traditional way. It takes large amount of time and it is a tedious process. In olden days exams were conducted by using only in manual way. Large amount of paper works were used to prepare exam seating arrangement. Recently the usage of the computers is increased. The growth of information technology affects every field. In educational institutions are also using communication devices for various tasks such as store the details, mark sheet preparation, processing, pay roll preparation etc. Now the educational institutions are preparing the exam hall manually and upload to the internet. The students are checking their seating location using their register number. The entire hall allocation details were displayed on the notice board before the exam starts. In this task large amount of paper works are needed. The main disadvantage of this system was it takes large amount of time to prepare the seating allotment, because large amount of students are going to write an exam within the same data and time. In this proposed work create a system for exam seating location using RFID technology. RFID is the latest communication technology used is various places. The working principle of this RFID reader is like as a barcode reader. RFID tag consists of antenna and miniscule microchip. The important types RFID are . passive RFID without using battery and active RFID with using on-board battery. In this proposed system Passive RFID tags type is used because it is the economical and used within considerable range. The RFID reader read the data from the student RFID tag using the concept of radio frequency. The data is checked with the stored data in the database. If it is correct data the LCD display the proper exam hall number with the floor value. If the data is not matched the message like unauthorized persons will be displayed on the screen and the access is denied.

This research paper is divided into V parts. Section II describes about some technologies are already used in exam hall planning. Section III deals with proposed block diagram and flow diagram of hall management system. Section IV shows the result of the proposed work with various conditions and discussion part. Section V discuss about the conclusion part.

II LITERATURE SURVEY

K. Vandana et al., proposed a new system for hall plan checking by using RFID technique. It is very useful of every exam conducting centers. In earlier days 99% of the exams are conducted by using jumbling scheme. By using this scheme the large numbers of students were creating troubles in searching hall location and hall number. Many students are felt it is the tension process before attending their exams. To avoid this issued the authors proposed a new system using current communication technology RFID.

Every student has their own RFID card. The institutions provide RFID card with their hall ticket. Before enter the hall the students show their card in the RFID reader. The reader checks the data and display room number of the student on the LCD screen. The main objective this work was to reduce the hall searching time and last minute tension [1].

Dr. Pranav Patil et al., explained that higher educational institutions owners in this country concentrated on student attendance. If the attendance of the student is less the whole academic activities of the particular student was going to be affected. In traditional days attendance was taken by using the name of the student. It is very difficult task. To avoid this issue RFID technology was used in this proposed system. The students show their RFID tag on the reader. The readers mark the attendance and report it. This web based system was developed by using JSP. The main objective of the above system was avoiding false attendance problem [2].

Arulogun O. T et al. says that in modern days RFID technique was applied in various fields like agriculture area, healthcare domain, transportation etc. RFID technique used to identify the objects by using wireless technology. Two types of RFID tag are available. They are electronic passive and active tags. Here the authors proposed a system for attendance marking by using RFID approach. This system was skilled to reduce time while manual attendance collection. This process is mainly used by management decision making [3].

Divya Varghese et al, proposed a new system to exam hall allocation using RDIF concept. The RFID reader was collecting the data from RFID tag. The collected data was compared with an existing stored data. If the data matched the proper location will be displayed on the screen. Otherwise it displays error message. Using this system the authorized person will be easily find the hall location with floor number [4]

Parvathy A et al., developed a new hall allocation management system using RDIF technique. The main aim of this system was avoid last minute problems and to eliminate unauthorized person while the education institution exams. Using this system the students were able to easily identify their proper location and floor value without any interruption [5].

Santa kumar et al, developed a Radio Frequency identification (RFID) and wireless Sensor community (WSN) are Crucial wireless technology which have sort of programs and offer unbounded Future potentials. But, RFID and sensor networks nearly are under increase in comparable Way. Integration of RFID and wireless sensor networks draws little interest from studies Network. On this paper, RFID device, Zigbee Module and GSM communication are Mentioned first off [6].

Dammak A et al, proposed a center era, RFID generation has been more and more broadly used with the Development of net of factors. However in contemporary RFID packages, there may be a key hassle Waiting to be solved. That is, how to make the reader examine better? For this problem, we Advise a method for optimizing the position of passive UHF RFID tags. Firstly, a relative Ideal check environment has been built [7].

Ayob A et al, developed The purpose of this paper is to give how we design and put in force a steel mounting Tag For passive UHF RFID for opposed environments. This development is a venture for an Electrical energy distribution agency that wishes to tune his assets such as: MVA Transformers, Public illumination and some add-ons[8].

Burke E.K. et al, proposed a compact slotted microstrip patch antenna for RFID programs.The antenna is designed to perform at 2.40-2.45 GHz the usage of the pc Simulation Era (CST) software. The proposed antenna is designed and fabricated the use of Flame Retardant 4, FR4 substrate with the layout specification dielectric constant (ε_r) of 4.5 and Thicknesses (d) of 1.6mm. If you want to minimize the dimensions of the microstrip patch antenna, the Proposed antenna carries additional slotted shape connected inside the reflector of FR-4 Substrate [9].

Prabnarong T et al, developed a passive UHF RFID for capacitive sensor programs is presented. The design of the bottom station and the passive RFID tag is explained. The tag consists of an Inductively-fed, meandered dipole antenna and an IC that incorporates the far flung powering, Communication, and sensor interface circuitry. The rectifier in the tag is a surprisingly green Differential rectifier with self threshold cancellation. A low-strength, all-virtual, PLL-based totally Sensor interface is used to study the differential capacitive sensor on the tag. The pulsewidth Modulated sensor facts is despatched to the bottom station by means of backscattering [10].

Though a lot of works are being carried out, there is a scope for improvement in this field. Artificial intelligence

and machine learning techniques are being widely used in all applications like medical, day to day access systems, communication systems etc.. [11-14]. The proposed work could be improvised by applying machine-learning techniques.

III PROPOSED METHOD

In traditional exam hall management system the seating allocation was developed by manually. It is very time consuming process. In this project a new system is developed for display seating location of the student before going to exam center. In this system the educational institutions are provided a RFID tag. They are issued password also used in this system. The students swipe their RFID tag before enter inside the exam hall on the RFID reader. The reader read data from students RFID tag. The collected data will be verified with the existing data. If the data is correct the reader asking the pin number. After providing the password through the keyboard only the LCD screen shows the proper seating location with appropriate floor number or block number. If the password matches with identification number a blue LED will glow and the LCD screen shows the name of the student, registration number, hall umber and seat number.

Each and every RFID tag has a unique identification number. The RFID tag reader is communicated with the controller by using MAX232. The main function of the controller is to detect the exam location from the different halls and blocks. The following diagram 1 shows the outline of our proposed work.

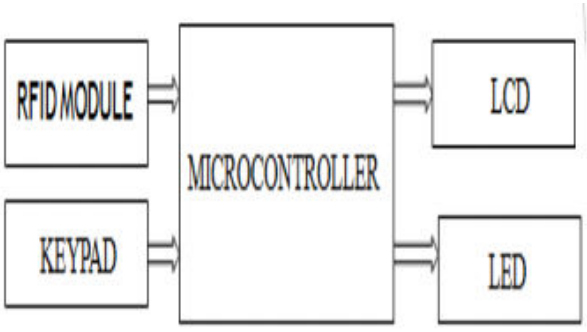

Fig 1: Proposed Block Diagram

This proposed system consists of various modules. The various modules are microcontroller module, RFID Reader module, RFID Tag module and display part. The system contains various hardware parts like microcontroller, RFID module, keypad, LCD display and LED display part. The following figure 2 shows the process flow of the proposed system.

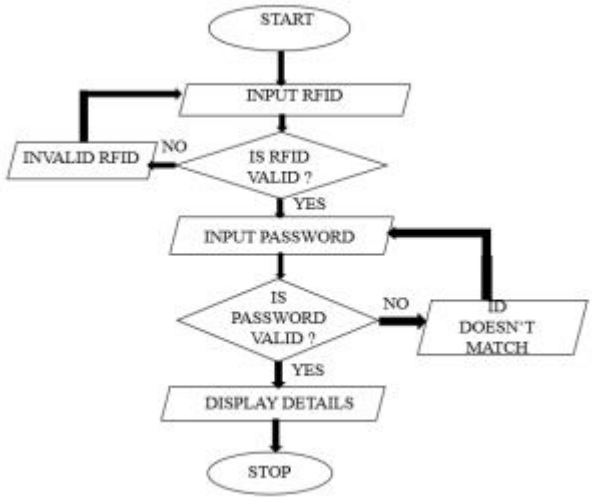

Figure 2 Flow Diagram Of Proposed System

IV RESULTS AND DISCUSSIONS

Most of the educational institutions conduct their exam using latest technologies. In this proposed system RFID reader and RFID tags are used to identify the authorized person and display the proper hall allocation details. The main usage of this proposed system is avoiding last minute confusion of the students. In this system is mainly used for conduction examination without any fraud. Before enter the exam hall the students collect the details from the RFID card reader. The card reader collects the data from student RFID tag. The following figure 3 shows the initial status of LCD screen.

Figure 3 Initial Screen

The students swipe their card on the RFID reader. The reader checks the data with the stored data. If it is matched the system asks the password. The password will be RFID tag number.If the password is correct the screen display the hall number and seat number. The following figure 5 shows the output.

Figure 4: Output Screen

If the student id is not matched with stored data the invalid massage will be displayed on the screen and red light will be blinked. The following figure 6 shows the status of unauthorized person

Figure 5 Status of Unauthorized student

V CONCLUSION

Communication technology is used in various application areas. RFID is one of the most important current technologies used in various fields. In education institutions used current technologies to solve various problems faced by students. This proposed embedded system using RFID technology is used to solve the major problem of exam conducting system in higher educational institution. The main aim of this system is reduce the paper work and save time. This system also used to avoid last minute tension of the students. The objective of this system is to restrict unauthorized person enter inside the exam hall.

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