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Secure Commuting for school children Using RFID and SIM800 GSM modem

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Abstract: Secure commutation is required for school children. It is a critical issue that tracking the students during transportation is essential. Radio Frequency Identification (RFID) technology has attracted much attention due to its variety of applications in different fields The system will control the entering and exiting of all students boarded into the bus using RFID and GSM modem. One of the critical issue in RFID frameworks is to build the power designation to the tag regarding their distance from the peruser which brings about efficient label recognition and separation scopeIn this paper we have investigated the utilizations of RFID in different fields and security highlights of it for advance improvement in secure compensation.

Keywords: *bus security, RFID (Radio Frequency Identification), GSM modem*.

I. INTRODUCTION

Overlooking children on the transport is one of the issues endured by the kids, which has expanded altogether in recent years. This has regularly prompted the passing of numerous students by virtue of suffocation because of the absence of attention of drivers. This venture, through section and leave recordings, expects to make an appropriate domain by following certain arrangement of criteria of security and wellbeing for school transport that will positively affect the students and their family. The paper proposed a transport security framework which was intended to control the entering/leaving of understudies from the transport. This framework completes a few undertakings, including distinguishing individual data (Eg. Name) of every understudy utilizing RFID tag, which will trade the information with the RFID pursue

by means of radio waves, and show ing every understudy name into LCD show. This will let the driver to know the quantity of understudies inside the transport and the understudies who withdrew from the transport. Also, the framework has a crisis framework that will alarm in the event that if there is a child inside the transport after the transport stops at the goal by sending SMS to the school through GSM modem. Furthermore, if the transport leave and arrive effective from the source to goal, it will advise the management through a SMS about its fruitful take off and entry. The key novel element of the proposed aproach is the utilization of vitality effective framework. School transports exchanges a great many kids every day in various nations around the globe. While there numerous issues that may irritate the guardians with respect to the movement wellbeing of school going children, the paper means to investigate presenting access wellbeing in regard of school transports through transport following framework that will help the school children transportation in a safe and more secure way. The supervision of the normality of understudies amid

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their entrance and exit from the transport is hard to be controlled by drivers, which prompted imperilling children security.

Commuting mode and behaviour-based spatial analysis have sprung up. However, it is difficult to study the relationship between commuting mode choice and origin destination space distribution since the commuting characteristics data are invisible in a specific space.

II. Literature Survey

The survey shows the many idea and features of the RFID[1] that transmits the individuals identity of the system using radio waves. This character is transmitted in a type of serial number that recognizes each question from others. The RFID framework comprises of a RFID peruser and a RFID tag. The label comprises of the microchip that is associated with a radio wire; microchip can store a most extreme of 2KB of information, which may incorporate information and data about the item, producing date, and goal. Further, the writer additionally watched that the capacity of the peruser field diminishes rapidly with expanding separation, which characterizes the zone of perusing to 4-5 meter remove utilizing VHF in given specific MHz. Authors for instance[2]presented a system to monitor the school children inside the transport in secure way a blend of RFID and GSM,GPRS is utilized. Each student carries a unique RFID card. The card is embedded in each of the student's school ID tags. At whatever point an understudy enters or exits from the transport, the peruser records the time, date, and area and after that move the information into a protected database and this does not require any activity from the drivers and understudies. Additionally shafaat[3] new advancements keeping in mind the end goal to redesign transport administrations and raise the level of movement wellbeing amid the exchange the school understudies and in addition, to enable groups of the understudies to follow the course of their kids while they are in school transports. The understudy checks the card when he/she come up to the transport by means of a gadget settled in the transport and he ought to do a similar thing when he got off from the transport. In view of that parent gets an instant message amid the understudy output of the card when entering and leaving. The GPS beacon system likewise will empower guardians to decide the course of the transport to take after its way on a guide that can be discovered by means of a cell phone. [4][6] The understudy swipes the card at the RFID reader while boarding the transport, when the RFID reader transmits the understudy ID to versatile DVR(Digital Video Recorder), which will transmit understudy recognizable proof to the CMS(Content Management System) server utilizing 2G/3G/WIFI arrange. The CMS server will send SMS(Short Message Service) to alloted guardians portable, at that point the guardians will get the message and after that the transport will leave. Amid the transport is moving, the versatile DVR will record (video/audio) the different school transport recognizes that will be appeared in the CMS server through 2G/3G/WIFI organize and there is a GPS utilized for following and observing the savvy transport area at the focal checking site. School administration allows and enables guardians to get to the observing framework that ena-bles them to screen their kids through the web utilizing peruse/CMS customer. If there should be an occurrence of episodes, pressing commu-nication or caution trigger on the CMS server by the driver and afterward the CMS server will convey directly with the driver utilizing a portable DVR framework through 2G/3G network

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device that located in the school bus. Through that, parents can receive information from the student through the mobile phone or computer browser with Z pass, which gives parents a comfort and confidence, using the information that is collected from Z pass, simple notifications send directly whenever the child gets on or gets off from the school bus through SMS to the parent's mobile phone. Additionally sumita et al [7]Some other related researches and works based on RFID system are given below: One proposal has been suggested to work with the attendance system using RFID technology. Here RFID tags are scanned by the reader and the tag sequences are simply matched with the stored values and showed on a GUI work by Herdawatie Abdul Kadir et al [8]proposed the student monitoring system using RFID tracking to ensure the security and safety of students as well as to improve attendance data management, reduce administrative error and internal theft. Ilkar Kormaz et al [9] proposed a patient monitoring system where the RFID tag is worn by the patient as a bracelet and the assigned doctor can read the information related to the patient on his PDA(Personal Digital Assistant). Another proposal by Mr.Tushar T. Tanpure et al [10] also has used RFID reader and tag to monitor students. As use of RFID tracking and identification has experienced a significant growth over recent years, there also have been many problems faced in this area. There have been proposals and research regarding localizing and power efficiency of tags. An analytical approach for multistage rectifiers, which provides design tradeoff and improve power efficiency. Several authors, for instance [11]propose to install multiple readers and apply reader-to-tag distance estimation to localize an RFID tag.

Low-cost RFID[15][16][19] will dominate the industry as a replacement of the barcode tags. RFID tags had been designed for the purpose of automatic identification and tracking. Therefore, RFID tags could violate their owners' privacy and security. Hence, it becomes a necessity to come up with an RFID protocol that meets security (e.g. mutual authentication) and privacy goals.

RFID is one of the rapidly[17][18][20] growing identification schemes. Unique identification, non-line of sight capability and functional haste result its massive deployment in many supply chain applications. Because of limited computational capabilities at tag side Ultra lightweight protocols are the only solution to ensure secure communication in RFID systems. In this paper we have presented a detailed working of three eminent UMAPs.

RFID security[21]-[24] and privacy an energetic teenager during recent years. Much of the exciting development in this are is summarized in this book with rigorous analyses and insightful comments. Inparticular ,asystematic overview on RFID security and privacy is provided at both the physical and network level.

At the physical level, RFID security means that RFID devices should be identified with assurance in the presence of attacks, while RFID privacy requires that RFID devices should be identified without disclosure of any valuable information about the devices.

Radio-Frequency Identification Devices (RFID)[25]-[31] may emerge as one of the most pervasive computing technologies in history. On the one hand, with tags affixed to consumer items as well as letters, packets or vehicles costs in the supply chain can be greatly reduced and new applications introduced. On the other hand, unique means of identification in each tag like serial numbers enable effortless traceability of persons and goods. But data protection and privacy are worthwhile civil liberties.

RFID and Public Key (PK) technology[32]-[36] are combined. RFID tags authenticate themselves by responding to a challenge of a reader/writer device. For this an asymmetric encryption algorithm (RSA) is implemented and executed on the tag. Thereby a high level of counterfeit security is reached. Using a private/public key pair makes this method very flexible for validation by the distributor or the customer.

The asymmetric encryption algorithm is running on a low cost tag providing security even for products with a low value. For high level security, drugs are used as example products.

The properties of tags in itself which is the core of RFID have a dysfunction like an invasion of privacy[37]-[40]for user. An existing cryptanalytic protection scheme of the information leakage has a difficult problem to apply to RFID tags for privacy protection. The scheme to the protection of the tag's information efficiently in the RFID system environment using low-cost tags. But, this method has all information of tags to identify tag's ID and then performs the process of identification in sequence in the Back-end server.

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IV. Table 1

Proposal	Year	Tools	Approach	Description	Use Case	Performance
Low cost RF-ID[15][16] [19]	2004 2006	RFID and Authentication tools	To process the security cost low	Security purpose for passive RFID	System level security	Simulation of RFID security features with low cost
Ultralight weight RFID authentication [17][18][20]	2007 2008	RFID ultralight weight	To maintain the authentication process for security	Authentication level of processing RFID ultralight weight	User level security features	Direction for RFID ultra description features
Privacy and security in RFID[21]-[24]	2003 2004	RFID for security	To maintain and privacy tool for security	Authentication for privacy features	System processed privacy	Privacy of security is improved.
RFID using hash function and cryptography [25]-[31]	2005	RFID for hash and cryptography	To encrypt the function using hash techniques	Authentication is improved via hash techniques	User to system level	Privacy is processed by hash functions
RFID security for public key infrastructure [32]-[36]	2003	RFID based technique for public key approach	Based on public key infrastructure	Authentication level for providing security	System level agreement	Improving the security features allowed
Privacy protection using RFID [37]-[40]	2005 2007	RFID processed for privacy protection method	To allow the privacy features using RFID	Provided authentication purpose of the privacy system	System level to user authentication purpose	The improving privacy for system is encouraged.

The table 1 survey for the new level RFID security features

The framework usage was tried and it found that the framework has filled in not surprisingly. The framework was simulated in the Proteus programming. At that point, the framework was by Mikrobasic programming and tried in Easy PIC7 improvement board. After the reproduction of the framework was tried, a toy transport was utilized to test the framework. The RFID peruser is settled on the transport entryway. The RFID peruser has tried by entering the labels (cards) in the transport through it. While the GSM has tried by associating the GSM modem to a PC specifically through the USB link. At that point the GSM has tried by utilizing AT summon analyzer program. For instance, if AT is com-

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posed and the answer was 'alright', this was implied that the correspondence with the GSM modem worked fine. Some other essential AT charges have checked and tried to ensure that the GSM modem is working effectively. Also, the LCD was settled before the transport and it has tried to play out the task of the framework

V. Conclusion

The integration of RFID and GSM technologies for safety and security purpose is very important in today's generation due to increase in accidents of children getting missed out of the bus. In this project, bus safety system for school children has been developed. Using this system, concerned authorities and bus driver will be alerted at it's visible RFID card. At the same time, if there was a student on the bus, the system will send an SMS message to the management of the school to take the right decision. The paper shows that the RFID technology based tracker system still acts as one of the best solution to enhance the safety in the school buses, which will reduce the accidents of forgetting the students inside the bus.

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