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Virtual Security Zones for Students Tracking in Schools to Avoid Child Abuse Using IoT

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Abstract. Children's health in the school system has now become a crucial problem for students at the university campus. The school / college and parents would like to know whether the candidate is in the classroom or not. The suggested device that tracks and updates it to the authority as he or she crosses a specified boundary line of a pre-defined area to control the location of the attached individual. It comes from simulated areas of RFID. Wireless Sensor Network (WSN) & Radio Frequency Identification are two essential communicational advancements with a range of uses that have infinite promise for the future. However, there have also been parallel developments in RFID and sensor networks. The scientific group is not paying attention to the convergence of RFIDs and wireless sensor networks. The first subject in this article is RFID, ZigBee and GSM Communication. Several existing systems & systems suggested evaluated with various application styles as regards technologies & deployment of RFID & GSM integration. To order to create a user interface framework, the proposed design outlined to detail. This device lets school and university administrators deter students from going over an invisible fence alerting school officials via SMS or via Smartphone IoT apps.

Keywords: RFID, Wireless Sensor, Transmitter, Receiver, Networks.

INTRODUCTION

Enactment of RFID Technology for monitoring students is a great demand for security in this day-to-day Environment [1]. Now a day's environment or society turned into a worst environment where more numbers of people and perverts are moving and roaming around every day [2].Even if any students got fainted can be easily traced using this RFID tags.There's a few various areas which might prosper easily perhaps if citizens knew what is going on & could have access to accurate data [3].Not only educational institutions even also some of the educational institution can avail this technology for the enhancement in service [4].Educational organizations can optimize the activities by providing an updated way of approaches and delivering it in an easy way to make information accessible [5]. At times of emergency all this information is provided to the concerned authorities of the organization when it is needed most [6]. Thus, Virtual Security zones for students tracking in schools to avoid child abuse using IoT indicate the location of the student and an alert to the authority if try to breach out [7]. Through combining the Radio Frequency Identification Monitoring Device with the Global System for Mobile communication & Cloud - based computing, this method of communication can be accomplished [8]. Each participant will be issued a tag that may be the ID Cards that are to be tracked to enforce the system [9]. Whenever they are away from the reader which is pre-installed in the educational institutions will send an alert to the controller which will trigger the SMS and a notification in blynk application [10].

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Radio Frequency Identification is a system consisting of components of both main tags & readers. The tag is typically attributed to the items that are marked [11]. The unit controls the rewrite feature & retains the information stored on the RFID chip. The reader is made up of segments receiving & transmitting. Once the reader transmits carrier signals & collects distributed signals through the receivers returned from the tag, it starts to operate on a basic RFID device [12]. The reader interacts with the tag simultaneously and provides the power to control the electronic components in passive tags. The tags respond with a single ID code assigned to the user.

This information is then forwarded by the reader to the central node, where the product will be up to date. By checking tag IDs in the region and then verifying with context data from the database that provides a link between IDs & things, the viewer will track the presence of such products [13]. Though RFID technology is restricted in fluid or metal environments such as low tolerance, it can broaden a sensor network capability by the supply of sensitive properties to artifacts otherwise insensitive. Over the next level of Radio Frequency Identification technology, the integration of RFID and WSN may be achieved [14]. It would require new uses, as sensors will provide much more knowledge such as temperature & physiological signal measurements, sound and vibration intensity, power transmission voltage, molecular concentrations, toxins etc. In addition, sensor networks deliver infinite RFID capacity. There is no correspondence between RFID tags, and all RFID device contact is a hop-on between readers and tags [15]. RFID will also have the multi-hop capability to function in a broader range through the introduction of RFID into the sensor networks.

PROPOSED SYSTEM

The machines offer all the different sensors, GPS and GSM integration. Customers must ensure that the credentials are used to apply the application. This tool may be given to adolescents for regular follow-up. While coding the machine, pay offshore and use GPS to manipulate this tool, also known as Geo Fencing. This information is stored on the server.

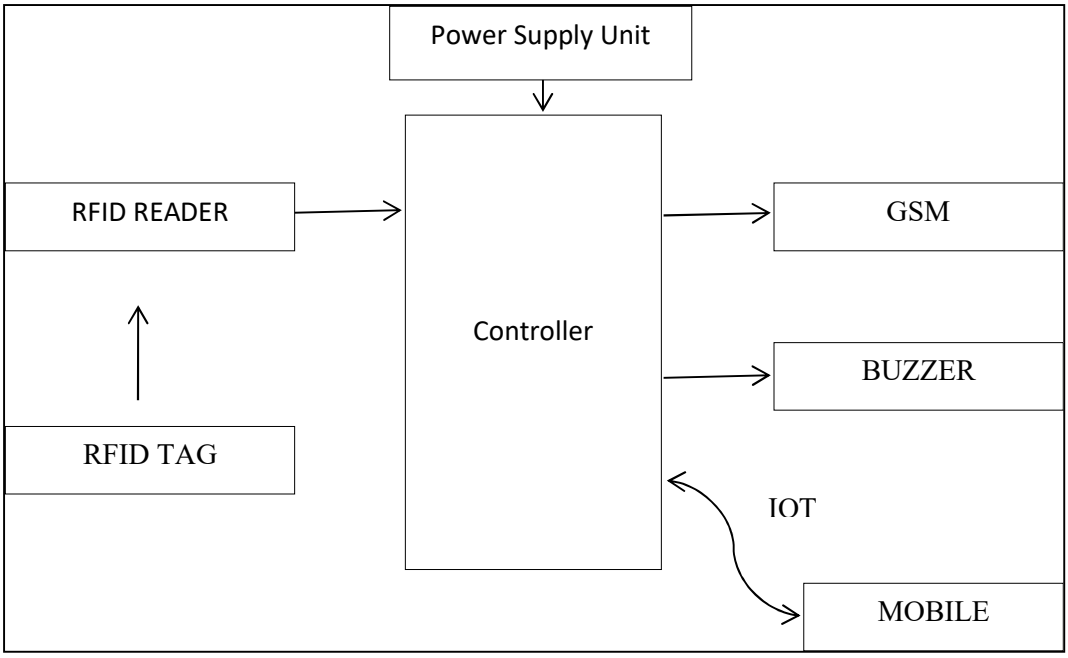

FIGURE 1. Block Diagram of the Proposed System

Figure 1 shows the hardware used in the proposed system are RFID Reader, RFID TAG, GSM module, Buzzer alarm, RFID Tag and a user mobile. In this proposed system, arduino ATMEGA as a controller which is the main unit which interfaces all the modules in the above block diagram are used. RFID reader is a module which is used to

read the radio frequency of various tags and send some serial data to the microcontroller (i.e.) different serial data for different tags. This is later communicated to the user via GSM module or application in which it developed it. Buzzer is used to generate a sound alarm at times of emergency conditions. Source power is given through the USB cable which is also used to dump source code in the controller.

RESULTS & DISCUSSIONS

This segment addresses well how to embed the RFID, Global System for Mobile Communications & Microcontroller. This article focused on the interpretation of the data from the RFID tag using a RFID reader and to ensure that the educational or institution authority on the student's presence within the boundary range and the prototype shown in Figure 2 [16]. If any of the reader reads the RFID tag outside the campus that indicates that the student has sneaked out of the campus, which is followed by a sms to the authorised persons & the institution.

FIGURE 2. Hardware Implementation of the Proposed System

The same can be also implemented via IoT by using some applications which is readily available at the play store. Thus, one can continuously monitor the children's presence using the above proposed model. So via Virtually created security zones child amusements are prevented.

FIGURE 3. Location Identification

That person will receive a name for the notification, and after entering the login ID and password, will be able to see the location via updated GPS within the application, it shown in Figure 3. By setting boundaries for college departments, can also update child's access and dropouts and college admissions within the app to keep in attendance. The server compares the currently received value to the encoded threshold. It generates a warning message via GSM when the value exceeds the edge value.

CONCLUSION

The suggested system's sole goal is accomplished successfully. It successfully verifies the alarm triggering from the GSM module. It shows the Micro controller is readable for the signal sent or received from GSM module. This implies that the Microcontroller can be managed via Text message services, if external features are implemented. The Radio Frequency Identification module & GSM module interfaces to analyses the signals received through a micro - controller. This system is useful for educational organizations and parents or guardians of the students. By implementing this method, families can immediately contact the universities oncehave issues & the organization can review the candidates' status as quickly as possible. It is incredibly beneficial for those who want to know the specifics or recognize the protection from a range of the precious son or girls, & for an urgent situation that needs urgent care in the event of earlier detection. Consequently, there is no need to always seem to go and search for the graduates' status & track it via SMS services from a vast reach.

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