

# Students Monitoring System using RFID Technology

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Received Date: 17<sup>th</sup> March, 2017, Accepted Date: 15<sup>th</sup> May, 2017.

**Abstract** - Nowadays children going to school and returning back to home without any unnecessary problems is just like a miracle happens. This is because the environment changes and the mentality of human beings. Additionally both the parents are tend to go for their respective jobs so automatically they cannot provide a valid time to take care of their children . This system provides a proper solution to avoid those scenarios in real time environment. This system mainly focused on the security of the children who are going to school through school buses. System reports about the individual student's entry and exit details with the help of the RFID tags. Each student will have their own RFID tags. The tag holds the students details like student name, student class details, parents details, bus stopping details. Through our proposed system each student entry will be analysed and notified, each students corresponding parents/guardian will receive a notification to their registered number whenever their child pickup and drop in the stop. Just five minutes before the bus reaches the stop, a notification will be send to the registered number, Delay start of the bus and route change information will be notified. The main technology used is RFID which is used to authorize the students. RFID tag stores digital codes that are scanned using RFID reader. This system benefits the students, any organization providing bus facilities, driver. By this technology the students can easily reach their source and destination.

**Keywords:** Radio Frequency Identification (RFID), Voice back circuit, RFID reader and tag, rely, sensors, Controllers, Global positioning system, Global system for mobile communication.

## I. INTRODUCTION

Around the world the education system plays a vital role in the individual children future. For this reason every parents will ready to pay as much as they can afford. To do this in this scenario both the parents are tend to go job for their respective children future. Due to this every parents are not able to monitor their kids so from this many students suffers through forgetting the stops and waiting for more time in stops, this will create many problem for the child. To avoid such cruel condition we develop a monitor a system to monitor each student whenever they get in the bus and leave the bus. The proposed system provides the facilities for pickup and drop notification. Route change information will also be notified this may occur whenever the bus met accidents and any other incidences; system will also authorize each student's entry and send a notification message to their respective parents. We focused mainly on the RFID technology; it will combine with RFID tag and RFID reader. The reader functionality is to integrate with the tag. Notification messages will be sending to the parents with the help of GSM and GPS. Messages will reach the parents as soon as their child gets in the bus and as soon as they leave the bus.

## II. LITERATURE REVIEW

There are many studies which explain briefly about the monitoring systems and tracking system, among the entire vehicle tracking system one of the best monitoring system is that using RFID technology. Initially vehicle monitoring system will be developed to avoid vehicle theft and to prevent such miss leading activities. Vehicle tracking system maintains a sensor and an alarm to detect and buzzered whenever the sensor is triggered [2]. Inefficiency with this system is that, the alarm can be heard only to the limited distance. To overcome this problem the notification system is used instead of the alarm but the high security system cost too expensive.

Rapid growth in vehicle usage in recent scenario causes more accidents and thefts. As well as it will hazard the world so easily in few years that may lead to introduction of new diseases. Due to this rapid growth of vehicle usage the vehicle theft rate is also increased drastically. To avoid these problems, vehicle theft detection systems are introduced. It uses GSM, GPS, Vibration sensor, ARM Controllers. Whenever a unknown person try to open the car without keys then the alarm gets triggered and it will starts to buzzered. It will also notify the owner through SMS message.

Child security is the major issue today while the going school every day and returning back to back is not an easy task. Many types of child theft is also going nowadays in our present scenario. To get rid from this actions secure child tracking system is used to monitor the child behavior whenever the child goes outside range of their parents. This system used GPS, GSM Modems [1] [3]. The system combines with the android device everyone nowadays holding their individual android devices so this system is used to avoid child theft, prevent child from any bad behaviours, to save the child from accidents. There are four modules in this system they are user interface, user authentication, sending SMS about the status of child, Location Based Service (LBS) to track the students van.

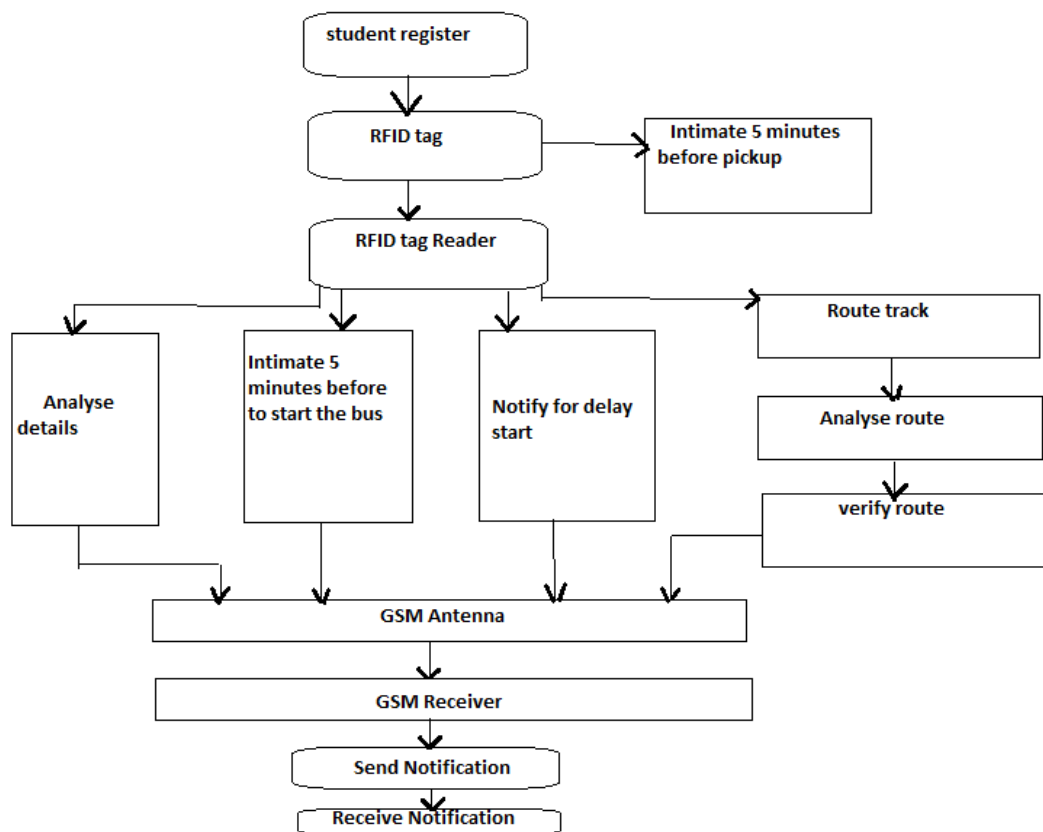


Fig. 1 Block Diagram of the Proposed System

### III. IMPLEMENTATION

There are three modules in the proposed system.

#### A. Register and Analyse Student Details

- 1) Student Registration: In this module each student details are registered with unique RFID card. The details all are stored in the database.
- 2) RFID Reader and Tag: Each student will hold a RFID tag with unique number. RFID system is used to authorize the tag holder to enter a secure area. Whenever the students show their tag in front of a reader it reads the data present on the RFID tag and compares it with data present in the hardware level database.
- 3) IR Sensor: IR Sensor is used to verify that each student will be authorized with their respective RFID tags. Through this, the security level of the system will be increased a level higher.

#### B. Intimate for Pickup and Drop

- 1) Entry and Exit: In this module student entry and exit of the bus must entered by the RFID tag reader. Its read the card details and compare it with the data present in the database, if it matches then the SMS will be send to the relevant number.
- 2) Notify before five minutes for each stop: Notification message will be send to the corresponding number that the bus reaches the stop before 5 minutes. This is done by measuring the wheels rotation speed.

#### C. Route Change and Delay Notification

- 1) Location Tracking: System will notify the parents whenever the usual route of a particular bus changes or for particular student. It is possible by using a GPS system to verify the exact route of the bus. The GPS system is fixed in the bus and it get the location of the bus; through this a short notification message is send to relevant number.
- 2) Accidents will be Notified: Each and every process of this application are sent by the SMS short information to the mobile numbers. A vibration sensor is used to sense for any accidents occur.
- 3) Delay start of the Bus: Driver of the each bus will send a short notification message whenever the bus starts early or delay. It is used to alert each parents from unnecessary waiting in the stops.

### IV. HARDWARE IMPLEMENTATION

This section deals with the hardware implementation of the proposed system. It includes,

- 1) GSM: Global system for mobile communication is used to send messages through transmitter and receiver.
- 2) GPS: Global positioning system is used to locate the exact location of a marked tracking system. It is used in most tracking system for tracking the location.

- 3) RFID tag: Radio frequency identification tag stores unique codes to identify individual student's details. The sample RFID card is shown in figure 2.
- 4) RFID reader: Radio frequency reader is used to integrate with the RFID tag. It is used to scan the information that is present in the tag.



Fig. 2 RFID tags

## V. DISCUSSION AND CONCLUSION

Thus the advantage of the proposed system will benefits the user in the way of providing students verification, students pickup and drop notification, delay start of the bus and route change information. Due to this SMART notification system child security is enhanced and makes their parents relaxed to concentrate on their work schedules. Tracking system and Monitoring will plays a vital role in future scenarios in organization, industries, business areas, manufacturing companies to control and monitor.

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