Bus Tracking System using IOT

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Abstract - In this paper, we have implemented Bus tracking system using Android application.It uses the inbuilt GPS service provided by the Smartphone. Smartphone is mounted on each bus and gets its GPS coordinates. These coordinates are transferred to the THINGSPEAK Cloud server. Users can retrieve information through android application. By taking the coordinates from the cloud server and it takes it to the google maps and show the location of the bus and where it is at that present moment. Parents or users can estimate their time of arrival from that destination.we also use RFID Reader, RFID card and Distance sensor. In this paper, we present a mobile application that is designed to address this issue. The system will help students, the school or college and the bus to communicate automatically and easily via the application. Using RFID we can get how many students paid the fees.The Distance sensor is used to calculate the number of people in bus using IR. When the rays hit an object it reflect back to the source point the distance is calculated.

Keywords - GPS, THINGSPEAK, RFID, Distance Sensor

I. INTRODUCTION

Nowadays, Parents are worried about their children and their security due to various factors. And nowadays the transportation is worst. Transportation schedules are unreliable and waiting for bus for long results is waste of time. But, however the bus service is not reliable. To come this problem, bus Tracking System has been set up to enable users with different operating systems platforms to easily reach the details with the help of internet access.

Bus tracking system using Android application uses the inbuilt GPS service provided by the Smartphone. Smartphone is mounted on each bus and gets its GPS coordinates. These coordinates are transferred to the THINGSPEAK Cloud server. Users can retrieve information through android application. By taking the coordinates from the cloud server and it takes it to the google maps and show the location of the bus and where it is at that present moment. Parents or users can estimate their time of arrival from that destination. By using this application the users can rest with ease.

Second, the Ultrasonic Distance Sensor works based on IR. IR stands for infra-red rays, first we set two set of distance sensor on both sides of the entrance of the bus and we start it the rays will move in straight line and hit destination and we count the distance and time taken .If the rays hit an object in between they will return back to the source point shorter than the required point of time then, we will write a condition where if the distance is shorter than the original

distance , it means someone has entered and it takes it as count as 1 . If the same happens with second sensor first and first sensor second that means someone has left so count will be reduced by 1 at the last we can get the count of people in the bus.

Third, RFID machine works as a combination of a reader, which can read information from tags. Readers can be passive RFID systems, where the reader and reader antenna send a radio signal to the tag, and tag then uses the transmitted signal to power on, and reflects energy back to the reader. These can operate either in low, high or ultra-high frequencies, with low covering frequency covering 30 KHz to 300 KHz , high frequency covering 3 to 30 MHz and the ultra-high frequency covering 30 MHz to 3 GHz respectively. We can give this tags to the students who have paid the fee and by using distance sensor we can count how many people are there in the bus and by using RFID we can get how many students paid the fees and by combining both, we can get an idea about the details of the students who did not pay the fees .

II. BUS TRACKING USING IOT

The aim of the proposed system highlights three aspects of software development 1) One is to track the bus by placing the tracker in the bus along with the Arduino it take the coordinates of the bus every few seconds and sends it to the Thingspeak server by using our mobile application we can get the coordinates of the bus. 2) By using the distance sensor we can know how many people there are in the bus. 3) By using RFID cards we can determine how many of the students have paid the fees. These are main aspects of our proposed system.
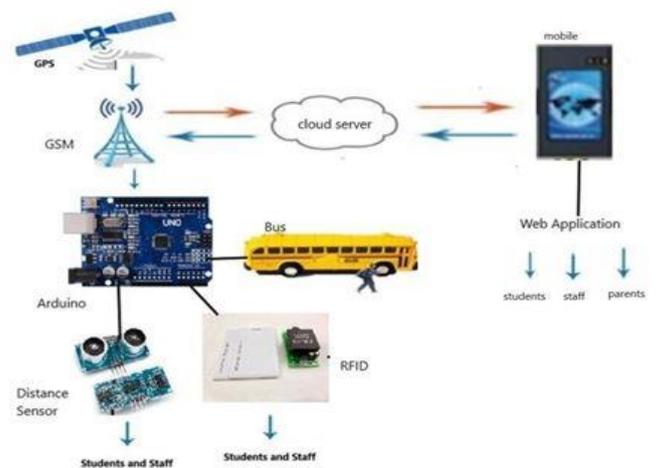

Figure 1: Architecture

III. SYSTEM SPECIFICATION AND REQUIREMENT

As shown in fig 2 our bus tracking using IOT contains mainly three roles that are bus tracking, counting number of people in the bus and how many students paid there fees .
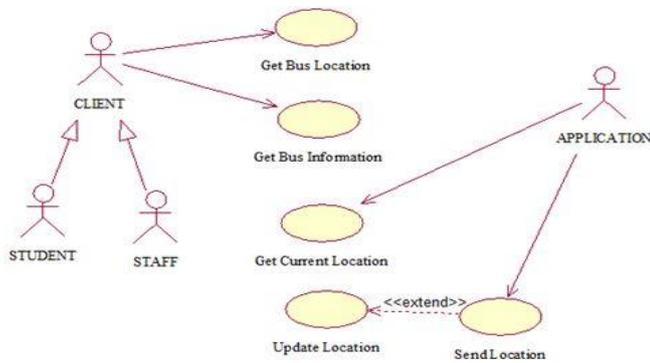

Figure 2: Usecase Diagram

In the above figure, both students and staff act as a clients in which they get students get bus location and staff get both bus location and bus information. Bus application will give the current location and sends the location to the client as the location change time to time update the location and update the information will be given to the bus incharge.

IV. RESULT& DISCUSSION
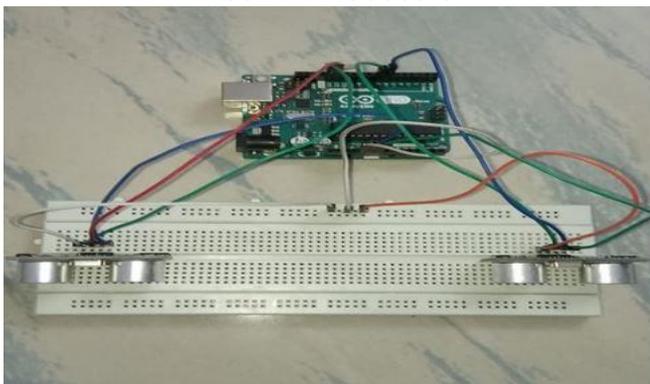
Figure 3: Distance Sensor

Whenever an object passes the distance sensor, it will count the number of objects passed through it.
It will increase the count when an object passes through first sensor and then the second sensor.
Again in return it will decrease the count when an object passes through second object and then first sensor.
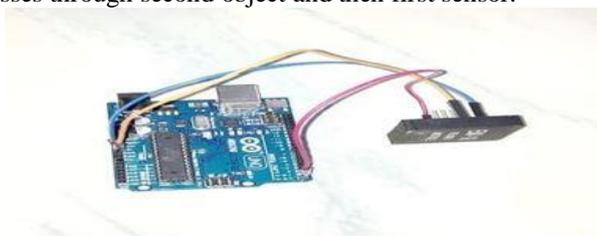
Figure 4: RFID

When a RFID card is placed on the EM-18 Reader it will check the RFID card when it matches with the database number and card number then will shows card number is valid means that card person payed the fee.
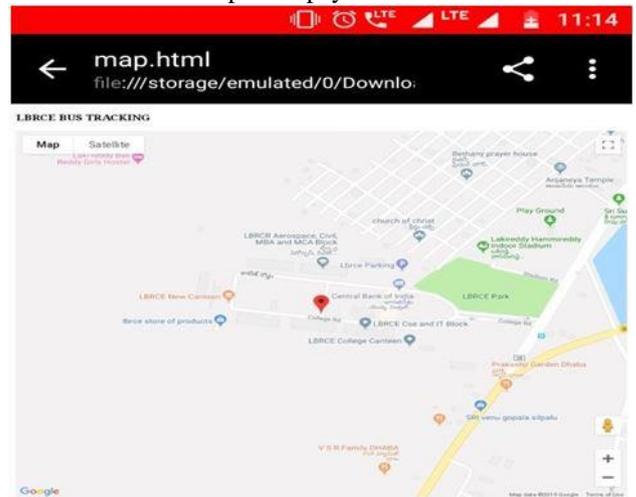
Figure 5: GPS Bus Tracking

Bus tracking system using android application uses the inbuilt GPS service provided by the web application. Web application is mounted on each bus gets its GPS coordinates to GSM. From GSM these coordinates transferred to the cloud server.

V. CONCLUSION

The conclusion of this study suggests that knowledge of specific domain improves the results. This paper has been implemented on Android platform. This paper is implemented using Android, Arduino and Thingspeak domain. Using the GPS system. The application will automatically display the maps using client-server technology and forward it to the client or user device. We also use the ultrasonic distance sensor to count the number of people in the bus and we also use RFID machine to check how many students have paid their fees.

VI. REFERENCES

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