



IOT BASED BUS ENTRY MONITORING SYSTEM USING RFID

PRARTHANA. S; NIVETHA.R; K. POORNIMATHI

UG Student, IT & Rajalakshmi Engineering College, TamilNadu, India

UG Student, IT & Rajalakshmi Engineering College, TamilNadu, India

Assistant Prof(SG), Dept of IT & Rajalakshmi Engineering College, TamilNadu, India

prarthanas612@gmail.com, nivetha.r.2016.it@rajalakshmi.edu.in, poornimathi.k@rajalakshmi.edu.in

Abstract— With the advancement of motorization and robotization, modern unrest has happened in all pieces of the world. This has expanded the expectations for everyday comforts of the humanity and furthermore added to the financial development of the nation. IoT has changed itself to suite different fields. This undertaking is to plan IoT based transport passage observing framework which is actualized utilizing RFID reader and Arduino Mega. A model of the product must be created to catch the subtleties of the vehicle number, driver subtleties, passage and leave time of the specific vehicle alongside date. Entry time of vehicle ought to be caught utilizing RFID tag. It is then put away in the database in three squares, first the transports entering the grounds on schedule, at that point the transports entering the grounds late. At last the transports which never entered the grounds is put away in a different square and a notice is sent to the administrator as a SMS. Our paper presents test consequences of the framework to proficiently screen the college transport entering and leaving the grounds.

Keywords— IoT, RFID tag, RFID reader, monitoring college bus, Arduino Mega.

I. INTRODUCTION

This project utilizes the materialness of radio frequency identification (RFID) innovation for observing Students during their way to and from College on College transports. Furthermore, it has the benefit of productive Monitoring abilities, ease and simple support. The individual RFID tags and readers are viably utilized for observing Busses. Arduino mega and Esp8266(NODEMCU) are additionally utilized in this task. These both communicates with one another and the information's are spread through WIFI - Device NODEMCU to the cloud(Firebase). In this when the transport goes into the college entrance RFID Tag is Read. RFID reader peruses the transport number, driver subtleties; transport entry timing will be captured. All the subtleties are sent to the Arduino mega and afterward controller send to ES8266. With the assistance of Esp8266(NODEMCU) all the subtleties are sent to the college Transport office through the cloud with the assistance of Esp8266. If the transports are late a notification is sent to appropriate concern through portable App that we have designed. This process accomplished for consistently with no human force.

II. RELATED WORK

The undertaking thought is to hint the school the board and guardians with respect to the understudies are dropped at right areas and in the event that they are dropped somewhere else the area is distinguished and alert is sent to parent. The framework screens the kids inside the transport in a more secure way. At the point when the understudy enters or exits from the transport the Reader records and move information in the database. Radio Frequency recognizable proof (RFID) is utilized to transmit Information of a subject utilizing radio waves[1].

Keen transportation frameworks dependent on computerized information assortment systems that are generally utilized by the significant travel organizations around the world. It depicts about the present cutting edge on improving both arranging and control on open street transportation organizations utilizing programmed vehicle area (AVL) information. [2].

Geofencing empowers remote observing of geographic zones encompassed by virtual fence (geofence), and programmed recognition when followed portable article enter or leave these zones. The paper presents ideas of geofencing and a few applications dependent on this strategy, vehicle tracking. [3].

Vehicle route is one of the most significant applications in the period of route which is for the most part utilized by drivers. The fundamental point of this venture is structuring a framework which is equipped for nonstop observing of way of the vehicle on PC with Google Earth Application [4].

For various years vehicle armada following frameworks are utilized in organizations working enormous number of vehicles in the field. Expansion of modest and minimized GPS recipients had the impact that Automatic Vehicle Location (AVL) frameworks today only utilize satellite-based finding frameworks [5].

The fast advancement of multi-Global Navigation Satellite Systems and the International GNSS Service (IGS) Multi-GNSS Experiment (MGEX) brings incredible chances and difficulties for constant assurance of tropospheric peak all out deferrals (ZTDs) and incorporated water fume (IWV) to improve numerical climate forecast, especially for nowcasting or serious climate occasion checking.[6].

Accuracy and reliability of multi-GNSS real time precise positioning: GPS, GLONASS, Beidou and Galileo. The comparison shows that Beidou navigation system has three main advantages than GPS navigation system for emergency logistics. They are security, high reliability and bidirectional communication. [7].

This chapter provides an introduction to the Galileo program and architecture. It starts by presenting the program context, rationale and history, including the early definition phases and test beds and the GIOVE experimental satellites. The chapter also provides a description of Galileo's contribution to the Search And Rescue services through COSPAS/SARSAT, and finalizes with an overview of the user segment and highlighting interoperability and compatibility issues with other GNSS [8].

The purpose of this project is to design and construct a hand-held wireless GPS tracking device that can be tracked from the Internet. The project consists of three parts. The first part is a mobile device with an embedded GPS and wireless Internet connection to transmit its current location. The second part is a web server that will receive the data, parse it, and store it for access over the Internet. The third component is the user interface that will allow others to visually see where the hand-held GPS device is and has been. To view its location, one could use any device that can connect to the Internet such as a desktop computer, laptop, PDA, or cell phone.

The system is to screen pickup/drop-off of younger students to improve the security of youngsters during the everyday transportation from and to class. The transport unit the framework is utilized to identify when a kid loads up or leaves the transport. A total model of the proposed framework was actualized and tried to approve the framework usefulness.[10]

III. PROPOSED SYSTEM

This section explains about the architecture of the proposed system and its components in detail. The Fig 1 explains about the architecture diagram.

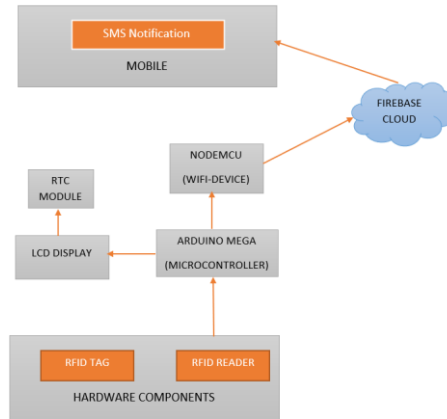


Fig 1: Architecture diagram

Fig 2 shows module of Arduino UNO. It is utilized to get information from the RFID reader and send to the WIFI gadget. LCD is likewise associated with it so as to see the passage leave time and status.



Fig 2: Arduino UNO.

The LCD is utilized to show the transport number and the transport status as went ahead time, arrived behind schedule, not yet came to separately. A Microcontroller, Arduino UNO is utilized to control the procedure.

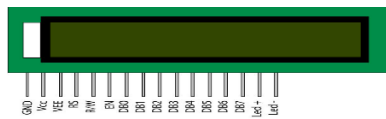


Fig 3: Time And Bus number is displayed in LCD

Entry and exit time of the buses are generated (noted) using RTC.

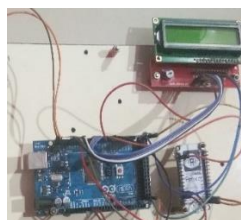


Fig 4: LCD and RTC connection with Arduino

Fig 5 shows that by using a real time clock (RTC) the Arrival time is noted and displayed in LCD.



Fig 5: RTC Clock Module

Fig 6 and Fig 7 Shows the RFID Tag And RFID reader . RFID reader is utilized to peruse the information put away in RFID tag and RFID tag is a little gadget which stores and sends information to RFID reader.



Fig 6: RFID Tag



Fig 7:RFID reader

Fig 8: WIFI gadget utilized for sending the subtleties caught to the cloud(Firebase).It cooperates with Arduino Uno and gets the subtleties from it and sends to cloud.

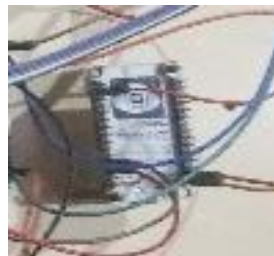


Fig 8:NODEMCU(WIFI Device)

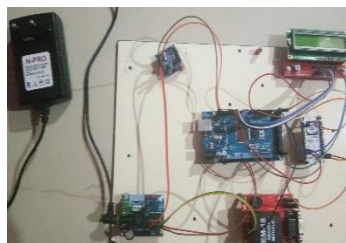


Fig 9: Overall View of Module

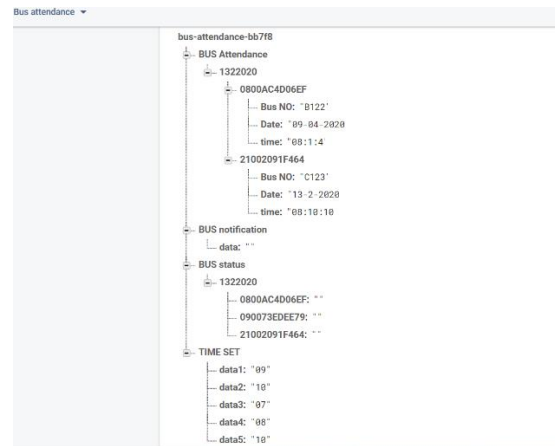


fig 10: Buses updated on entry in real time firebase cloud.

The fig 10 snapshot represents the buses updated on entry in real time database cloud with the help of NODEMCU.

IV. CONCLUSIONS

This proposed framework targets upgrading the wellbeing of students during the day by day transportation to and from College. RFID reader situated at the entryway Reads the Bus entered with RFID tags. Also, it sends a moment notice of applicable information from NODEMCU(WIFI Device) to the cloud(Firebase).The passage time, Late section transports and not turned out transports are noted on to the cloud. An application is created so as to send notice to the administrator with respect to the transports that doesn't turn out on schedule. This framework can be stretched out for full-time checking of college transports that will be useful for Transport organization at least expense.

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