

Automatic Monitoring And Updation of Vehicular Data Base To Regularize Traffic & Avoid Vehicle Theft By Using RF& IoT Technology

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ABSTRACT:

Automatic bus tracking is an important approach to modern intelligent transportation systems (ITS). The aim of the project is to recognize the bus which passes through the gate by automatically using RFID. Generally the bus is tracked in the gate during the entry and exit. The system detected the bus entry using RFID then sends the bus entry to the cloud [Internet of Things] via Wi-Fi to the database. It tracks each and every bus enters and exits in the gate and display reports with date and time of bus entries and exit in online (webpage).

KEYWORD: *Arduino ,RFID Tag , ESP-12E Module ,RFID Reader , IoT , database.*

1. INTRODUCTION

1.1 OBJECTIVE

Our primary objective is to develop a IoT based bus tracking system using RFID .Implementation of Iot concepts using RFID's integration between the system and its the outside world. This implementation is done using Wi-Fi connectivity via ESP 12-E and RFID transmitter and receiver also used in bus tracking system.

1.2 SCOPE

Initial concept of the system has been established during conception stage to foresee the problems and suitability of the system with the initiatives taken to monitor the bus entry and exit in online using Internet of Things [IoT].

1.3 OVERALL DESCRIPTION

RFID is a wireless technology using to detect a radio frequency and a each radiofrequency device (Tag, card) have unique code. RFID reader is a passive system. In an RFID system having various frequency ranges. A low frequency lies between 30Khz to 300KHz and High frequency lies between 3MHz to 30Mhz and Ultra-high range between 30MHz to 3GHz. Reader communicates with tag or card in 5 to 12 m range.

1.4 Features

- Manage your Apache, MySQL and MariaDB services
- Manage your server's settings
- Access your logs
- Access your settings files
- Create alias
- Use Virtual Host as hosters

2. EXISTING SYSTEM

In earlier days usually bus entry and exit time are noted manually. it takes more time to check every bus. and need more manpower. and timing is not accurate. some man-made errors may occur. To overcome manual error, we have implemented a fully automated and wireless technology.

3. PROPOSED METHODOLOGY

By making use of the write capability of the RFID readers, the EM18 RFID tag is embedded with a unique identification code and is assigned to the buses. Whenever the bus enters the gate, it is identified using the RFID tag attached to it. The entry and exit of the bus is tracked using the unique identification number. Once the bus is identified in the gate it will be transmitted and stored in online [IoT] through the WIFI module. So we can monitor the entry and exit of the bus online.

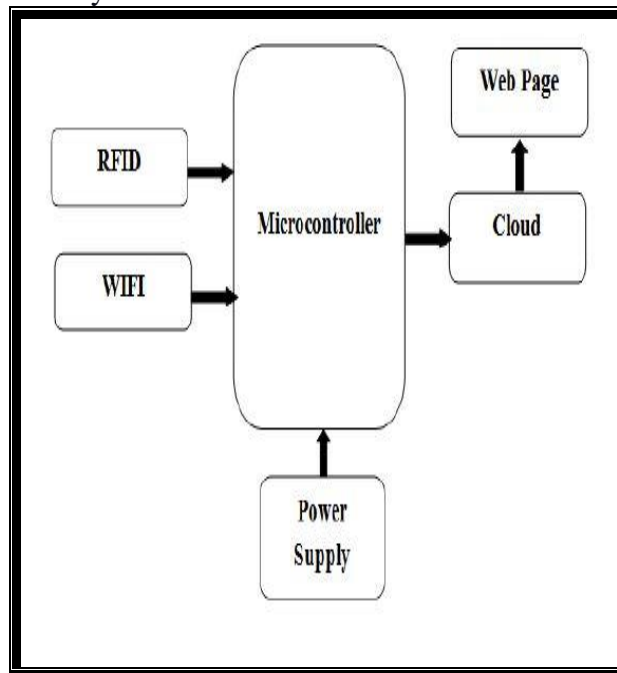


Figure 1. Block Diagram

CIRCUIT DIAGRAM

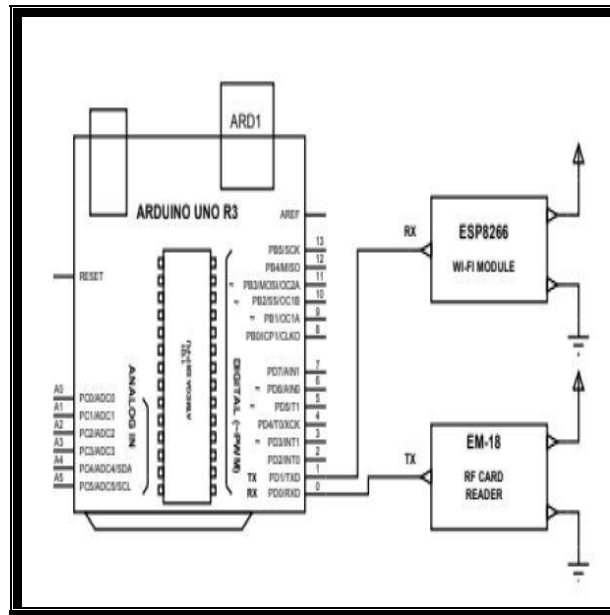


Figure 2. Arduino Board

3.1. RADIO FREQUENCY AND IDENTIFICATION (RFID)

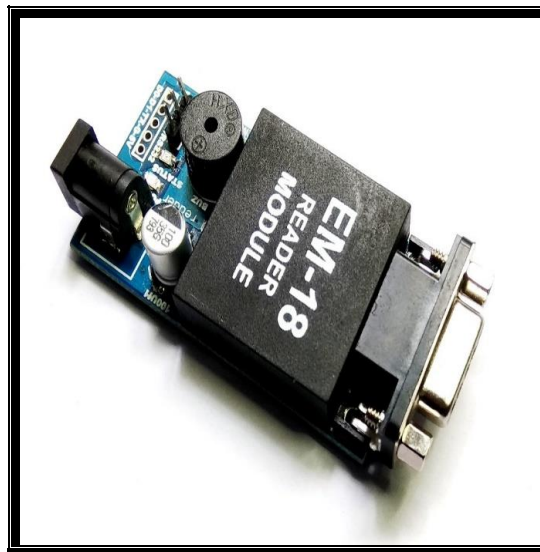


Figure 3. RFID MODULE

RFID is a system uses tags, or labels connected to the objects to be detected. Two-way having in radio transmitter-receivers called interrogators or readers send a signal to the tag and read its RFID code. RFID tags are passive or active. Passive tags gather energy from a nearby RFID reader's detect radio waves.

3.2 Wi-Fi MODULE

For internet connectivity here we are using the ESP 12E module. This ESP-12E is an act as a Wi-Fi module for data transmission from the microcontroller to the server.



Figure 4. WIFI MODULE

4. SOFTWARE DESCRIPTION

4.1 ARDUINO IDE

The open-source Arduino Software (IDE) makes it an easy way to write code and upload it to the board. It supports both Windows, Mac OS X, and Linux. The environment is written in Java and Processing the open-source software. The Arduino is (IDE) Integrated Development Environment that is a cross-platform application (for Windows, macOS, Linux) code is written in functions from C and C++. It is used to write and upload programs to Arduino boards, but also, with the help of 3rd party cores, other vendor development boards.

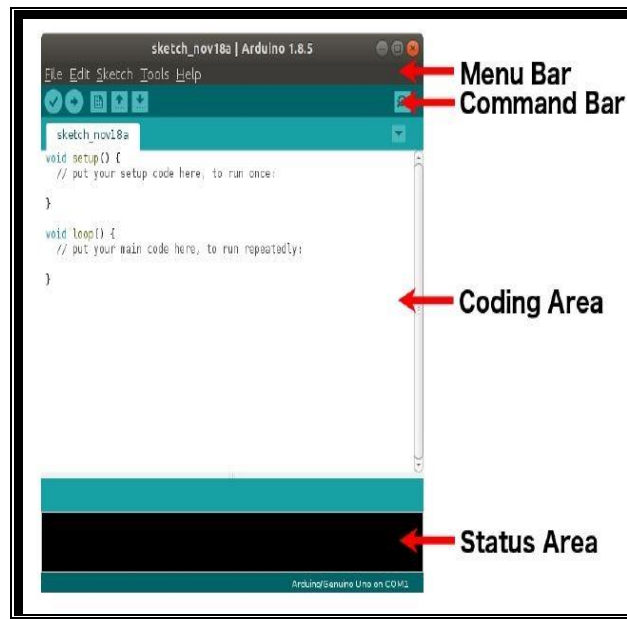


Figure 5. Arduino IDE

The source coding for the IDE is released under the GNU General Public License, version 2. The Arduino IDE supports in C language and C++ using special rules and function of code structuring. The Arduino IDE a software library from the Wiring project, which may provide many common inputs and output processes. The user only writes the code requires two basic functions, to start the sketch and the main program loop, that is compiled and linked with a program to main tab() into an executable cyclic executive program with the GNU toolchain, also included with the IDE distribution. The Arduino IDE is software converts a microcontroller understanding of the program to convert the executable code into a text file in a

hexadecimal format that is loaded into the Arduino board is load program in the board's firmware. for this process, Arduino IDE software is used in microcontroller program feeder

4.2 PHP

PHP stands for PHP: Hypertext Preprocessor. PHP is a server-side scripting language designed for particularly web development. PHP is easily embedded in HTML files format and HTML codes can be written in a PHP file. The thing that differentiates PHP with client-side language like HTML is, PHP codes are executed on the server whereas HTML codes are directly rendered on the browser.

4.2.1 PHP File

- PHP files have text, HTML, CSS, JavaScript, and PHP code
- PHP coding is executed on the server, and the output is returned to the browser as plain HTML
- PHP files have the extension ".PHP"

4.2.2 WORKING

- can generate the dynamic page content
- create, open, read, write, delete, option and close the files on the server
- can collect form data
- can send and receive cookies
- can add, delete, modify the data in your database by add and delete option
- can be used to control user-access
- can encrypt data for security purpose
- PHP is not limited to the output of HTML. You can view output by images, PDF files, and even Flash movies files also. You can also output any format like text and XHTML, XML.

4.3 MYSQL

MySQL, the most popular Open Source tool in SQL database management system, and is developed, and supported by Oracle Corporation.

MySQL databases are relational.

MySQL is a database management system.

A database is a structured format and collection of data. maybe anything like a shopping list of a picture gallery or the amounts of information in a corporate network. the computers are very good at handling large amounts of data and store files, database management systems play a wide role in computing, and standalone utilities, and also parts the other applications.

the relational database stored data in separate tables type than put the all data in one big storage unit. database struct is organized into a physical file format for increased speed. You implement rules that governor the relationship between different data bounded, such as one-to-one and, one-to-many, unique, required or optional, and pointer between different tables. The database enforcing the rules, and be a well-designed database, your application never sees not compatible duplicate, orphan, out-of-date, or missing data.

The SQL apart of "MySQL" stands for "Structured Query Language". and SQL is the most frequently standardized language used to access the databases language, or use a language-specific API that hidden the SQL syntax. MySQL is Open Source. software.

5. RESULT

The table 1 shows the output of our IOT based bus tracking system. If the bus flag is set high only when the corresponding bus enter the premises. In the logs the information about the date, entry time(start time), the exit time(end time) and the total time the Bus was in the premises. Here the manual burden of entering all the details is reduced. Any time just by looking the table we can identify the number of buses

inside the premises, the number of buses still to enter, number of buses left the premises after entering and their total tenure inside the premise all can be easily identified. As it is a fully automated system manual labour is reduced. The chance of vehicle theft is also greatly reduced and security is enhanced.

IOT based Bus Tracking system						
Bus time calculation						
Bus 1		March		2020		Find
Bus 1	Bus 2	Bus 3	Bus 4	Bus 5		
Bus1 report table						
sno	bus Flag	non-bus Flag	Date	Start Time	End Time	Total Time
1	0	0	0000-00-00	00:00:00	00:00:00	00:00:00
2	1	0	2020-03-06	11:24:16	11:25:47	00:01:31
3	1	0	2020-03-15	09:55:30	09:56:11	00:00:41
4	1	0	2020-05-02	18:51:32	18:54:11	00:02:39
5	1	0	2020-05-02	19:36:05	19:36:18	00:00:13
6	1	0	2020-05-02	19:36:40	19:37:17	00:00:37
7	1	0	2020-05-02	19:40:03	19:40:36	00:00:33
8	1	0	2020-05-02	19:40:48	19:41:10	00:00:22
9	1	0	2020-05-02	19:41:21	19:41:54	00:00:33
10	1	0	2020-05-02	19:42:16	19:48:05	00:05:49
11	1	0	2020-05-06	19:10:39	19:11:01	00:00:22
12	1	0	2020-05-06	19:11:13	16:25:10	-02:46:03
13	1	0	2020-05-13	16:25:22	16:25:34	00:00:12
14	1	0	2020-05-13	16:25:56	16:26:17	00:00:21

Table1. Simulated output of the bus tracking system

6. CONCLUSION:

We have presented an overall design of the bus management system based on multi-node RFID cards. Through this technology, we enable us to track information about the bus entry and exist in the college. We have also done a prototype and view an output of project working properly we expected and monitor a bus by using IoT

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