# C-BUS TRACKER

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**Abstract—The present generation requires the information time to time.The use of technology have been increasing day by day.So we are planning for the combination of present technology with the requirement of information transmission, we planned for the creative approach of "C-BUS TRACKER".**

**College bus plays an important role in the students day to day life. But most of the students face the problem of not knowing exactly where the bus has reached. Here we propose a college bus tracking system.**

**Index Terms—IOT, GPS , QR code scanning**

## I. INTRODUCTION

College bus Tracking System is the technology used to determine the location of a vehicle using different methods like GPS and other radio navigation systems operating through satellites and ground based stations. The tracking system enables to calculate easy and accurate location of the vehicle. Vehicle information like location details, speed, distance trav-eled etc. can be viewed on a digital mapping with the help of a software via Internet. Even data can be stored and downloaded to a computer from the GPS unit at a base station and that can later be used for analysis. This system is an important tool for tracking each vehicle at a given period of time and now it is becoming increasingly popular for people having expensive cars and hence as a theft prevention and retrieval device. i. The system consists of modern hardware and software components enabling one to track their vehicle online or offline. Any vehicle tracking system consists of mainly three parts mobile vehicle unit, fixed based station and, database and software system. ii. Vehicle Unit: It is the hardware component attached to the vehicle having either a GPS/GSM modem. The unit is configured around a primary modem that functions with the tracking software by receiving signals from GPS satellites or radio station points with the help of antenna. The controller modem converts the data and sends the vehicle location data to the server. iii. Fixed Based Station: Consists of a wireless network to receive and forward the data to the data center. Base stations are equipped with tracking software and geographic map useful for determining the vehicle location. Maps of every city and landmarks are available in the based station that has an in-built Web Server. iv. Database and Software: The position information or the coordinates of each visiting points are stored in a database, which later can be viewed in a display screen using digital maps. However, the users have to connect themselves to the web server with the respective vehicle ID stored in the database and only then she/he can view the location of vehicle traveled.

## II. PROBLEM DEFINITION

In the existing systems, there is no measure for rush con-trol.In those systems, the tracking system is a desktop system aimed at students and college administration to maintain the bus services.It allows flexibility during these processes. The system generates exhaustive reports related to the Bus Management.Our reports highlight various bus services and features of the bus, which can be subjected to improvements especially for the college administration to improve bus trans-port system.Existing systems were having the basic

idea to guide the bus travelers with the routes, all the possible stops that come on their way to the destination and moreover, display maps and track of their locations. The system overall. keeps approach in highlighting key features of the bus services.

## III. PROPOSED METHODOLOGY

A preprocessed system with automated fee payment storage, rush control by making the students view the number of seats available in the bus , the timing of arrival and departure of each bus is known along with the facility to track the location of the bus.

## IV. SYSTEM ARCHITECTURE

A. Software requirements

A software requirement specification (SRS), a requirements specification for a software system, is a complete description of the behavior of a system to be developed and may include a set of use cases that describe interactions the users will have with the software. In addition it also contains non-

functional requirements. Non-functional requirements impose constraints on the design or implementation (such as perfor-mance engineering requirements, quality standards, or design constraints) the software requirements specification document enlists all necessary requirements that are required for the project development. To derive the requirements we need to have clear and thorough understanding of the products to be developed. This is prepared after detailed communications with the project team and customer.

Operating System: WINDOWS 8 or above for better per-formance

Front end: Python (For web application), Android (Mobile Application)

Back end: MYSQL

Software: SubLime Text, WAMP, Android Studio

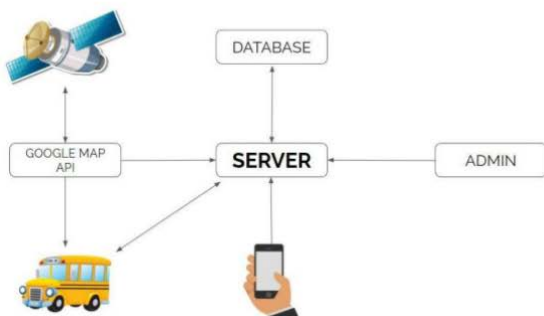Web Browser: Internet Explorer/Google Chrome/Firefox

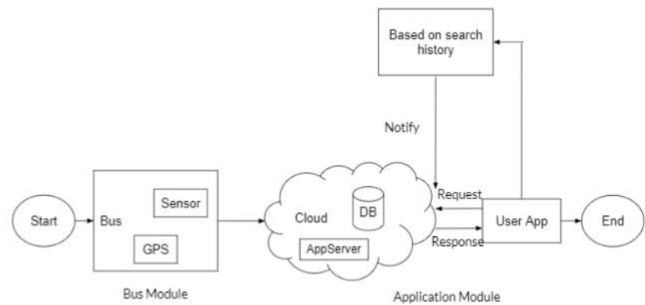Web Server: Apache



Fig. 1. system architecture



Fig. 2. Workflow diagram

B. Hardware requirements

The most common set of requirements defined by any oper-ating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatible, and sometimes incompatible hardware devices for a particular operating system or application.

Processor: Intel Pentium or above.
Hard Disc: 320GB.

Display Type: PC Display.
Keyboard: PC/AT Enhanced PS/2Keyboard (110/10Key).
Mouse: First/Pilot Mouse Serial (c48).
Input Device: Mouse, keyboard
Output Device: Monitor, Mobile Display

C. Design/Methodology
This project consists of two different modules :
i.Application Module
User login portal- Username and password provided is needed.
Bus location icon- The locations to and from are to be inputted. The current number of buses

available, their current location , their timing and present location is shown.

Fee payment icon- An option for online fee payment is provided. Alert options if fee not paid is also shown.

Seat information icon- The current running bus's available seats are shown, the number of occupied seats are shown and the place vacancy for standing and traveling is also provided. Setting/ Help icons- The common settings for

app display and other manual help options are provided

ii.Bus Module
A fixed mobile for scanning- QR code scanning from user app side to be done while entering the bus. Alert Alarm- A buzzer alarm activates when the scanned ID gives the output
"Fee Not Paid".
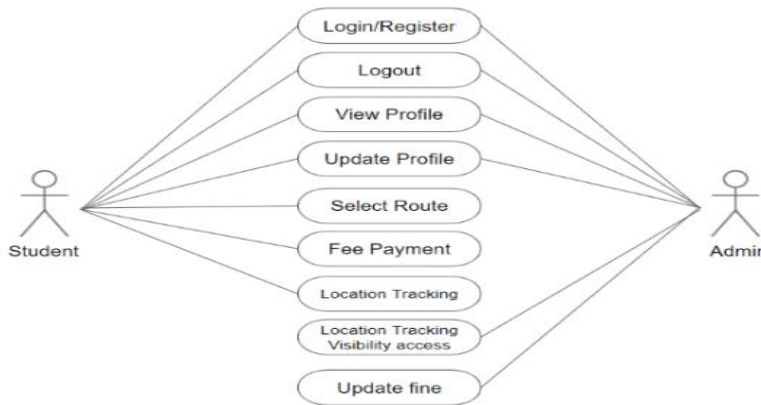GPS- Location tracking is done through this system.



Fig. 3.  Use case diagram

## V.    SYSTEM IMPLEMENTATION

Implementation phase is the phase, which involves the process of converting a new system design into an operational one. It is the key stage in achieving a successful new system. Implementation is the stage if the project, where the theoretical design is turned into a working system. At this stage the main workload, the greatest up heal and the major impact on existing practices shift to user department.

If the implementation stage is not planned and controllers carefully, it can cause chaos. The implementation stage is a system project in its own right. It involves careful planning, investigation of the current system and its constraints on the implementation, design methods to achieve the changeover procedures, and evaluation of change over methods. The implementation plan consists of the following steps,

• Testing the developed system with the sample data.
• Detection and correction of errors.
• Making necessary changes in the system.

• Training and involvement of user personnel.
• Installation of software utilities.

TESTING TECHNIQUES
•Unit testing
•Integration Testing
• Validation Testing
• System Testing
• Output Testing
• User Acceptance Testing

UNIT TESTING
It is the first level of testing. Each module is tested individually and focus is given for finding errors limited to each individual module and correcting them. The different modules of the system are tested individually and corrected all errors. Each module is focused to work satisfactorily with regard to the expected output from the module. Validation checks for fields are also done here. Each process was done individually and tested separately. Errors discovered were corrected. After unit testing, modules were integrated to form the complete system.

## INTEGRATION TESTING

The tested modules are combined into subsystems and these are tested again. It is the second-level of testing. When modules are integrated, problems can arise at boundaries like incompatibility of data type of value being passed across the interface or some unexpected problems which appeared only after integration. Integration test was carried out while each module was integrated, interfaces were tested and corrected errors.

## VALIDATION TESTING

For each input forms validation testing are done to ensure that only allowed values will be entered. Entering incorrect values does the validation testing and it is checked whether the errors are being considered. Incorrect values are to be discarded. The errors are rectified.

## SYSTEM TESTING

System testing was performed to verify that all system el-ements have been properly integrated and perform allocated function. Security testing was done to check the security mechanisms built into the system, which will protect it from improper penetration, performance testing was done to test the runtime performance of the software. For user acceptance testing the system was given to the end user to use. OUTPUT TESTING

After performing the validation testing, the next step is the output testing of the enhanced system. No system could be useful if it does not produce the required output in the required format. The outputs generated or the displayed by the system are tested by asking the users about the format required by them.

## USER ACCEPTANCE TESTING

User acceptance testing comprises a completed and successful end-to-end system test with review of the results by one or more users with specific knowledge. Users may apply a variety of validation techniques. For example: generate a report from the new system and compare the results with the same report from the current system, data inspection and others.

Prior to this testing the system was delivered to the clients along with the steps for implementation. In user acceptance testing the system was run in the client environment by system users. The users were allowed to test the system and raise any issues for a specific period after the system is assumed to be complete and error free.

## VI. CONCLUSION

We live in a hectic world where everyone is impatient and at the mean time everyone wants to complete their day to day tasks smoothly and efficiently. So we believe we can achieve this through our project. The project was to implement an intermediate site and app which connects a user to an admin. The proposed system has many advantages over the existing system. Creation of the website "C-BUS TRACKER" was successfully done. The proposed system contains the following features: •College bus tracker is a user friendly app / website for students, parents and teachers. •It acts as an efficient tracking system for college buses.
•A mode to pay bus fees without delay and excuses.
•Helps in fee due control.
•Rush control: Sensor-scanning system.
•Availability of seats known.

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