

# College Bus Tracking System

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**Abstract-** The college bus tracking system helps users to know the bus location so that the users don't get delayed or don't arrive at the stop too early. In order to overcome increased waiting for time and uncertainty in arrival, we have come with this project. This mobile phone application gives information about buses, bus numbers as well as bus routes. Complete information namely the number of buses that go to the required destination, bus numbers, bus timings, the routes through which the bus would pass, maps that would guide the passenger with his/her route and most importantly, track the current location of the bus and give the correct time for the bus to reach its bus stop.

**Index Terms-** IDE (Eclipse Integrated Development Environment), ADT (Android Development Tools) and Android SDK (Software Development Kit).

## I. INTRODUCTION

Android has become very popular in the world since it is an open source and there are no extra fees for Java Virtual Machine (JVM). In today's world, the time is more important for students. Being a product of high technology, mobile phones are more widely used and are becoming more and more popular. A vehicle tracking system is a commonly used application for tracking vehicles. Due to traffic congestion and road works, most of the buses are delayed. People have to wait for their bus at the bus stops for a long time without even knowing when the bus will arrive. Thus, the arrival time of the bus cannot be guaranteed. The main focus of the project is to save the waiting time of students and provide them the details of the bus.

College bus Tracking System (VTS) 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. By following triangulation

or trilateration methods the tracking system enables to calculate easy and accurate location of the vehicle. Vehicle information like location details, speed, distance traveled 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. A vehicle tracking system is one of the most common applications used for tracking vehicles which is also used to prevent vehicle from theft. Today Android Applications are very good source for tracking the vehicles. It provides real time data on the movement of vehicles. Android phones are widely used for this purpose because they have GPS device attached with it. It acts as both transmitter as well as receiver. A vehicle tracking system combines the use of automatic vehicle location in individual vehicles with software that collects these fleet data for a comprehensive picture of vehicle locations.

## II. METHODOLOGY

### A. SYSTEM DESIGN

A software product is a complex entity. Its development usually follows what is known as Software Development Life Cycle (SDLC). The second stage in the SDLC is the Design stage. The objective of the design stage is to produce the overall design of the software. The design stage involves two sub-stages namely:

High-Level Design

Detailed Design

In the High-Level Design, the proposed functional and non-functional requirements of the software are studied. Overall solution architecture of the solution

is developed which can handle those needs. The purpose of this High Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level. The purpose of this High Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level.

**B. Input Design**

The Input design is the link between the information system and the user. It comprise, the developing specification, procedures for data preparation where those steps are necessary to put transaction data into a usable form for processing, output can be achieved by inspecting the computer to read the data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system. It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

**C. Output Design**

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be displaced for

immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system’s relationship to help use decision-making.

**III. DATA FLOW**

**A. DATA FLOW DIAGRAM**

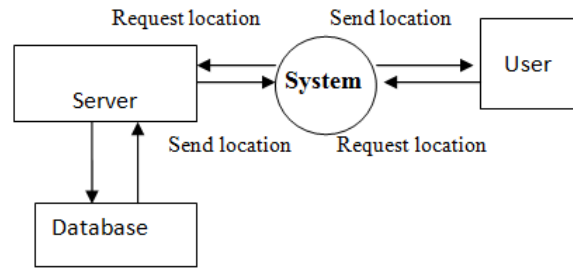
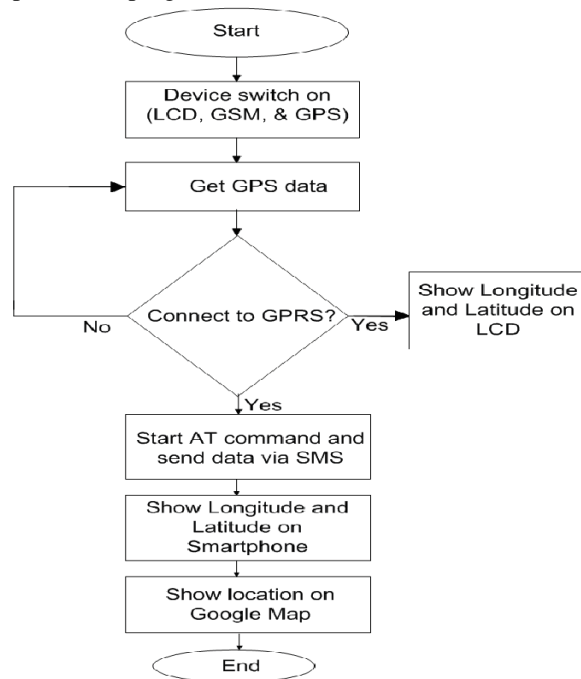


Fig. : Data Flow Diagram level 0

Data Flow Diagram is a graphical representation of the "flow" of data through an information system. DFDs can also be used for the visualization of data processing (structured design).

**B. Process Flow Chart**

A flow chart is a common type of chart that represents an algorithm or process showing the steps as boxes of various kinds, and their order by connecting these with arrows. Flow charts are used in analyzing, designing, documenting or managing a process or program in various fields.



## V. IMPLEMENTATION

### A. Android SDK

Android software development is the process by which new applications are created for devices running the Android operating system. Google states that, "Android apps can be written using Kotlin, Java, and C++ languages" using the Android software development kit, while using other languages is also possible. All non-JVM languages, such as Go (JavaScript, C, C++ or assembly), need the help of JVM language code, which may be supplied by tools, likely with restricted API support. Some languages/programming tools allow cross-platform app support, i.e. for both Android and iOS. Third party tools, development environments and language support have also continued to evolve and expand since the initial SDK was released in 2008.

### B. SQLite

SQLite is a relational database management system contained in C programming library. In contrast to many other database management systems, SQLite is not a client-server database engine. Rather, it is embedded into the end program. SQLite is ACID-compliant and implements most of the SQL standard, using a dynamically and weakly typed SQL syntax that does not guarantee the integrity. SQLite is a popular choice as embedded database software for local/client storage in application software such as web browsers. It is arguably the most widely deployed database engine, as it is used today by several widespread browsers, operating systems, and embedded systems (such as mobile phones), among others. SQLite has bindings to many programming languages. features that make SQLite the most widely deployed SQL database engine. The lite in SQLite means light weight in terms of setup.

### C. Testing

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types

of test. Each test type addresses a specific testing requirement.

### D. Testing Methodologies

The following are the Testing Methodologies:

- Unit Testing.
- Integration Testing.
- User Acceptance Testing.
- Output Testing.
- Validation Testing.

### E. Testing Strategy

A strategy for system testing integrates system test cases and design techniques into a well planned series of steps that results in the successful construction of software. The testing strategy must co-operate test planning, test case design, test execution, and the resultant data collection and evaluation .A strategy for software testing must accommodate low-level tests that are necessary to verify that a small source code segment has been correctly implemented as well as high level tests that validate major system functions against user requirements. Software testing is a critical element of software quality assurance and represents the ultimate review of specification design and coding. Testing represents an interesting anomaly for the software. Thus, a series of testing are performed for the proposed system before the system is ready for user acceptance testing.

## F. RESULT



8:50 PM

Bus ID:  
101

Bus Source:  
shivaji collage

8:00

Bus Destination:  
Bit college

9:00

BusRoutess:  
shivaji college-om hotel-gandhi stop-paranda roa

Bus Times:  
8:00-8:10-8:15-8:20

SAVED

SHOW DETAILS

DELETE TABLE DATA

ALTER TABLE

- 8:51 PM
- shivaji college 8:00
  - om hotel 8:10
  - gandhi stop 8:15
  - paranda road 8:20

8:50 PM

### BIT College

Select Source  
shivaji collage

Select Destination  
Bit college

SHOW LIST

Address:NH 465 Bypass, Industrial Estate No.2, Barshi, Maharashtra 413401, India

ADD DATA

9:05 PM

### BIT College

Enter Bus ID  
101

8:51 PM

Bus ID:101

Source:shivaji collage

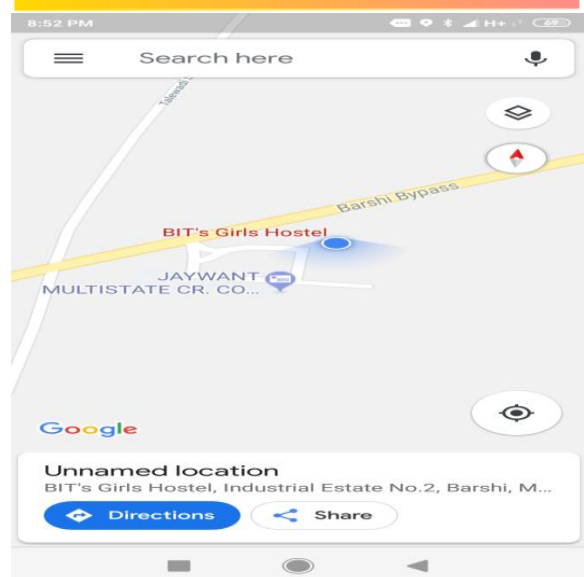
Des t:Bit collage

Time:8:00

8:00

number to send sms

SEND SMS



## VI. CONCLUSION

The conclusions of this study suggest that knowledge of specific domain improves the results. This Project has been implemented on Android platform. Also, different attributes have been added to the project which will prove to be advantageous to the system. The requirements and specifications have been listed above. This project is implemented using Android and the SQL domain. Using the GPS system, the application will automatically display the maps and routes to the different locations and also track the bus location using client-server technology and forward it to the client device. This project will be put up on the cloud platform, so that it will be accessible by every Android user. The application will prove beneficial for every bus traveller, or even tourists. Not just buses, but this application will be useful for every person travelling by any means of transport. The Location Tracker will give the exact location of the bus which will make it easy for the passengers to travel.

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