

CHAPTER 1

INTRODUCTION

1.1 PROJECT DESCRIPTION

The complexity of current time demands a redefined approach towards traditional problem which is, a single person (employee) travelling by cab to his office increases traffic and cost as compared to 4 persons travelling in single car. Currently there are tools that are working on a concept called carpooling, which means if there are 2 or more persons who are travelling to the same destination from almost same place can hire a cab and can share the fare charges and hence reduce the traffic too. But these tools are for general public. As there was no specific tool for Employee transportation of a particular organization, we have come up with a tool that has complete control over their transportation in an easier and efficient way.

Employee Transportation Automation Tool (ETAT) interprets all employee information (Ex: employee address), finds latitude and longitude and allocates a cab, reduces manual documentation and diminishes the time spent in empowering to a matter of seconds.

Monitoring as being one of the major feature of ETAT system tracks every movement of each and every trip, triggers off routing alerts, over speeding, halting alerts and has inbuilt analytics engine which includes a log maintained on performance of each and every driver.

Administrator registers the vendor and employees and then the vendor registers the drivers. There are two types of normal trips for employees, which are pickup trip and drop trip. In case of pickup trip, the employee is picked up from his home and drop at his office and in case of drop trip it is vice versa. There is another form of trip called Adhoc trip, which is helpful in case the employee has to travel instantly to a place which is at different time other than his normal office timing. There are 3 types of Adhoc trips which are Adhoc pickup, Adhoc drop and Adhoc other. In case of Adhoc pickup the employee is picked up from his home and drop at his office and in case of Adhoc drop trip it is vice versa and

Adhoc other is used in case the employee has to travel to a place other than his home or office.

Once the vendor assigns the trip to the driver, the driver receives the details of the employees whom he needs to pick. Once the driver clicks on the trip start button, the monitoring system starts tracking the car based on the driver mobile through the app. As and when the driver picks up the employee, the driver has to mark the attendance (present/absent) of the employee through the app.

In case the driver deviates from normal route or the driver stops at a particular point beyond a stipulated time or the driver exceeds the normal speed, the administrator gets an alert message through the monitoring system.

In case the car has a breakdown, the driver can alert the administrator/vendor by clicking on the breakdown button in his app, so that the trip can be transferred to another driver. In this case, if the employee is already picked up, the employees are picked up from the place where the car had a breakdown else the employee will be picked from home/office depending on the trip.

Once the trip is completed i.e. once all the employees are dropped, the administrator should be able to view the tracking data through the monitoring system.

Driver, Employee, Vendor and Administrator can view the details of trips that took place between the specified dates, that are relevant to them. This includes details like trip, date and time of the trip and can have all these details in excel format by clicking on the download button.

Employee can request for a Adhoc trip through his app, if he needs to travel somewhere at a time other than his usual office timings. It means that if the employee has to travel somewhere instantly (either office or home or other place) at a time other than the usual office timing, the employee can choose Adhoc request through his mobile app and choose the relevant Adhoc type, depending on his need and vendor/ admin can accept the request and allot a cab and assign a driver to it. These trips are not included in the normal employee trips.

1.2 COMPANY PROFILE

Company Name : NeoCube Technologies Solutions Pvt. Ltd.

Company Address : #1091, 12th main Indiranagar, Bangalore-560008

Website : <http://www.cubito.in/>

Co-founders : Mr. Yash Patodia and Mr. Pranay Agarwal

CTO : Mr. Tenzin Kunkhyab

NeoCube Technologies Solutions Pvt. Ltd., headquartered in Bangalore, India, provide solutions to clients' transportation and logistical challenges. We leverage our technology and process capabilities to provide tools that optimize and automate transport operations. Our in-house developed proprietary solutions take care of operations ranging from employee transportation, student transportation to fleet management and logistical operations including first mile, short haul, line haul and last mile. Funded by Sol Primero in 2014, NeoCube has been providing point solutions that address explicit client issues taking into account complexities involved in transporting your employees.

In 2013, NeoCube was giving 3600 rides a day with more than 400 taxicabs in operation, turning into the biggest composed taxicab sharing entrance in India. This permitted NeoCube to influence its enterprise in transportation innovation to take into account the necessities of undertakings. This empowered them to thoroughly test their innovation for more than year and a half and make more than 14 cycles to at long last touch base at our head arrangement - Employee Transportation Automation Tool that NeoCube provides today. This coupled with our expanding expertise allowed us to diversify into fleet management, logistics and supply chain with our Transportation Logistics Optimization Tool and Vendor Fleet Management System.

We have been the go-to experience makers for our endeavor customers crosswise over different verticals for as far back as 2 years. Henceforth, we trust this makes us your optimal transportation accomplice.

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING AND PROPOSED SYSTEM

EXISTING SYSTEM

The current system solves the problem of transportation which is, a individual hiring a cab for traveling not only increases the cost but also traffic [1], which is solved by a concept called carpooling, which states 4 or more persons (depends on car capacity) travelling to same place at same time can hire a single cab. But this system is for general public and there is no specific tool for tackling the employee transportation [2].

Currently all the organization have a transportation facility for their employees, but there is not tool which can make the transportation easier, can monitor the whole process and ensure security for their employees[3]. These things made us come up with a tool called Employee Transportation Automation Tool [4].

The current system is not automated and many organizations follow the traditional practice by keeping the track of the drivers manually [5]. The details of the trip like driver details, employees involved are maintained in record books and the trip was not monitored, which was a major problem when it comes to security[6][7].

PROPOSED SYSTEM

The proposed system solves all those problems that were previously faced by the organization for their employee transportation[8][9][10][11]. This system automates the whole process. Firstly it takes the addresses of all the employees, geo-codes them and groups the employees into 4 or 5 (depending on the type of vehicle and allocates fleet to them).

Monitoring being an important feature, the system monitors the whole process once the trip starts, and triggers alert in case of high speed, unplanned stop beyond a stipulated time. This maintains an inbuilt analytics engine which records the performance of all the drivers.

There are 2 trips which an employee can take, pickup trip and drop trip. If the employee needs to travel from home to his office he can choose pickup trip and if he needs to travel from office to home he can choose drop trip. There is another form of trip called Adhoc trip, which can be used by the employee in case the employee has to travel instantly to a place which is at different time other than his usual office timing. Adhoc trip has 3 types, which are Adhoc pickup, Adhoc drop and Adhoc other. In case the employee needs to travel from his home to office he can choose Adhoc pickup and the employee needs to travel from his office to home he can choose Adhoc drop and in case the employee has to travel to a place other than his home or office, employee can choose Adhoc other.

Once the vendor allots a trip to the driver, the driver receives the details of the employees whom he must pick. The driver can then start the trip by clicking the start trip button, which starts tracking the car. As the driver picks up the employee, their attendance can be marked through the driver app.

In case of deviation from normal route or excessive halt at a certain point beyond a particular time or in case of high speed, the Admin is alerted through the monitoring system.

In case of break down, the administrator/vendor can be alerted by the driver by clicking on the breakdown button in his app, which in turn transfers the trip to another driver. In this case, if the employee is already picked up, the employees are picked up from the place where the car had a breakdown else the employee will be picked from home/office depending on the trip.

The administrator can view the tracking data of the trip even after the trip is completed by specifying the dates between which the trip occurred.

Driver, Employee, Vendor and Administrator can view the details of trips that took place between the specified dates, that are relevant to them. This includes details like trip, date, time of the trip, employee name, vendor name, driver details, trip status, pickup address of the employee and can have all these details in excel format by clicking on the download button.

2.2 FEASIBILITY STUDY

Monitoring System for Employee Transportation Automation Tool is feasible technically, economically and operationally.

Technical Feasibility

The technical feasibility concentrates on the feasibility of system in terms of tools and technology & justify for exploitation of the technology so as to arrive at the solution for a given problem.

Since Python is both a scripting language and a server-sided technology that can handle multiple request simultaneously & processed efficiently & also Python provides help in balancing the load on the database server. Django is a free and open-source web framework, composed utilizing Python, which takes after the Model View Controller (MVC) engineering.

Ajax facilitates in connecting to the backed end asynchronously and avoids page reload every time the data is updated on to the page. JQuery provides for handling information (data) received through asynchronous calls and also in validating data to ensure that the data being sent at the backend is formatted correctly.

Economically Feasibility

The Economical feasibility concentrates on the varied expenses incurred by the organization in order to arrive at a solution for a given problem statement. This involves the cost of the code employed to arrive to the solution, external devices or hardware utility cost, resource cost & development time of the project.

Monitoring System for ETAT is developed using free and open source technologies like python, MySQL. The IDE used in development is PyCharm community edition, which is free. The tool used for designing database server, creating and editing tables is HiediSQL is a free and open source, which acts like a user interface for MySQL. Thus Monitoring system is economically feasible as this is built (developed) using these free and open source technologies.

Operational Feasibility

The operational feasibility measures how well the planned system can solve the problems of prevailing system and falls exactly in the scope of project which is analyzed throughout the analysis part.

METAT is operationally feasible because it solves the traditional problems of transportation, reduces paperwork, traffic and automates the whole process.

The proposed system must provide accurate real time tracking data to the user. It must also provide seamless retrieval of data & the response time of the application must be minimum.

2.3 TOOLS AND TECHNOLOGIES USED

TOOLS USED

PyCharm community edition

PyCharm is an Integrated Development Environment (IDE) utilized for programming in python. It provides code analysis, a graphical debugger, an integrated unit tester, integration with Version Control System, and supports developing web applications in Django[12][13][14]. This project uses community edition which is free[15][16].

HeidiSQL

Designed for web developers, a very useful and reliable tool that is designed using MySQL server, Microsoft SQL databases and PostgreSQL[17][18][19]. It allows the user of the application to create and edit tables, browse and edit data, views, triggers, procedures, and scheduled events[20][22]. The data & the structure of data can be exported to clipboard, SQL file or to other servers[23].

PhoneGap

PhoneGap is a framework by Adobe System, which is utilized to create portable applications[24][25][26][27]. To create applications utilizing PhoneGap, the designer does

not require to know about portable programming languages yet just web-advancement technologies like, HTML, CSS, and Jscript [28].

TECHNOLOGIES USED

Python

Python is a broadly utilized abnormal state, universally useful, interpreted, dynamic programming language[28]. Its configuration rationality, accentuates code comprehensibility, and its punctuation permits software engineers to express ideas in less lines of code than would be conceivable in languages, for example, C++ or Java[29][30][31][32]. The language gives development expected to empower clear projects on both a little and substantial scale [33][34][35][36].

Django

Django is a free and open-source framework for web, written in Python, which takes after the Model View Controller design[37][38][39]. This encourages rapid development and clean, pragmatic design[40][41]. This deals with a significant part of the bother of Web improvement, so you can concentrate on composing your application without expecting to rehash the wheel. We don't have to pay for this as it is open source[42][43]. Django basically contains three main components, which are models, views and urls. The front end for the application (html files) are placed in templates.

AJAX

Ajax is an arrangement of web improvement systems utilizing numerous web innovations on the customer side to make nonconcurrent Web applications[44][45]. With Ajax, web applications can send information to and fetch from a server nonconcurrently without meddling with the showcase and conduct of the current page [46].

MySQL

MySQL is an open-source database management system which is relational (RDBMS). MySQL is very easy to use and reliable. MySQL uses standard SQL[47]. The front end (user interface) used is HiediSQL.

HTML

Hyper Text Markup Language, commonly abbreviated as HTML, is the markup language used to design front end for web applications. Along with CSS, and JavaScript, HTML is an essential technology utilized to design front end, as well as to design user interfaces for mobile[48].

CSS

Cascading Style Sheets (CSS) is a language used for applying style to the front designed by markup languages[49][50]. Although most of the time this is used to set the style of web pages or front end written in HTML and XHTML, the language can be set to any XML report, including plain XML, SVG and XUL, and is material to interpret in discourse, or on other media.

2.4 HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE REQUIREMENTS

Processor	:	Pentium - IV.
RAM	:	512MB.
Hard-disk	:	Minimum 40GB.

SOFTWARE REQUIREMENTS

IDE	:	Pycharm community Edition 5.0.4
Database Server	:	MySQL 5.6
Operating System	:	Ubuntu 15.4
Platform	:	PHP, HTML 5, Bootstrap, JavaScript, AJAX, Django, PhoneGap.
Environment	:	Sublime Text 3, HeidiSQL.

CHAPTER 3

SOFTWARE REQUIREMENT SPECIFICATION

3.1 USERS

Monitoring System has four type of users namely driver, vendor, employee and admin.

Driver

- Driver must have a smart phone and should register his name for the application.
- Once the driver registers, before every trip he receives the details of employees whom he needs to pick up.
- Once the trip starts, the system starts tracking the car through driver mobile.
- Driver can view the details of the trip that are relevant to him.
- Driver can send a message to the admin in case of a breakdown and the trip will be transferred to another driver.
- Based on the tracking, alerts will be sent in case the driver deviates from the normal route, stops at a particular point beyond the stipulated time, over speeding.
- Based on the performance of the driver an inbuilt analytics is maintained.
- Driver can view the details of trips that took place between the specified dates that are relevant to him. This includes details like date and time of the trip.

Vendor

- Vendor can view the details of trips that took place between the specified dates.
- This includes details like the employees, driver who were involved in the trip, date and time of the trip.

Employee

- Employee can view the details of the driver who is about to pick him.
- Employee can view the details of his own trips that took place between the specified dates. This includes details like the employee, driver that were involved in the trip,

date and time of the trip.

- Employee can request for a Adhoc trip, if he wants to travel somewhere at a time other than his usual timings.

Admin

- Admin can keep track of trips through the monitoring system.
- Admin can view the details of all the trips that took place between the specified dates. This includes details like the employees, driver that were involved in the trip, date and time of the trip.
- Admin receives alerts in case the driver deviates from the normal route, stops at a particular point beyond the stipulated time, over speeding through driver mobile.

3.2 FUNCTIONAL REQUIREMENTS

When vendor assigns a trip to a driver, the driver's app, to whom the trip is assigned, should receive the details of the employee whom he/she needs to pickup. The employee, who is involved in the trip, should receive the details of the driver and vehicle, who is about to pick the employee.

As the trip starts, the monitoring system must receive the location (latitude and longitude) in order to track the cab. The driver app must have a button to mark employee attendance. Admin must be able to monitor the tracking data present in the monitoring system.

Monitoring system should have a dropdown that contains the different trips, so that the administrator can view the tracking data based on the trips. Monitoring system should have a dropdown for viewing the tracking data based on the trip status, which are completed, running and breakdown. Monitoring system should display the tracking data based on the current date by default and should have two date pickers for viewing the tracking data between the specified dates.

In case the driver deviates from the normal route, the system administrator should receive an alert message, in case the driver stops at a particular point beyond the stipulated time, the system administrator should receive an alert message and in case the driver exceeds the speed

limit, the system should receive an alert message.

Inbuilt analytics engine is maintained based on performance of the driver and can be viewed by the vendor and admin.

Driver must be able to view the details of trips that took place between the specified dates that are relevant to him. This includes details like trip, date and time of the trip and this should have a download button to download the details in excel format. Vendor must be able to view the details of trips that took place between the specified dates. This includes details like the employees, driver that were involved in the trip, date and time of the trip and this should have a download button to download the details in excel format. Employee must be able to view the details of his own trips that took place between the specified dates. This includes details like the employees, driver that were involved in the trip, date and time of the trip and this should have a download button to download the details in excel format. Admin must be able to view the details of all the trips that took place between the specified dates. This includes details like the employees, driver that were involved in the trip, date and time of the trip and this should have a download button to download the details in excel format.

Employee should be able to request for a Adhoc Trip, which means if he/she wants to travel somewhere at a time other than the usual time, employee can use this feature.

Inbuilt analytics engine helps to record the performance of the driver and the alerts they are associated with and the number of associated alerts. This helps the admin and organization in making decision.

Inbuilt analytics engine stores the following

- Name of the driver
- Vehicle registration number
- Number of Breakdown alerts
- Number of Excessive halt alerts
- Number of Deviation alerts
- Number of High speed alerts
- Date and time of all these alerts

3.3NON FUNCTIONAL REQUIREMENTS

Availability

The system is fully functional and available to the users and in case of any errors the system should terminate with a suitable error message.

Performance

The application must not lag when in use. The user interface must be optimized using Mobile, Tablet and other desktop devices so the UI is built using bootstrap with lot of customization are lighter to load.

Scalability

The system should adjust to the changing requirements of the customer without affecting the existing system.

Accessibility

The user interface must be user-friendly and ensure that the user of system gets the entire flow of the system without unusual termination.

Reliability

The monitoring data provided should be precise and the real-time tracking should be uploaded continuously after a particular instance of time into the system.

Security

The system should be secured i.e; the system should show appropriate tracking data and alert administrator at the earliest in case of the car has a breakdown, high speed, deviation or excessive halt.

Sustainability

The system should be reusable meaning if there is similar requirement elsewhere then this project should be available as an off the shelf component so that the code need not me written from scratch.

CHAPTER 4

SYSTEM DESIGN

4.1 SYSTEM PERSPECTIVE

Architectural Design

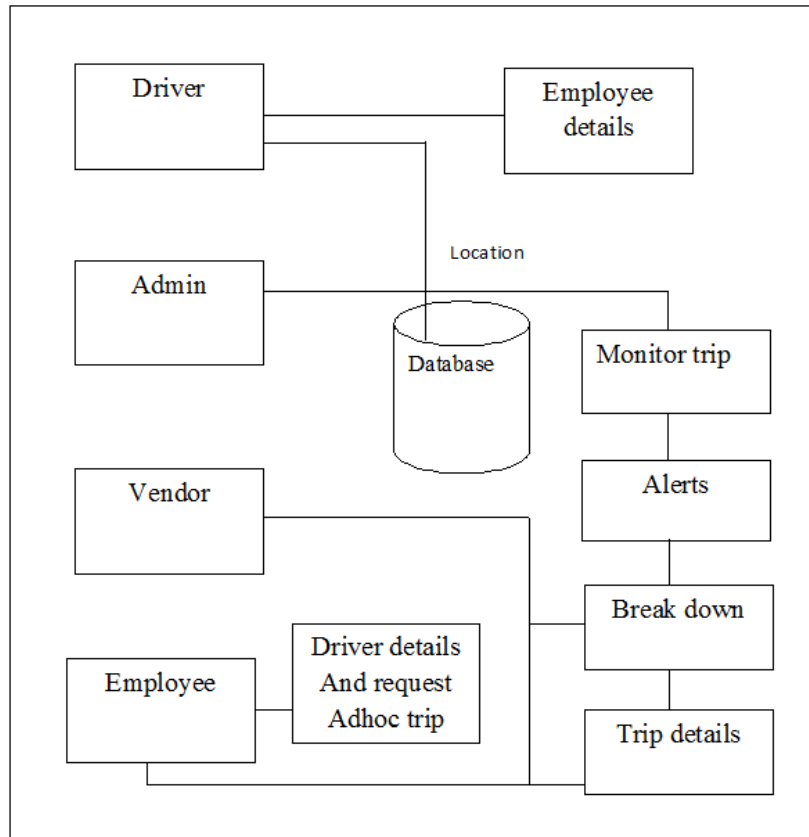


Fig 4.1 Architectural Design for Monitoring System for Employee Transportation Automation Tool

The figure 4.1 depicts that the driver can view the details of employees. Once the driver starts the trip through his app, the system starts tracking the car and the Admin can view the tracking data. Once he starts picking employees, he needs to mark the attendance of employees through his app. In case of high speed, excessive halt at particular point or deviation from the normal route, the admin receives an alert through the monitoring system. In case of break down, the admin and vendor receives an alert message. Employee, Admin, Vendor and driver can view the details of the trip that are relevant to them.

4.2 CONTEXT DIAGRAM

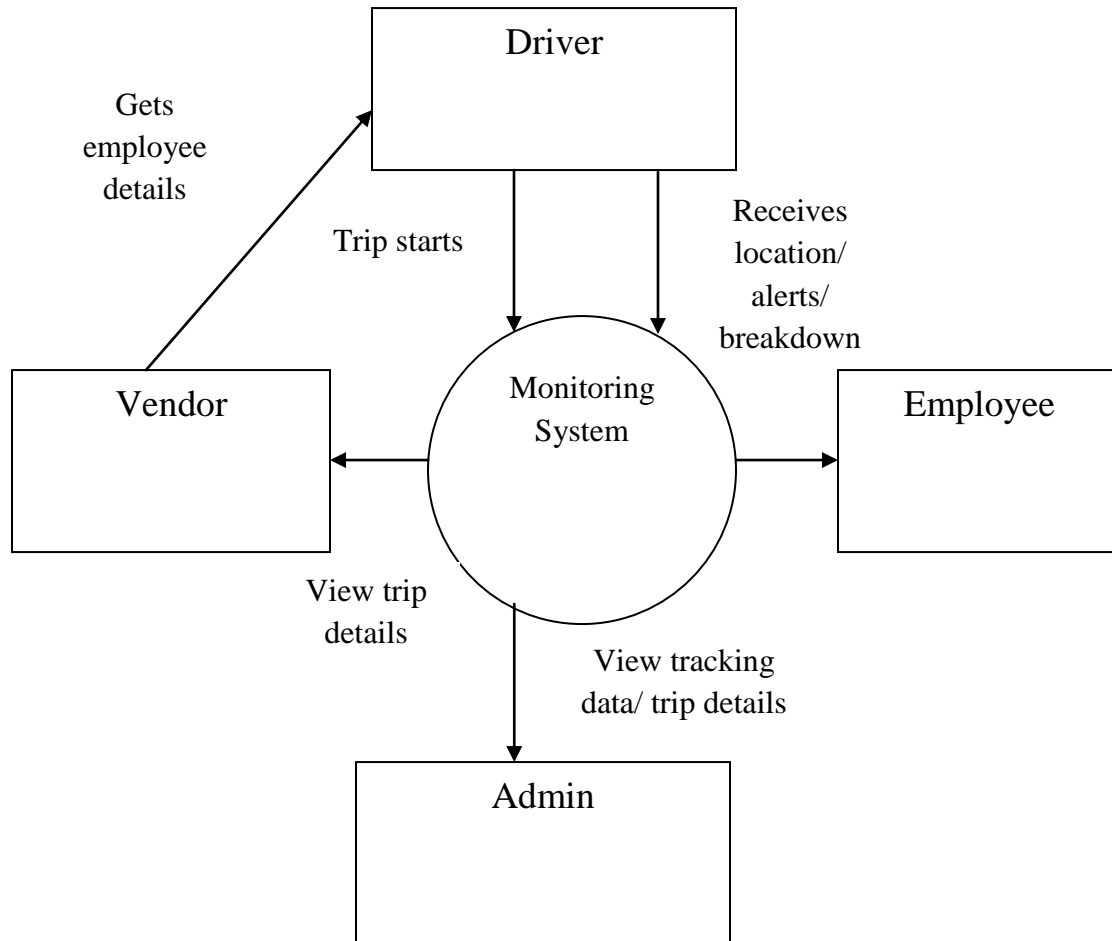


Fig 4.2 Context diagram for Monitoring system for Employee Transportation Automation Tool

Driver receives details of employees whom the driver needs to pick up through his mobile app from the vendor. Once the driver starts the trip through his app, the system starts tracking the car and the Admin can view the tracking data and driver can pick up the employees. Admin receives an alert through the monitoring system in case of high speed, excessive halt at particular point, deviation from the normal route or breakdown. Employee, Admin, Vendor and driver can view the details of the trip that are relevant to them.

CHAPTER 5

DETAILED DESIGN

5.1 USE CASE DIAGRAM

A Use case diagram at its most straightforward is a representation of a client's communication with the system that demonstrates the association between the client and diverse use cases inside which the client is concerned.

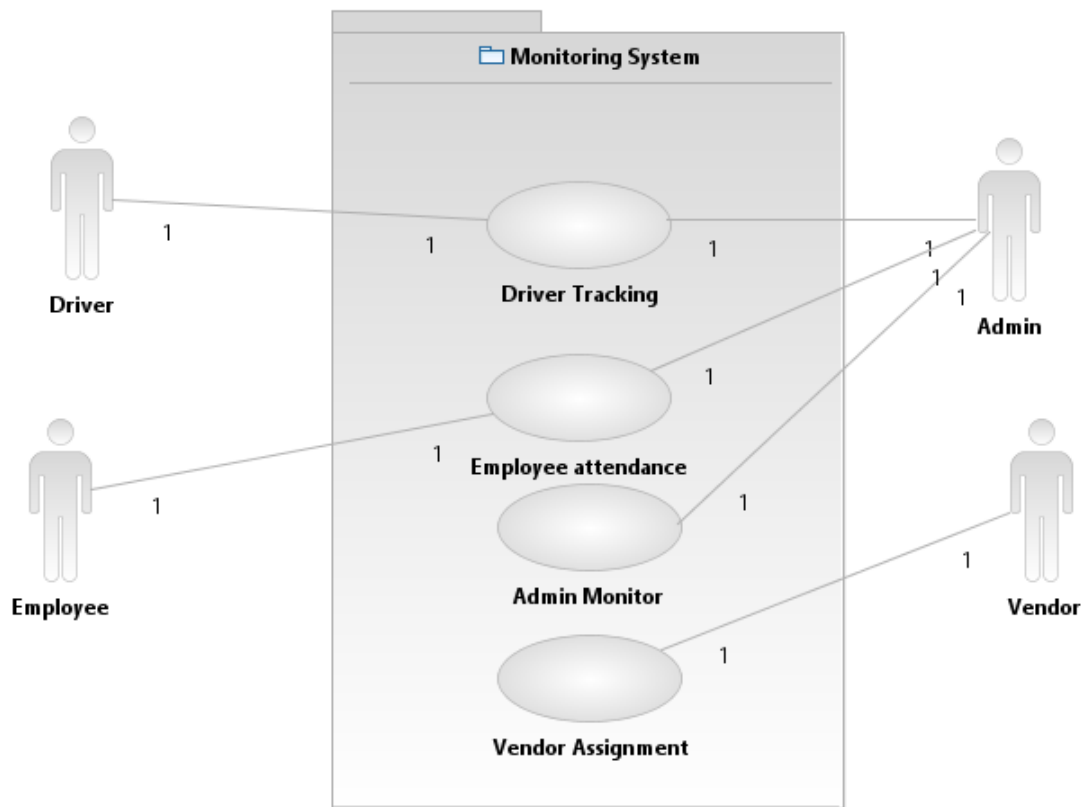


Fig 5.1 Use Case Diagram for Monitoring System

The figure 5.1 depicts that driver, employee, vendor and admin can view the trip details that are relevant to them. Admin can view tracking data, analytics engine, receive alerts in case of high speed, deviation and excessive halt. Admin and vendor receive break down message.

5.2 CLASS DIAGRAM

Class diagram is a static diagram which is utilized for picturing and portraying diverse parts of the framework.



Fig 5.2 Class diagram for Monitoring System for Employee Transportation Automation Tool

The figure 5.2 depicts the various classes involved in the system which are Employee, Driver, Vendor, Admin, Tripdetails and Monitoring. All classes access the driver details from Driver class and details of employees from Employee class. Admin accesses the tracking data from Monitoring class. All classes access the trip details from Tripdetails class.

5.3 SEQUENCE DIAGRAM

A Sequence diagram is a diagram that depicts how different objects of a system interact with each other.

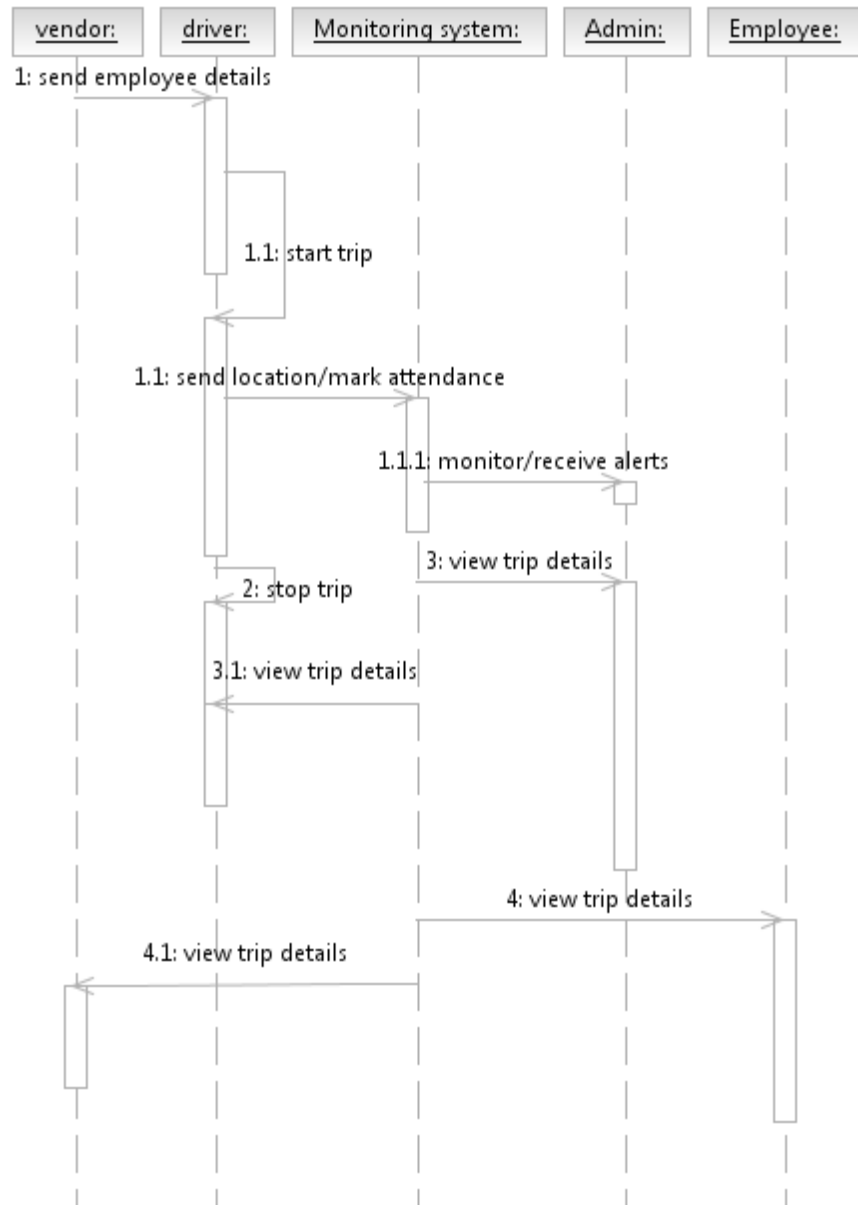


Fig 5.3 Sequence Diagram for Monitoring System

The figure 5.3 depicts that the vendor assigns a driver to the trip and sends the employee details to the driver. Driver starts the trip and marks the attendance of the employee as they are picked up. In case of high speed, deviation, excessive halt, break down,

the admin is alerted through the monitoring system. Driver stops the trip and can view the trip details. Vendor, Admin and Employee can view the trip details.

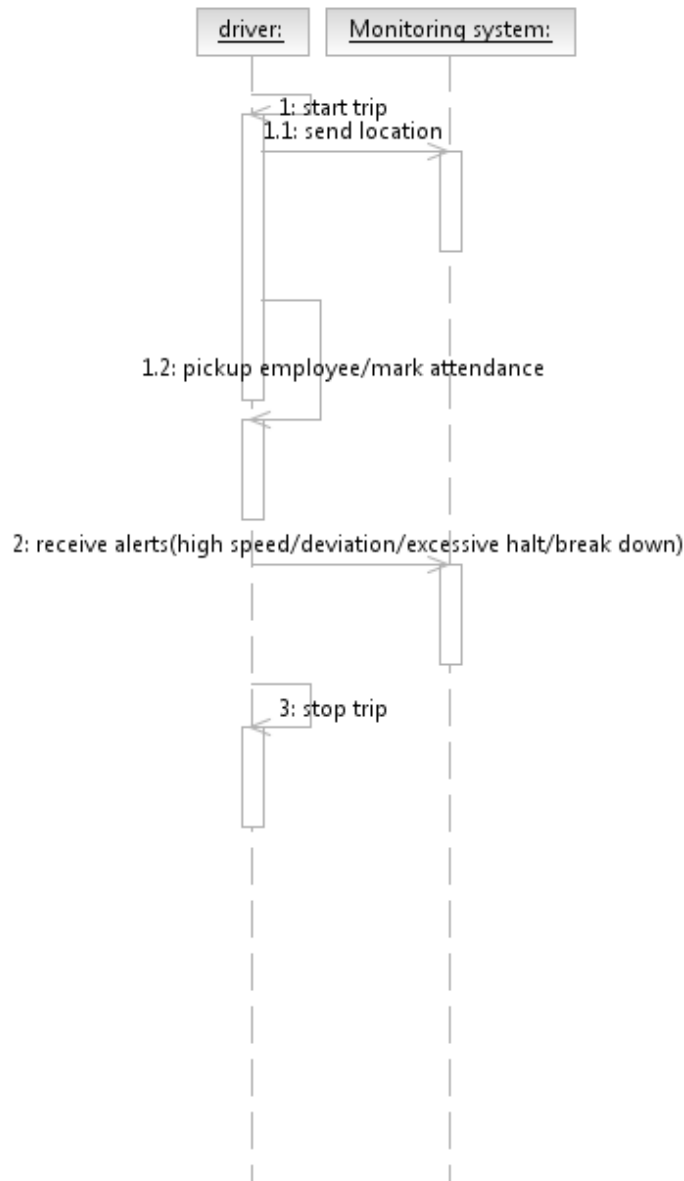


Fig 5.4 Sequence Diagram for Driver app

The figure 5.4 depicts that driver starts the trip and marks the attendance once the employee is picked up. Monitoring receives alert in case of high speed, deviation and excessive halt. Driver can send an alert to the admin and vendor in case of breakdown. Once the trip is completed driver can stop the trip.

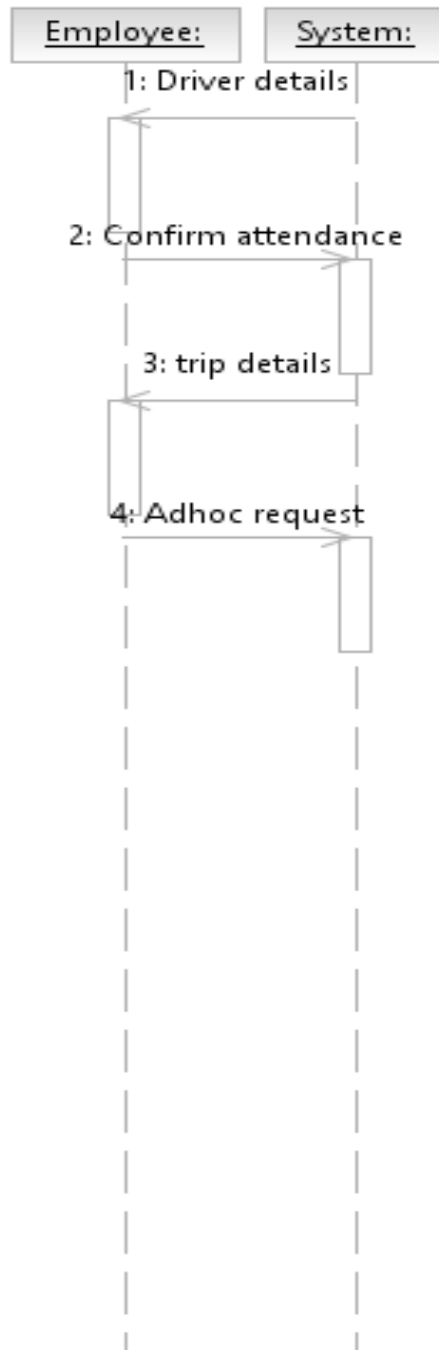


Fig 5.5 Sequence Diagram for Employee app

The figure 5.5 depicts that the employee receives the driver details who will pickup and can confirm the attendance when attendance is marked by the driver and can view the relevant trip details. Employee can even make a Adhoc request if the employee needs to travel somewhere instantly at an unusual time.

5.4 COLLABORATION DIAGRAM

A collaboration diagram depicts the relationship and communication between the various objects of the system.

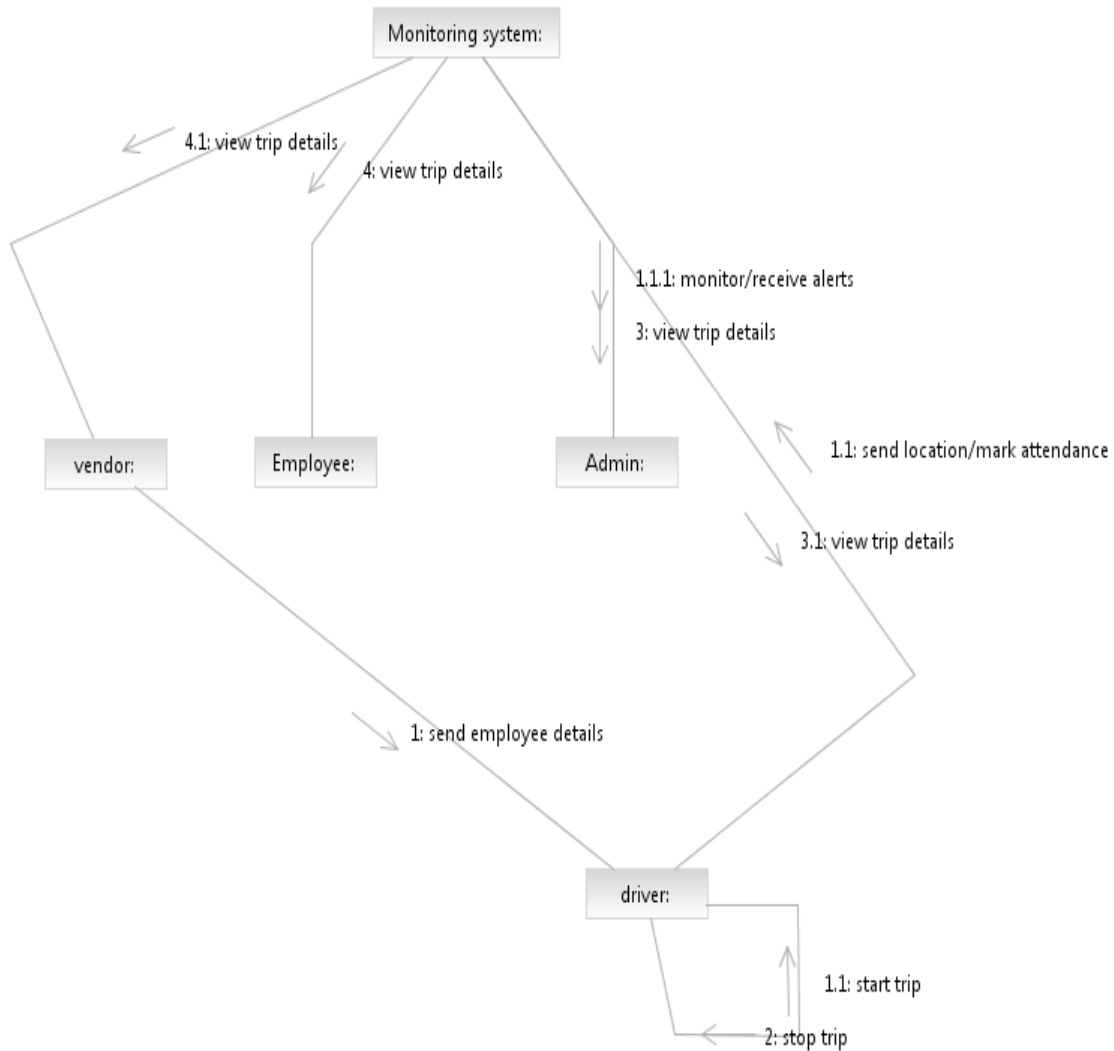


Fig 5.6 Collaboration Diagram for Monitoring System

The figure 5.6 depicts that the vendor sends the trip details to the assigned driver. Driver can start, stop the trip, mark employee attendance and send alert in case of break down. Admin views tracking data and receive alerts and view trip details. Employee, Vendor and Driver can view the trip details.

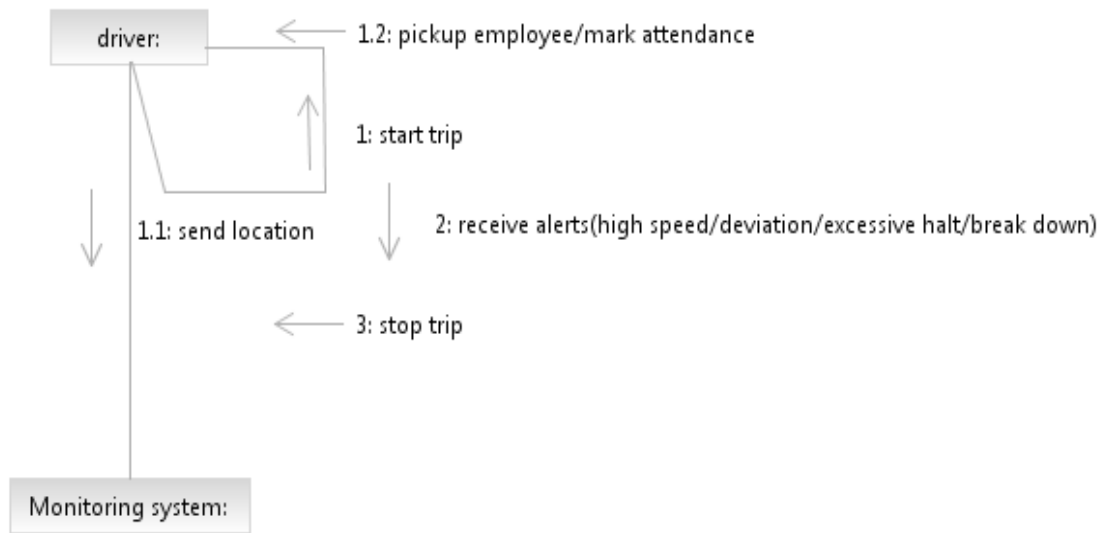


Fig 5.7 Collaboration Diagram for Driver app

The figure 5.7 depicts that the driver starts, stops the trip, marks attendance and sends alert in case of break down. Monitoring system receives alert in case of excessive halt, deviation and high speed.

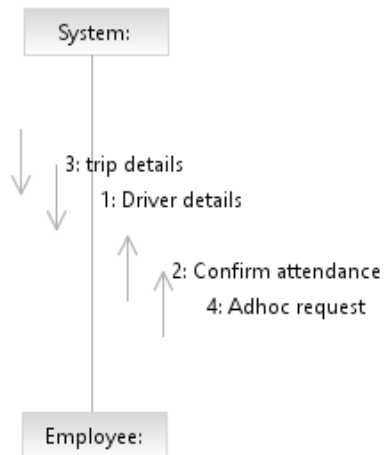


Fig 5.8 Collaboration Diagram for Employee app

The figure 5.8 depicts that the employee views the driver details who will pickup and can confirm the attendance when attendance is marked by the driver and can also view the trip details and employee can even request for Adhoc trip.

5.5 ACTIVITY DIAGRAM

Activity diagram depicts the flow of system from one activity to another activity.

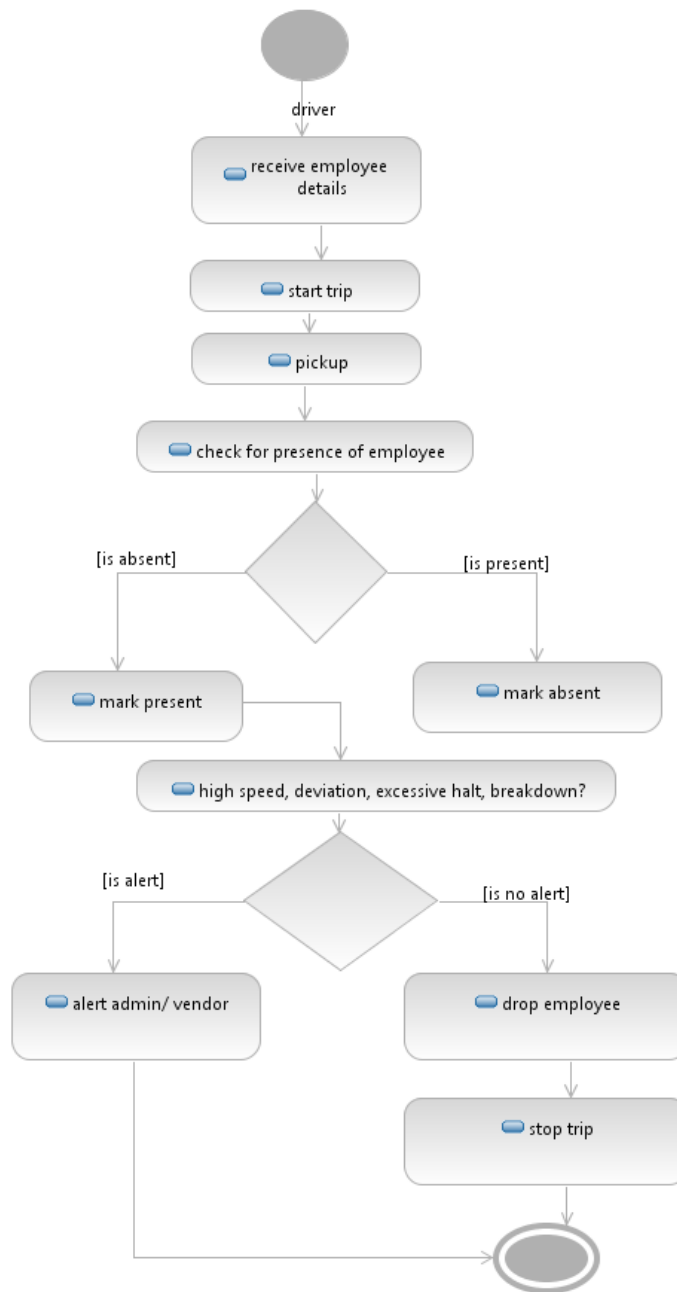


Fig 5.9 Activity Diagram for Monitoring System for Employee Transportation

The figure 5.9 depicts that the driver receives the employee details and starts the trip. As the driver picks the employees, he/she starts marking attendance (present or absent). In case of high speed, deviation, excessive halt the admin receives alert and in case of break

down the driver send alert message to Admin and vendor. After all the employees are dropped, the driver can stop the trip.

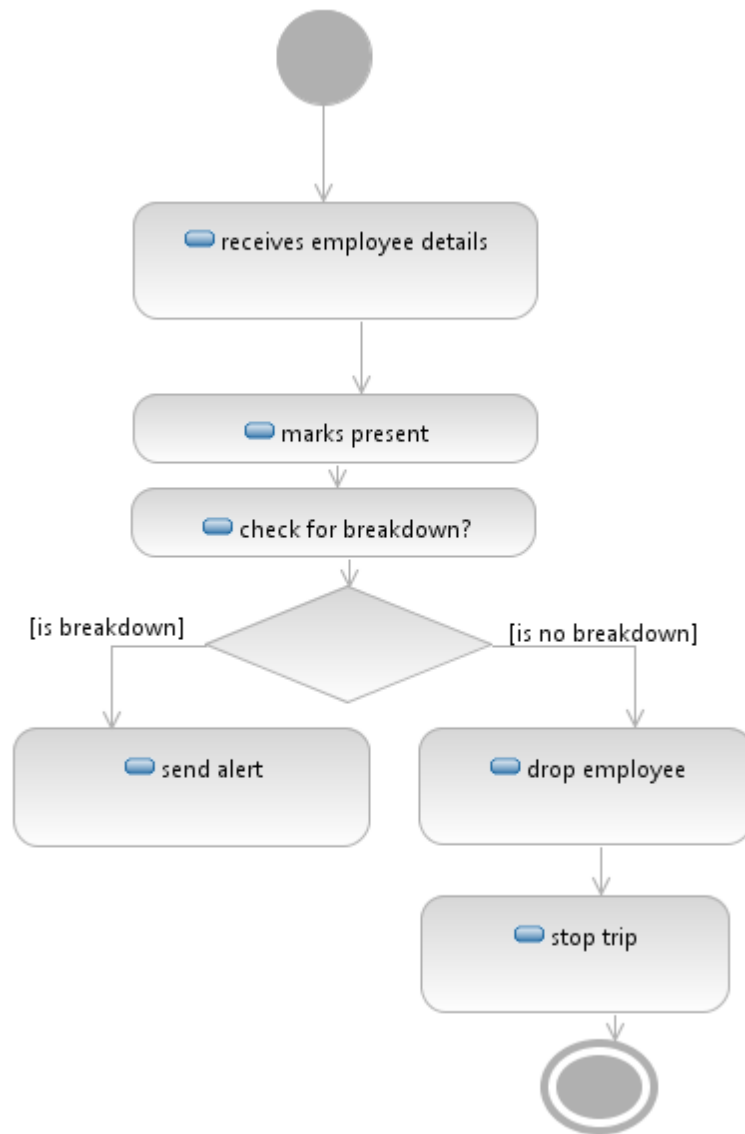


Fig 5.10 Activity diagram for Driver app

The figure 5.10 depicts that the driver can view the details of employees and starts the trip. Driver marks the attendance as the employees are picked up. In case of break down the driver alerts the admin and vendor through a message. The driver can stop the trip after all the employees are dropped.

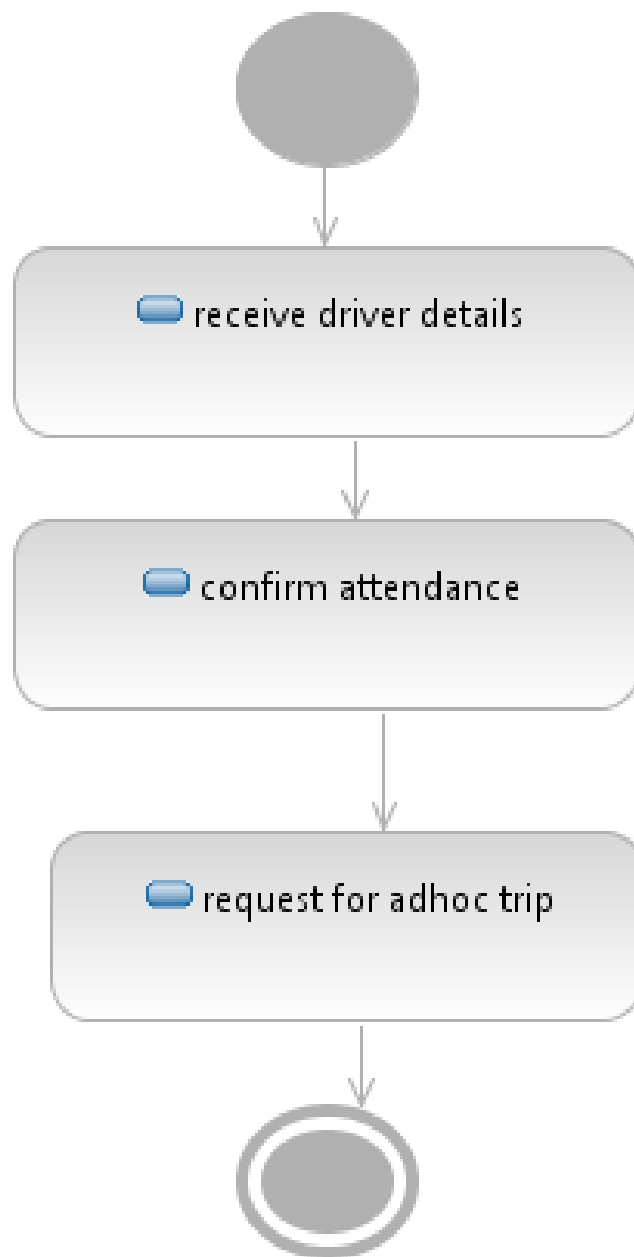


Fig 5.11 Activity Diagram for Employee app

The figure 5.11 depicts that the employee receives the driver details through the app and can confirm the attendance when picked up by the driver. The driver details include driver name, phone number, vehicle type, vehicle number. Employee can request for Adhoc trip if the Employee wants to travel somewhere instantly at an unusual time.

5.6 CONCEPTUAL SCHEMA

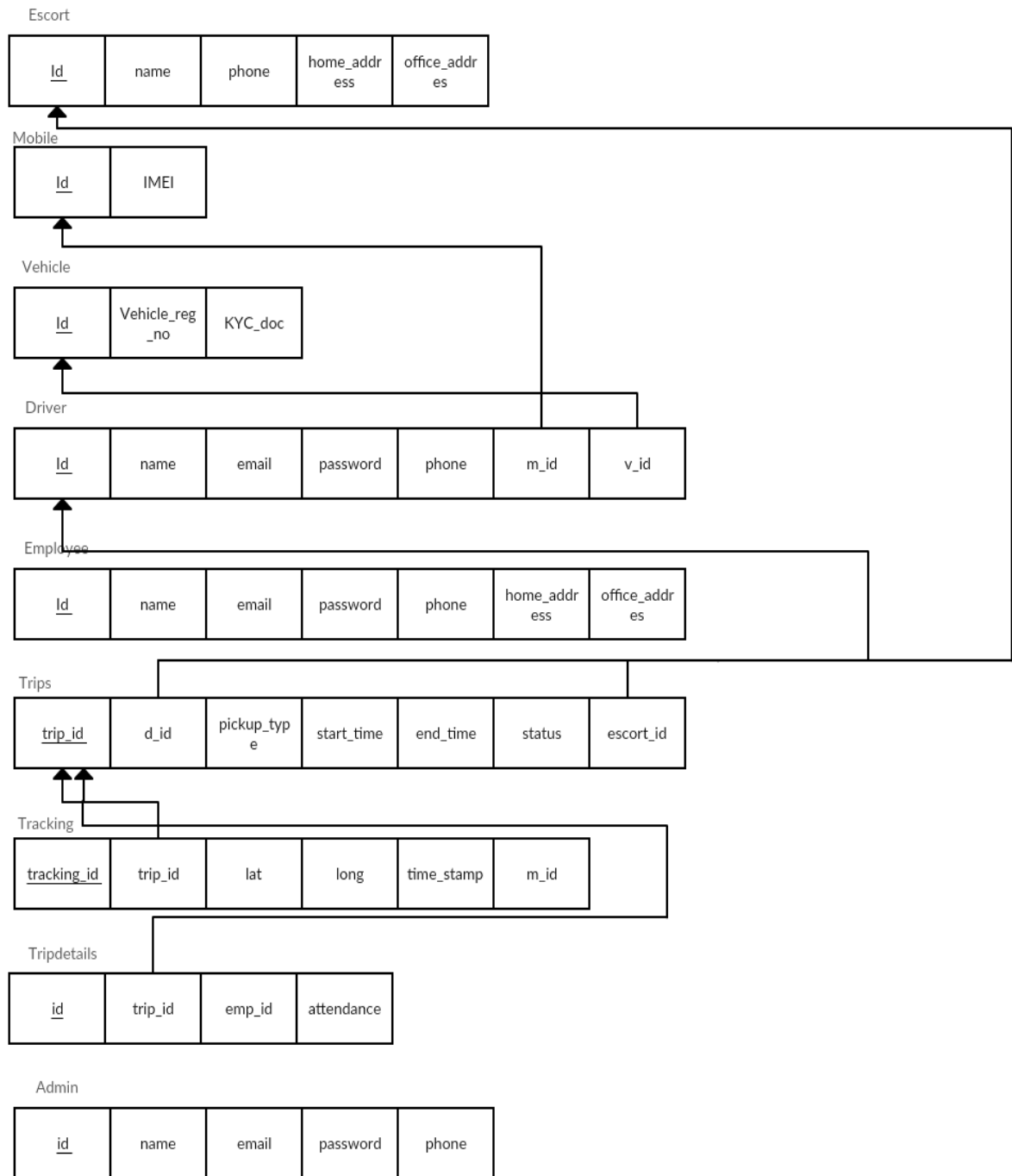


Fig 5.12 Conceptual schema for Monitoring System for Employee Transportation Automation Tool

The figure 5.12 depicts the conceptual schema of the Monitoring System which shows the various tables present and the relationship between them.

5.7 DATA FLOW DIAGRAMS

Data Flow Diagram is the graphical representation of information stream or stream of information in the application.

Level Zero DFD

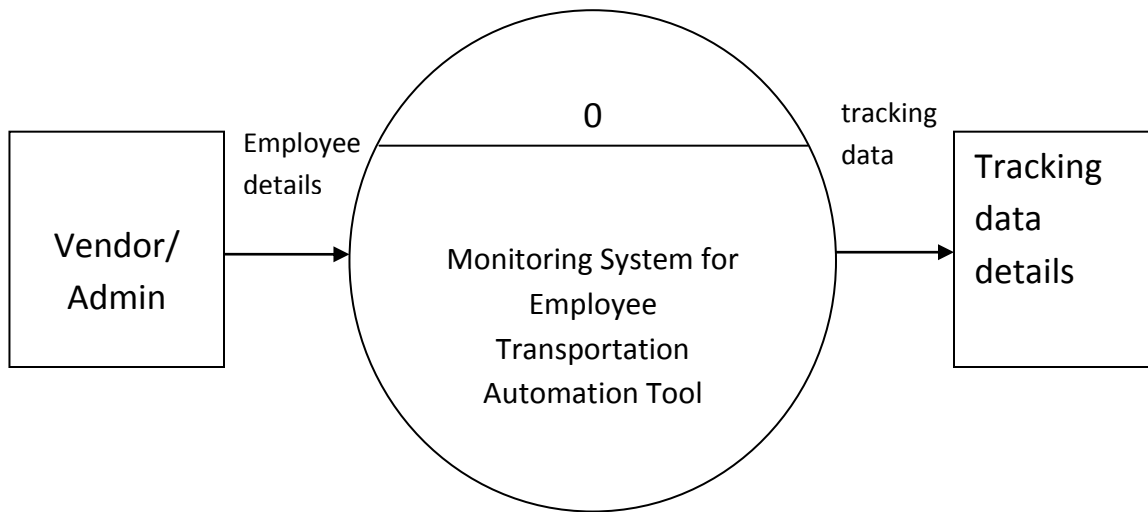


Fig 5.13 Level Zero DFD for Monitoring system

Figure 5.13 depicts the Level Zero DFD for Monitoring system which shows as the trip is started, the current location of the cab is given as input to the monitoring system. The tracking can be viewed by admin through the monitoring system. In monitoring trip the following process occurs, the driver starts the trip, system starts tracking the cab. As the the employees are picked up, the driver marks the attendance of the employee and employee in turn can confirm the attendance. In case of excessive halt, over speed or deviation the admin is alerted through the monitoring system with appropriate message. In case of breakdown driver can send breakdown message to the admin. As all the employees are dropped, the driver can stop the trip and hence tracking will be stopped.

Level One DFD

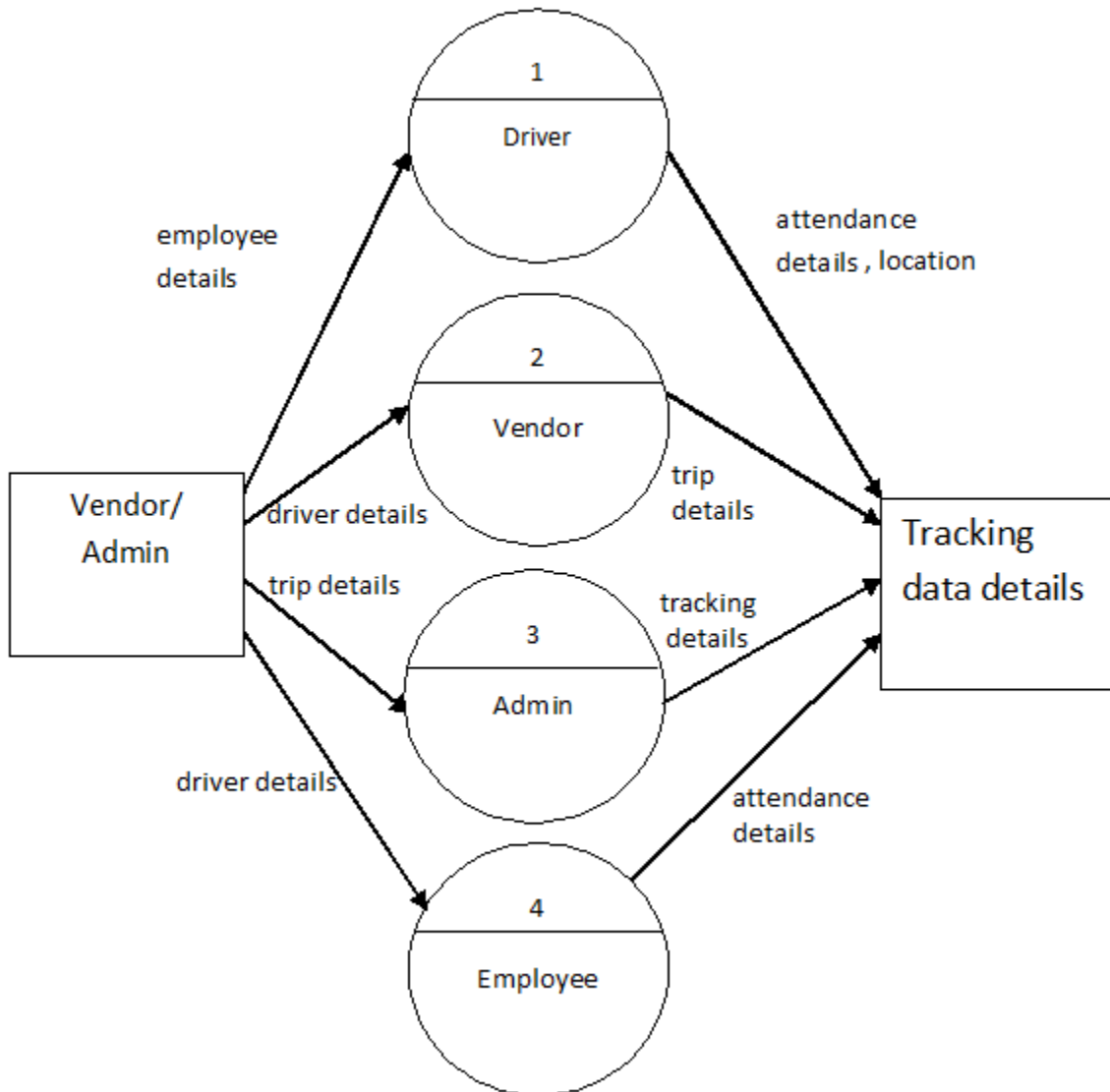


Fig 5.14 Level One DFD for Monitoring system

Figure 5.14 depicts the detailed dataflow flow in the application. As the vendor assigns a diver to the trip, the driver receives the employee details and employee receives the details of the driver. Than as the driver starts the trip, system starts tracking the cab. In case of excessive halt, over speed or deviation the admin is alerted through the monitoring system with appropriate message.

Level Two DFD

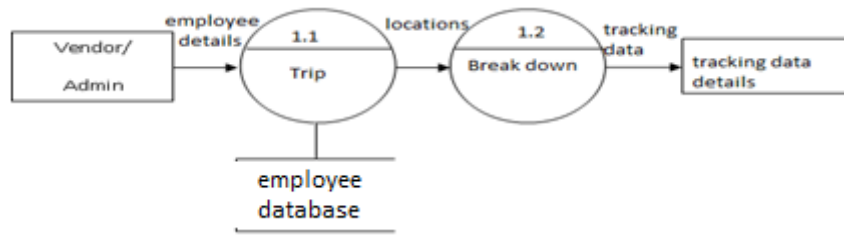


Fig 5.15 Level two DFD for Driver

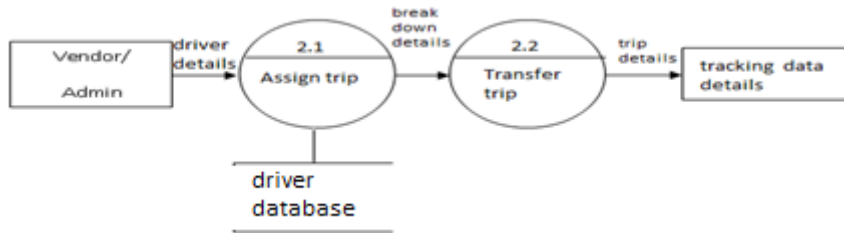


Fig 5.16 Level two DFD for Vendor

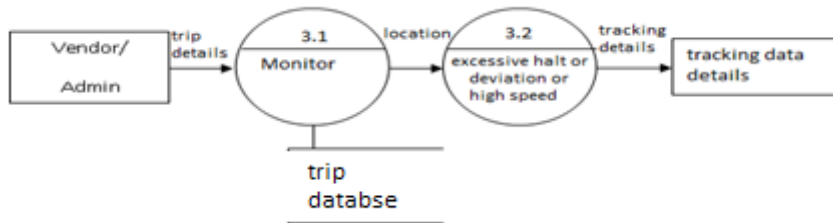


Fig 5.17 Level two DFD for Admin

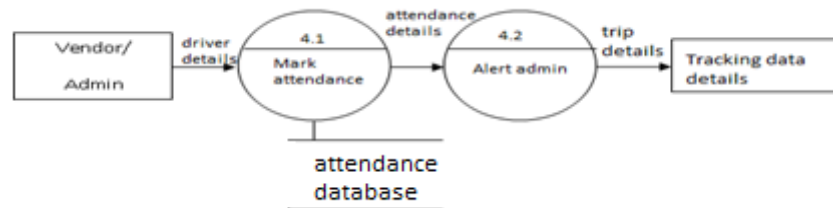


Fig 5.18 Level Two DFD for Employee

The figure 5.15, 5.16, 5.17 and 5.18 depicts the detailed dataflow in the application. As the vendor assigns a driver to the trip, the driver receives the employee details. Then as the driver starts the trip, system starts tracking the cab. In case of high speed, deviation or excessive halt, the admin is alerted through the monitoring system. In case of break down, the driver alerts the admin by clicking on breakdown button

CHAPTER 6

IMPLEMENTATION

6.1 SCREEN SHOTS

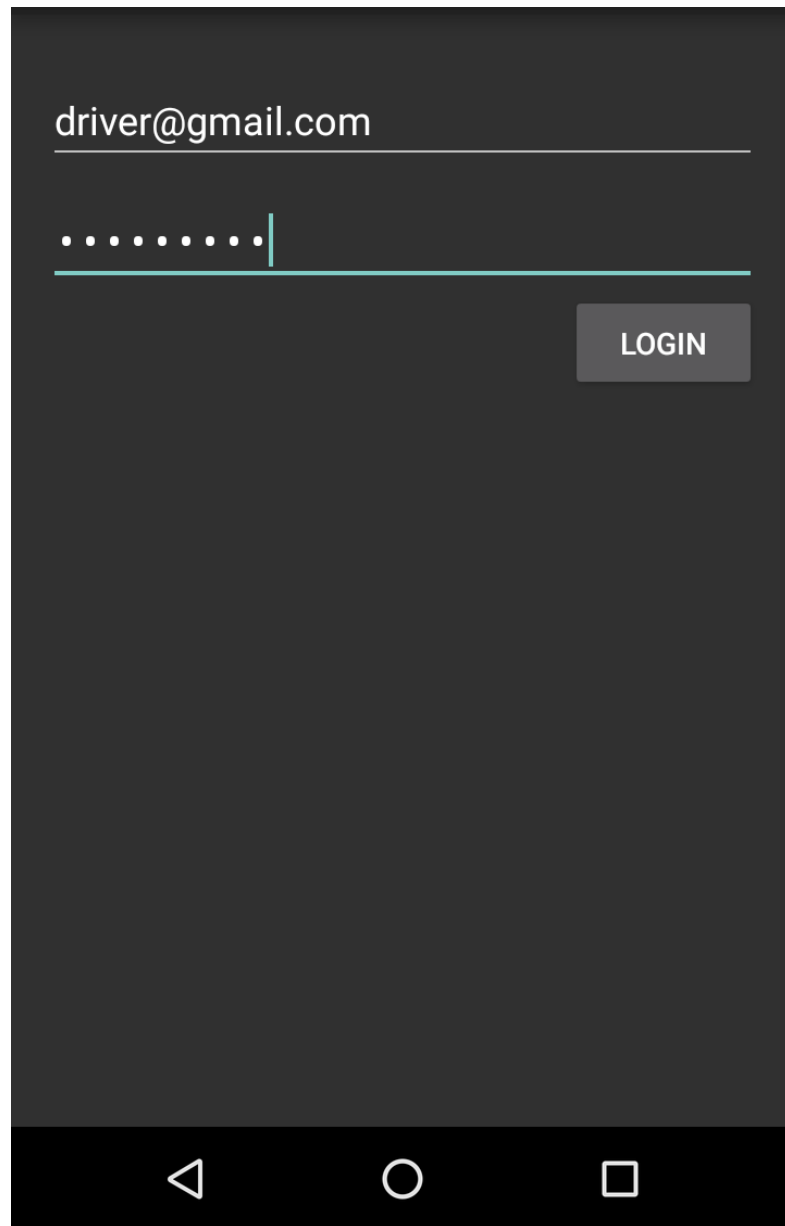


Fig 6.1 Login page for Driver app

The figure 6.1 depicts the login form for Driver app through which the driver logs in.

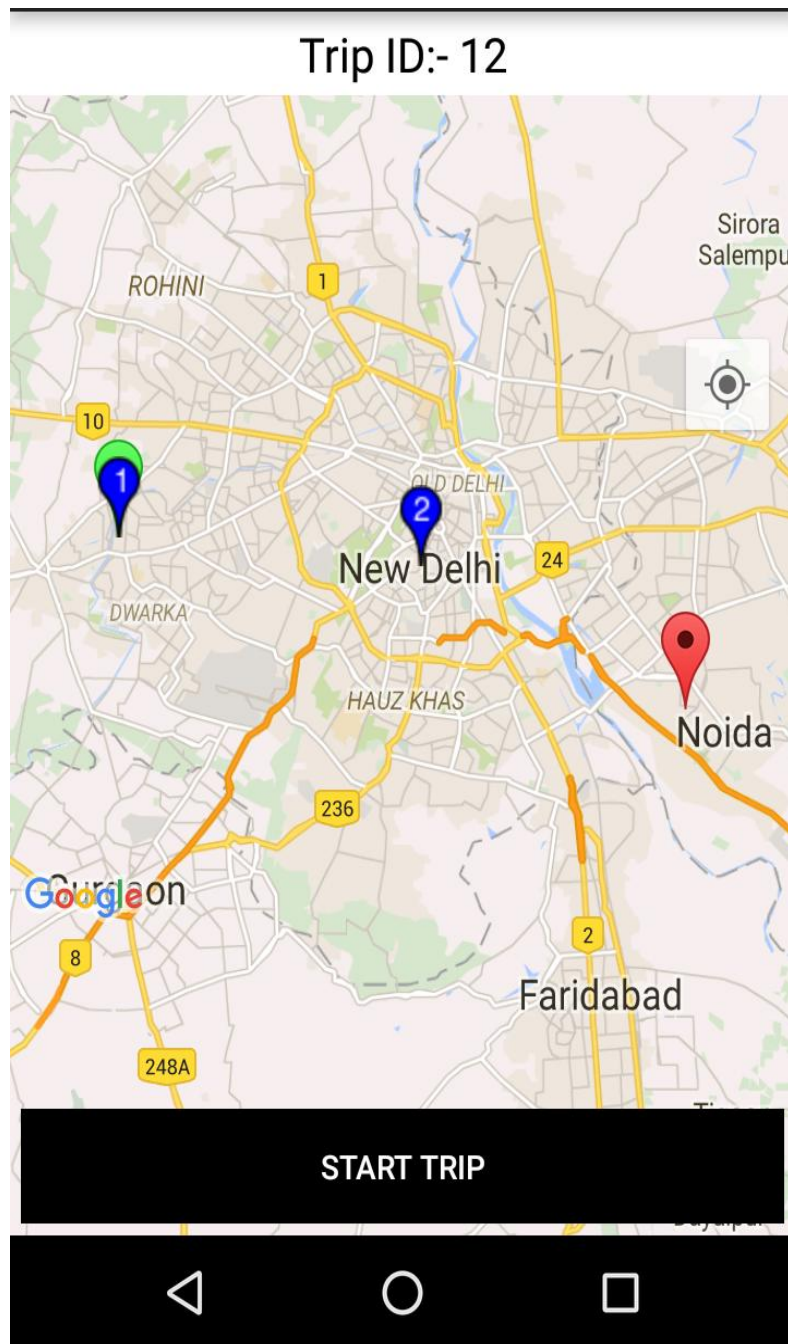


Fig 6.2 current tracking and start trip option

The figure 6.2 depicts the current tracking of the driver, which also provides an option to start the trip. On click of this button, the monitoring system will start tracking the system and hence admin can view the tracking data.

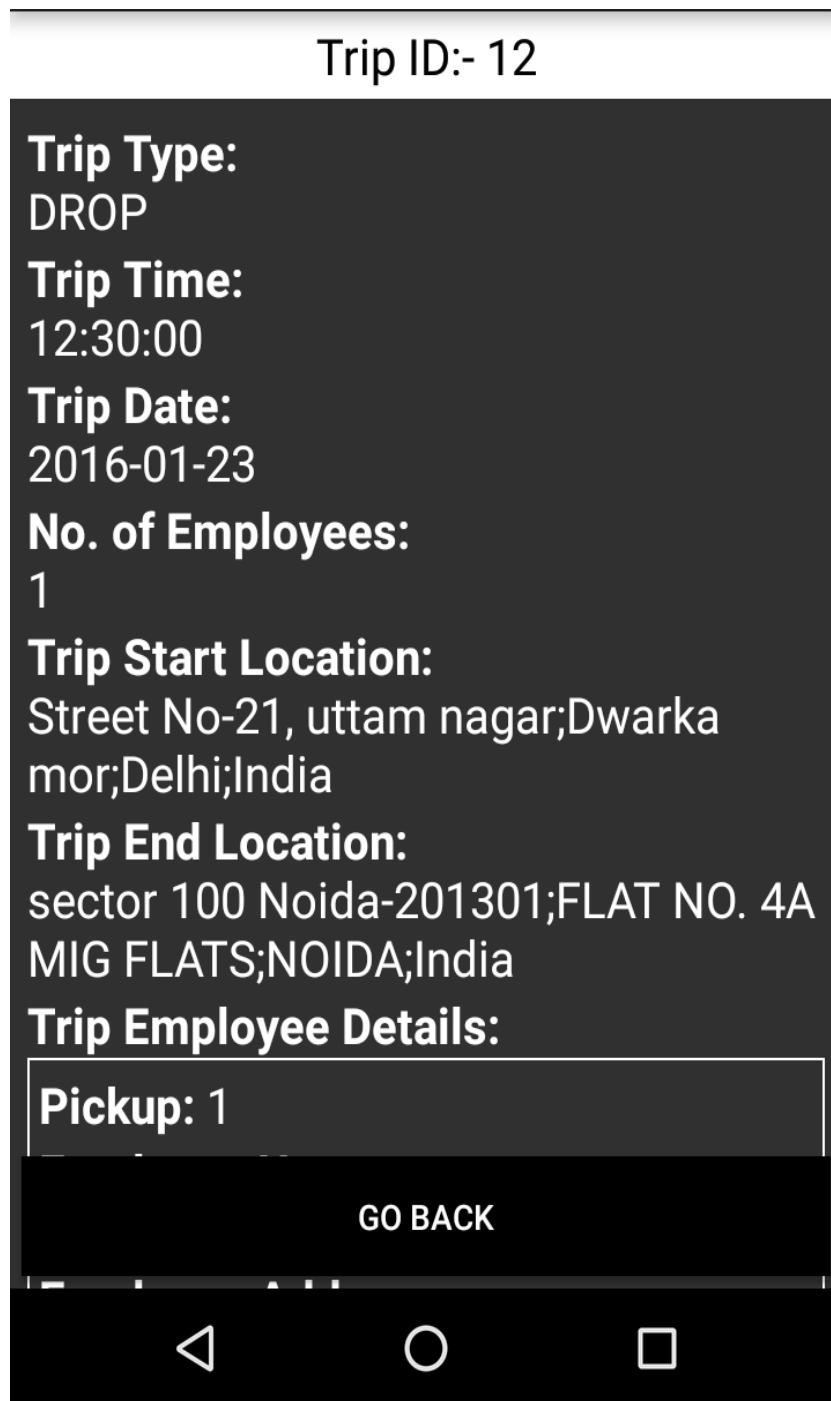


Fig 6.3 Details of trip in Driver app

The figure 6.3 depicts the driver app which contains the details of trip which the driver receives when trip is assigned to him/her.

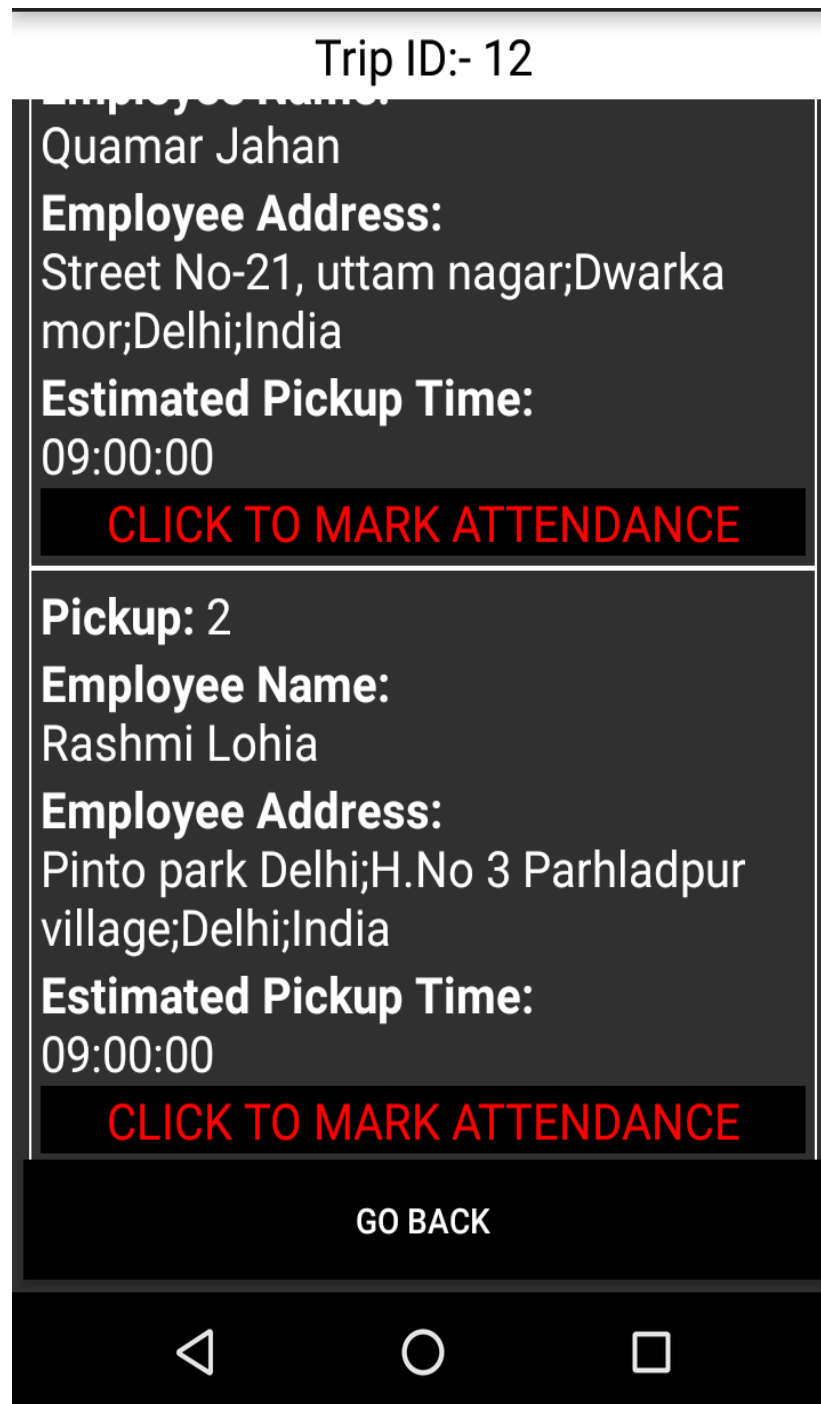


Fig 6.4: Driver app contains the employee details.

The figure 6.4 depicts the driver app, that contains the details of employees whom he/she needs to pickup. The driver can mark the attendance once the employee is picked up.

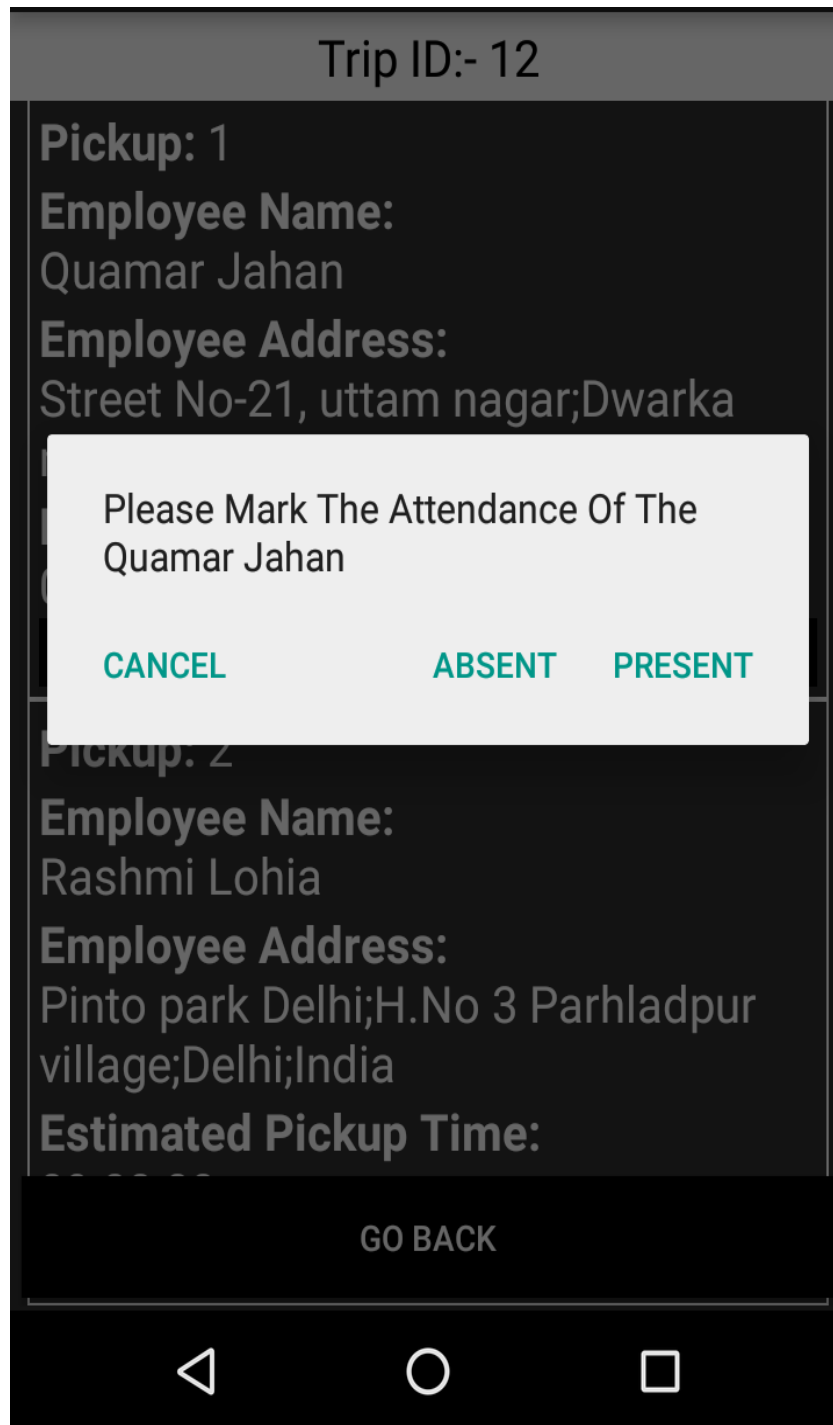


Fig 6.5 Confirmation of attendance of a particular employee

The figure 6.1.5 depicts the driver confirming the attendance of a particular employee (present/absent).

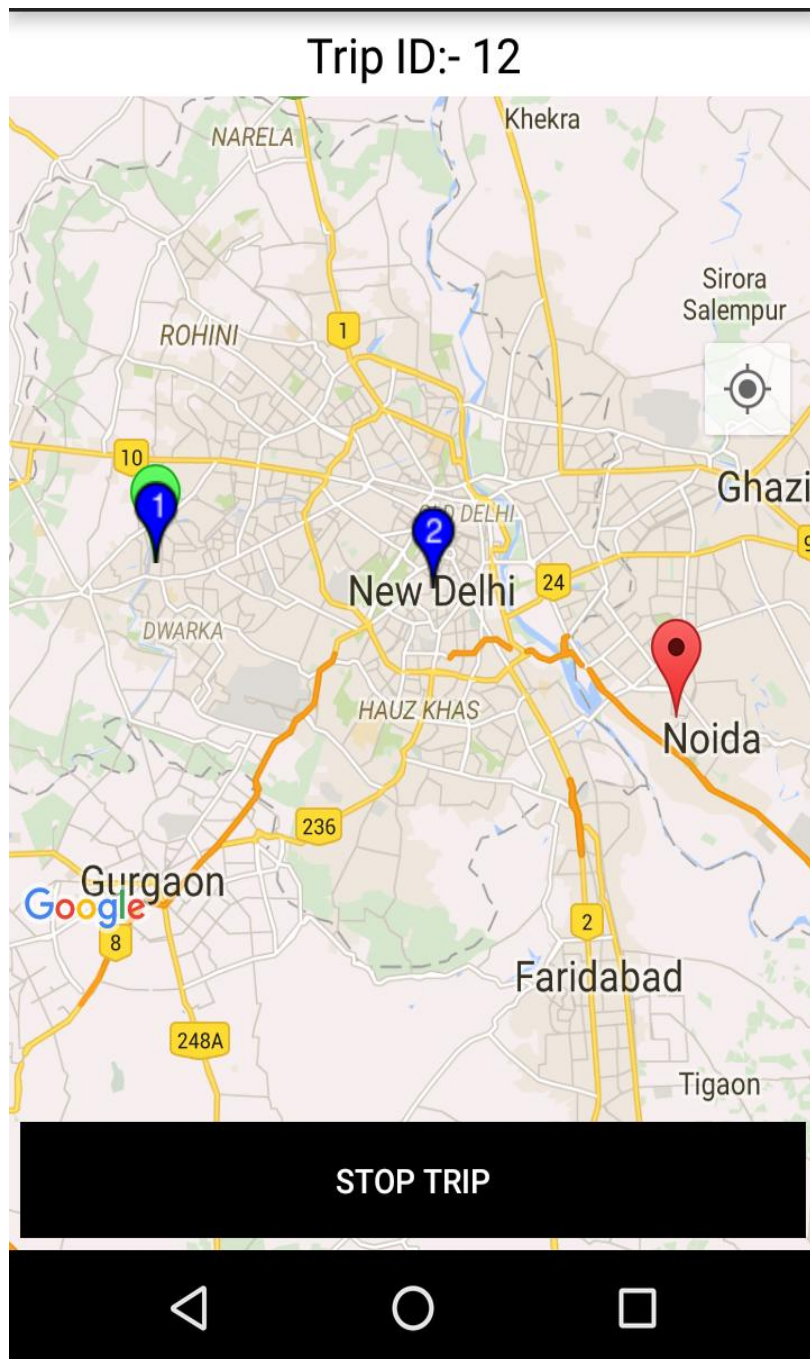


Fig 6.6 current tracking and stop trip option

The figure 6.6 depicts the current tracking of the driver, which also provides an option to stop the trip.



Fig 6.7 breakdown and call option

The figure 6.7 depicts the breakdown and call option. In case of breakdown, the driver can alert the admin using the breakdown option or even call using call option.

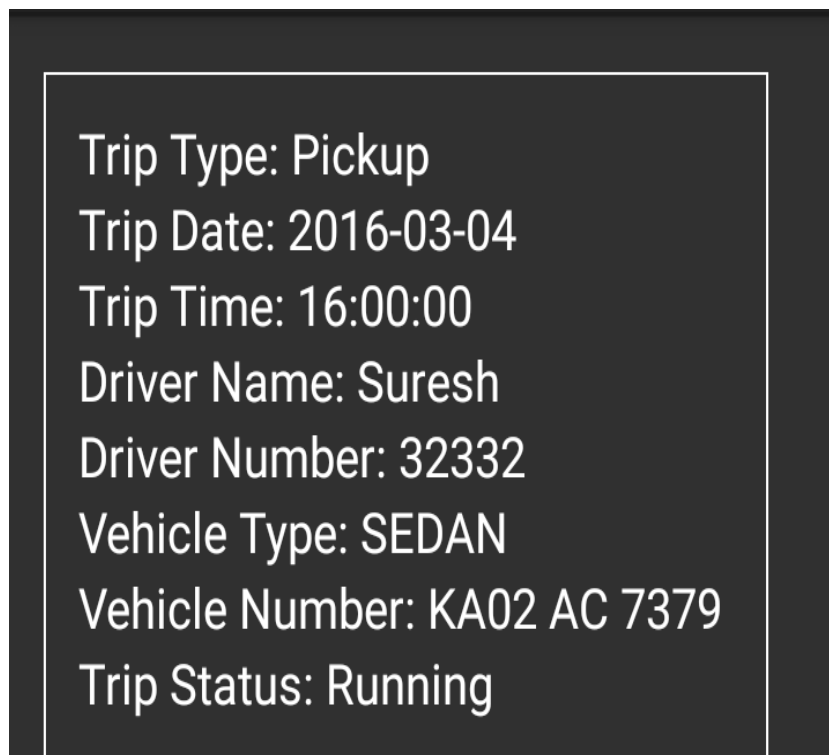


Fig 6.8 Employee app contains the details of driver

The figure 6.8 depicts the Employee app that contains the details of the driver who is about to pick the employee.

Please Input Pickup Location:

☒ Home ☐ Office ☐ Other

Apt A 802, Zen Garden Apartments, #6,
Artillery R

Please Input Drop Location:

☐ Home ☒ Office ☐ Other

Office Address

2016-5-22 Select Date

14:46:00 Select Time

Reason(Optional)

Confirm Request

SOS

Fig 6.9 Adhoc request page

The figure 6.9 depicts the Adhoc request page for Employee in case the employee wants to travel somewhere instantly.

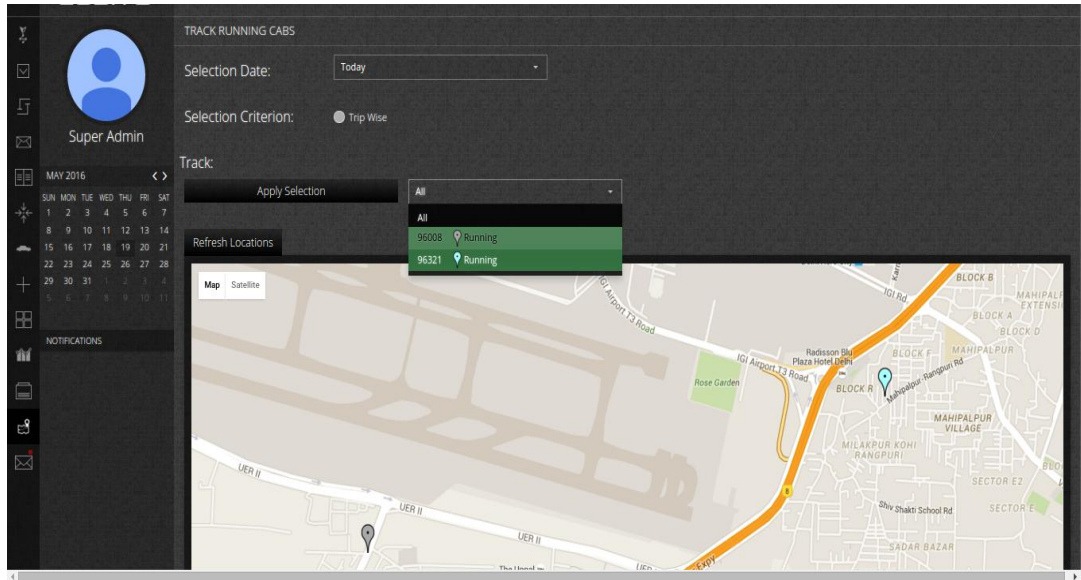


Fig 6.10 Monitoring page

The figure 6.10 depicts the Monitoring page for various trips. Admin can view the tracking data by selecting the trips that are displayed in the dropdown with their statuses.

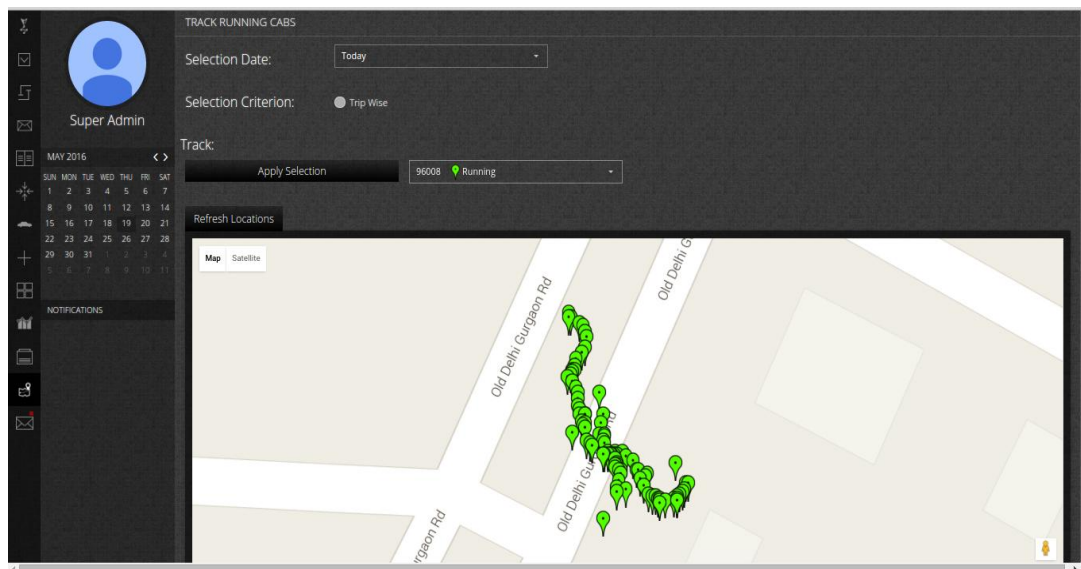


Fig 6.11 Tracking data

The figure 6.11 depicts tracking data for a particular trip which is running.

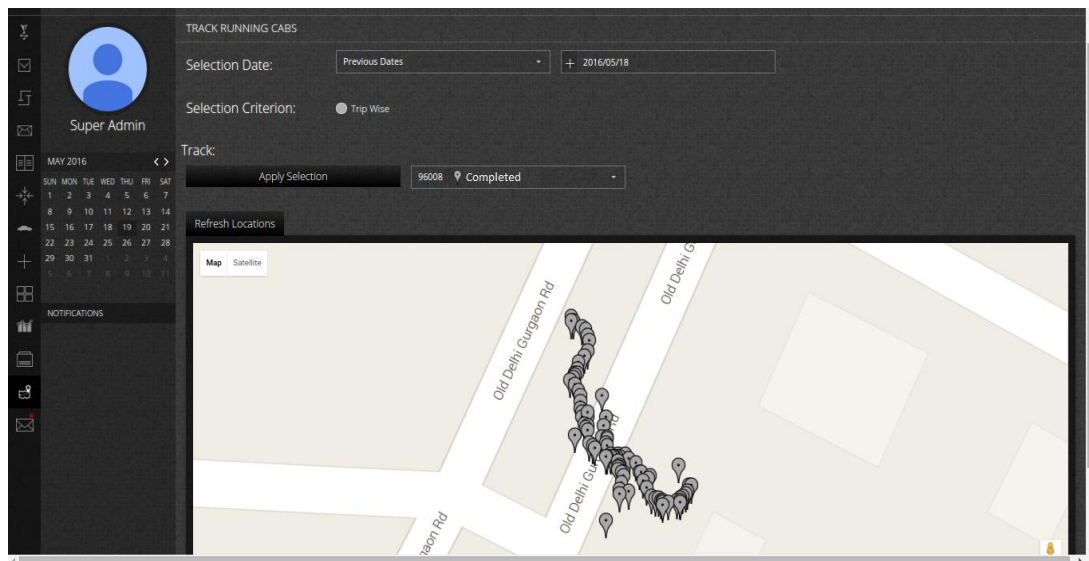


Fig 6.12 Tracking data for a specified date trip

The figure 6.12 depicts the tracking data for a completed trip on a specified date.

TRIP_VENDOR	DROP_ADDRESS	EMPLOYEE_ID	EMPLOYEE_NAME	PICKUP_ADDRESS	TRIP_ID	TRIP_STATUS	TRIPDETAIL_STATUS
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	37	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	98	BASANNA KUMAR	12th Main, Indiranagar	37	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	38	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	98	BASANNA KUMAR	12th Main, Indiranagar	38	DRIVER_ALLOCATED	GROUPED

Fig 6.13 Trip details page for Admin

The figure 6.13 depicts the Trip details page for Admin, who can view the details of all the trips for current date by default. Admin can view the trip details of specified date by specifying the from date and to date and can also download the details in excel format.

TRIP_VENDOR	DROP_ADDRESS	EMPLOYEE_ID	EMPLOYEE_NAME	PICKUP_ADDRESS	TRIP_ID	TRIP_STATUS	TRIPDETAIL_STATUS
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	37	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	98	BASANNA KUMAR	12th Main, Indiranagar	37	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	38	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	98	BASANNA KUMAR	12th Main, Indiranagar	38	DRIVER_ALLOCATED	GROUPED

Fig 6.14 Trip details page for vendor

The figure 6.14 depicts the Trip details page for Vendor who can view the relevant trip details. By default this displays the trip details for current date. Vendor can view the trip details of specified date by specifying the from date and to date. The trip details can be downloaded in excel form by clicking the excel download button.

TRIP_VENDOR	DROP_ADDRESS	EMPLOYEE_ID	EMPLOYEE_NAME	PICKUP_ADDRESS	TRIP_ID	TRIP_STATUS	TRIPDETAIL_STATUS
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	37	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	37	DRIVER_ALLOCATED	GROUPED
vendor one	12th Main, Indiranagar	83	RAMAPPA S	12th Main, Indiranagar	38	DRIVER_ALLOCATED	GROUPED

Fig 6.15 Trip details page for Employee

The figure 6.15 depicts the Trip details page for Vendor who can view the relevant trip details and can download the details in excel form by clicking the excel download button.

CHAPTER 7

SOFTWARE TESTING

Testing is the imperative piece of any product advancement. The testing will be done under varied stages amidst the time of programming advancement. The code survey is done once the code is ready for organization. The goal for testing is to verify so that the created little bit of code tries to see the problem articulation, furthermore that all the targets are met. The testing is likewise completed to verify that the code runs proficiently and monetarily as far as time and area.

The task performs different types of testing to verify that every one conditions square measure met and actualized faultlessly. It additionally fare thee well that various types of testing results meet the normal results. To verify that every page is functioning in keeping with the prerequisite and the application generally is functioning once incorporated, unit testing and mix testing square measure performed.

The application verifies that no unapproved user can utilize the system furthermore confirms the correct inputs from the consumer. The client inquiries for verification of users are checked for accessibility and accepted. At whatever purpose the worker makes the price tag and the admiration supervisor offer the input rating each user is checked for the ticket approval. Indeed, even the members are checked for the approvals at whatever purpose remarks square measure created mistreatment any members. All the testing performed in the task are physically done and verified that each piece of testing conditions is met. No testing devices are used as a half of the testing.

Software testing can be carried out when automated executable software exists. To deal with programming advancement regularly decides when and how testing is led. For instance, in a phased process, most testing happens after requirements have been characterized and implemented. Under Agile methodology, requirements, programming, and testing are regularly done simultaneously and all these three are carrying out in an iterative way, so that the end product that is produced is refined and the number of errors that are present are reduced eventually.

7.1 TEST CASES

Unit Testing

Table 7.1 Testcases

Sl. No.	TestCase Name	Feature tested	Sample input	Expected Output	Observed Output	Result & Remarks
1	Login Authentication	Syntactical errors, Invalid login credentials	Invalid Username & Password	The System should prompt error message	Message displayed as invalid credentials	Pass, User is not allowed to login with invalid credentials
2	Login Authentication	Valid login credentials	Valid Username & Password	User should be allowed to login into system	User is allowed to access dashboard	Pass
3	Start trip	Marking attendance before starting the trip	Mark the attendance	The System should prompt error message	Message displayed as Please start the trip to proceed	Pass
4	Stop trip	Stop the trip before marking the attendance	Stop the trip	The System should prompt error message	Message displayed as You have not marked the attendance of all the employees	Pass
5	Adhoc request	Confirm Adhoc request before fully filling the Adhoc request form	No inputs	The System should prompt error message	Message displayed as Please fill all the details	Pass

7.2 SCREENSHOTS OF TESTING AND VALIDATIONS

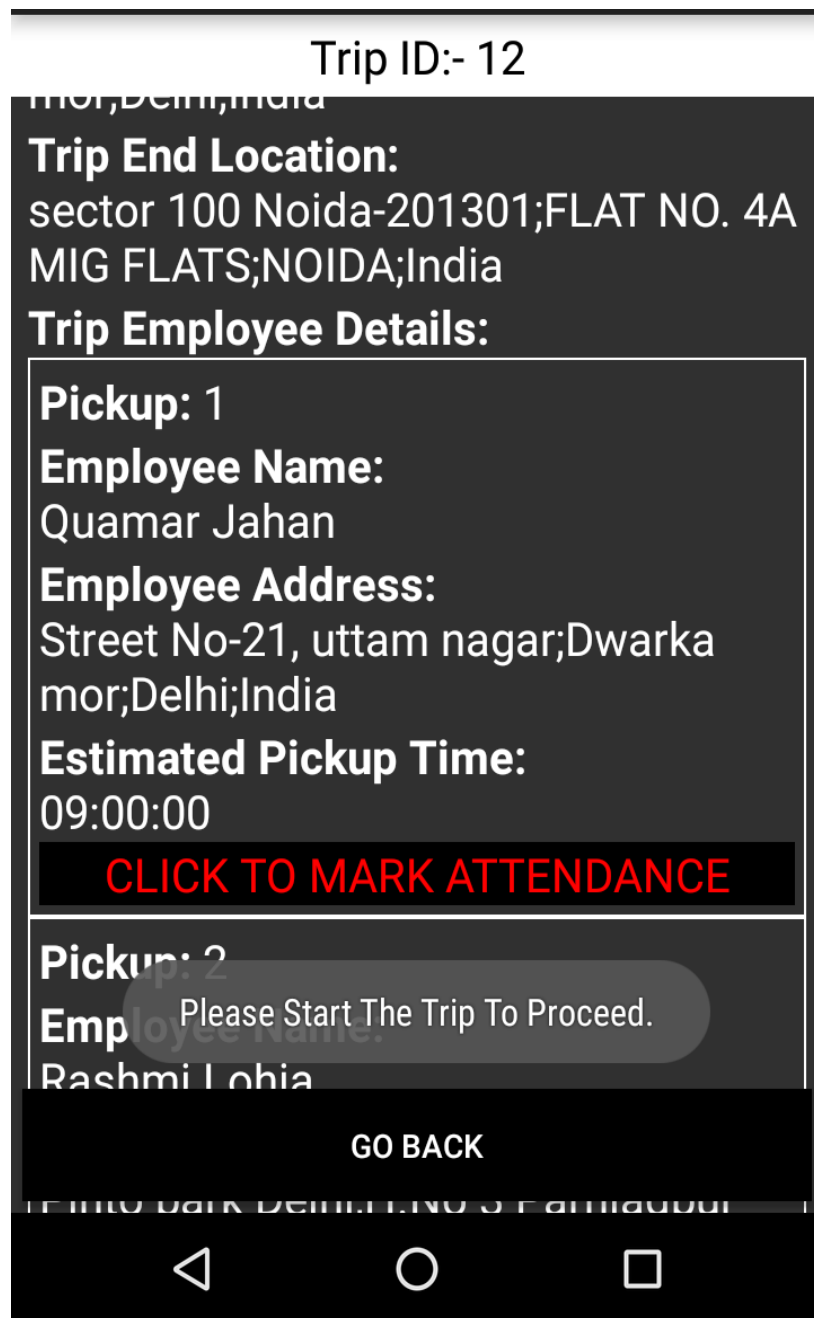


Fig 7.1 Error message while marking attendance before starting the trip

The figure 7.1 depicts the error message in driver while marking attendance before starting the trip.

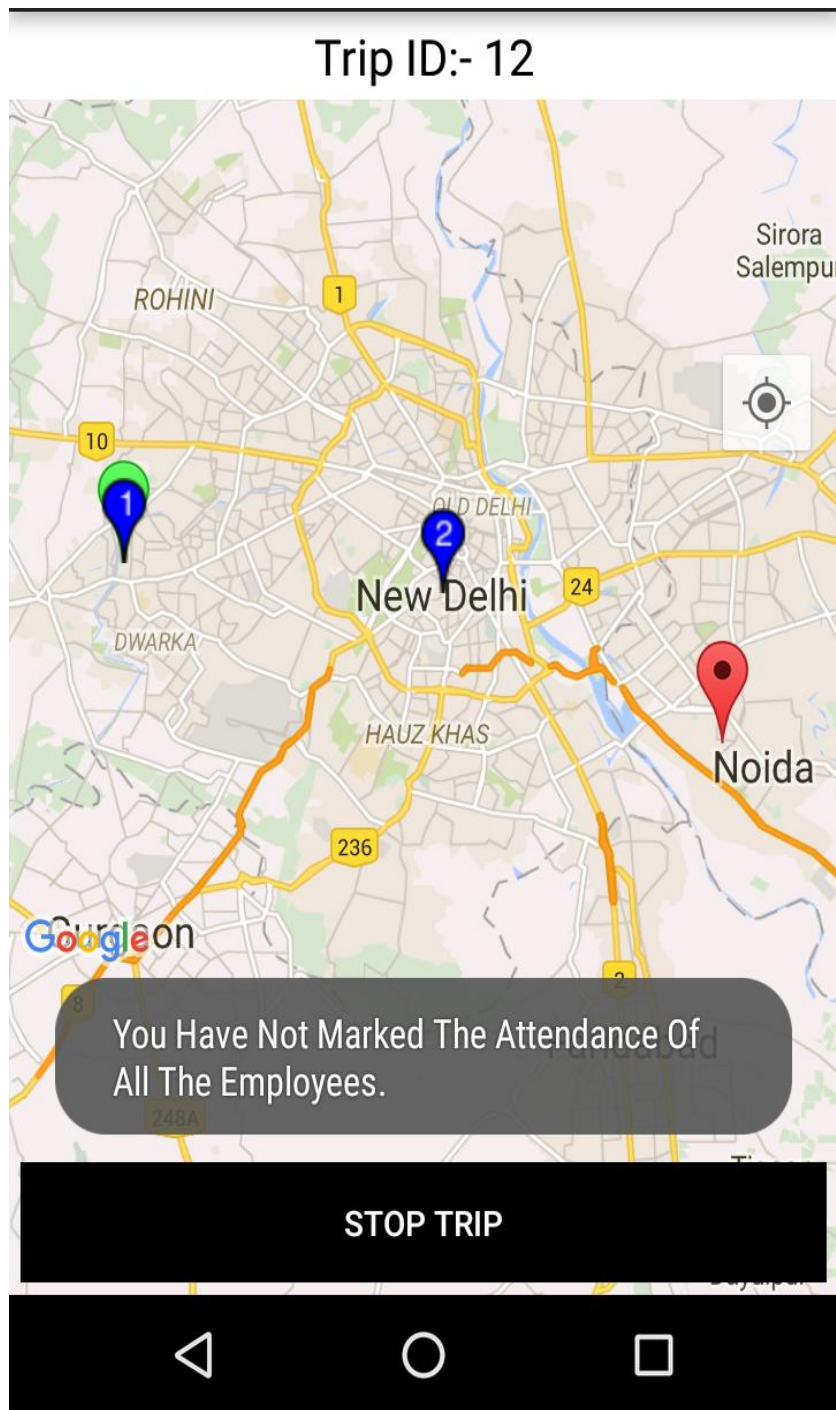


Fig 7.2 Error message while stopping the trip before marking the attendance

The figure 7.2 depicts error message while stopping the trip before marking the attendance of the employee.

Please Input Pickup Location:

☐ Home ☐ Office ☐ Other

Please Select Pickup Location

Please Input Drop Location:

☐ Home ☐ Office ☐ Other

Please Select Drop Location

Select Date

Select Time

Reason(Optional)

Please Input Both Pickup And Drop Location.

Fig7.3 Error while confirming adhoc request before inputting pickup and drop location

The figure 7.3 depicts error while confirming adhoc request before inputting pickup and drop location in employee app.

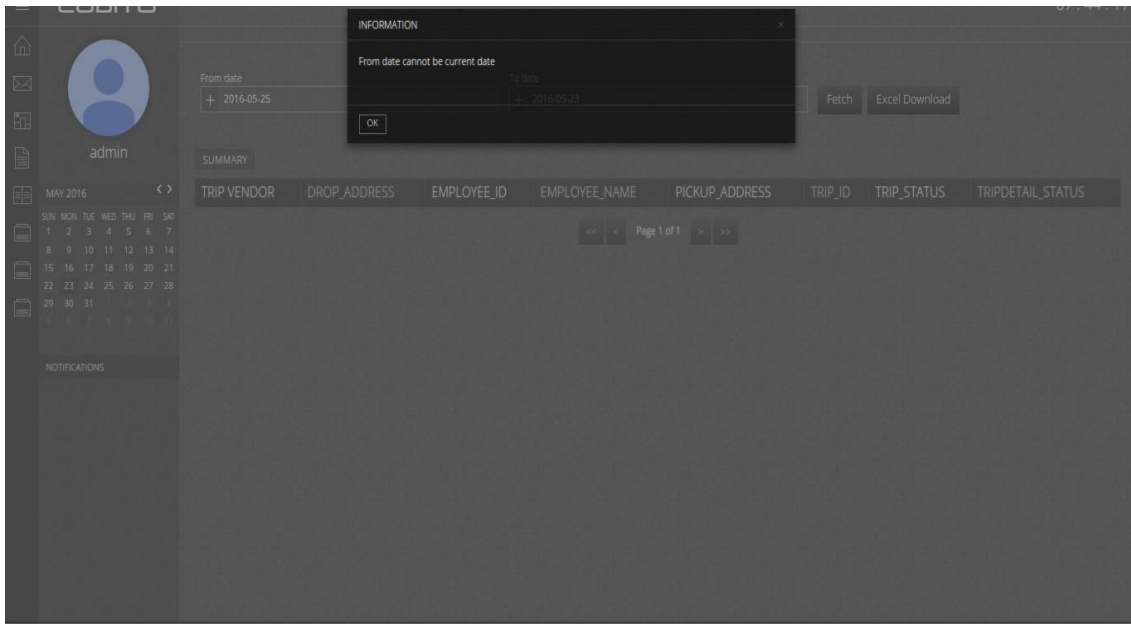


Fig 7.4 error message in trip details for invalid from date

Figure 7.4 depicts error message in trip details page if from date exceeds current date.

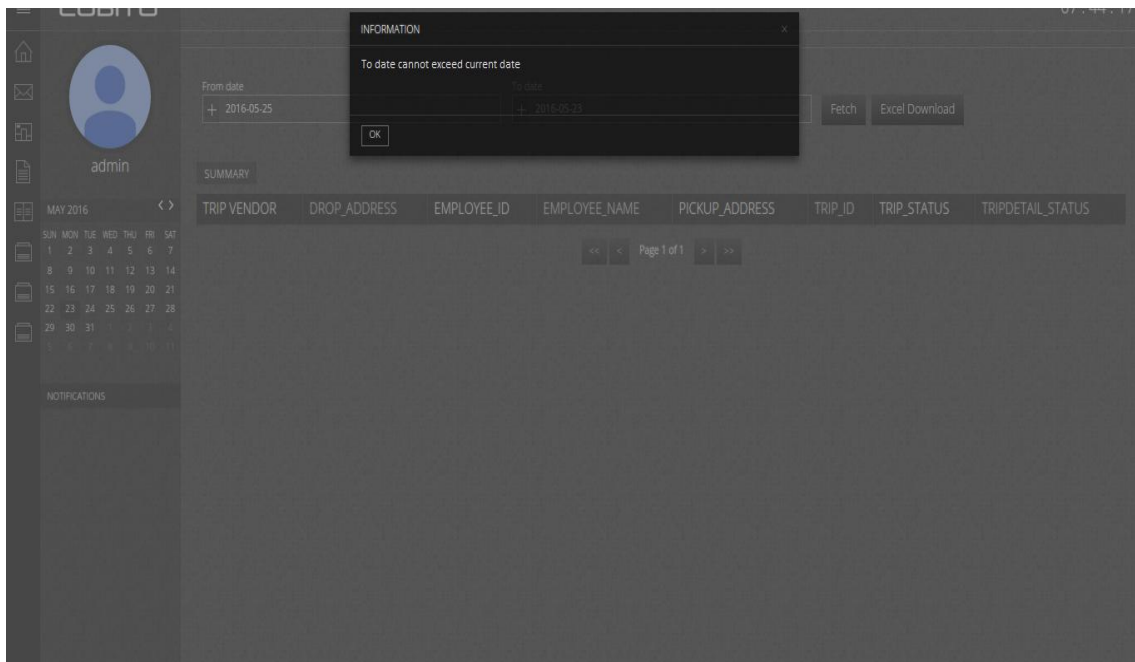


Fig 7.5 error message in trip details for invalid to date

Figure 7.4 depicts error message in trip details page if to date exceeds current date.

CHAPTER 8

CONCLUSION

Employee Transportation Automation Tool interprets the employee data (Ex: address), finds the latitude and longitude of the address present in the data and allots a cab.

Monitoring being one of the major feature, monitors each and every fleet involved in the trip. When a trip is scheduled a driver is assigned to the trip. The driver who is assigned to the trip receives the details of the employee, whom he needs to pickup. The employees involved in the trip receive the details of the trip. Once the driver starts the trip, tracking starts and the driver can mark the attendance as the employee is picked up. Tracking data can be viewed by the Admin. In case the driver exceeds the speed limit, waits at a particular point more than the stipulated time or deviates from normal route, the admin is alerted through the Monitoring system.

In case the car has a breakdown, the admin and the vendor can be alerted by clicking the breakdown button, who in turn transfers the trip to another driver. Once all the employees are dropped the driver can stop the trip. Employee, Driver, Vendor, Admin can view the relevant trip details for a specified date and can download the details in excel format. The details include name of the vendor, name of the employee, employee id, trip status, trip date and time. Employee can request for a Adhoc trip through employee app, if he needs to travel somewhere instantly at a time other than his usual office timings. It means that if the employee has to travel somewhere instantly (either office or home or other place) at a time other than the usual office timing, the employee can choose Adhoc request through his mobile app and choose the relevant Adhoc type. The Adhoc trip type depends on the need of the employee, whether he wants to travel back to his home or office or any other place. Inbuilt analytics engine helps to record the performance of the driver and the alerts they are associated with and the number of associated alerts. This helps the admin and organization in making decision.

Thus this reduces paper work and time spent in it, hence reduces traffic, cost and ensures safety.

CHAPTER 9

FUTURE ENHANCEMENTS

The Driver app and Employee which are designed using web technologies like HTML, CSS, JQuery, bootstrap, AJAX and Phone gap, can be designed using android studio, IOS platform and windows so that the app is much faster than what it is now. The server used is Apache, in future Redis server can be used, so that processing time of the entire application can be reduced and then the application can be hosted on cloud. Currently MySql is used, which is a relational database and has many limitations over the non relational database. Instead of MySQL, MongoDB can be used which is a non relational database. This not only requires less storage space but also avoids null values. When the number of transactions are more, the difference can be felt when MongoDB is used instead of MySQL. Also the maximum column limit of MySQL is less compared to MongoDB.

The system uses internet for navigating through the routes, which might take time to load the map sometimes. Instead of this offline navigation can be used. That means no internet connection is required to navigate through the routes in future and the time that takes for loading will be reduced.

Monitoring system can be implemented for the Logistics transportation, for example in case of e-commerce based organizations, the delivery personnel who has to deliver the products to the customer can be tracked, so that the customer can get the exact location of the delivery personnel and this can help the customer to receive the order from the delivery personnel in case they are not present at the delivery place. The Adhoc request facility can be extended for ambulance services, fire brigade services and police help, so that people can get these services for help instantly in case of medical emergency, fire and other emergencies. This project uses driver's mobile phone for tracking the cab. Instead of mobile phones, GPS devices can be used for tracking.

We can enhance this project by providing medical emergency for employees, example in case of cardiac arrest, so that the involved person can be alerted and in turn they can alert the ambulance.

BIBLIOGRAPHY

- [1]. Blaauw, P., 2006, The Construction Industry and Long-Term Economic Growth in South Africa. Brenthurst Discussion Paper, Brenthurst Foundation.
- [2]. South Africa. Department of Transport, 2007. Public Transport and Road Safety in South Africa <http://www.arrivealive.co.za/pages.aspx?i=1456> [12 June 2009].
- [3]. Buitendach, J.H., & De Witte, H., 2005, Job insecurity, extrinsic and intrinsic job satisfaction and affective organisation commitment of maintenance workers in a parastatal. South African Journal of Business Management 36 (2): 27-33.
- [4]. UITP, 2007, Tackling social inclusion - the role of public transport, Focus Paper. May.
- [5]. StatsSA 1996. Transport Statistics. www.statssa.co.za. [19 May 2009].
- [6]. Paine Schofield, C. B. & Joinson A. N Psychological aspects of cyberspace: Theory, research, and applications, pp. 13-31, 2008.
- [7]. Massaro, D. W., "Perceiving talking faces" from speech perception to a behavioral principle, Cambridge, Massachusetts, MIT, 1998.
- [8]. Bhattacharjee A., Individual trust in online firms: Scale development and initial test. Journal of Management Information Systems, 19, pp. 211-241, 2002.
- [9]. Transportation and Climate (2010). U. S. Environmental Protection Agency, Retrieved on September 14, 2010, Available: <http://www.epa.gov/OMS/climate/index.htm>.
- [10]. Share you ride Retrieved on January 18 2011 <http://www.shareyourride.net/about.php>.
- [11]. iCarpool. Retrieved on January 18, 2011, Available: <http://www.icarpool.com/en/index.html>.
- [12]. G Piatetsky-Shapiro and W.J. Frawley, Knowledge Discovery in Databases, AAAI/MIT Press, 1991
- [13]. Lisa Lewinson, Data Mining: Tapping into the Mother Lode, Database Programming and Design, Feb.1994, 7(2): 50-56

- [14]. Fayyad U, Piatetsky-Shapiro, Smyth, Uthurusamy, Advances in Knowledge Discovery and Data Mining, MIT Press, 1996
- [15]. D .Michie, D .J .Spiegelhalter, C .C .Taylor, Machine Learning, Neural and Statistical Classification, Ellis florwood, 1994.
- [16]. J. R. Quinlan. Discovering rules by induction from large collections of examples, systems in the Microelectronic Age, Edinburgh University Press, 1979
- [17]. J. Han et al.DMQL: A Data Mining Query Language for Relational Databases, SIGMOD 96 DMKD, Workshop on Research Issues on Data Mining and Knowledge Discovery
- [18]. Naveneetha Vasudevan, Laurence Tratt. "Comparative Study of DSL Tools", Electronic Notes in Theoretical Computer Science (ENTCS), Volume 264, Issue 5, July, 2011, 103-121p.
- [19]. Python Enhancement Proposal Index, The Python Project, 2015 - <https://www.python.org/dev/peps/>
- [20]. Guido van Rossum, et. al, "PEP 0008 -- Style Guide for Python Code", Python Developer's Guide, 2013. <https://www.python.org/dev/peps/pep-0008/>
- [21]. Flake8 – Modular Source Code Checker, Python Module, April 2015. <https://pypi.python.org/pypi/flake8>
- [22]. Line profiler and KernProf for Python project, BSD License. https://github.com/rkern/line_profiler
- [23]. P.J. Eby, "Python Web Server Gateway Interface v1.0.1", PEP-3333, 2010. <https://www.python.org/dev/peps/pep-3333/>
- [24]. The Django Web Framework, Django Project, September 2014. <https://docs.djangoproject.com/en/1.7/faq/general/>
- [25]. MySQL Overview, <http://www.oracle.com/us/products/mysql/overview/>

- [26]. Amazon RDS for MySQL, 2014. <http://aws.amazon.com/rds/mysql/details/>
- [27]. Amazon RDS Multi-Availability Zone, Amazon AWS Documentation, 2013 <http://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZ.html>
- [28]. Lim Tai Ching, H.K Garg, "Designing SMS applications for public transport service system in Singapore" The 8th International Conference on Communication Systems, 2002. ICCS 2002. Volume 2, 25-28 Nov. 2002 Page(s):706-710 vol.2.
- [29]. Michael S. Keller, "Take Command: cron: Job Scheduler", Linux Journal, Volume 99, Issue 65, Article No. 15, September 1999.
- [30]. web1.ctaa.org/webmodules/webarticles/articlefiles/Fundamentals.pdf.
- [31]. Punyabrota Dasgupta and Rani Bisal, —Social Media Analytics —,Tata Consultancy Services Whitepaper.
- [32]. Hastings, Larry,"The History of Python: A Brief Timeline of Python". . 2009-01-20. Retrieved 2016-03-20.
- [33]. The Python dialect manual, pp 502-505.
- [34]. sichel F. Sanner et al. (1998). Integrating Computation and Visualization for Biomolecular Analysis: An example using Python and AVS. Proc. Pacific Symposium in Biocomputing `99.
- [35]. "Type hinting for Python". LWN.net. 24 December 2014. Retrieved 5 May 2015.
- [36]. "Django's History". The Django Book. Retrieved 6 June 2013.
- [37]. Graham, Tim (2 May 2016). "Django bugfix releases issued: 1.9.6 and 1.8.13". Django Weblog. Retrieved 3 May 2016
- [38]. Graham, Tim (24 November 2015). "Security releases issued: 1.9rc2, 1.8.7, 1.7.11". Django Weblog. Retrieved 27 November 2015.
- [39]. Adrian Holovaty, Jacob Kaplan-Moss; et al. The Django Book. Django follows this MVC pattern closely enough that it can be called an MVC framework.

- [40]. "SQL Conformance". postgresql.org. 2013-04-04. Retrieved 2013-08-28.
- [41]. "What Is JavaScript?"wiley, Retrieved 2014-04-21.
- [42]. "A Brief History of Ajax". Aaron Swartz. 22 December 2005. Retrieved 4 August 2009
- [43]. Martin Fowler, "Domain Specific Languages". Addison-Wesley Professional, 2010.
- [44]. Sergey Dmitriev. "Language Oriented Programming: The Next Programming Paradigm". URL: [2] <http://www.onboardjetbrains.com/is1/articles/04/10/lop/> (access date:30.01.2013).
- [45]. Martin Fowler, "Language Workbenches: The Killer-App for Domain Specific Languages?" 2005. URL:[http://www.martinfowler.com/articles/languageWorkbench.h tml](http://www.martinfowler.com/articles/languageWorkbench.html) (access date: 30.01.2013).
- [46]. Michael S. Keller, "Take Command: cron: Job Scheduler", Linux Journal, Volume 99, Issue 65, Article No. 15, September 1999.
- [47]. web1.ctaa.org/webmodules/webarticles/articlefiles/Fundamentals.pdf.
- [48]. Punyabrota Dasgupta and Rani Bisal, —Social Media Analytics —,Tata Consultancy Services Whitepaper.
- [49]. Hastings, Larry,"The History of Python: A Brief Timeline of Python". . 2009-01-20. Retrieved 2016-03-20.
- [50]. The Python dialect manual, pp 502-505.