An Android based application: Cab pooling

Mrs. Chaitrali Dangare[1], Ms. Gouni Akila[2]

Assistant Professor, Dept. of CSE, Bharat Institute of Engineering & Technology, Hyderabad[1]

M.Tech Student, Bharat Institute of Engineering & Technology, Hyderabad[2]

Abstract: Many transportation modes are available in our country but, still transportation is a major issue nowadays in metropolitan cities. Increase in number of cars on road leads to many problems such as traffic congestion, health problems, air pollution, environmental degradation etc. This problem can be reduced by using a mechanism called as "Cab sharing or pooling", which allows you to share your cab with other passengers. Cab pooling is the sharing of car journeys so that more than one person travels in a cab that reduces each person's travelling cost such as fuel cost, stress of driving and security to passengers etc. In this paper we have proposed to develop an android based application which helps user to share expense, not worry about hiring a cab and making new connections.

Keywords: Cab pooling; android; Location tracing service; cab management; traffic congestion.

I. INTRODUCTION

India has second largest road network in world, because transportation requirement is more in India, which leads to more number of vehicles on roads. From fast few years number of vehicles on road has increased which created many problems such as traffic congestion, pollution, environmental degradation etc. It will also result in reducing quantity of natural resources like petrol, diesel & natural gas. The main problem created due to this is vehicles emitting pollutants are affecting environment as well as human health badly.

In recent years, because of increase in vehicles on roads world is facing a problem "global warming". To overcome from this problem an effective solution is reduce the harmful factors in air emitted by vehicles. So in this paper, we have proposed a solution to reduce this problem is "Cab pooling". There is another reason for applying this solution is inadequate public transportation system in metropolitan cities.

In the absence of an efficient public transportation system in urban areas, there has been an increasing trend towards more and more ownership and utilization of personalized motor vehicles to commute which is not only more energy intensive and polluting, but also more expensive to the economy[2].

Cab pooling scheme is designed to encourage commuters to share travel expenses and resources with colleagues. Carpooling (also known as car-sharing, ridesharing, lift-sharing), is the shared use of a car by the driver and one or more passengers, usually for commuting. Carpooling arrangements and schemes involve varying degrees of formality and regularity.

The advantages of this scheme are

1. Number of vehicles on road will be reduced.
2. Reducing traffic congestion.
3. Emission of harmful gases by the vehicles can also be reduced.
4. Increase vehicle occupancy.
5. Parking requirement is reduced.
6. Cost saving
7. Decrease in pollution.

II. RELATED WORK

In recent years, the problems of global warming and the energy crisis have aroused widespread public concern. One recommended solution for reducing the harmful factors leading to such problems is cab pooling. Our application is an attempt to make a system which is user friendly and provides an opportunity to share cars. We intent on making an application which would be help the users to upload, view and register for journeys both short distance.

While developing this application we found problems in current scenario as follows:
1. Increase traffic
2. Increase pollution
3. Increase in fuel price

So, we did a detail study on exiting system based on following research papers.

Yu-Tso Chen and Chen-Heng Hsu[1] found that current cab pooling systems or applications are not functioning well. They proposed a system called as social community based car pooling (SCC) model which use result of CRS analysis model. With this model traveling cost will be reduced.

Sweta, Sushmitha Reddy I, Maddipatla Mounika, Priyanka Agrawal, Pallavi G. B[3] did a survey to reduce the issues decrease the road density and emission of fuels.

Deepak B. Nagare, Kishor L. More, Nitin S. Tanwar, S.S.Kulkarni, Kalyan C. Gunda[4], in this paper Carpool is android application that provides advanced searching techniques. This will help user to reduce the cost involved in repetitive distance traveling by sharing car and cost required for traveling.

Kum Kum Dewan and Israr Ahmad[2], did a survey in Delhi based on a structured questionnaire for carpooling.

After analysis based on collected data they found that carpooling can save approximately 40% of total fuel cost required to travel.

Swati.R.Tare, Neha B.Khalate and Ajita A.Mahapadi[5], did a review paper on car pooling application using android OS. This application will successfully overcome the drawbacks of previous application which can be accessed only by the driver and not the passenger which result in inflexibility and also is less expensive and anyone can afford it on their Smartphone.

III. EXISTING SYSTEM

We exactly don't know where the cab is available and also whether the space is available in the cab or not this is the primary issue. There is huge problem of traffic on roads these days and the increase in fuel prices add to the misery of daily users of personal vehicles. Also use of vehicles causes pollution which has its adverse affects. Cab pooling is a solution for issues like security and trust which come into the picture.

IV. PROPOSED SYSTEM

In this paper we have proposed a system that is an attempt to make an application which is user friendly and provides an opportunity to share cabs and also provides security to passengers. The mobile based Cab Pool system helps users to upload, view and register for journey. The administrator will upload the information like source, destination along with route selected and also capacity of vehicle.

This application provides security to users. When the users hire the cab immediately message will be sent to police and the persons in favorites list (secure persons). When the user are in danger then immediately message will be sent to police and secure persons. They can trace the location and save the user.

V. DESIGN MODULES

Our system contains following total 4 modules like:

1. **Profile Management**:

- User registers his/her basic details like name, contact number, e-mail id.
- User login with username and password.
- User can update his details like password, phone number and address etc.
- User can retrieve his password by entering his date of birth.

2. **Cab Management**:

- Administrator updates the details of cabs.
- User selects the cabs based on his requirements.
- Administrator updates information like capacity of vehicle.

3. **Booking Management**:

- User selects his category based on his convenience i.e. sharing cab or non sharing
- Then the user books for the cab

- Then if the user finds the path convenient then he/she can hire the cab and immediately message will be sent to police and also the members of favorite list that he/she entered the cab

4. **Location tracing Services**:

If the user is in any danger then immediately message will be sent to police and members of favorite list so that they can trace the location and save the user.

VI. ARCHITECTURE

The architecture has shown in fig 1, show how the system will interact with user and admin. Our system has total four modules along with two major modules admin and user. The application will be installed on both devices i.e. user & driver device and they will interact with each other. The system module details are already discussed in previous section
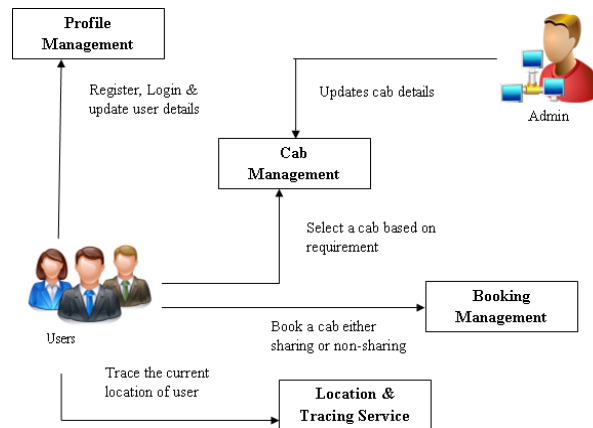

Fig. 1: System Architecture

The basic objects in the physical model are:

Table: An entity in the logical model usually corresponds to a table in a physical data model. In the physical model, a graphic box represents a table in which data is stored in the database.

Columns: Columns collect information about a table.

Views: In a physical model, you can create a view, which is really a SQL query that is permanently stored in the database. Typically, a view is used to present specific database information for target audience.
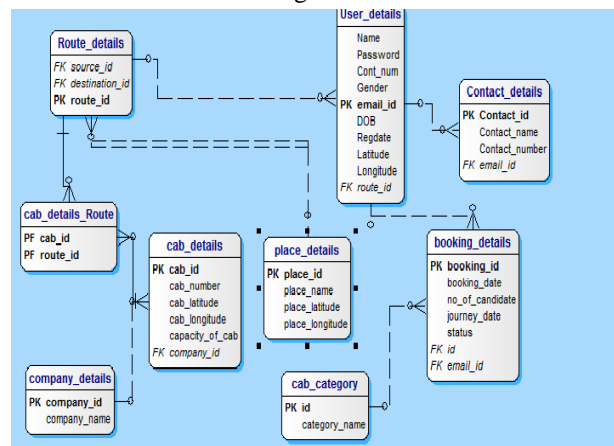

Fig 2: Database tables

Here we will show some of the views for database tables like:

Fig 3: User_Details table fields

Fig 4: Cab_Details table fields

Fig 5: Booking_Details table fields

VII. TESTING

Testing is one of the most important phases in the software development procedure activity. In software development life cycle (SDLC), the main aim of testing process is the quality because quality gives guarantee about software; the developed software is tested against attaining the required functionality and performance.

During the testing process the software is worked with some particular test cases and the output of the test cases are analysed whether the software is working according to the expectations or not. The success of the testing process in determining the errors is mostly depends upon the test case criteria, for testing any software we need to have a description of the expected behaviour of the system and method of determining whether the observed behaviour confirmed to the expected behaviour.

For our application we perform testing based on that some of the test cases are listed in below table:

| Sr. No.	Test case name	Description	Input data	Expected output	Observed output	Status
1.	User Login	Username/ password is wrong.	Username/ password is wrong.	Enter correct username and password	Enter correct username and password	Success
2.	User Registration	Enter name, dob, Contact number, email-id	Name, dob, contact number, Email is wrong	Enter correct details	Enter correct details	Success
3.	Booking	Source, destination	Source destination	Enter correct source and destination	Booked	Success.
4.	Location and tracing	By using gps or internet can trace the user location	By using gps or internet can trace the user location	Message will be sent favourite list members	Traced successful	Success.
5.	Tollgate details	Enter correct tollgate details	Enter correct tollgate details	Display correct details	Yes it is	Success

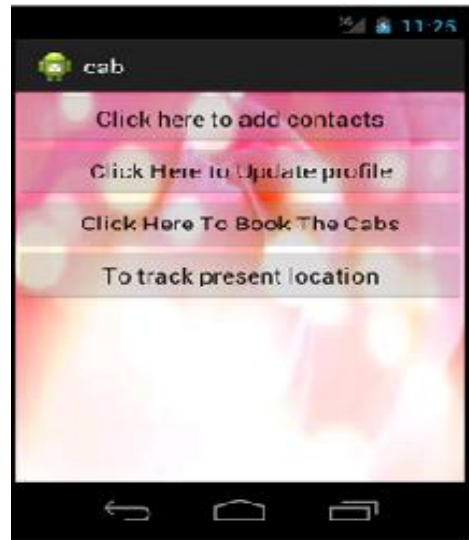## VIII. SCREEN SHOTS
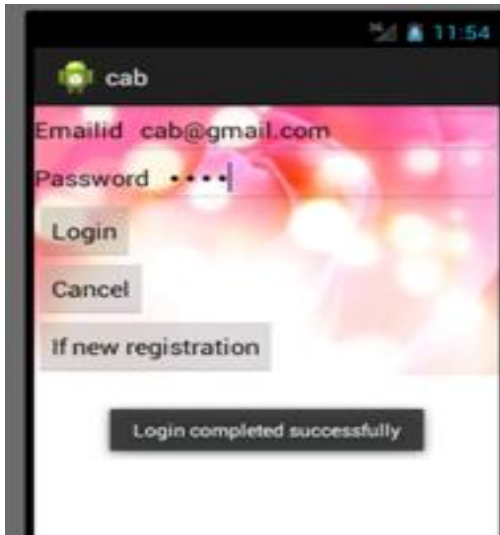
Fig 6: Login Screen

Fig 8: Menu

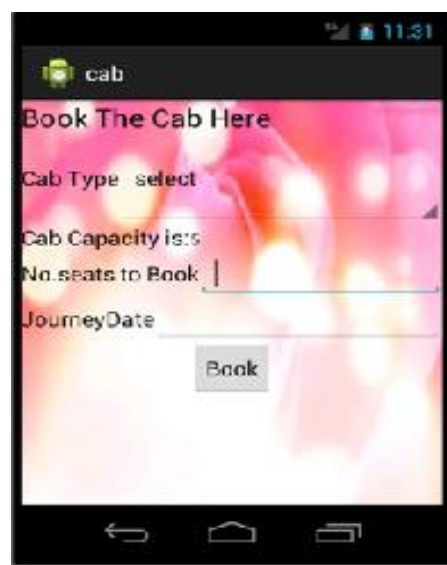Fig 7: Registration

Fig 9: Booking

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IX. CONCLUSION AND FUTURE WORK

Cab pooling system is very effective means to reduce pollution. It also provides an eco-friendly way to travel and also provides security to users. So for safe, secure and comfortable journey cab pooling is the best way to travel. Save your life by having a safe secure and comfortable journey. Cab pooling or ride sharing is convenient, great to save money and better for the environment. You can't really go wrong! I guess you need to know what is car pooling to start with, don't you? Cab pooling is basically sharing a ride with a friend who is going the same way. It might be a friend from work with a car who you share the same shift with – why not catch a lift with them? You might even take a ride with your flat mate or neighbour to the supermarket because you like to shop at the same place – the possibilities are endless you just have to ask around.

Here are some reasons car pooling is great for you:
- It reduces your travelling expenses and the need for a car.
- If you have a car then offering someone a ride might be some extra company for the trip or they might even help contribute to the fuel bill.
- It improves your travel time (it can sometimes be a little faster on highways because if you have more than one person in the car you can use 'car pooling lanes' which are generally less crowded.
- It provides you with an alternative and cheap travel option

Cab pooling is also great for your community because: It reduces pollution and emissions (one car is better than two!) and therefore improves the environment

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