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Driverless Connect: The Car Pool

A Report for the Evaluation 3 of Project 2

Submitted by

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BONAFIDE CERTIFICATE

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ABSTRACT

There are a lot of problems for a country in the transport section. Some of the major problems are inadequate public transportation, high gas prices, traffic jam, depletion of natural resources for obtaining fuel etc.

The solution of these problems requires a lot of resources and time. So an alternative to reduce the issues mentioned earlier can be used.

This alternative is none other than Car Pooling. This aims to bring together the travellers with similar destination and time and help reduce the number of vehicles used and utilize the space in the vehicles. The online carpooling system is a web-based application is to provide us with a simple riding platform between the car owner and car user. This project enables users to access mobility assets own by others exactly when they need. It shows a medium for available cars to pick up them on the interest of car owner with time and capacity.

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Chapter 1 -**INTRODUCTION**

1. Overall Description

Carpooling (also **car-sharing**, **ride-sharing** and **lift-sharing**) is the sharing of car journeys so that more than one person travels in a car, and prevents the need for others to have to drive to a location themselves

By having more people using one vehicle, carpooling reduces each person's travel costs such as: fuel costs, tolls, and the stress of driving. Carpooling is also a more environmentally friendly and sustainable way to travel as sharing journeys reduces air pollution, carbon emission, traffic congestion on the roads, and the need for parking spaces. Authorities often encourage carpooling, especially during periods of high pollution or high fuel prices. Car sharing is a good way to use up the full seating capacity of a car, which would otherwise remain unused if it were just the driver using the car.

In 2009, carpooling represented 43.5% of all trips in the United States and 10% of commute trips. The majority of carpool commutes (over 60%) are "fam-pools" with family members. Carpool commuting is more popular for people who work in places with more jobs nearby, and who live in places with higher residential densities. Carpooling is significantly correlated with transport operating costs, including fuel prices and commute length, and with measures of social capital, such as time spent with others, time spent eating and drinking, and being unmarried. However, carpooling is significantly less likely among people who spend more time at work, elderly people, and homeowners.

1.2. Advantages of such projects:-

- Reduce pollution
- Reduce traffic
- Save money
- Save natural resources

1.3. Purpose

The purpose of the project is to help reduce the problems like traffic jam by fully utilizing the vehicle space, reduce the wastage of fuel, save money**.**

1.4.Motivation and Scope

As the population of the world increases day by day the problems for the world increases and some of the problems affect the general population. Some problems are inadequate public transportation, high gas prices, traffic jam, depletion of natural resources for obtaining fuel etc. If these problems are not solved then the effects can be dangerous for example natural resources that are used to obtain fuel for vehicles can be exhausted and there might not be a lot of alternatives for the generation of energy. And for creating a solution for such a problem a huge about of resources and time is required. So an alternative for at least reducing the negative impacts of such problems is carpooling. It might not eradicate the whole problem but at least it can reduce its effects.

The Vehicle sharing Project is an android based application which includes user interaction. The project will provide communication environment for users (drivers and customers). Every user has their own profiles and they can have access with given password to the system. The drivers can draw their routes from map in our application. And customers can communicate with the

driver via the messaging system and pick their path. After mutual agreement with each other, they record the transportation information to the system. At the end, users can assess each other via feedback system.

The definition of the term which are in SRS Document, are shown below

GUI	Graphical User Interface
API	Application User Interface
SRS	Software requirement Specification
PHP	Hypertext Processor
DBMS	Data Base Management System
SDK	Software Development Kit

Table 1: SRS Abbreviation, Notation and Acronyms

Chapter 2 Literature survey

Vehicle sharing also known as carpool is two or more commuters sharing a ride in one of their own vehicles. The best carpooling arrangements are very flexible. Usually people arrange carpools in order to save money, protect the environment by burning less fuel or gas to enjoy each other's company.

By having more people using one vehicle, carpooling reduces each other's persons travel cost such as fuel cost, tolls, and the stress of driving. The other motive behind the development of such an application is to reduce hardship that are faced by the commuters to reach the destination.

Cities with worst traffic, longer commuters and longer rush hours times often have more people whop want to carpool. In areas where you wan to find "extreme commuters" (like Mumbai) travelling an hour and more to work every day, there is even more demand for carpooling.

In such a system commuters are benefited because they can share gas and toll. Of course you accept carpool, you may, need to compromise on your specific work hours in order to make a carpool happen.

Conventional vehicle sharing has multiple issue associated with it. Car Pooling is like taking care of health. People know that its good, but many end up not ding it after an initial attempt. Some problems are listed below:

Co-ordination Issues:

Matching the travel time on a daily basis, managing multiple calls can be too taxing in the morning.

Bound by daily car pool commitment:

Car Pool becomes a daily or a monthly affairs and it becomes difficult for the vehicle owner to say no when they have some other commitment.

Informal contract:

A party can drop of the pact any time as per their convinence

Safety Concerns:

Unavailability of proper verification detail of ride sharing partners.

Awkward cash exchange:

Discussing money and exchanging cash is extremely awkward, and people having reputed jobs do not prefer this.

Limited Circle:

Do not know enough people or are not comfortable awakward, and people Having reputed jobs do not prefer this.

So there seems to be a plat forms which could handle most of these task at it ends so as to ease the process of car pooling and making it all the more feasible and effective.

The Platform should be a dynamic, safe and simple CarPooling solution that enables easy cost sharing for car owners when they share car seats with fellow commuters

Doing analysis of the current market for such platforms for sharing vehicle we came across a bunch of platforms providing these facilities and features most of them has usually failed delving deeper into the analysis of as to why this was the case, reveals that these platforms were built a few year back.

Now, few years back the most preferred and feasible way to reach the masses in a country like India would be via in the web. Needless to mention mobile devices and the platform that run them were barely as developed as they are today. And even if there were smartphone available in the market, but they catered only to people falling in high income bracket or to geeks who spent all their money on such devices. This made it very difficult to communicate to the user’s.

3.1SYSTEM SPECIFICATION

3.1.1 Hardware Requirement

In hardware requirement we require all those component which will provide us the platform for the development of the project. The minimum hardware require for the development of this project is as follows:-

- System: Any Oracle based System
- RAM: 2 GB
- Hard Disk:500 GB

3.1.2 Software Requirement

Software can be defined as a program which run on our computer. It act as a petrol in the vehicle. It is very important to run software to function the computer. Various software's are needed in this project for its development

.

- Operating System: Windows XP and advance
- Back end: DJANGO , PYTHON
- Front end: html, CSS, JAVASCRIPT
- Database: My SQL
- Tools: My SQL, Browser, StarUML, Pycharm

4.SYSTEM ARCHITECTURE

4.1 Functional Requirement

1.Registration Process:

Through this module new users can registered them. After giving their details, they will get a user id and password. Then to get entry into details section they need to provide this id and password and only user with valid id and password will get entry into details zone. This is also a security feature to avoid entry of unauthorized user.

2.Login:

In this module user enter the User id and password is checked and only valid user id and password will get entry into member's zone. This is a security feature to avoid entry of unauthorized users.

3.Search:

Through this module users can find their respective information.

4.Manage Information:

Users can update their details as well as their car details. Users can also delete his car details and complete account.

5.Administrator:

This is the Administrator's module by which we keep the eye on whole site and maintain and upgrade the site's service for sake of users

4.2 Non-Functional Requirements-

1.Privacy

Message shared between users should be encrypted to maintain privacy.

2. Robustness

In case user device crashes, a backup of their chat history must be stored on remote database servers to create recoverability.

3.Performance

Application must be lightweight and must send messages instantly.

Chapter -4 Existing System

In the existing system there is no good communication between administration and the car drivers. The older system is not user friendly. Administrator not able to view the requests of the users. Security is less compared to existing system. Details of the routes are not given online.
All the present available systems have a very attractive and innovative interface which helps the user to understand the system in a easy way. These systems work efficiently and engineered very well by the different sources available. But the problem with available systems is that they do not provide component that builds up trust among the fellow passengers. The reason is all the available sources only concentrate on physical structures of the system

Chapter -5 Proposed System

The proposed system is user friendly. Good communication is maintained between admin and driver. All the users requests can be viewed by the administrator immediately. Details of the driver and car are maintained in the database. High level security is assigned in the proposed system. The Carpooling application will be implemented in Android operating mobile phones. The application will try to cover the following:

1.User accounts for both the ride providers and the ride seekers.

2.Use GPS to find nearby carpoolers.

3.Find optimum paths and allow carpooler to choose one from it.

4.Integrating google maps so that the ride provider can provide his detailed route and then the potential passengers can view and decide their boarding and de-boarding point.

5.User profile which will have car details like registration number, colour and model of the car apart from the profile photo of the user fetched from his google account.

6.Option to choose the carpoolers so as to give women the option to travel with women only.

7.Profile rating to ensure the quality of ride.

It has SMS Alerts facilities for notification purpose. The High security makes it faithful to use. The security aspects gets more enhance by SOS facilities if the user is in trouble. It is available on Smartphone's so it is more flexible & dynamic to use.

Chapter -6 Proposed Design

6.1 CLASS DIAGRAM

Definition

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

Purpose of Class Diagrams:-

1.Shows static structure of classifiers in a system

2.Diagram provides basic notation for other structure diagrams prescribed by UML

3.Helpful for developers and other team members too

4.Business Analysts can use class diagrams to model systems from business perspective

A UML class diagram is made up of:

- A set of classes and
- A set of relationships between classes

What is a Class?

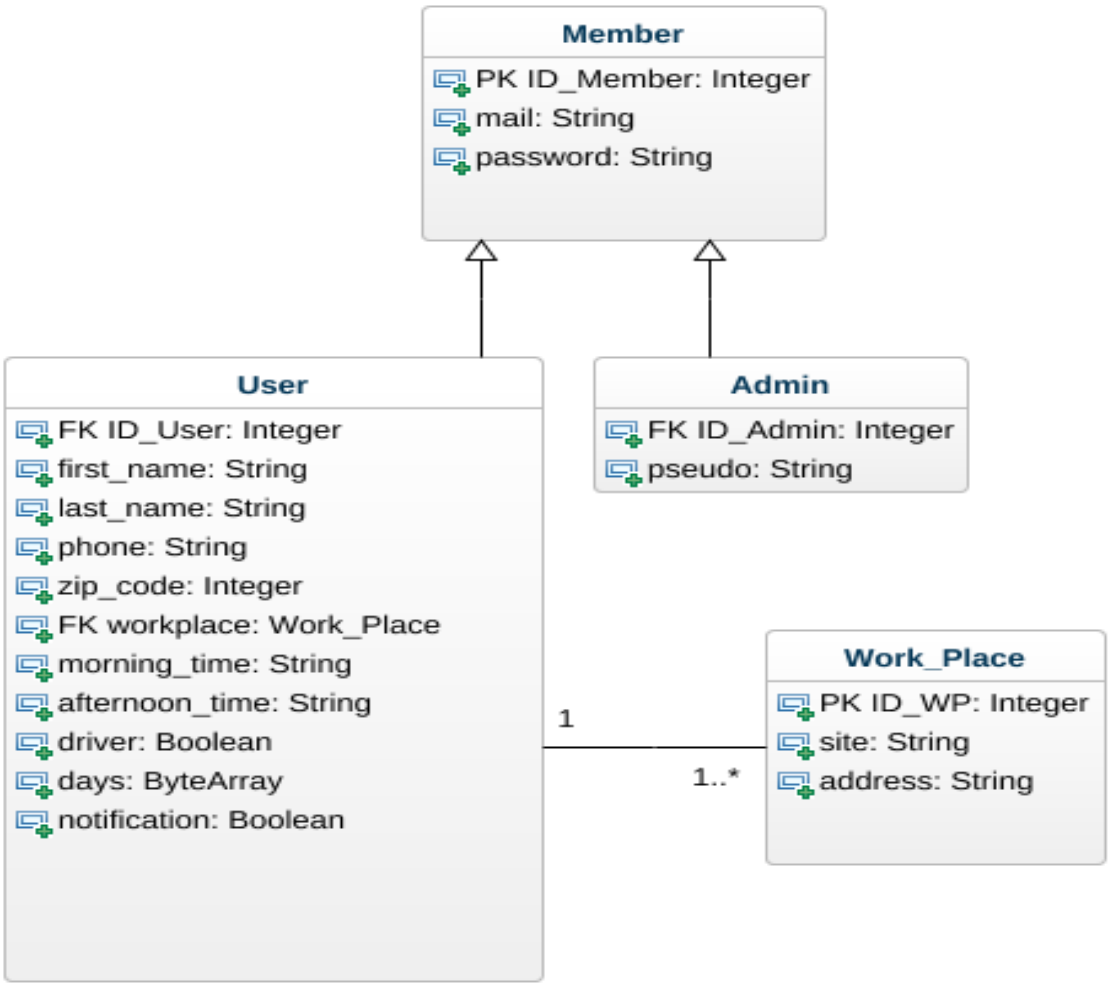
A description of a group of objects all with similar roles in the system, which consists of:

- Structural features (attributes) define what objects of the class "know"
  - Represent the state of an object of the class
  - Are descriptions of the structural or static features of a class
- Behavioral features (operations) define what objects of the class "can do"
  - Define the way in which objects may interact
  - Operations are descriptions of behavioral or dynamic features of a class

Class Notation

A class notation consists of three parts:

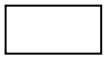
1. Class Name
2. The name of the class appears in the first partition.
3. Class Attributes
    - Attributes are shown in the second partition.
    - The attribute type is shown after the colon.
    - Attributes map onto member variables (data members) in code.
4. Class Operations (Methods)
    - Operations are shown in the third partition. They are services the class provides.
    - The return type of a method is shown after the colon at the end of the method signature.
    - The return type of method parameters are shown after the colon following the parameter name.
    - Operations map onto class methods in code


Member
PK ID_Member: Integer
mail: String
password: String
User
FK ID_User: Integer
first_name: String
last_name: String
phone: String
zip_code: Integer
FK workplace: Work_Place
morning_time: String
afternoon_time: String
driver: Boolean
days: ByteArray
notification: Boolean
Admin
FK ID_Admin: Integer
pseudo: String
Work_Place
PK ID_WP: Integer
site: String
address: String
1
1..*

6.2 DFD

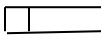
The Data flow Diagram shows the flow of data. It is generally made of symbols given below :

(1) A **square** shows the Entity : -



(2) A **Circle** shows the Process: -

(3) An **open Ended Rectangle** shows the data store : --



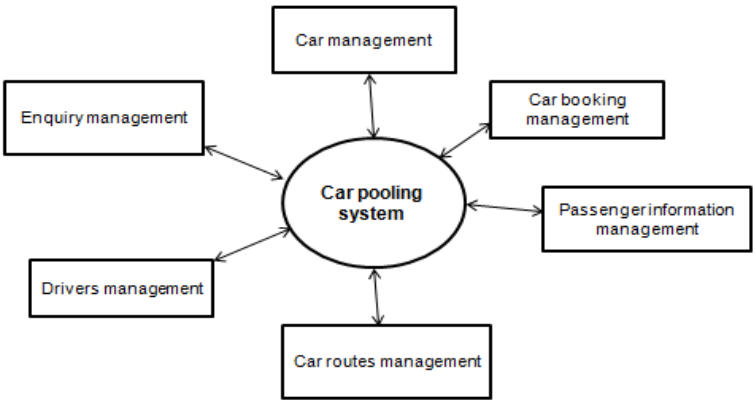
(4) An **arrow** shows the data flow :-

The DFD can be up to several levels. The 0 level DFD states the flow of data in the system as seen from the outward in each module.

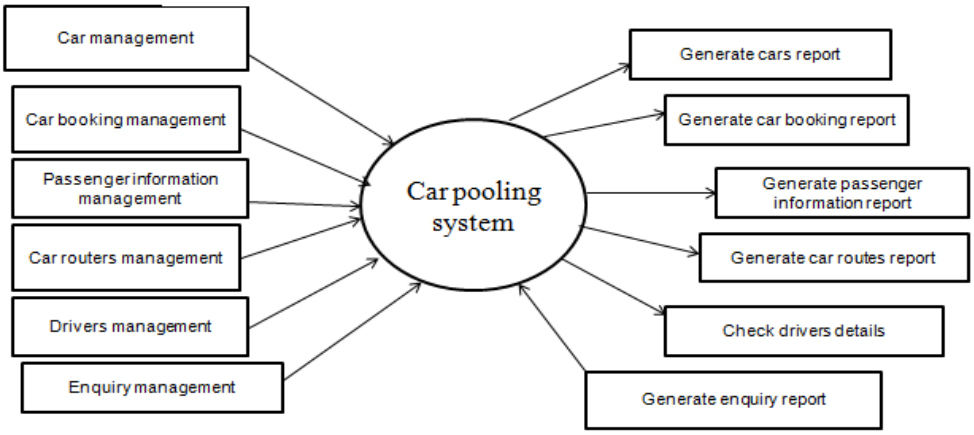
The first level DFD show more detail, about the single process of the 0 level DFD

The second level DFD can show even more details and so on.

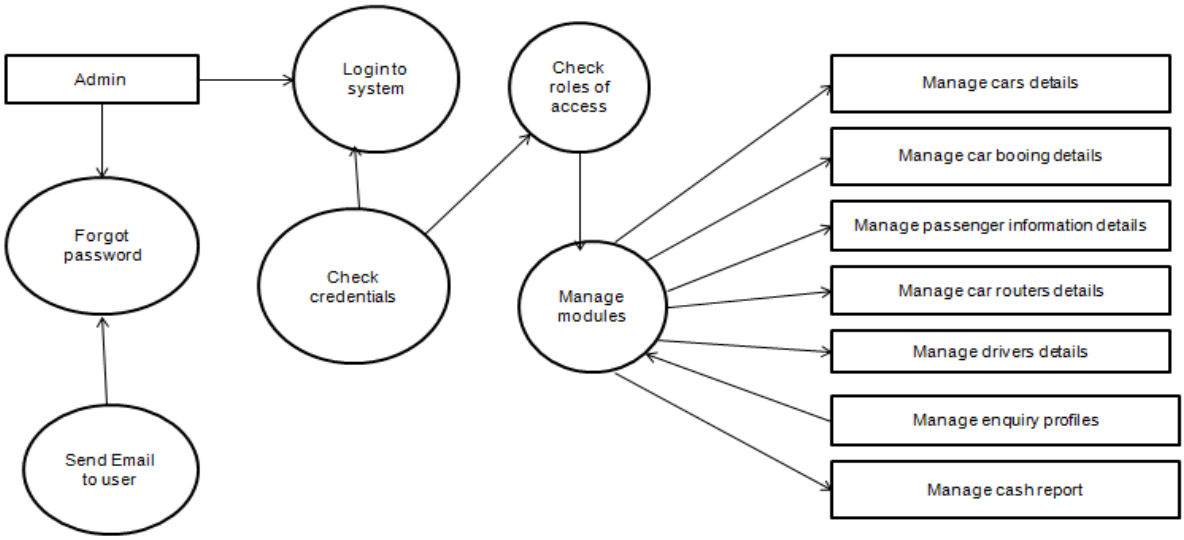
LEVEL ZERO DATA FLOW DIAGRAM



LEVEL ONE DATA FLOW DIAGRAM



LEVEL TWO DATA FLOW DIAGRAM



6.3 ER DIAGRAM

Definition:

An entity-relationship (ER) diagram is a specialized graphic that illustrates the interrelationships between entities in a database. ER diagrams often use symbols to represent three different types of information. Boxes are commonly used to represent entities. Diamonds are normally used to represent relationships and ovals are used to represent attributes.

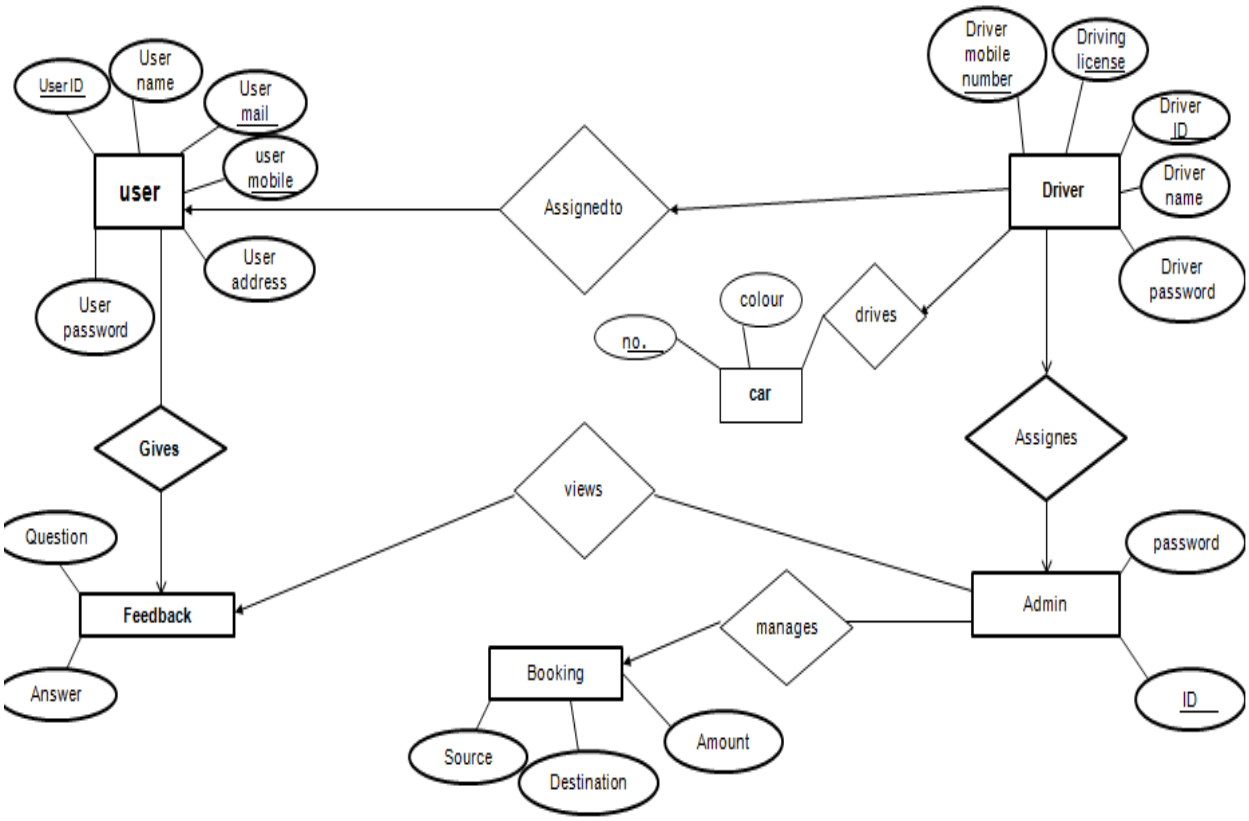
Entity Relationship (ER) diagram:

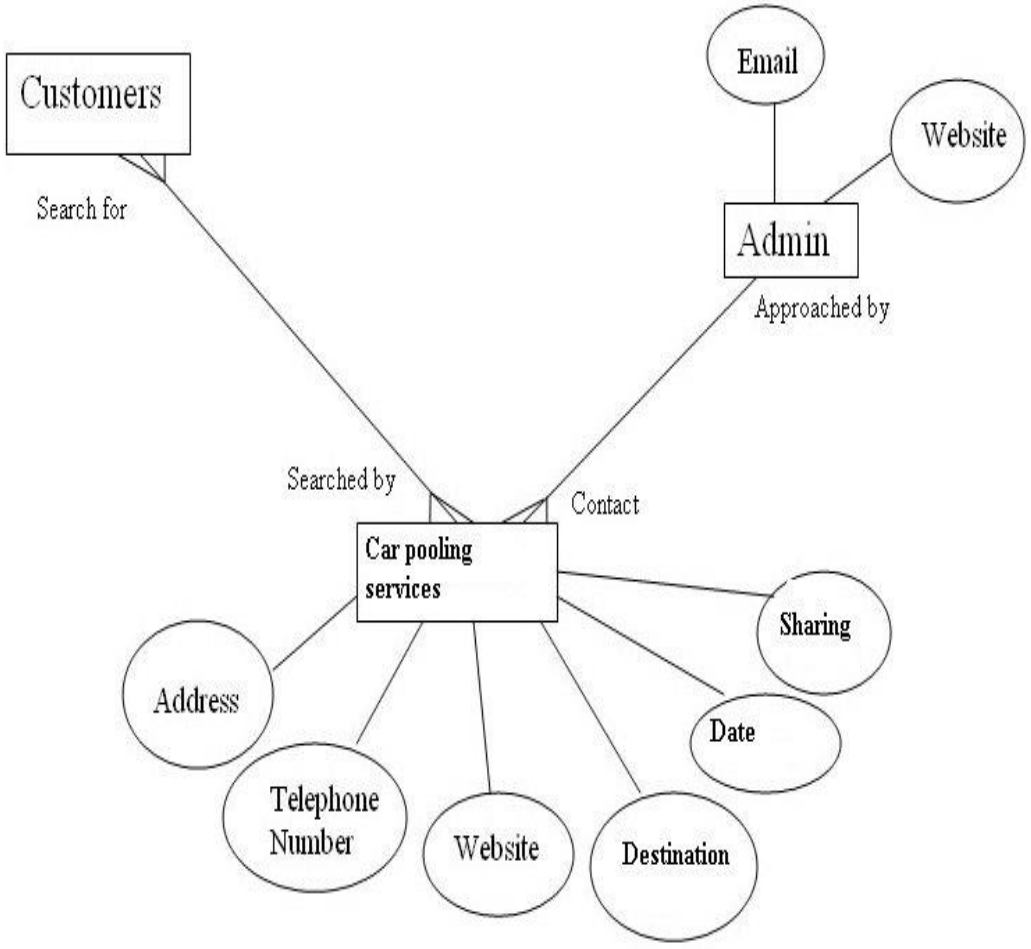
This diagramming technique is used to visually present a database schema or data model and was original proposed by Chen in the 1970s. There are many different data modeling notations; some are very similar to UML class diagrams (with the exception of operations). However, the notation the used here is slightly different, as proposed by Elmasri, et al.
The database schema for this system is shown in figure. The table object has been left out of the diagram because the table management feature set had been dropped from the requirements before this stage of the design process.

Some important database design decisions are as follows:

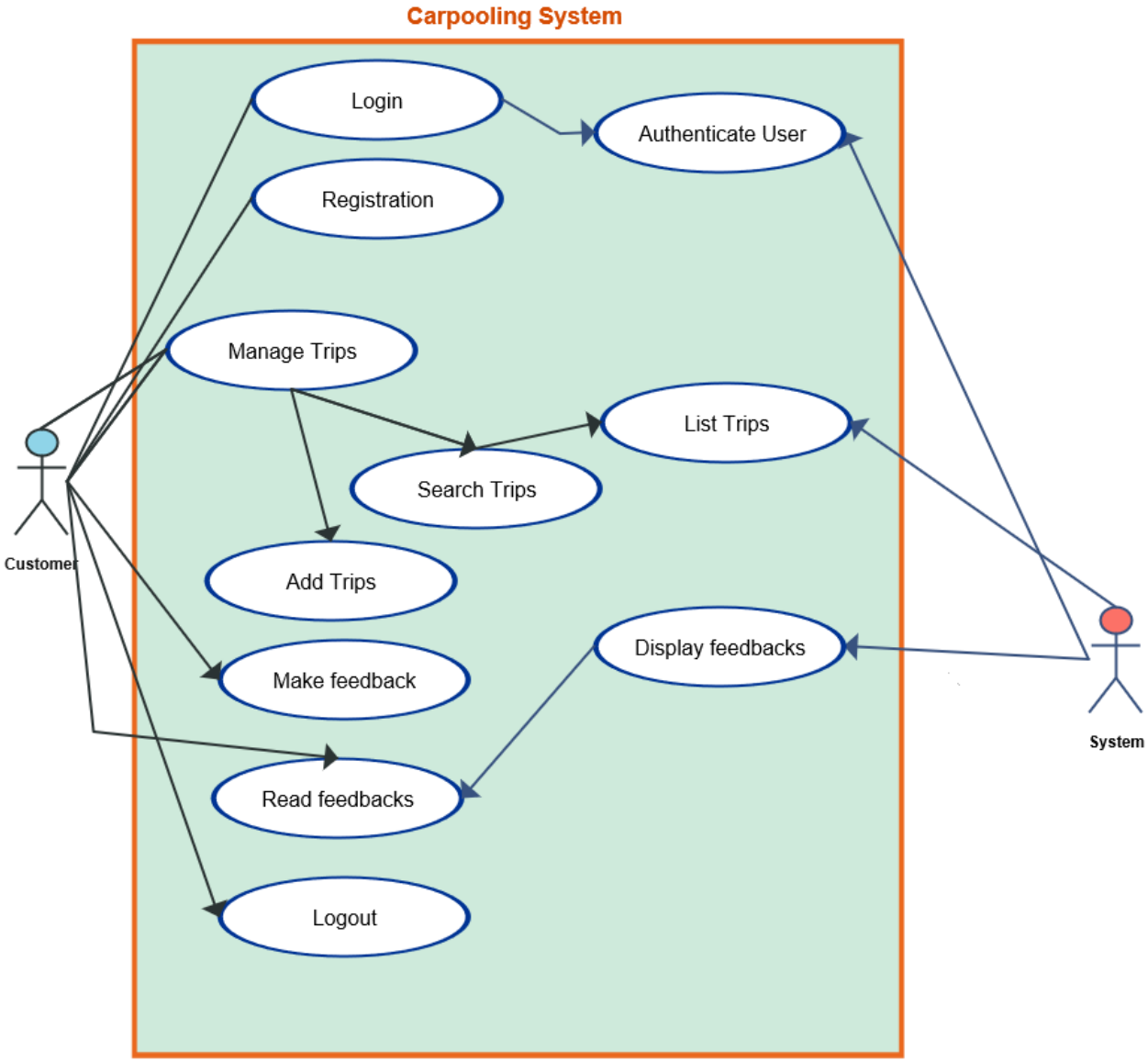
To store the total price of an order with the order rather than calculating it on the fly when looking at past orders. This is because the price of menu items could change at any time, so the total price at the time of ordering must be stored so that the total price is not incorrectly calculated in future.

Similar to the previous point, the order receipt is stored as a hard-copy and not regenerated when reviewing past orders because things such as the restaurant name or VAT percentage are subject to change. Receipts stored need to be exactly the same as the customer copy in case of dispute.

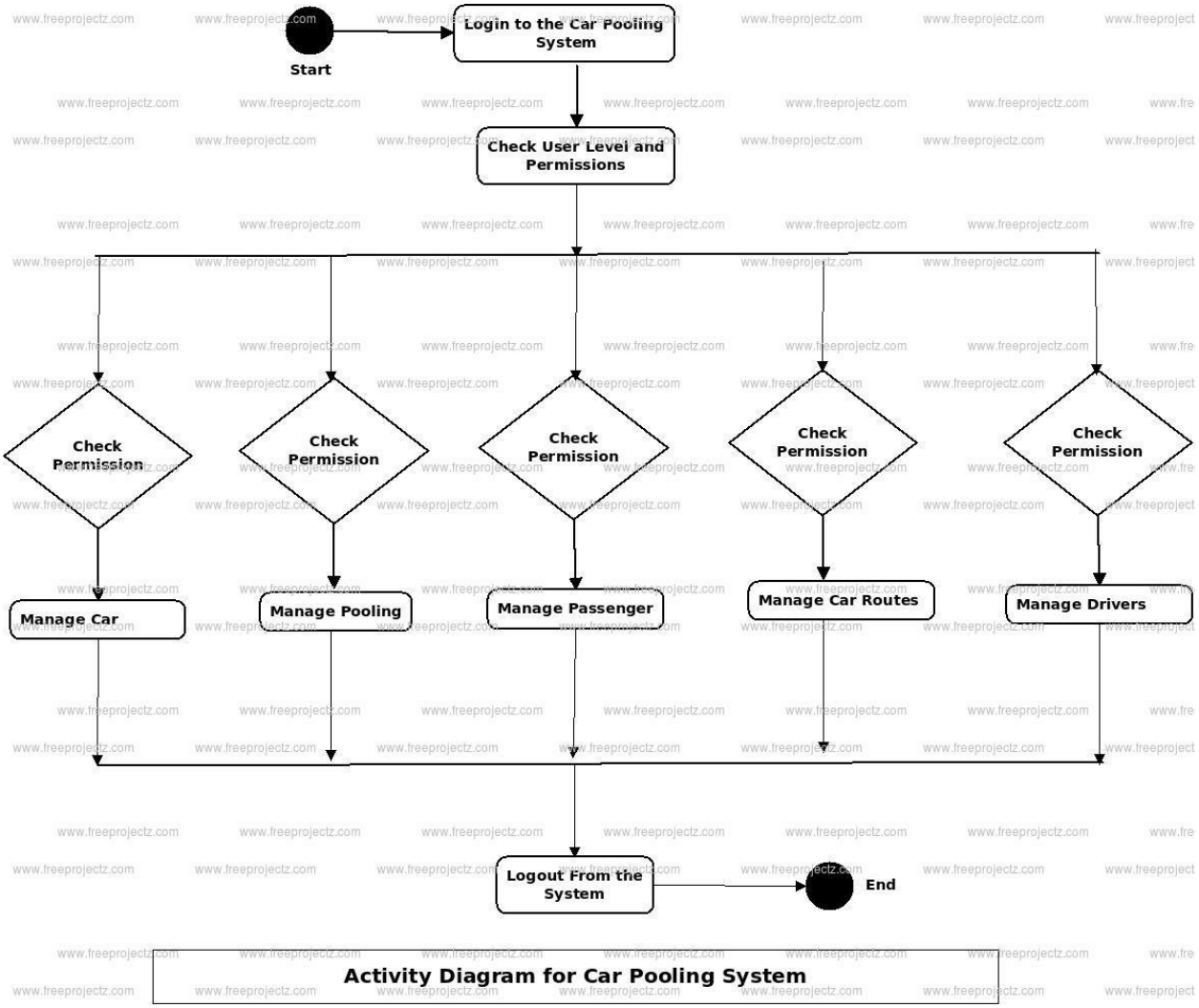



Customers
Email
Website
Search for
Admin
Approached by
Searched by
Contact
Car pooling services
Sharing
Address
Date
Telephone Number
Website
Destination

6.4USE CASE DIAGRAM



6.5 ACTIVITY DIAGRAM



Activity Diagram for Car Pooling System

MODULE SPLIT UP

1.Registration Process:

Through this module new users can registered them. After giving their details, they will get a user id and password. Then to get entry into details section they need to provide this id and password and only user with valid id and password will get entry into details zone. This is also a security feature to avoid entry of unauthorized user.

2.Login:

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3. Search:

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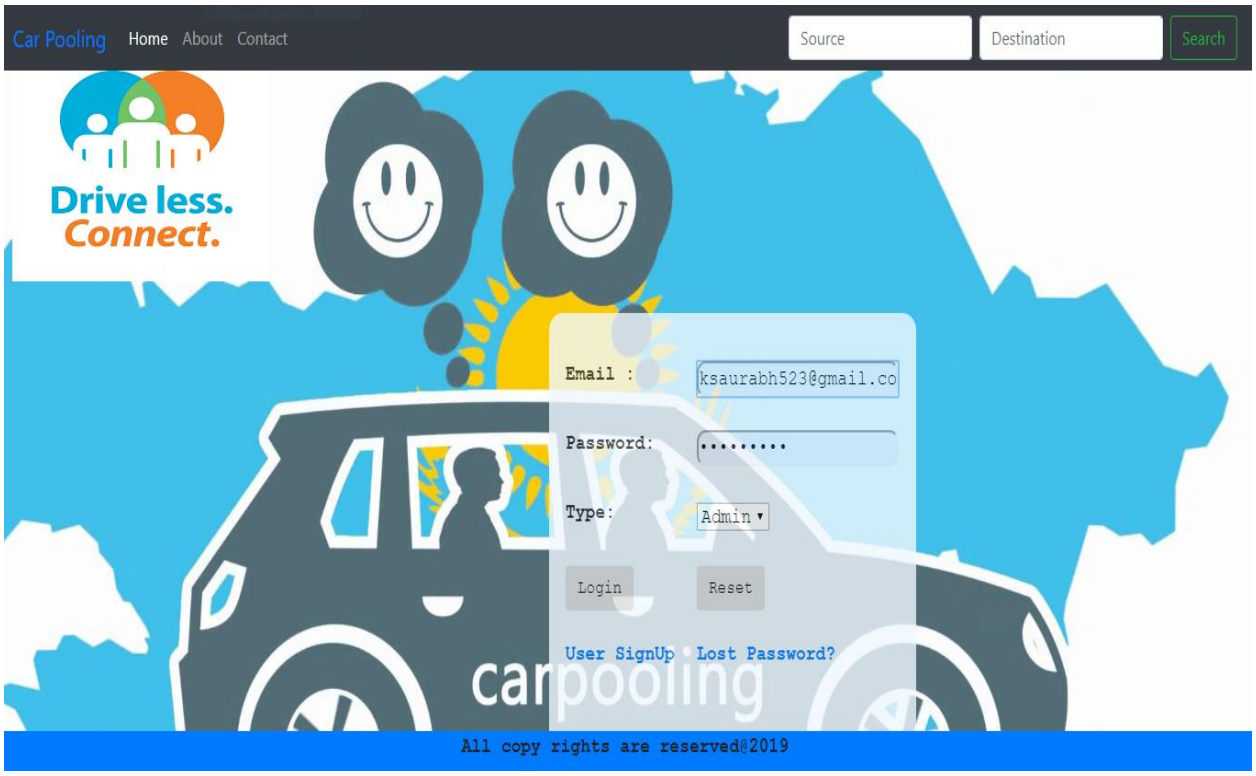
4.Manage Information:

Users can update their details as well as their car details. Users can also delete his car details and complete account.

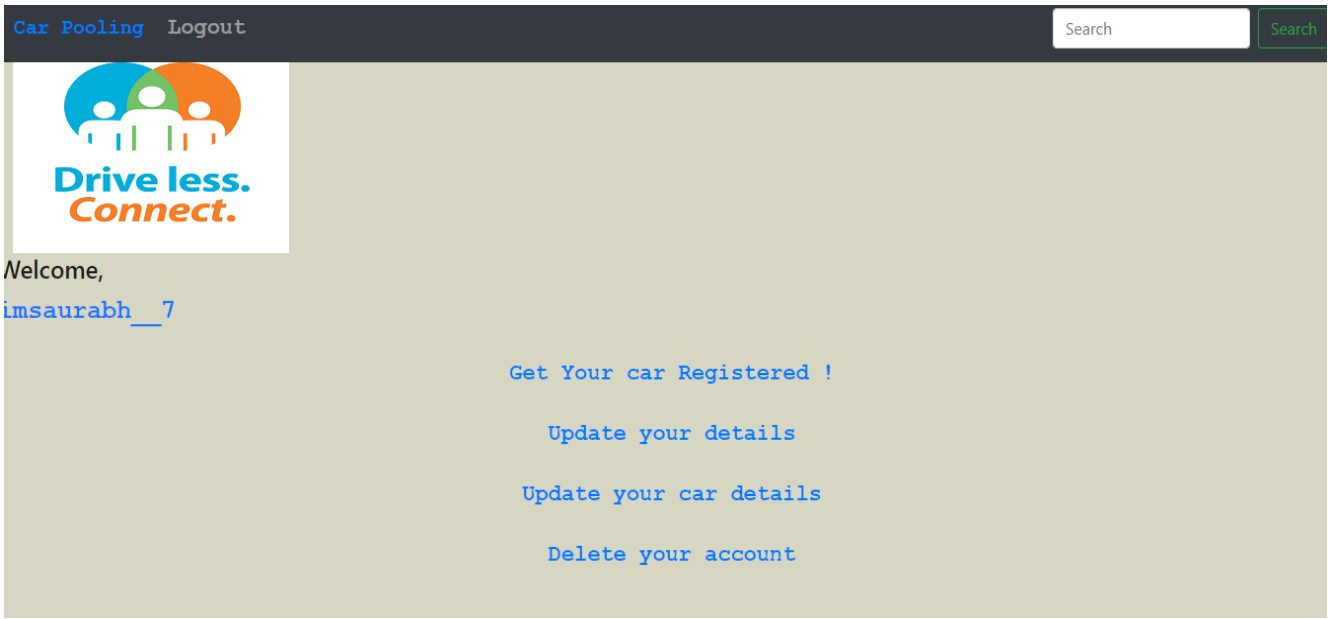
5.Administrator:

This is the Administrator's module by which we keep the eye on whole site and maintain and upgrade the site's service for sake of users.

Output




127.0.0.1:8000/search/
Apps
Paused
Car Pooling
Home
About
Contact
Source
Destination
Search
Drive less.
Connect.
alto 8:00am 6:00pm greater noida delhi alto cc@cc.com
dzire 8:00am 6:00pm greater noida delhi dzire aa@aa.com
maruti ,dzire 7:00AM 8:00PM greater noida delhi maruti ,dzire vishal@gmail.com
Audiii 8 am 6 pm greater noida delhi Audiii vishalsingh05@gmail.com


Car Pooling
Logout
Search
Search
Drive less.
Connect.
Welcome,
imsaurabh__7
Get Your car Registered !
Update your details
Update your car details
Delete your account

Chapter -7 Conclusion

Fifty percent of major industrial and mining firms have ride-sharing programs. Ride sharing is more prevalent than elsewhere in the Hampton Roads area where the military-industrial complex has promoted extensive ride sharing.

Carpooling is not for everyone. It is for those who can be a significant cost saving.We can understand the bushes don't work for everyone it is for those who can use the bus almost eliminate the cost of getting to work. Carpooling system is very effective means to reduce pollution and the congestion of vehicles in cities. It also provides an ecofriendly way to travel. It also provides an opportunity to meet new people. As today most people prefer private vehicle to travel due to delay caused in public transport system and luxuries provided by private vehicles. Pre-registration ensures that only identified people get into the vehicle so that trust can be established. The people registered are allotted specific days on which they should take their private vehicle, so that no inconvenience is caused to its registered passengers for daily commute. Thus the proposed carpooling system will be effective in reducing environment pollution.

- It will also provide a security to citizens.
- It will give the accurate pick-up time.

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- Fundamental of software engineering by Rajib Mall and Software engineering by Ian Sommerville
- IEEE standards for complete software requirement specification
- Slide share for taking reference of another project design and specification
- And apart from that we have taken help from many websites like:-
- https://www.javatpoint.com/django-tutorial
- https://www.javatpoint.com/python-tutorial
- https://www.sourcecodesworld.com
- https://www.javatpoint.com/javascript-tutorial
- https://www.geeksforgeeks.org
- https://en.wikipedia.org
- https://www.studytonight.com
- https://staruml.io
- https://www.tutorialspoint.com