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CAR POOLING

A Report for the Evaluation 3 of Project 2

Submitted by

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CONTENT

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.

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.

2.Advantages of such projects: -

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

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.

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.

SYSTEM SPECIFICATION

❖ Hardware Requirement

In hardware requirement we require all those components 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

❖ 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

SYSTEM ARCHITECTURE

Functional Requirements-

1. **Registration Process:**
   Through this module new users can register 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.

Non-Functional Requirements-

1. Privacy

Message shared between users should be encrypted to maintain privacy.

2. Robustness

In case users 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.

CLASS DIAGRAM

Definition

In software engineering, a class diagram in the Unified Modelling 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:
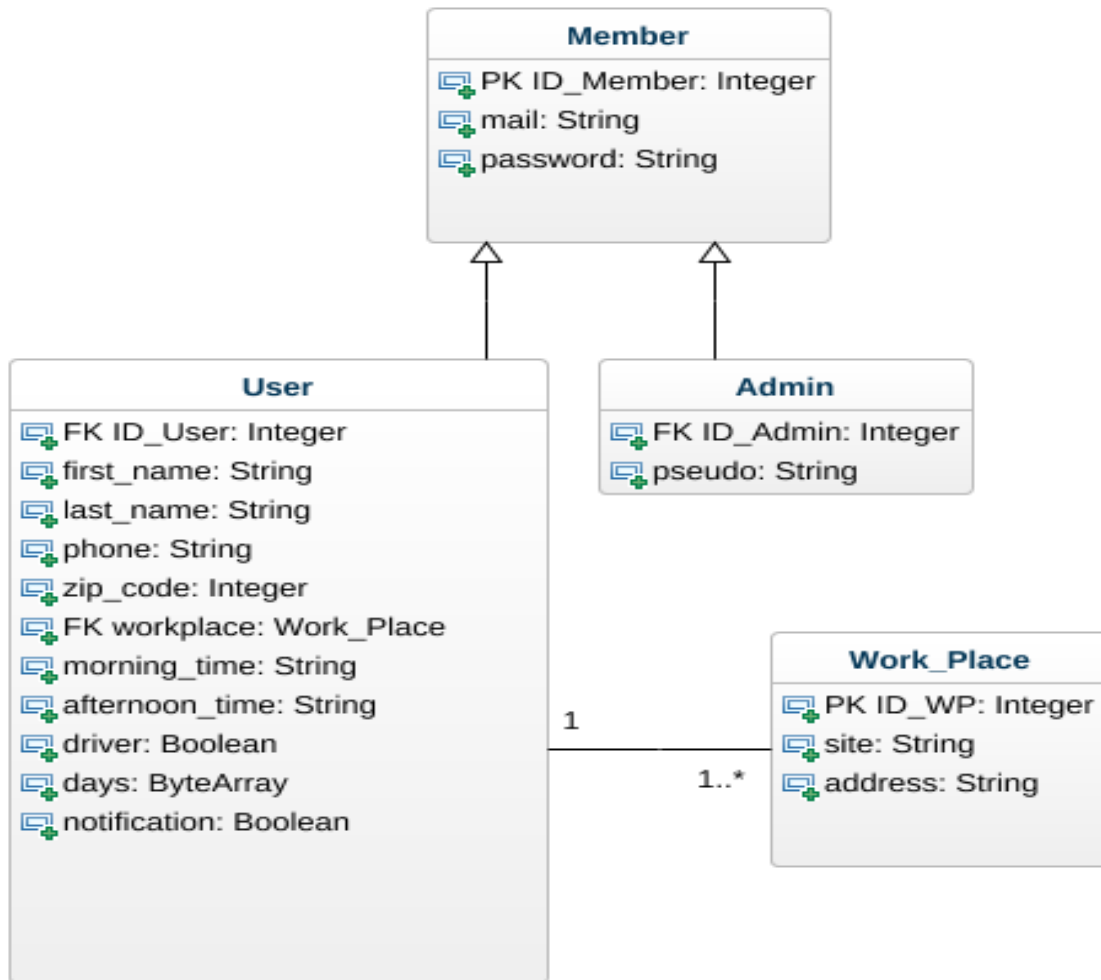- Structural features (attributes) define what objects of the class "know"
    - Represent the state of an object of the class
    - Are descriptions of the structural or static features of a class
- Behavioral features (operations) define what objects of the class "can do"

- Define the way in which objects may interact
- Operations are descriptions of behavioral or dynamic features of a class
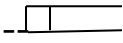
Class Notation

A class notation consists of three parts:
1. Class Name
   - The name of the class appears in the first partition.
2. 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.
3. Class Operations (Methods)
   - Operations are shown in the third partition. They are servicing 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 is 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..*

DFD

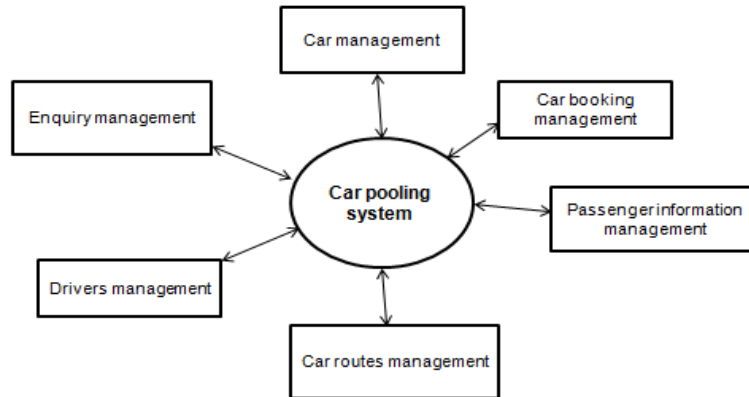The Data flow Diagram shows the flow of data. It is generally made of symbols given below:

(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.
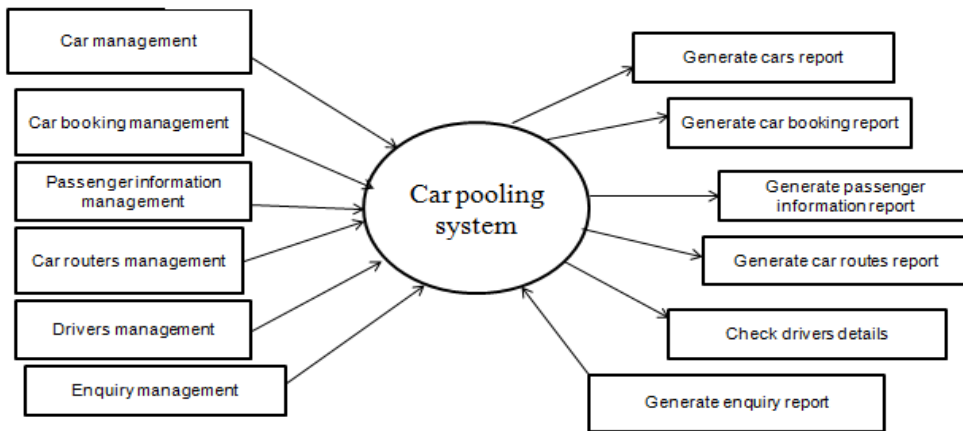The first level DFD show more detail, about the single process of the 0 level DFD
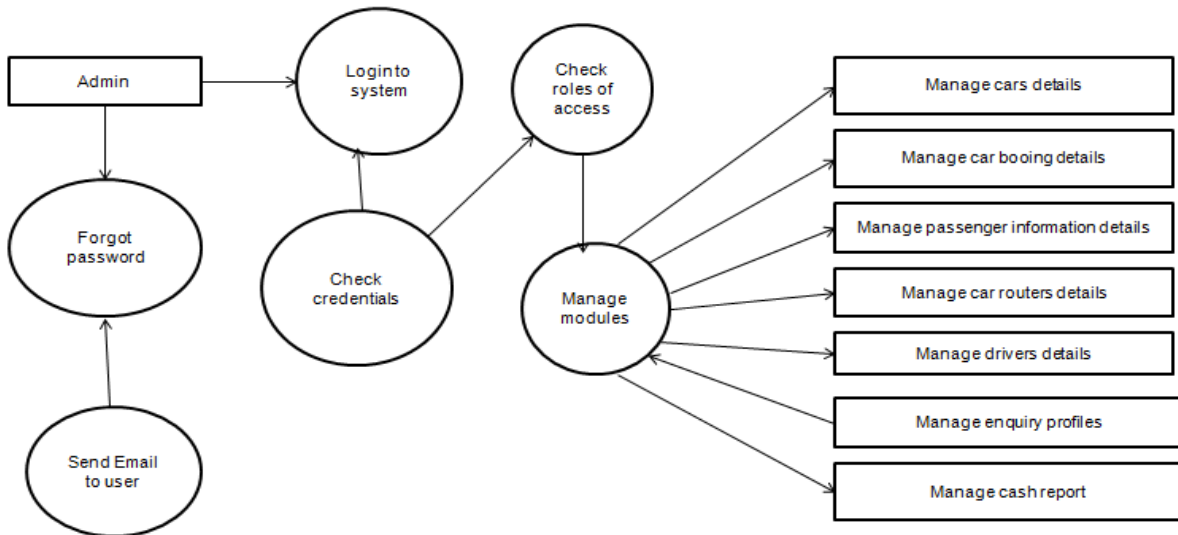The second level DFD can show even more details and so on.

LEVEL ZERO DATA FLOW DIAGRAM

- Car management
- Enquiry management
- Car booking management
- Car pooling system
- Passenger information management
- Drivers management
- Car routes management

LEVEL ONE DATA FLOW DIAGRAM

- Car management
- Car booking management
- Passenger information management
- Car routers management
- Drivers management
- Enquiry management
- Car pooling system
- Generate cars report
- Generate car booking report
- Generate passenger information report
- Generate car routes report
- Check drivers details
- Generate enquiry report

LEVEL TWO DATA FLOW DIAGRAM

- Admin
- Login to system
- Check roles of access
- Forgot password
- Check credentials
- Manage modules
- Send Email to user
- Manage cars details
- Manage car booing details
- Manage passenger information details
- Manage car routers details
- Manage drivers details
- Manage enquiry profiles
- Manage cash report

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.
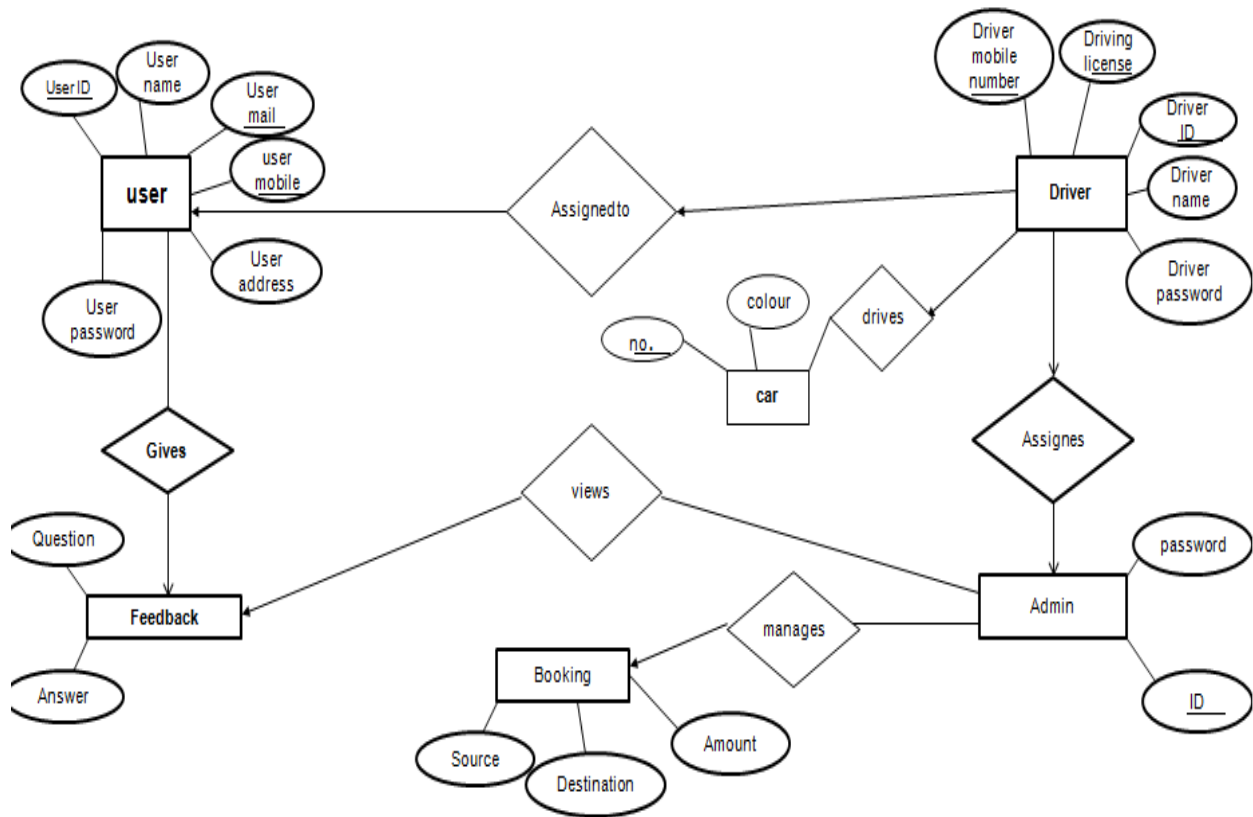
Entity Relationship (ER) diagram:

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 modelling 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.
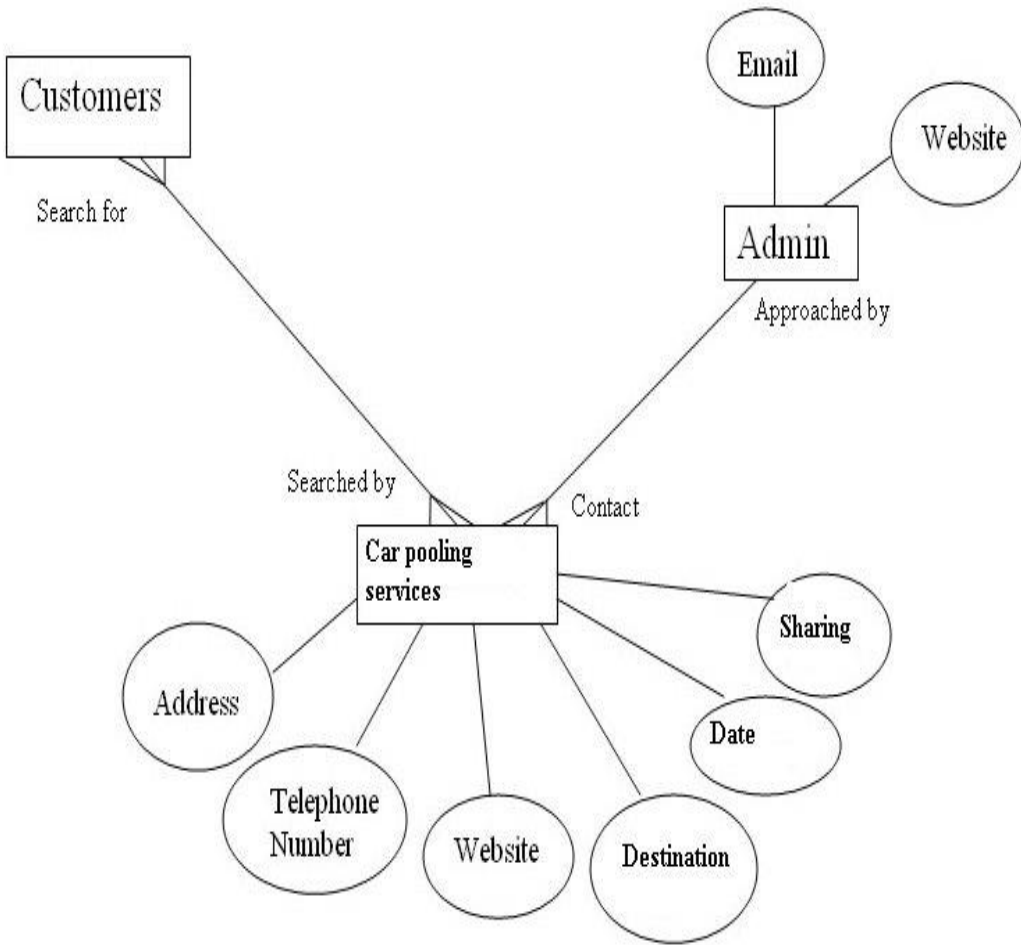The database schema for this system is shown in figure. The table object has been left out of the diagram because the table management feature set had been dropped from the requirements before this stage of the design process.

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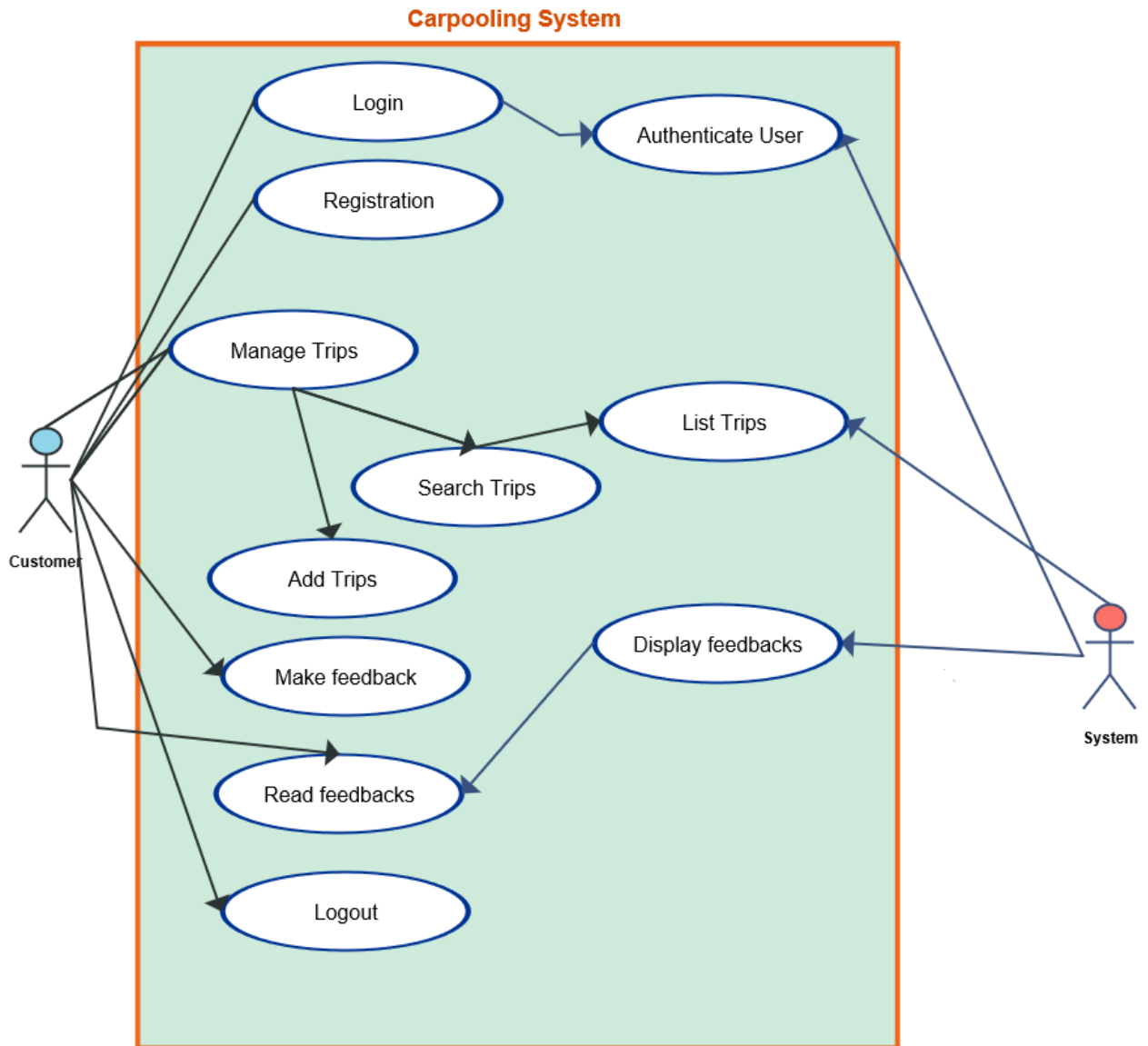
Similar to the previous point, the order receipt is stored as a hard-copy and not regenerated when reviewing past orders because things such as the restaurant name or VAT percentage are subject to change. Receipts stored need to be exactly the same as the customer copy in case of dispute.
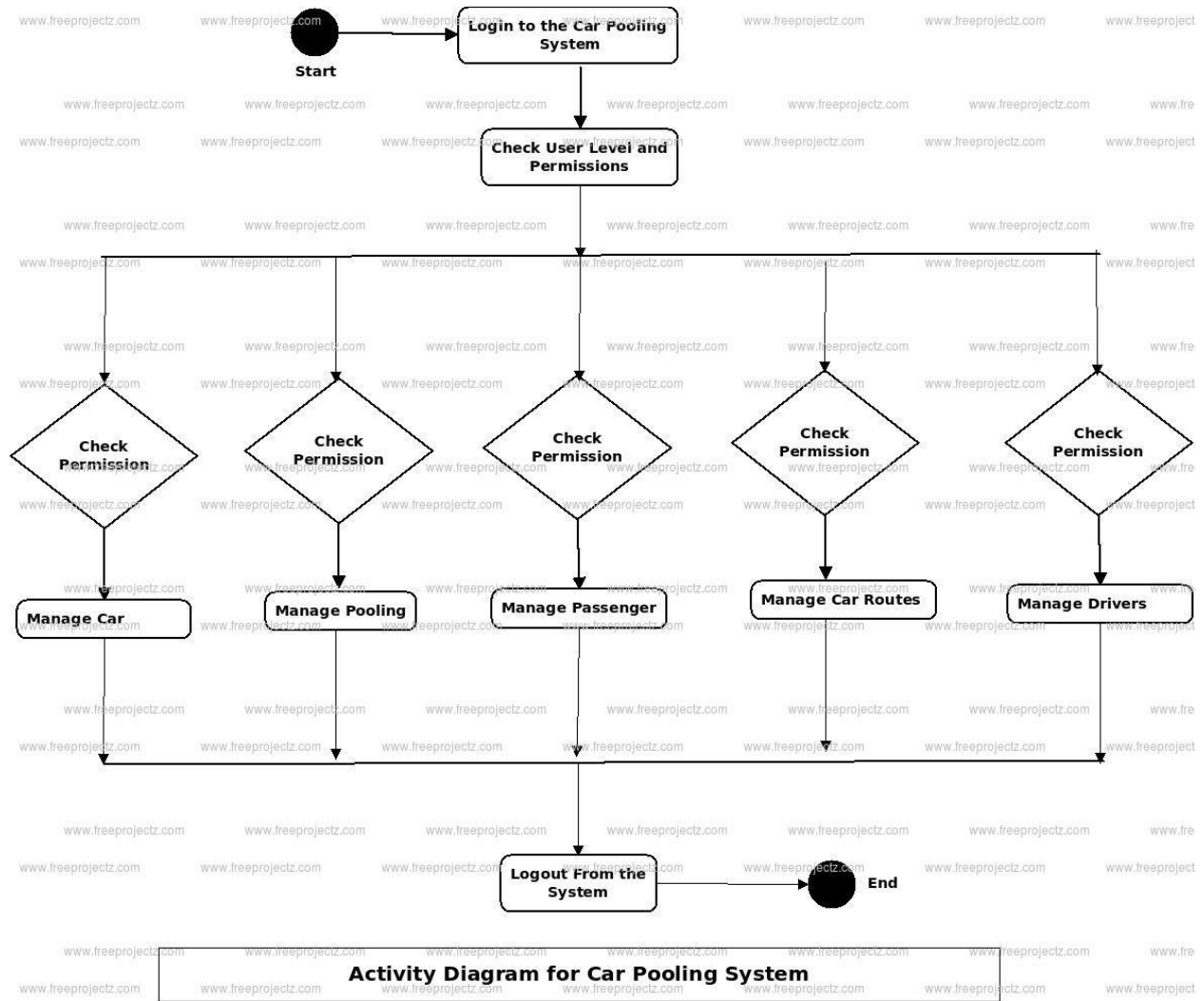
USE CASE DIAGRAM

Carpooling System

- Login
- Registration
- Manage Trips
- Search Trips
- Add Trips
- Make feedback
- Read feedbacks
- Logout
- Authenticate User
- List Trips
- Display feedbacks

Customer

System

ACTIVITY DIAGRAM

Start

Login to the Car Pooling System

Check User Level and Permissions

Check Permission → Manage Car

Check Permission → Manage Pooling

Check Permission → Manage Passenger

Check Permission → Manage Car Routes

Check Permission → Manage Drivers

Logout From the System

End

Activity Diagram for Car Pooling System

MODULE SPLIT UP

1.Registration Process:

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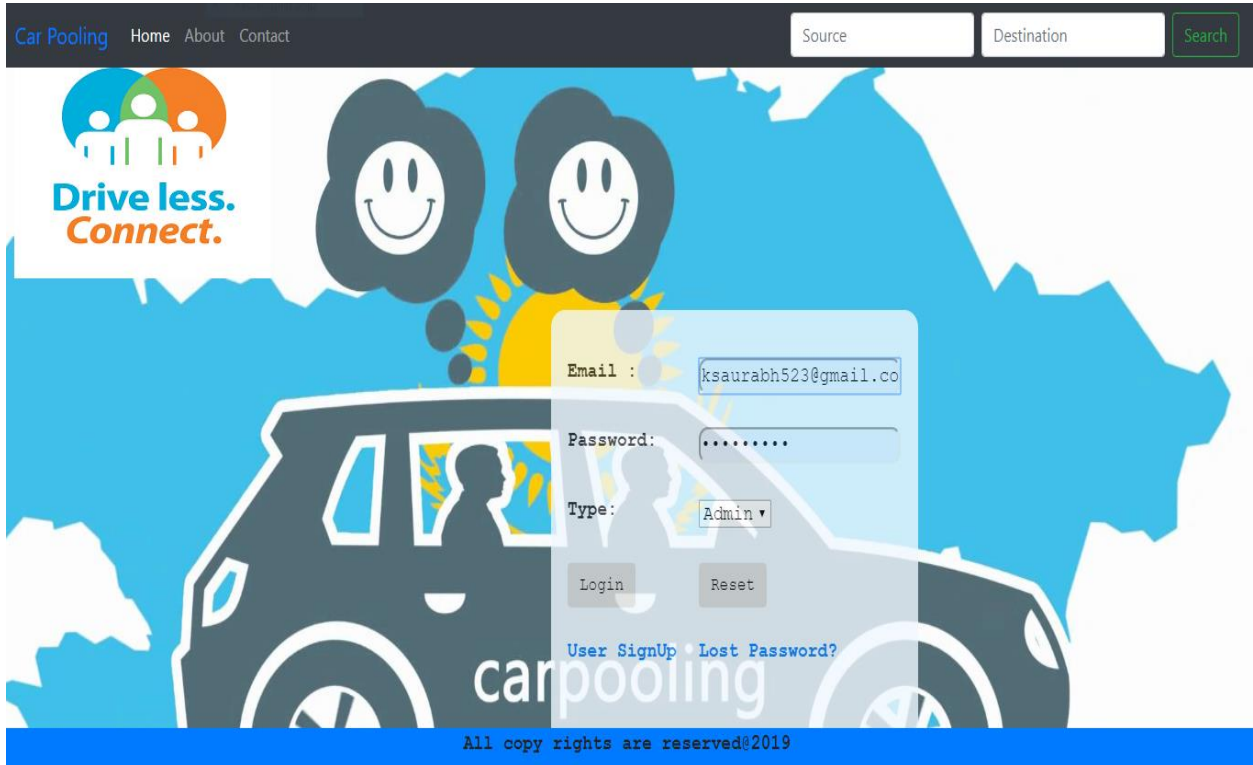
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5.Administrator:

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.

SAMPLES

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

Welcome,

imsaurabh__7

Get Your car Registered !

Update your details

Update your car details

Delete your account

CASE STUDY

In order to know student response about implementation of carpool program at Petra Christian University (PCU), information about respondent characteristic and response were collected in the campus using a questionnaire. Five hundred copies of the questionnaire were given to the student and among the questionnaires collected, there were 470 effective replies. They were ask three categories of question, namely: i) general information (years of study, sex, reason for using car as primary mode, etc.), ii) specific question for those who prefer to parking at other parking lot (reason, price per day, etc.), iii) response on offered facilities for SOV and HOV category(include preference to choose other mode for those who not interested to join carpool program).

As shown in the Figure 2 percentage of respondent using Single Occupancy Vehicle (SOV) are larger than High Occupancy Vehicle (HOV) for both drivers and non-drivers. That means most of student are driving alone (one person per car) and drive by chauffeur (two persons per car including driver).
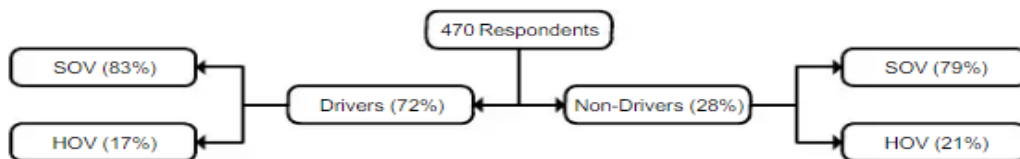

Figure 2. Proportion of SOV and HOV

Most of the students at 2nd and 3rd years of study tend to driving alone for commuting to and from campus (Figure 3).
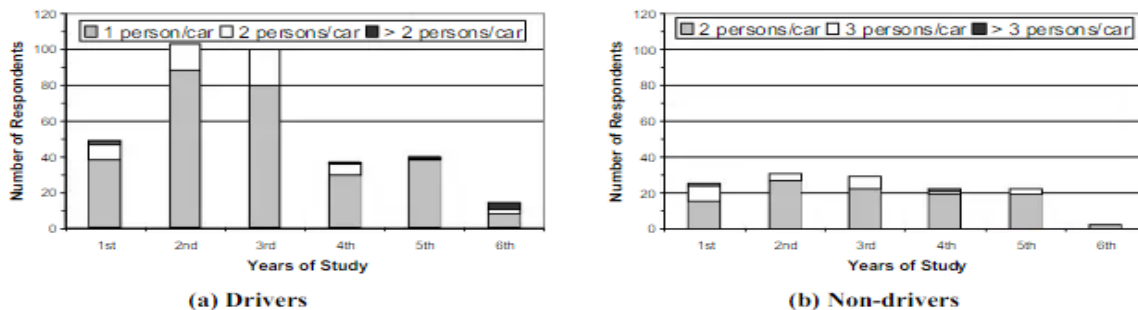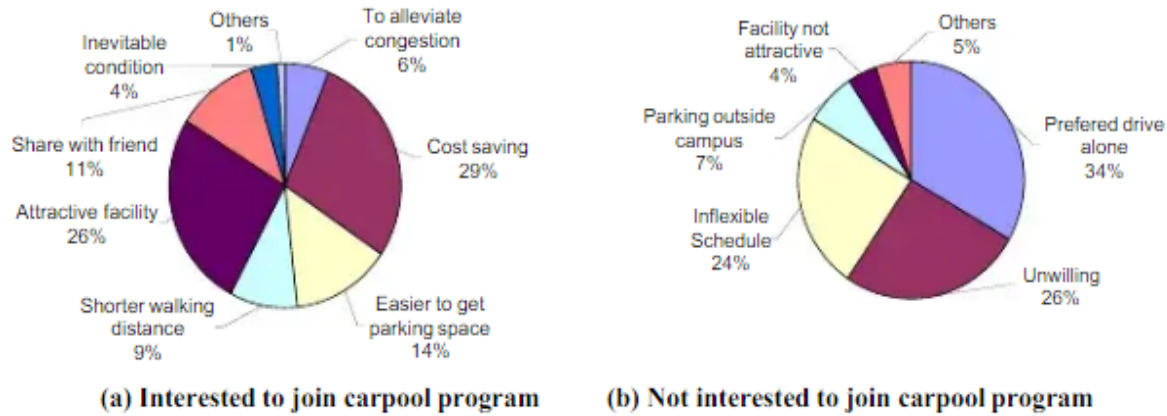

(a) Drivers   **(b) Non-drivers**

Figure 3. Car occupancy for each years of study

(a) Interested to join carpool program   (b) Not interested to join carpool program

Figure 5. Respond about carpool program

As shown in figure 6, most of the student who interested to join carpool program were living in radii over than 5 kilometers from campus and almost equal for both sex.

(a)Interested to join carpool program   (b) Not interested to join carpool program
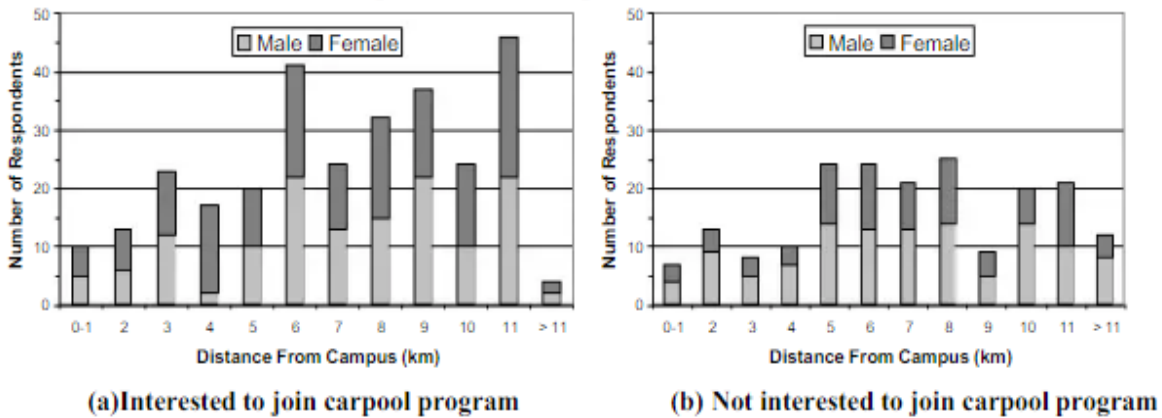
Figure 6. Respond based on distance between house and campus

REFERENCES

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- S.K. Kataria and sons publisher of engineering and computer science books
- 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
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