# PROJECT REPORT ON TOPIC: CAR RENTAL SYSTEM



# MOTILAL NEHRU NATIONAL INSTITUE OF TECHNOLOGY, ALLAHABD

# MASTERS OF COMPUTER APPLICATIONS (IV SEM)

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# **DECLARATION**

We hereby declare that the project entitled "CAR RENTAL SYSTEM" submitted for the "MINI PROJECT I (SRS AND DESIGN) LAB" is our original work and the project has not formed the basis for the award of any degree, associateship, fellowship or any other similar titles.

Place: Allahabad

Date: 24 April, 2018

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#### 1. INTRODUCTION

Transport facility is a matter of headache for those people who do not have any personal transport in Allahabad city. On occasions like Wedding, Vacation, house shifting, and tour outside Allahabad and on many other situations they feel the necessity of a vehicle to sort out the problems. So if it is possible to design or develop a web based application for availing transport whenever and wherever possible, then it will be beneficial for both renter and transport provider. Now a day, by some clicks only, we can get whatever you want at home. We already know about the online shopping, e-banking etc. Similarly, The Car Rental System is the online facility to book cars online within few clicks only. Some people cannot afford to have a car, for those people this system becomes very helpful. This system includes various cars, as per the customer order and comfort, it place the order and deliver the car as per the location within the area. For travelling a long distance, booking can be done via internet service only.

# 1.1 Document Purpose

The advancement in Information Technology and internet penetration has greatly enhanced various business processes and communication between companies (services provider) and their customers of which car rental industry is not left out. This E-Car Rental System is developed to provide the following services:

#### 1.1.1 Enhance Business Processes:

To be able to use internet technology to project the rental company to the global world instead of limiting their services to their local domain alone, thus increase their return on investment (ROI).

#### 1.1.2 Online Vehicle Reservation:

A tools through which customers can reserve available cars online prior to their expected pick-up date or time.

#### 1.1.3 Customer's registration:

A registration portal to hold customer's details, monitor their transaction and used same to offer better and improve services to them.

#### 1.2 Problem Statement

As the name suggest a Car Rental System enables a person to rent a car according to one's need. This system will not only help the traveler rent a car at the lowest prices possible but also compare the cars (cost, brand, and model). It will provide the details of the cars that are available in the nearest area, pickup location as well as its drop location. The individual in need of a car must contact the owner regarding the vehicle. The person renting the car will also provide feedback to the owner. Before renting the car all the details of the renter will be verified.

#### 1.3 Product Scope

This project traverses a lot of areas ranging from business concept to computing field, and required to perform several researches to be able to achieve the project objectives. The area covers include:

- Car rental industry: This includes study on how the car rental business is being done, process involved and opportunity that exist for improvement.
- NetBeans Technology used for the development of the application.
- General customers as well as the company's staff will be able to use the system effectively.
- Web-platform means that the system will be available for access 24/7 except when there is a temporary server issue which is expected to be minimal.

# 1.4 Aims & Objectives

Specific goals are -

• To produce a web-based system that allow customer to register and reserve car online and for the company to effectively manage their car rental business.

• To ease customer's task whenever they need to rent a car.

# **2.Oveall Description**

# 2.1 Product Perspective:

# 2.1.1 Existing system function:

A car rental is a vehicle that can be used temporarily for a period of time with a fee. Renting a car assists people to get around even when they do not have access to their own personal vehicle or don't own a vehicle at all. The individual who want to rent a car must first contact the car rental company for the desire vehicle. This can be done online. At this point, this person has to supply some information such as; dates of rental, and type of car. After these details are worked out, the individual renting the car must present a valid Identification Card.

Most companies throughout the industry make a profit based on the type of cars that are rented. The rental cars are categorized into economy, compact, compact premium, premium and luxury. And customers are free to choose any car of their choice based on their purse and availability of such car at the time of reservation.

Car Rental System gives car rental service for local customers. This organization carries out its daily work by providing; their service to the customers using manually system. The organization uses a manual system for reserving, renting, register and to keep record of all the rental activities and customer information. The detailed existing system functions are listed as follows -

• During car reservation the customers reserve a vehicle by making a phone call to the organization; otherwise he/she is expected to go to the organization to make reservation.

During renting a car the customer personal information, payments status
and rent agreements are filled in the car rent agreement form in order to
hold legal contract between the customer and organization for renting the
vehicle.

#### 2.1.2 Product functionality:

Car Rental System provides the features for booking a car online. It includes several functionalities describes as below:

#### 2.1.2.1 Car Rental Management:

It provides car reservation facility online. Customer can visit the website and check for various cars. If they are feasible with requirement, then booking can be done

# 2.1.2.2 Checking for Availability:

Employee can check for the availability of the car. He/she maintains the database of car. If no any car is available, it is the responsibility of the employee to provide alternative options.

# 2.1.2.3 Payment system:

Administrator/owner of the applications responsible for payment to the employee. Order cancellation, order finalize, these all activities are done by the administrator of the application.

# 2.1.2.4 Maintenance Manager:

If any car requires maintain ace like repair or replacement of any parts, then maintenance manager maintain the data about that. Payment of maintenance are done by the administrator of the application.

#### 2.2 Benefits of Online Car Rental Services

- This online car rental solution is fully functional and flexible.
- It is very easy to use.
- This online car rental system helps in back office administration by streamlining and standardizing the procedures.

- It saves a lot of time, money and labor.
- Eco-friendly: The monitoring of the vehicle activity and the overall business becomes easy and includes the least of paper work.
- The application acts as an office that is open 24/7.
- It increases the efficiency of the management at offering quality services to the customers.
- It provides custom features development and support with the application.

# 2.3 Modules of Project

#### 2.3.1 Registration

- 2.3.1.1 Signup for Customer and Renter
- 2.3.1.2 Login for Customer and Renter
- 2.3.1.3 Change Password / Forgot Password
- 2.3.1.4 Help
- 2.3.1.5 About Us

#### 2.3.2 Customer

- 2.3.2.1 Edit Profile
- 2.3.2.2 Search Car
- 2.3.2.3 Book Car
- 2.3.2.4 Duration of Trip
- 2.3.2.5 Pick-up Date
- 2.3.2.6 Drop off Date
- 2.3.2.7 Booking Detail
- 2.3.2.8 Payment History
- 2.3.2.9 Feedback

#### **2.3.3 RENTER**

- 2.3.3.1 Edit Profile
- 2.3.2.2 Add Vehicle
- 2.3.3.3 Remove Vehicle

- 2.3.3.4 Update Information
- 2.3.3.5 Booking Details
- 2.3.3.6 Duration of Trip
- 2.3.3.7 Pick-up Date
- 2.3.3.8 Drop off Date
- 2.3.3.9 GPS Tracker
- 2.3.3.10 Payment History

#### 2.3.4 ADMIN

- 2.3.4.1 Login
- 2.3.4.2 Manage Customer
- 2.3.4.3 Manage Renter
- 2.3.4.4 Manage Bookings

#### 2.3.5 Report

- 2.3.5.1 Report Customer
- 2.3.5.2 Report Renter
- 2.3.5.3 Report Vehicle

# 2.4 Operating Environment:

#### 2.4.1 Server Side:

- **Processor:** Intel® I3 Processor (Dual Core and Above)
- **HDD:** Minimum 500GB Disk Space
- **RAM:** Minimum 4GB
- **OS:** Windows 8.1, Linux
- Database: MySQL Server
- Application: NetBeans, Bootstrap

# 2.4.2 Client Side (minimum requirement):

• **Processor:** Intel I3 Processor (Dual core and above)

• HDD: Minimum 20GB Disk Space

• **RAM:** Minimum 1GB

• **OS:** Windows XP and above, Linux

• Internet Enabled Device

GPS

#### 2.5 Design and Implementation Constraints

• The application will use Bootstrap, JavaScript, jQuery and CSS as main web technologies.

- HTTP and FTP protocols are used as communication protocols. FTP is used to upload the web application in live domain and the client can access it via HTTP protocol.
- Several types of validations make this web application a secured one and SQL Injections can also be prevented.
- Since Car Rental system is a web-based application, internet connection must be established.
- The Car Rental System will be used on PCs and will function via internet or intranet in any web browser.

#### 2.7 Assumptions and Dependencies:

#### 2.7.1 Regularity Policies:

Each center user has account created and authenticated by admin. This Website can be accessible within company's intranet and other user can see the all details about the franchisee. Each user has to first login itself to present him/her after entry in franchisee. This will be done automatically.no user can share their username and password to each other.

#### 2.7.2 Hardware Limitations:

There is no limitation in the operating system in which Car Rental System will work. However, the Car Rental System and the database will work on a server that needs to be always online. Users can access the system with any internet browser.

#### 3. Specific Requirement

# **3.1 External Interface Requirements**

#### 3.1.1 User Interfaces:

- All the users will see the same page when they enter in this website. This page asks the users a username and a password.
- After being authenticated by correct username and password, user will be redirect to their corresponding profile where they can do various activities.
- The user interface will be simple and consistence, using terminology commonly understood by intended users of the system. The system will have simple interface, consistence with standard interface, to eliminate need for user training of infrequent users.

#### 3.1.2 Hardware Interfaces:

- No extra hardware interfaces are needed.
- The system will use the standard hardware and data communication resources.
- This includes, but not limited to, general network connection at the server/hosting site, network server and network management tools.

# 3.1.3 Application Interfaces:

**OS:** Windows XP and above, Linux

**Web Browser:** The system is a web based application; clients need a modern web browser such as Mozilla Firebox, Internet Explorer, Opera, and Chrome. The computer must have an Internet connection in order to be able to access the system.

# 3.1.4 Communications Interfaces:

- This system use communication resources which includes but not limited to, HTTP protocol for communication with the web browser and web server and TCP/IP network protocol with HTTP protocol.
- This application will communicate with the database that holds all the booking information. Users can contact with server side through HTTP protocol by means of function that is called HTTP Service. This function allows the application to use the data retrieved by server to fulfill the request fired by the user.

# 3.2 Functional Requirements:

These are statements of services the system should provide, how the system should react to particular inputs, and how the system should behave in particular situations. It specifies the application functionality that the developers must build into the product to enable users to accomplish their tasks.

#### 3.2.1 Reservation:

- The system must allow the customer to register for reservation.
- The system shall allow the customer to view detail description of particular car.
- The system must notify on selection of unavailable cars while reservation.
- The system shall present an option for advanced search to limit the car search to specific categories of car search.
- The system must allow the customers to select specific car using different search category while reservation.
- The system must view list of available car during reservation.
- The system shall allow the customers to cancel reservation using reservation confirmation number.
- The system shall allow the employee to update reservation information.
- The system shall allow the employee to view reservations made by customers.
- The system shall present information on protection products and their daily costs, and requests the customer to accept or decline regulation terms during reservation.
- The system must be able to provide a unique reservation conformation number for all successfully committed reservations.
- The system must be able to display reservation summary for successfully committed reservation.

# 3.2.2 Log in:

- The system should allow manager to login to the system using their username and password.
- The system should allow employee to login to the system using their username and password.

- The system shall allow the manager to create new user account.
- The system shall allow manager to change account password.
- The system shall allow staff to change account password.
- The system shall allow staff to logout.
- The system shall allow manager to logout.

#### 3.2.3 Car:

- The system should allow staff to register new cars.
- The system shall allow staff to select cars in the list.
- The system shall allow customer to select cars in the list.
- The system shall allow staff to Search cars by specific record.
- The system shall allow customer staff to Search cars by specific record.
- The system shall allow staff to update information of the car in need of modification.
- The system shall allow staff to display all lists of car.
- The system shall allow staff to display all available car.
- The system shall allow customer to display all available car.
- The system shall allow staff to display all rented car.
- The system shall allow staff to display all off duty car.

#### 3.2.4 Rent:

- The system shall allow staff to register customers into rental list.
- The system shall allow staff to update about customer rent record details in the rental list.

- The system shall be able to save all changes made on the customer rent list.
- The system shall allow staff to select customer rent record by specific search category.
- The system shall allow staff to search rent record of customers using specific categories.
- The system shall allow staff to display customers, who rent cars.
- The system shall allow staff to display all customers rent record.
- The system must provide printable summary for successful committed rent.

# 4. Other Non-functional Requirements

Non-functional requirements, as the name suggests, are requirements that are not directly concerned with the specific services delivered by the system to its users. They may relate to emergent system properties such as reliability, response time, and store occupancy. Alternatively, they may define constraints on the system implementation such as the capabilities of I/O devices or the data representations used in interfaces with other systems. Non-functional requirements, such as performance, security, or availability, usually specify or constrain characteristics of the system as a whole.

# 4.1 Usability:

The system provides a help and support menu in all interfaces for the user to interact with the system.

# 4.2 Security:

The system provides username and password to prevent the system from unauthorized access. The staffs' password must be greater than eight characters. The subsystem should provide a high level of security and integrity of the data held by the system, only authorized personnel of the company can gain access to the company's secured page on the system; and only users with valid password and username can login to view user's page.

#### 4.3 Performance:

The system response time for every instruction conducted by the user must not exceed more than a minimum of 10 seconds. The system should have high performance rate when executing user's input and should be able to provide response within a short time span usually 50 second for highly complicated task and 20 to 25 seconds for less complicated task.

#### 4.4 Availability:

The system should always be available for access at 24 hours, 7 days a week. Also in the occurrence of any major system malfunctioning, the system should be available in 1 to 2 working days, so that business process is not severely affected.

# 4.5 Error handling:

Error should be considerably minimized and an appropriate error message that guides the user to recover from an error should be provided. Validation of user's input is highly essential. Also the standard time taken to recover from an error should be 15 to 20 seconds.

#### 4.6 Ease of use:

Considered the level of knowledge possessed by the users of this system, a simple but quality user interface should be developed to make it easy to understand and required less training.

# 5. Description

#### 5.1 Customer

#### **5.1.1 Register as member**

This use case describes the activities of the customer to register online and become a member. Customer's details are required as part of the registration. Login detail is automatically sent to the customer after successful registration.

#### 5.1.2 Make reservation

This use case enable customer to search and make reservation. Non-register customer will be directed to register before their reservation can be confirmed. Notification is automatically send to the customer after the task is completed.

#### 5.1.3 Return car

This use case describes the event of customer returning the car borrowed, the use case extends "process rental" use case from the staff actor.

#### **5.1.4** Give feedback

This use case is used by the customer to provide feedbacks/comment to the company; a confirmation notification will be send to the customer once a feedback has been submitted.

#### 5.2 Staff

#### 5.2.1 Add new car

This use case is used by the staff to add new car to the company's fleet database. Staff will need to login to activate this use case.

# 5.2.2 Update car details

This use case is used by the staff to edit and modify car details whenever there is new renewal (insurance, road tax). It allows the company to keep up-to-date record of their fleet.

# 5.2.3 Reply to customer's feedback

This use case describes the event by which staff sends reply to customer's earlier feedback. It depends on 'give feedback' use case from the customer.

#### **5.2.4 Process rental**

This use case described the event by which staff updates the system when customer pick up or when returning car.

# 5.3 Admin

#### 5.3.1 Add new staff

This use case describes the event by which Admin add new staff detail to the company's staff database.

It is invoking whenever a new staff join the company.

#### **5.3.2** View report

This use case is used by the Admin to view transaction report.

#### 6. Entity-relationship model

The entity relationship diagram describes the relationship between entities, cardinality and their attributes. Entity—relationship model (ER model) is a data model for describing the data or information aspects of a business domain or its process requirements, in an abstract way that lends itself to ultimately being implemented in a database such as a relational database. The main components of ER models are entities (things) and the relationships that can exist among them. In here we provide a description of entities with all their attributes. Describing entity name, business definition for the entities and their attribute and domain.

# **6.1 Entity Description:**

Table 6-1: Entity Description

<b>Entity Name</b>	<b>Business definition</b>
Employee	This entity is responsible to store Employee information in the database.
Customer	Attribute stores customers' details information in the database, in order to identify the customer.
Car	This entity is stores the information of the vehicle in the database.
Reservation	This stores information about the reservations made by a customer.
Rent	This stores rental information of the vehicle, payments
Maintenance	This checks for repairing and replacing.
Payment	This produce payment and rent the car.

# 6.2 E-R Diagram

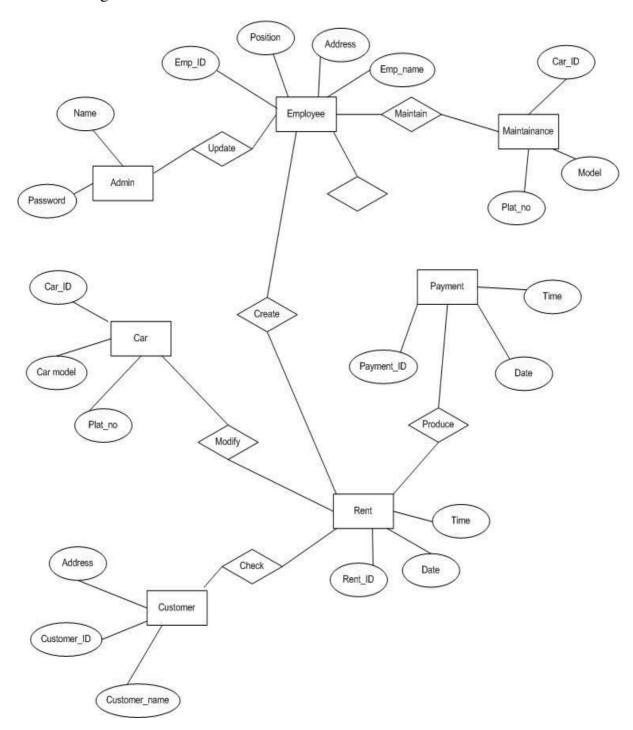


Figure 6-1: E-R Diagram

# 7 Data flow diagram

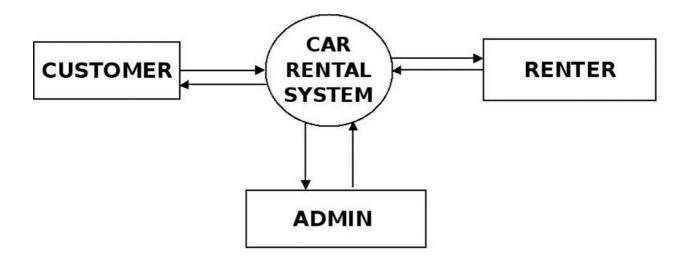


Figure 7-1: Data flow diagram

- The Customer (a source of information) sends in an order.
- The system then sends out an invoice data flow.
- Employees update car records and give details to the car rental system.
- Car maintenance manager gets information about cars from the system, update the renewed records.
- The owner checks for order and generates report.
- This is a top-level view of the information flow in and out of the system.

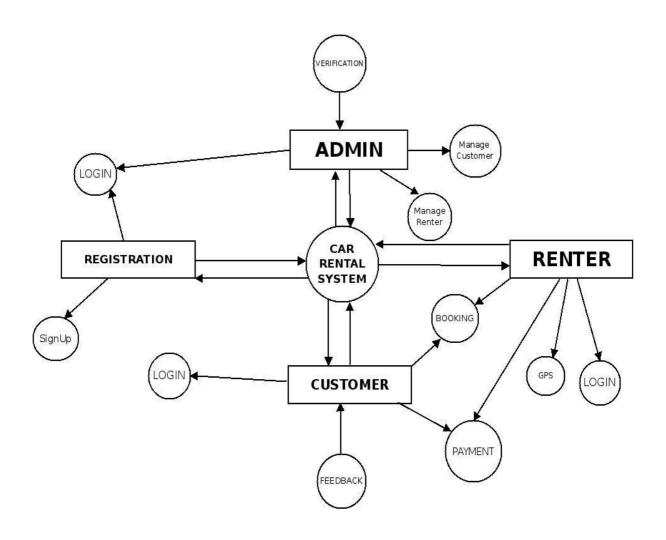
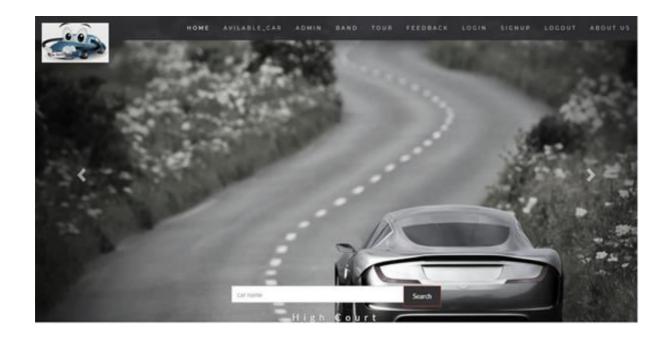
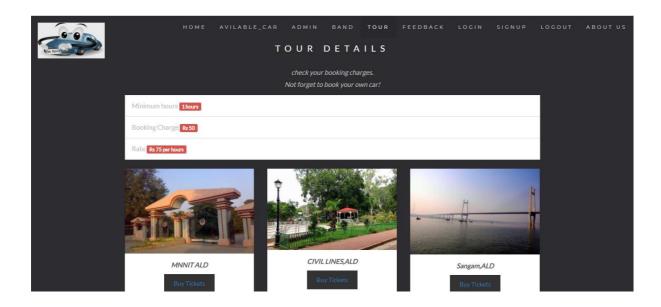
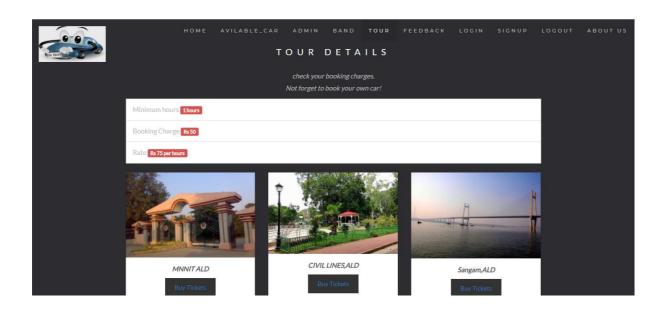


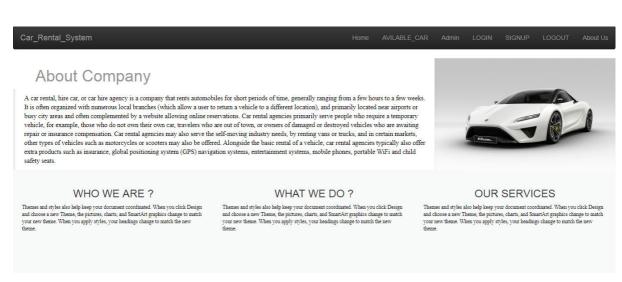
Fig 7-2: First Level DFD

# 8. Snapshots

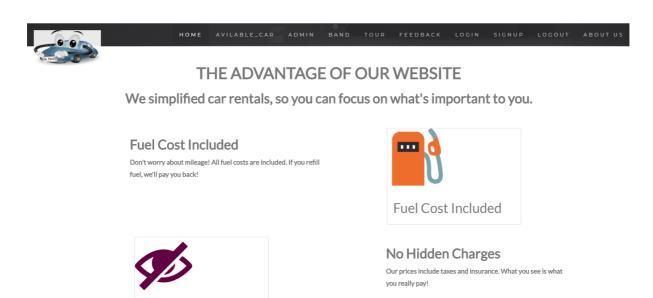


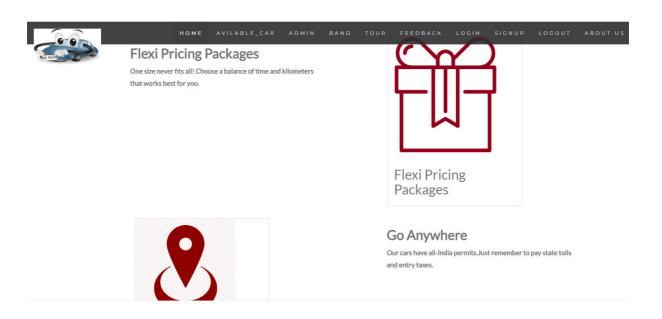


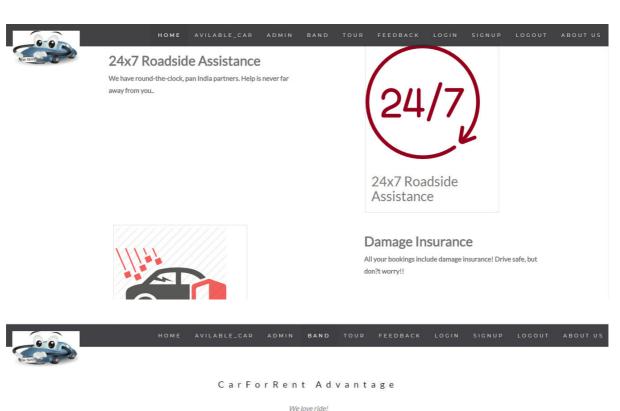




#### Meet Our Team









#### Meet Our Team





Mileage





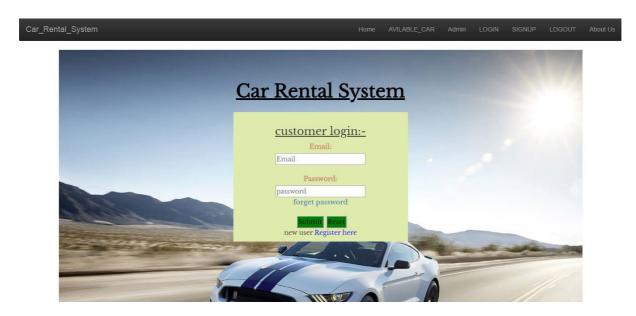


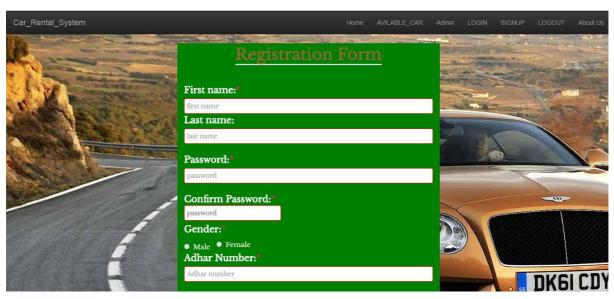
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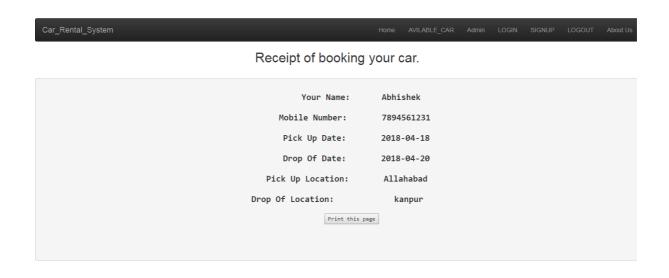
Car_Rental_System									
Add Your Car Details  If You Want To Add									
	Car Name:	Car Name	]						
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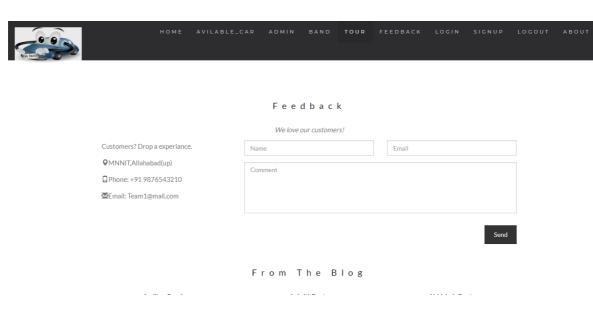


Car_Rental_System			Home	AVILABLE_CAR	Admin	LOGIN	SIGNUP	LOGOUT	About Us
	Your Name	Your Name							
	Mobile Number	Mobile Number							
	Pick up Date								
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	Dropoff Date	mm/dd/yyyy							
	Pick Up Location	Pick Up Location							
	Drop Off Location	Drop Off Location							
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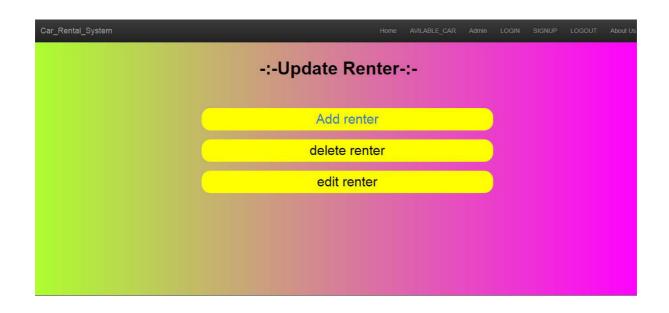


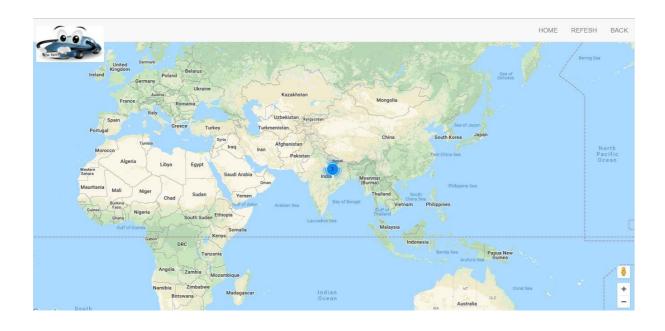


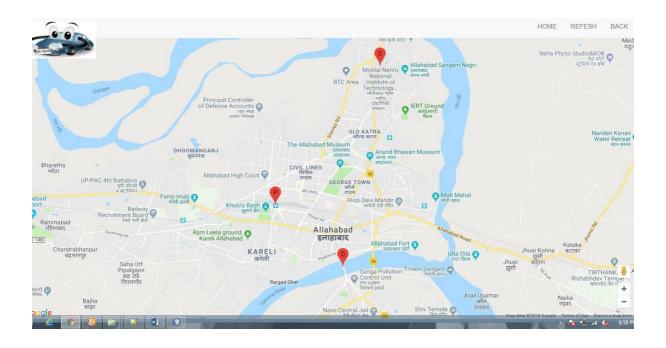












#### 9.CONCLUSION

Car rental business has emerged with a new goodies compared to the past experience where every activity concerning car rental business is limited to a physical location only. Even though the physical location has not been totally eradicated; the nature of functions and how these functions are achieved has been reshaped by the power of internet. Nowadays, customers can reserve cars online, rent car online, and have the car brought to their door step once the customer is a registered member or go to the office to pick the car. The web based car rental system has offered an advantage to both customers as well as Car Rental Company to efficiently and effectively manage the business and satisfies customers' need at the click of a button.

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