

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM



Mini Project report on

“CAR RENTAL MANAGEMENT DATABASE SYSTEM”

Submitted in partial fulfillment of the requirements for the 5th semester DBMS lab

BACHELOR OF ENGINEERING IN

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

By

ADIR NIZAR
(1SP21AI002)

Under the guidance Of

Prof. KAVITHA P
Asst.Professor Dept. of AIML



Department of Artificial Intelligence and Machine Learning

S.E.A.COLLEGE OF ENGINEERING AND TECHNOLOGY
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S.E.A COLLEGE OF ENGINEERING AND TECHNOLOGY

EktaNagar, Basavanpura, Virgonagar Post, K.R.Puram, Bengaluru, Karnataka 560049



DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

CERTIFICATE

This is to certify the project work entitled “**CAR RENTAL MANAGEMENT DATABASE SYSTEM**” has been successfully carried out by **Mr. ADIR NIZAR** , bearing **USN 1SP21AI002**, of V semester in partial fulfillment for the award of **Bachelor of Engineering in Artificial Intelligence and Machine Learning** of the **Visvesvaraya Technological University, Belgaum** during the year **2023-24**.The project report has been approved as it satisfied the academic requirement in respect of the mini project work prescribed for Bachelor of Engineering.

Signature of Co-ordinator

PROF. KAVITHA P

Signature of HOD

DR.LOKESH

Signature of Internal Examiner

Signature of External Examiner

ACKNOWLEDGEMENT

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ADIR NIZAR(1SP21AI002)

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CHAPTER I: INTRODUCTION

Nowadays, there is Online Car Rental which gives much benefit to user. A rental service is a service which customers arrive to request the hire of a rental unit. It is more convenient than carrying the cost of owning and maintain the unit. A car rental is a company that rent automobiles for short period of time for a fee for few hours or a few days or a week.

It helps to book the cars or vehicles online rather than using the traditional manual system of vehicle reservation. This eliminates the risk of erroneous booking and reduce overall lead time and ensures growth in customer satisfaction. They can book any car according to their brands and price.

Our Project Yahya Car rental System provides the users easy and convinient way to rent awvailable cars on the basis of brands and car types with privilege of selection of pickUp and Drop Location and also the date for the pickup and drop.And a auto generated bill is provided to the user on the basis of the service they have chosen.

The objective of the project is to automate vehicle rental ad reservation so that the customers do not need to call and spend unnecessary time to reserve a vehicle.To transform the manual process of hiring car to a computerize system,To validate the Rental car system using user satisfaction test,To produce the documentation such as Software Requirement Specification(SRS), Software Design Description as system development reference.

CHAPTER II: PROPOSED SYSTEM

Yahya Car Rental System project will enable the user to rent a vehicle. The user can check for availability of cars. The user specifies a type of car and the journey date and time. The Car Rental System shall check for the availability of the car and rent the car to the customer. The tool is designed using VB.net. All the data regarding the rental cars are stored in MySQL database . The user has to enter his name, address, phone details and check for the cars available for rent. The UI is eyecatching and user-friendly and the connectivity to back end is robust. The main advantage is that the user shall be able to choose a car depending on his budget.

The objective of the project is to automate vehicle rental ad reservation so that the customers do not need to call and spend unnecessary time to reserve a vehicle.

- To transform the manual process of hiring car to a computerize system
- To validate the Rental car system using user satisfaction test
- To produce the documentation such as Software Requirement Specification(SRS),
Software Design Description as system development reference

TECH STACK USED

For the development of project the designing of database was done on PHPMYADMIN with MYSQL, back end was coded in basic PHP and for frontend we used HTML,CSS,JAVASCRIPT and same basic PHP codes.

TOOLS USED

❖ Xampp:

○ **MySqlServer:**

- It handles large databases much faster than existing solutions.

- It consists of multi-threaded SQL server that supports different back ends, several different client programs and libraries, administrative tools, and application programming interfaces (APIs)
 - Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.
- ❖ **Sublime Text 3.1.1-** Sublime Text is a sophisticated text editor for code, markup and prose. In this project we have used this to write the code for PHP scripts and also HTML and CSS codes.
- ❖ **MYSQL Workbench-** Mysql Workbench is used in this project to write the mysql code for the database.
- ❖ **Web browsers:** Google Chrome, Mozilla Firefox, Opera and Internet Explorer.
- ❖ **Git Hub:** GitHub Inc. is a web-based hosting service for version control using Git. It is mostly used for computer code. It offers all of the distributed version control and source code management functionality of Git as well as adding its own features. In this project we have used this to work in a project so that everyone access and modifies in a single repo with different branches.

Functional Requirements

- a. **Admin Login:** The system should allow the admin to Log In with correct credential online and Access to the data information of the service.
- b. **Online reservation of cars:** Customers should be able to use the system to make booking and online reservation.
- c. **Automatic update to database once reservation is made or new user registered:** Whenever there's new reservation or new registration, the system should be able update the database without any additional efforts from the admin.
- d. **Feedbacks to customers:** It should provide means for customers to leave feedback.

Non-Functional Requirements

It describes aspects of the system that are concerned with how the system provides the functional requirements. They are:

- a. Security: The subsystem 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. The password in the system is also encrypted for make the system data more secured with sha1 when store in database.
- b. Performance and Response time: The system have high performance rate when executing user's input and is able to provide feedback or response within a short time span usually 3 seconds for highly complicated task and 1 to 2 seconds for less complicated task.
- c. Error handling: Error is 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.
- d. Availability: This system is 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 the business process is not severely affected.
- e. Ease of use: Considered the level of knowledge possessed by the users of this system, a simple but quality user interface is developed to make it easy to understand and required less training.

CHAPTER III: SYSTEM DESIGN

Various Design concepts and processes were applied to this project. Following concepts like separation of concerns, the software is divided into individual modules that are functionally independent and incorporates information hiding. The software is divided into 3 modules which are Client, Cars and Users. We shall look at each module in detail.

USE CASE DIAGRAM

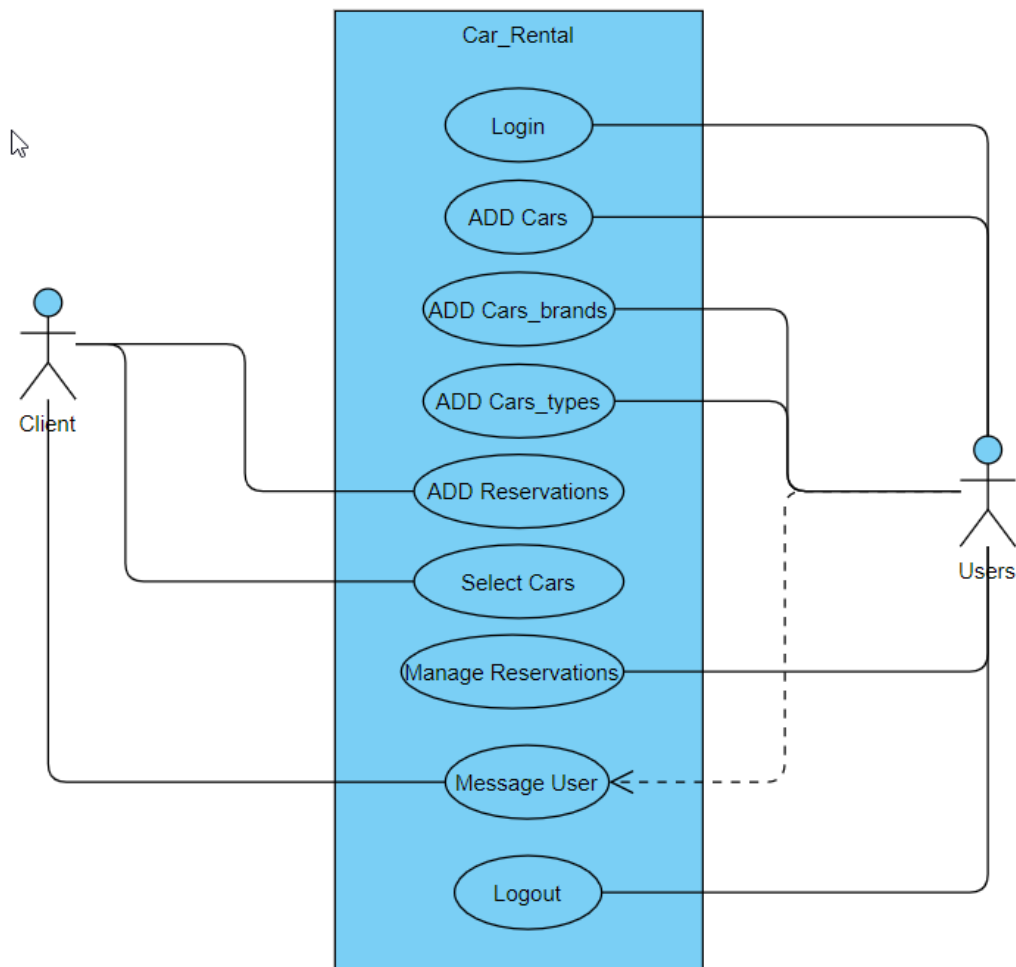


Figure 1: Use Case Diagram

Above figure represents Use Case Diagram of the project and is a useful technique for identifying, clarifying, and organizing system requirements. It describes how a user uses a system to accomplish a particular goal. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. The use cases are represented by either circles or ellipses.

CLASS DIAGRAM

The class diagram states the different classes involved in the software. For each class, a set of attributes and method are included. The relationship between the classes are also specified.

For example, the Car_brand class has the attribute brand_id, brand_name, brand_image. Each instance of the car_brand class belongs to a Car. This is specified by the relationship between Car_brand and Cars.

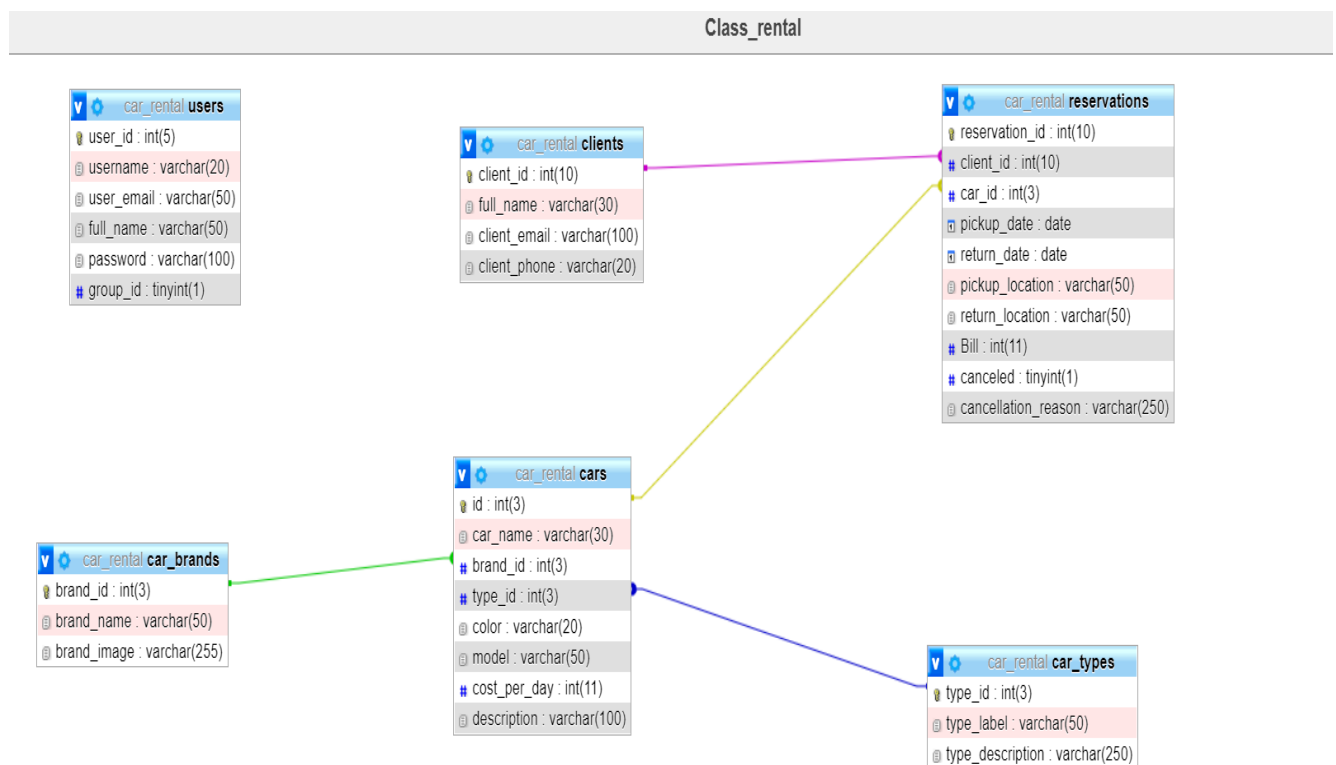


Figure 2: Class diagram of Car rental ERP

ENTITY RELATIONSHIP DIAGRAM (ER)

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties. By defining the entities, their attributes, and showing the relationships between them, an ER diagram illustrates the logical structure of databases. ER diagrams are used to sketch out the design of a database.

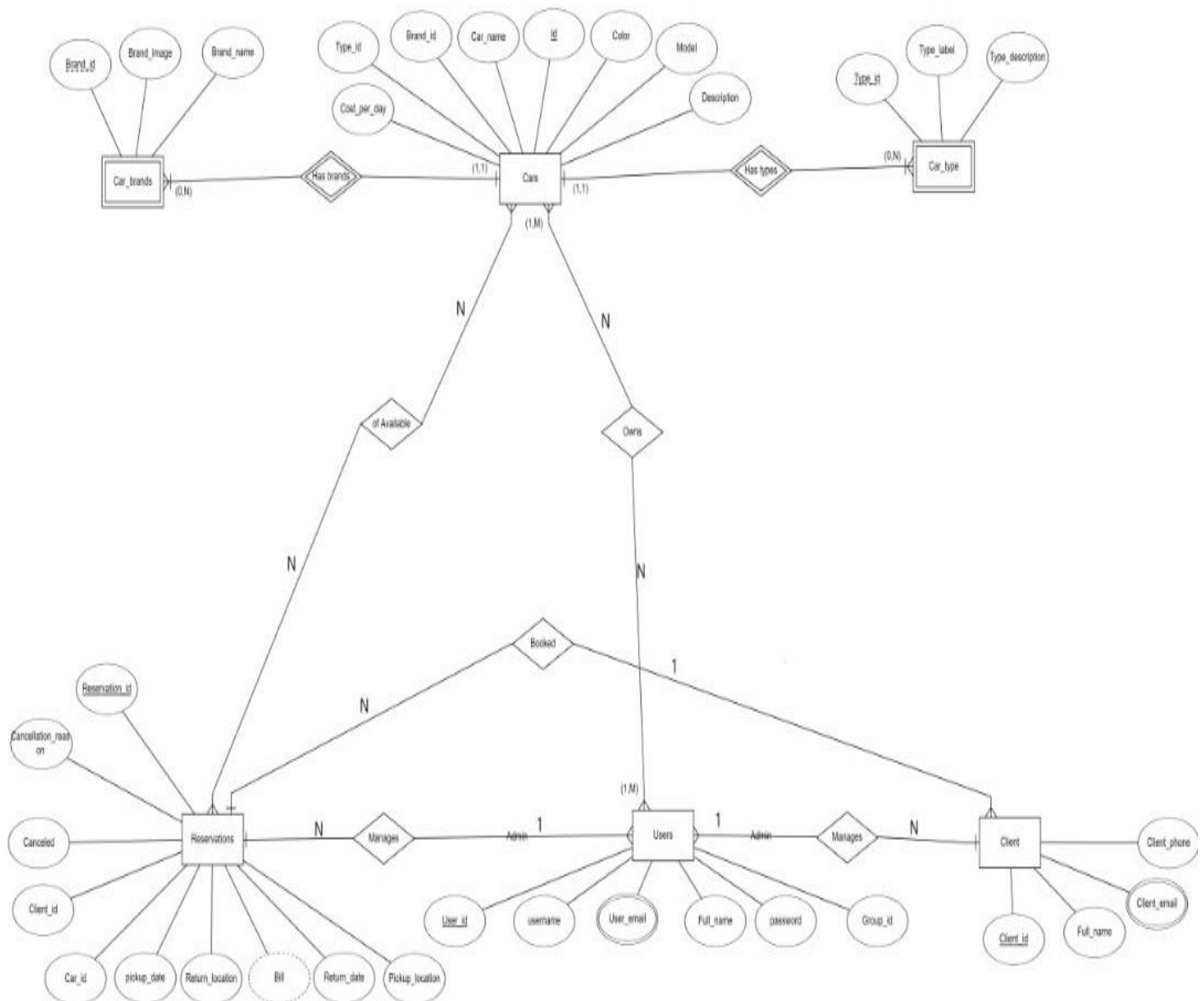


Figure 2: Entity Relationship diagram of Car rental

Entites & their attributes in ER Diagram

Cars - The cars entity has the folowing attributes named id , Car_name,Color Brand_id, Type_id, model, description,cost_per_day , with id as the key Attribute.

Car_Brand- The car_brand entity has the folowing attributes named brand_id , brand_name,brand_image , with brand_id as the key Attribute.

Car_Type - The cars entity has the folowing attributesType_id , Type_label, Type_description, with Type_id as the key Attribute.

Reservations - The reservations entity has the folowing attributes named Bill, Reservation_id, Car_is,Canceled,Client_id,Pickup_date, Cancellation_reason, Pickup_location,Return_date, Return_location with Reservation_id as the key Attribute

Users(Admin) -The users(admin) entity has the following attributes named User_id,Username,User_email,Full_name,password,Group_id With User_id as its key attribute.

Clients - The client attribute has the following named Client_id, Client_email, Client_phone,Full_name wit Client_id as its key attribute.

Data Flow Diagram

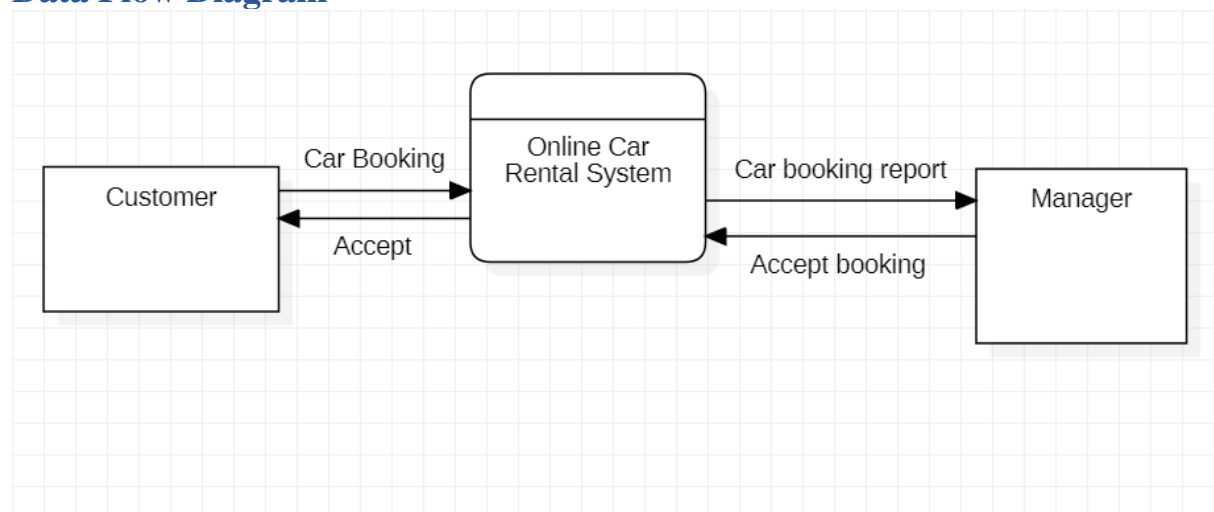


Figure 4: Data Flow Diagram

CHAPTER IV: IMPLEMENTATION

Architectural model

The Car rental software requires the architectural design to represent the design of the software. Here we define a collection of hardware and software components and their interfaces to establish the framework for the development of this software.

There exists number of components of the system which are integrated to form a system. The set of connectors will help in coordination, communication, and cooperation between the components. The Car rental software is built for computer-based system. It exhibits the data centric style of architecture.

The architecture comprises of various modules as given in the figure. There are 2 major categories in which the whole architecture is divided. These are user and client. The architecture is designed such a way that it is self explanatory. The admin/user roles are user management, car management, reservation management.

The role of user includes car data entering, reservation management, client data management. While the roles of client are few in number and includes their complete reservation details like pickup date, location and give feedback.

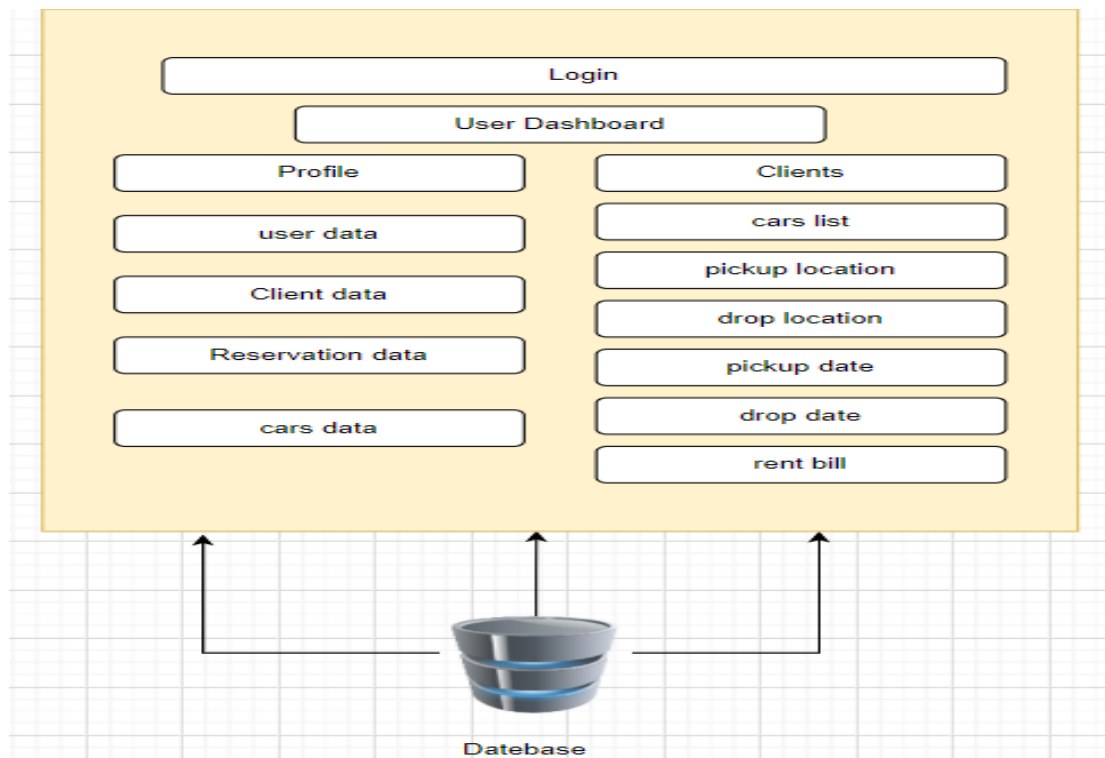


Figure 3: architecture

Any Information System needs to communicate with external entities, human users or other computers. Presentation layer allows these entities to interact with the system; it can also be implemented as a GUI interface and can be referred to as the client of the IS.

Application layer do more than information delivery, they perform data processing (Business Logic and calculation) behind the results being delivered. This tier is often referred as

- 1.Services
- 2.Business rules
- 3.Business logic
- 4.Servers

The database layer is implemented using a Database Management System which in our case is MySQL.

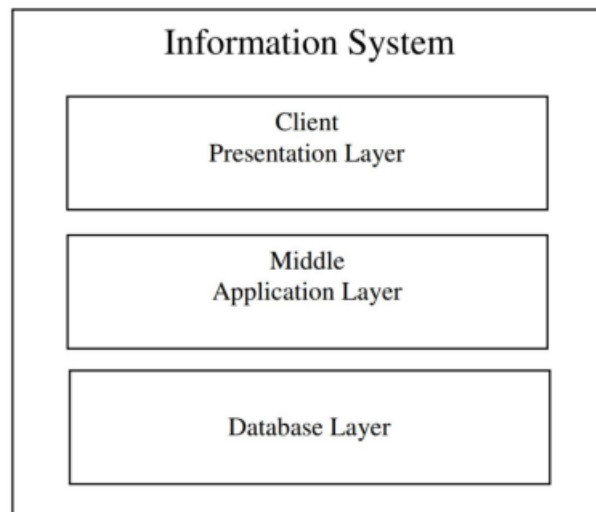


Figure 6: 3 tier architecture

SQL Database Code

```
-- Table structure for table `car_brands`  
--
```

```
CREATE TABLE `car_brands` (  
  `brand_id` int(3) NOT NULL,  
  `brand_name` varchar(50) NOT NULL,  
  `brand_image` varchar(255) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
--  
-- Dumping data for table `car_brands`  
--
```

```
INSERT INTO `car_brands` (`brand_id`, `brand_name`, `brand_image`) VALUES  
(1, 'Audi', 'Audi-A4-Avant-1.jpg'),  
(2, 'BMW', 'bmw-3-series-sedan.jpg'),  
(3, 'Lexus', '2016-Lexus-RX-350-BM-01.jpg'),  
(4, 'Mercedes Benz', 'Mercedes-C-Class-Estate-1.jpg'),  
(5, 'MINI', '2016-MINI-Cooper-S-Clubman-ALL4.jpg'),  
(6, 'Porsche', 'P14_0596_a4_rgb-1.jpg');
```

```
-- -----
```

```
--  
-- Table structure for table `car_types`  
--
```

```
CREATE TABLE `car_types` (  
  `type_id` int(3) NOT NULL,  
  `type_label` varchar(50) NOT NULL,  
  `type_description` varchar(250) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
--  
-- Dumping data for table `car_types`  
--
```

```
INSERT INTO `car_types` (`type_id`, `type_label`, `type_description`) VALUES  
(1, 'Sedan', 'A sedan has four doors and a traditional trunk.'),  
(4, 'Coupe', 'A coupe has historically been considered a two-door car with a trunk and a solid roof.'),  
(6, 'HATCHBACK', 'Traditionally, the term \"hatchback\" has meant a compact or subcompact sedan  
with a squared-off roof and a rear flip-up hatch door that provides access to the vehicle's cargo area  
instead of a conventional trunk.');
```

```
-- -----
```

```
--  
-- Table structure for table `clients`  
--
```

```
CREATE TABLE `clients` (  
  `client_id` int(3) NOT NULL,  
  `client_name` varchar(50) NOT NULL,  
  `client_email` varchar(100) NOT NULL,  
  `client_phone` varchar(20) NOT NULL,  
  `client_address` varchar(255) NOT NULL,  
  `client_city` varchar(50) NOT NULL,  
  `client_state` varchar(50) NOT NULL,  
  `client_zip` varchar(10) NOT NULL,  
  `client_password` varchar(50) NOT NULL,  
  `client_created` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```



```
`client_id` int(10) NOT NULL,  
`full_name` varchar(30) NOT NULL,  
`client_email` varchar(100) NOT NULL,  
`client_phone` varchar(20) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
--  
-- Dumping data for table `clients`  
--
```

```
INSERT INTO `clients` (`client_id`,`full_name`,`client_email`,`client_phone`) VALUES  
(1, 'Jhon Doe', 'gayatri@good.com', '987654321'),  
(2, 'sourabh', 'fuckyou@gmail.com', '918273645'),  
(3, 'shubham', 'subham@bad.com', '987654321'),  
(7, 'sourabh', 'sourabh@good.com', '987654321'),  
(8, 'tanmoy', 'tanmoy@go.com', '918273640');
```

```
-----
```

```
--  
-- Table structure for table `reservations`  
--
```

```
CREATE TABLE `reservations` (  
  `reservation_id` int(10) NOT NULL,  
  `client_id` int(10) NOT NULL,  
  `car_id` int(3) NOT NULL,  
  `pickup_date` date NOT NULL,  
  `return_date` date NOT NULL,  
  `pickup_location` varchar(50) NOT NULL,  
  `return_location` varchar(50) NOT NULL,  
  `Bill` int(11) DEFAULT NULL,  
  `canceled` tinyint(1) NOT NULL DEFAULT 0,  
  `cancellation_reason` varchar(250) DEFAULT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
--  
-- Dumping data for table `reservations`  
--
```

```
INSERT INTO `reservations` (`reservation_id`,`client_id`,`car_id`,`pickup_date`,`return_date`,  
`pickup_location`,`return_location`,`Bill`,`canceled`,`cancellation_reason`) VALUES  
(1, 1, 1, '2021-06-30', '2021-07-06', 'Agadir', 'manali', 42000, 1, ''),  
(2, 2, 2, '2021-07-05', '2021-07-10', 'dhanbad', 'manali', 25000, 1, ''),  
(3, 3, 3, '2021-06-30', '2021-07-06', 'ranchi', 'manali', 60000, 1, ''),  
(7, 7, 2, '2021-08-18', '2021-07-30', 'banglore', 'mysore', -95000, 0, NULL),  
(8, 8, 3, '2021-07-01', '2021-07-07', 'dhanbad', 'dumka', 60000, 0, NULL);
```

```
-----
```

```
--  
-- Table structure for table `users`  
--
```

```
CREATE TABLE `users` (  

```

```

`user_id` int(5) NOT NULL,
`username` varchar(20) NOT NULL,
`user_email` varchar(50) NOT NULL,
`full_name` varchar(50) NOT NULL,
`password` varchar(100) NOT NULL,
`group_id` tinyint(1) NOT NULL DEFAULT 1
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

--
-- Dumping data for table `users`
--

INSERT INTO `users` (`user_id`, `username`, `user_email`, `full_name`, `password`, `group_id`)
VALUES
(1, 'tommy', 'test_test@gmail.com', 'Idriss Jairi', 'f7c3bc1d808e04732adf679965ccc34ca7ae3441', 0),
(2, 'sourabh', 'skumardas267@gmail.com', 'sourabh kumar',
'bfe54caa6d483cc3887dce9d1b8eb91408f1ea7a', 1);

--
-- Indexes for dumped tables
--

--
-- Indexes for table `cars`
--
ALTER TABLE `cars`
  ADD PRIMARY KEY (`id`),
  ADD KEY `connect_brand` (`brand_id`),
  ADD KEY `connect_type` (`type_id`);

--
-- Indexes for table `car_brands`
--
ALTER TABLE `car_brands`
  ADD PRIMARY KEY (`brand_id`);

--
-- Indexes for table `car_types`
--
ALTER TABLE `car_types`
  ADD PRIMARY KEY (`type_id`);

--
-- Indexes for table `clients`
--
ALTER TABLE `clients`
  ADD PRIMARY KEY (`client_id`);

--
-- Indexes for table `reservations`
--
ALTER TABLE `reservations`
  ADD PRIMARY KEY (`reservation_id`),
  ADD KEY `connect` (`car_id`),
  ADD KEY `connect_client` (`client_id`);

```

```
--
-- Indexes for table `users`
--
ALTER TABLE `users`
  ADD PRIMARY KEY (`user_id`);

--
-- AUTO_INCREMENT for dumped tables
--

--
-- AUTO_INCREMENT for table `cars`
--
ALTER TABLE `cars`
  MODIFY `id` int(3) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=5;

--
-- AUTO_INCREMENT for table `car_brands`
--
ALTER TABLE `car_brands`
  MODIFY `brand_id` int(3) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=11;

--
-- AUTO_INCREMENT for table `car_types`
--
ALTER TABLE `car_types`
  MODIFY `type_id` int(3) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=7;

--
-- AUTO_INCREMENT for table `clients`
--
ALTER TABLE `clients`
  MODIFY `client_id` int(10) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=9;

--
-- AUTO_INCREMENT for table `reservations`
--
ALTER TABLE `reservations`
  MODIFY `reservation_id` int(10) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=9;

--
-- AUTO_INCREMENT for table `users`
--
ALTER TABLE `users`
  MODIFY `user_id` int(5) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=3;

--
-- Constraints for dumped tables
--

--
-- Constraints for table `cars`
--
ALTER TABLE `cars`
```

```

    ADD CONSTRAINT `connect_brand` FOREIGN KEY (`brand_id`) REFERENCES `car_brands`
    (`brand_id`),
    ADD CONSTRAINT `connect_type` FOREIGN KEY (`type_id`) REFERENCES `car_types`
    (`type_id`);

--
-- Constraints for table `reservations`
--
ALTER TABLE `reservations`
    ADD CONSTRAINT `connect` FOREIGN KEY (`car_id`) REFERENCES `cars` (`id`),
    ADD CONSTRAINT `connect_client` FOREIGN KEY (`client_id`) REFERENCES `clients`
    (`client_id`);
COMMIT;

```

Code For Availaibility of the car for the Client to chose for the service

```

{
    $pickup_location = $_SESSION['pickup_location'];
    $return_location = $_SESSION['return_location'];
    $pickup_date = $_SESSION['pickup_date'];
    $return_date = $_SESSION['return_date'];

    $stmt = $con->prepare("SELECT *
    from cars, car_brands, car_types
    where cars.brand_id = car_brands.brand_id and cars.type_id = car_types.type_id and
        cars.id not in (select car_id
        from reservations
        where (? between pickup_date and return_date
        or ? BETWEEN pickup_date and return_date )
        and canceled = 0
    )");
    $stmt->execute(array($pickup_date, $return_date));
    $available_cars = $stmt->fetchAll();
}

```

Code for displaying the Invoice once the reservation is done by Client

```

// Invoice Display
echo "<div class = 'alert alert-success'>";
echo "Great! Your reservation has been created successfully. ".<br>";
echo "Client Name: ".$full_name."<br>";
echo "Client Pn Number: ".$client_phonenumber."<br>";
echo "Car Name : ".$car_name[0]."<br>";
echo "Number of days Car reserved : ".$diff_date[0]."<br>";
echo "Rent cost : ".$rent_bill."<br>";
echo "Thank you for choosıng our service <span>#128522;</span><br> Invoice will be send to the Client's number. ";
echo "</div>";

$con->commit();

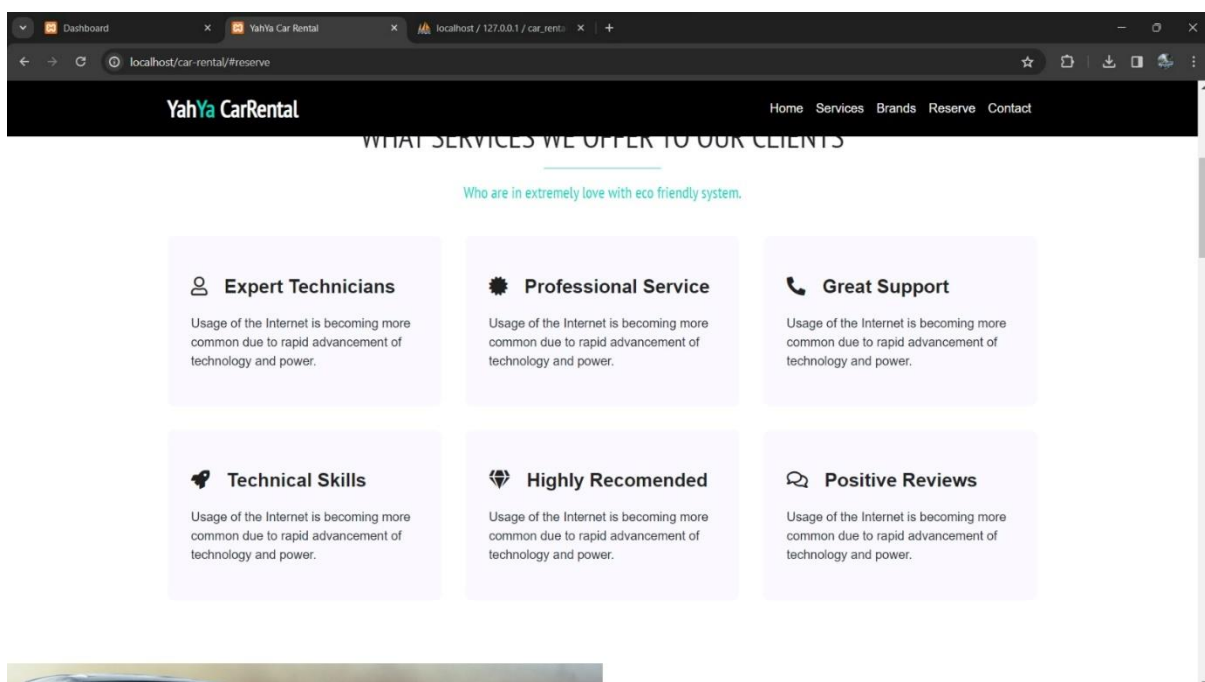
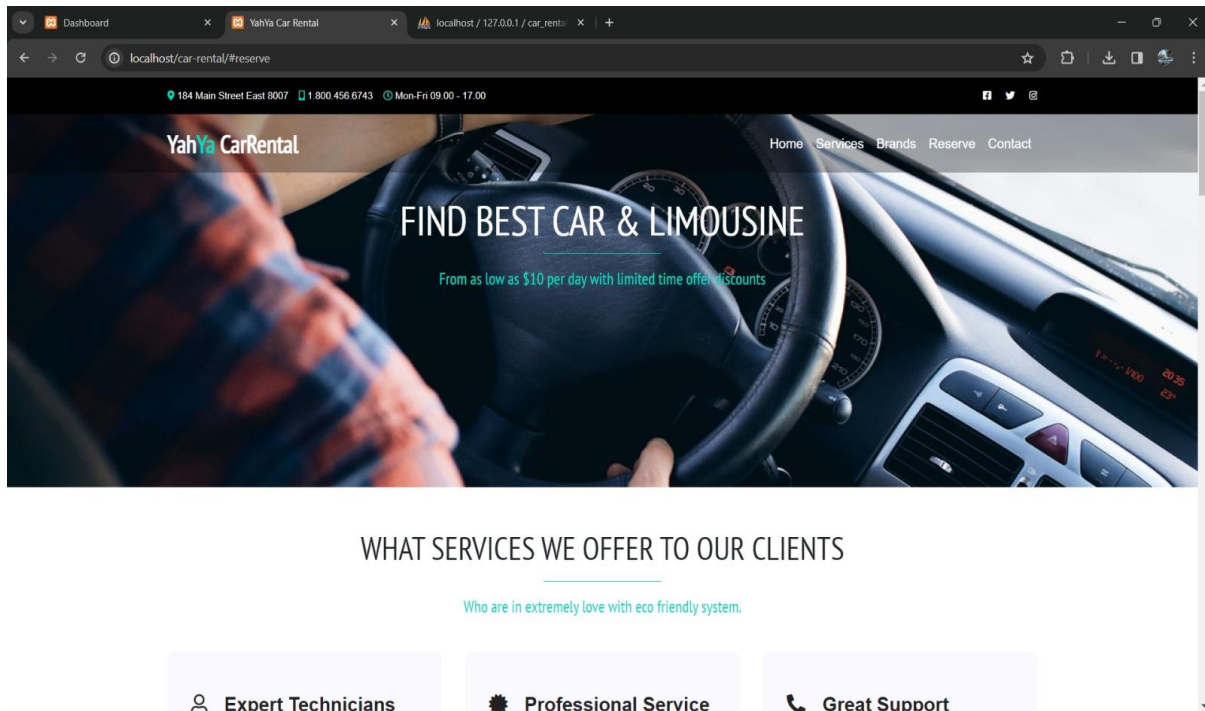
```

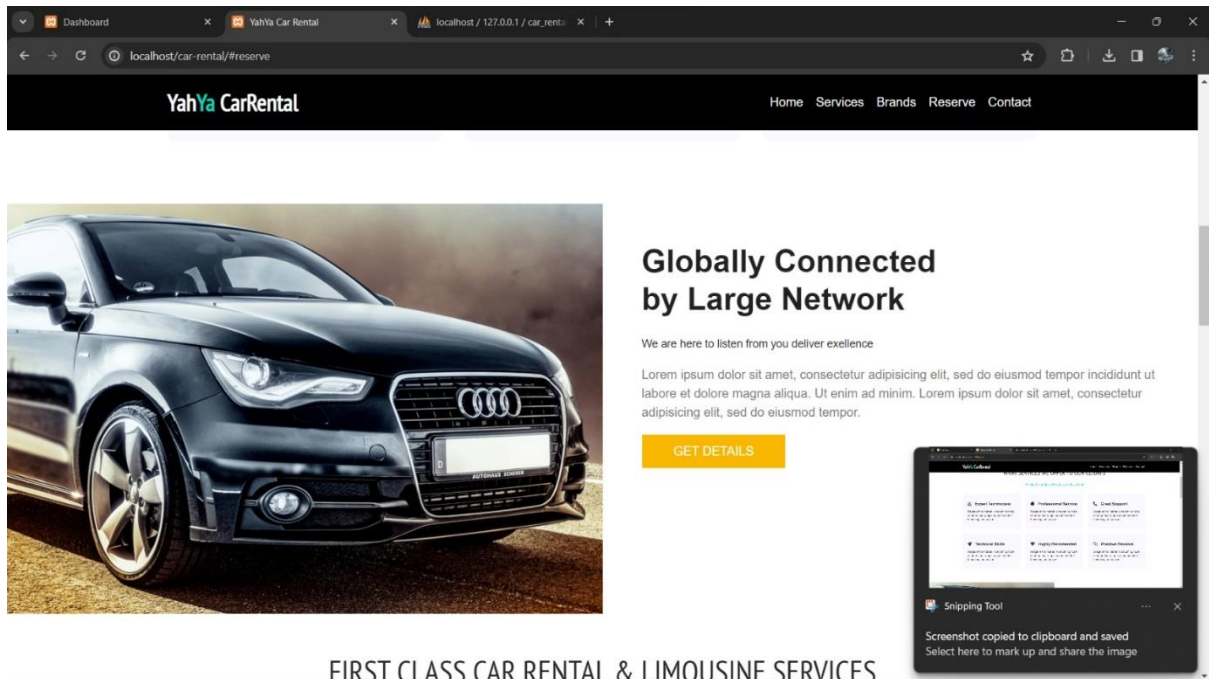
CHAPTER V: CONCLUSION & FUTURE ENHANCEMENT

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. Our web based yahya 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.

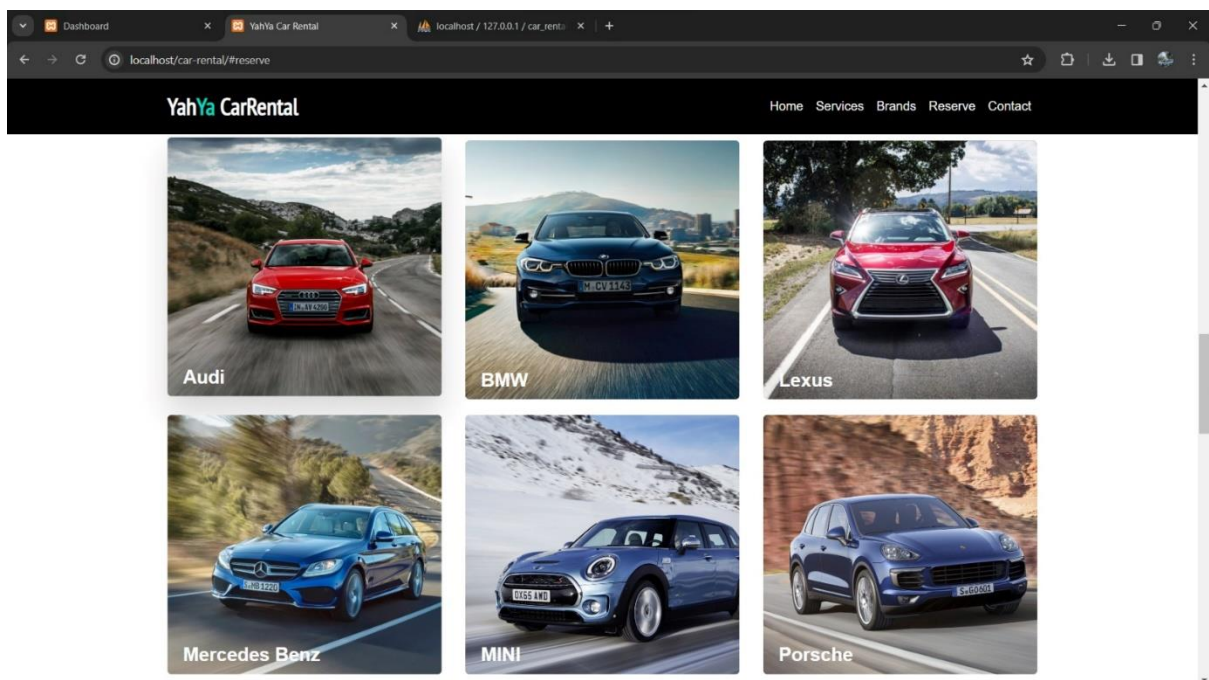
There is always a scope of improvement and Future Enhancement in a project. We are also looking towards the Future Enhancement of the project by the following manner. First We have thought of knowing the location our Car which has been reserved by our client and also imply late fee if the user return the car after the return date. Second we have thought of a promocodes and discounts for the service to our clients on the basis of. Third to provide driver with the car service to the required clients. Fourth to have real secured Based payment in our project.

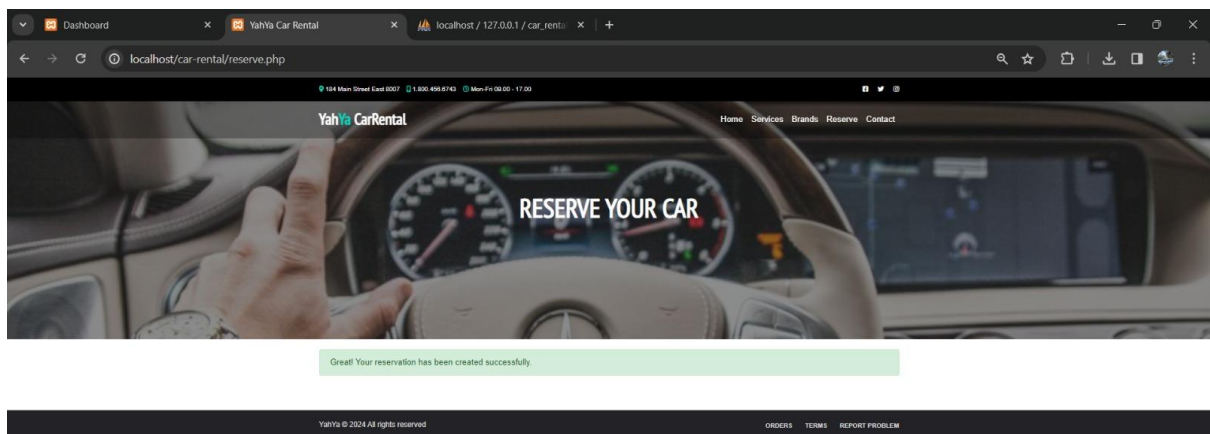
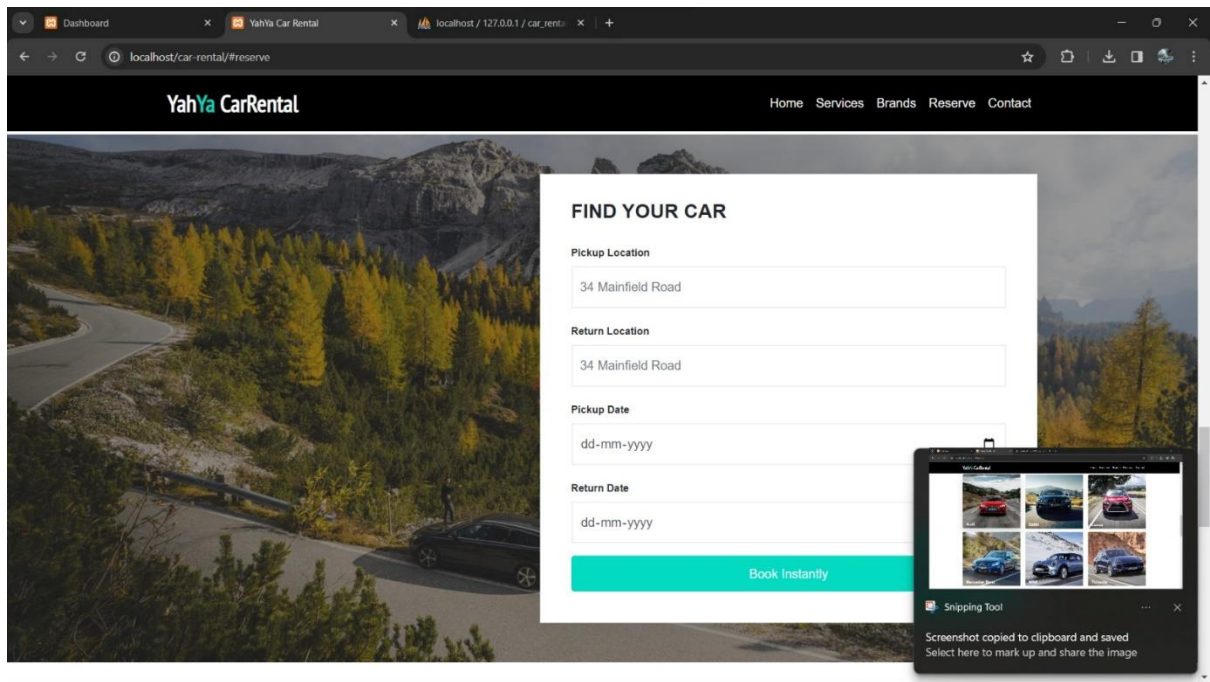
CHAPTER VI: SNAPSHOTS OF THE PROJECT

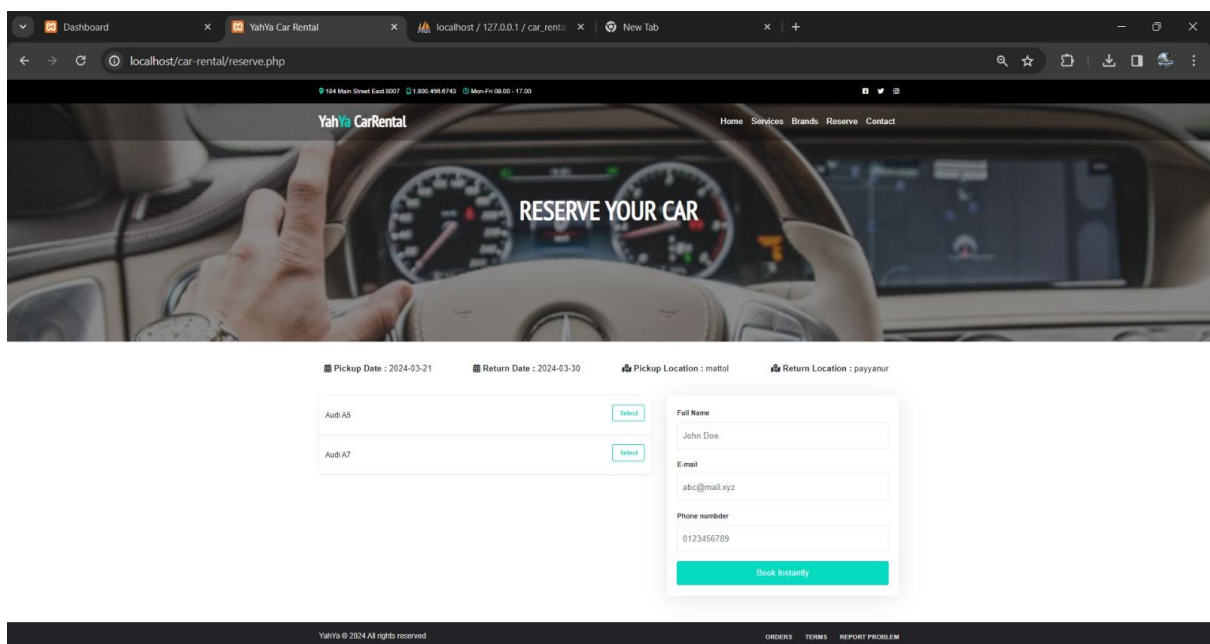
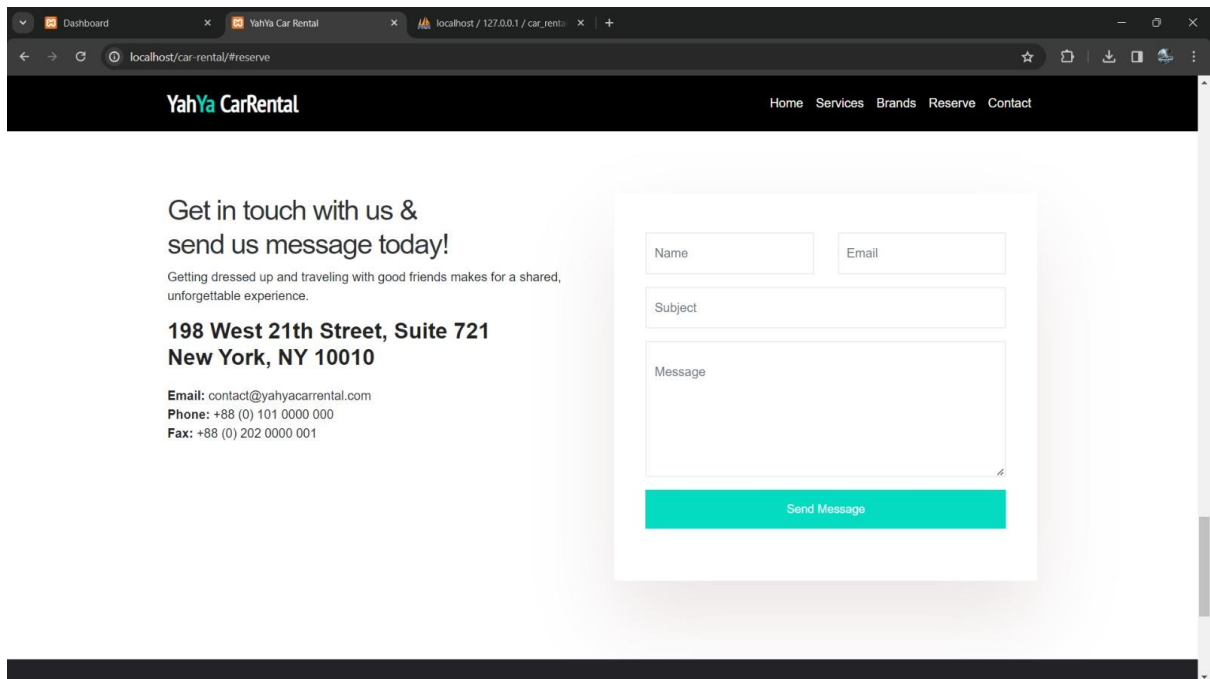




FIRST CLASS CAR RENTAL & LIMOUSINE SERVICES







localhost / 127.0.0.1 / car_rental

localhost/phpmyadmin/index.php?route=/database/structure&db=car_rental

Server: 127.0.0.1 Database: car_rental

Structure SQL Search Query Export Import Operations Privileges Routines Events Triggers Tracking Designer Central columns

Filters

Containing the word

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> cars		4	InnoDB	utf8_general_ci	16.0 K	-
<input type="checkbox"/> car_brands		6	InnoDB	utf8_general_ci	16.0 K	-
<input type="checkbox"/> car_types		3	InnoDB	utf8_general_ci	16.0 K	-
<input type="checkbox"/> clients		6	InnoDB	utf8_general_ci	16.0 K	-
<input type="checkbox"/> reservations		10	InnoDB	utf8_general_ci	16.0 K	-
<input type="checkbox"/> users		2	InnoDB	utf8_general_ci	16.0 K	-
6 tables	Sum	31	InnoDB	utf8mb4_general_ci	96.0 K	0 B

☐ Check all With selected

Print Data dictionary

Create new table

Table name: Number of columns: 4 Create

Console