

**MINI PROJECT REPORT ON**  
**CAR RENTAL SYSTEM**  
**DATABASE INFORMATION SYSTEM LAB**

**T. E. Computer Engineering**

Under the guidance of

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## **CERTIFICATE**

This to certify that the Mini Project report on Flight Management System has been carried out by Name of the Student (TE/Branch/Roll No), who is a bonafide student of St. Francis Institute of Technology, Mumbai in partial fulfillment of the requirement of T. E. degree in Computer Engineering at St. Francis Institute of Technology, Mumbai, India. It is also certified that this work has not been presented anywhere else for award of any other degree or diploma prior to this.

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**Internal Examiner**

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**External Examiner**

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# INTRODUCTION

## Project objective

This project is designed so as to be used by Car Rental Company specializing in renting cars to customers. It is an online system through which customers can view cars, register, view profile and book car.

Objectives of this project include:

- To produce a web-based system that allow customers 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.

## Features of the system

- 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 labour.
- Eco-friendly: The monitoring of the vehicle activity and the overall business becomes easy and includes the least of paper work.
- The software 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 software.

# SYSTEM REQUIREMENT SPECIFICATIONS

## Software requirement specification

Software requirement specification abbreviated as SRS is a means

of translating the idea of files into a formal document. The main features of SRS include:

- Establishing the basis for an agreement between the client and the developer.
- Producing a reference for validation of the final product. SRS assist clients in determining if the software meets the requirements.

Mainly there are six requirements which an SRS must satisfy.

- (a) It should specify the external behaviour.
- (b) It should specify the constraints.
- (c) It should be easy to change.
- (d) It should be a reference tool.
- (e) It should record throughout the lifecycle.
- (f) It should have the capacity of expectation of an undesired event.

Usually we come across four types of requirement specification

- (a) User Interface Requirements
- (b) Database Requirements
- (c) Functional Requirements
- (d) Non-Functional Requirements

## **User Interface Requirements**

The user of the proposed system requires that the developed software should be user friendly, have security access, and ensure the privacy of the administrator and produce results in timely manner. The users are not frequently exposed to the mail system, so the system interface to the user must be simple and understandable. The web pages must be user-friendly and must be in an easy-to-use style. The user must be able to easily switch among various I/O screens. The product is well designed so that it can be used easily by the users who are novices to the system.

The user interface should be as interactive as possible. A user- friendly interface must be provided so that the user can easily interact with the system and comprehend things in a quicker and easier way. The system must provide reliable and up-to-date information.

The application should be efficient so that the user does not spend much time in searching. Consistency will increase the confidence of the user in the reliability of the application. The user must be limited with a small set of operations to achieve the result. The application should be visually and conceptually clear. .

## **Database Requirements**

The database should be designed in such a way that it enhances the efficient searching , reservation and manipulation of all the information associated. For instance all general information regarding an item attribute should be stored in a particular table. The database should be organized in such a way that it helps in searching and reserving various essential summaries needed for users.

## **Functional Requirements**

Requirement analysis is a software engineering technique that is composed of the various tasks that determine the needs or conditions that are to be met for a new or altered product, taking into consideration the possible conflicting requirements of the various users.

Functional requirements are those requirements that are used to illustrate the internal working nature of the system, the description of the system, and explanation of each subsystem. It consists of what task the system should perform, the processes involved, which data should the system holds and the interfaces with the user. The functional requirements identified are:

- **Customer's registration:** The system should allow new users to register online and generate membership card.
- **Online reservation of cars:** Customers should be able to use the system to make booking and online reservation.
- Automatic update to database once reservation is made or new customer registered: Whenever there's new reservation or new registration, the system should be able update the database without any additional efforts from the admin.
- **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:

- **Security:** 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.
- **Performance and Response time:** The system should have high performance rate when executing user's input and should be able to provide feedback or response within a short time span usually 50 seconds for highly complicated task and 20 to 25 seconds for less complicated task.
- **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.
- **Availability:** This 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 the business process is not severely affected.
- **Ease of use:** Considering 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.

## **SYSTEM ENVIRONMENT**

### **Hardware**

The hardware environment consists of the following:

CPU : 3.3 gigahertz(GHz) or faster 64-bit dual core processor

Mother Board:

Hard disk space : 100 GB or more

Display : Super Vga with a display of 1024 \*768

Memory : 4-GB Ram or more

Other Devices :Color Monitor, Keyboard, mouse.

## **Software**

Technically the system will run on any OS having Web Browser.

(a) Development Tools:

Front End : HTML,CSS,JAVASCRIPT

Back End : PHP,MySQL

(b) Operating System : Windows 10

(c) Web server : XAMPP

### ➤ **Windows 10 Operating System**

Windows 10 is a series of operating systems developed by Microsoft and released as part of its Windows NT family of operating systems. It is the successor to Windows 8.1, released nearly two years earlier, and was released to manufacturing on July 15, 2015, and broadly released for the general public on July 29, 2015.[18] Windows 10 was made available for download via MSDN and Technet, and as a free upgrade for retail copies of Windows 8 and Windows RT users via the Windows Store. Windows 10 receives new builds on an ongoing basis, which are available at no additional cost to users, in addition to additional test builds of Windows 10, which are available to Windows Insiders. Devices in enterprise environments can receive these updates at a slower pace, or use long-term support milestones that only receive critical updates, such as security patches, over their ten-year lifespan of extended support

### ➤ **MySQL SERVER**

VERSION : 5.0

DEVELOPER : phpMyAdmin

phpMyAdmin is a free software tool written in PHP, intended to handle the administration of MySQL over the Web. phpMyAdmin supports a wide range of operations on MySQL and MariaDB. Frequently used operations (managing databases, tables, columns, relations, indexes, users, permissions, etc) can be performed via the user interface, while you still have the ability to directly execute any SQL statement.



## FEATURES

- Intuitive web interface
- Support for most MySQL features:
  - browse and drop databases, tables, views, fields and indexes
  - create, copy, drop, rename and alter databases, tables, fields and indexes
  - maintenance server, databases and tables, with proposals on server configuration
  - execute, edit and bookmark any SQL-statement, even batch-queries
  - manage MySQL user accounts and privileges
  - manage stored procedures and triggers
- Import data from CSV and SQL
- Export data to various formats: CSV, SQL, XML, PDF, ISO/IEC 26300 - OpenDocument Text and Spreadsheet, Word, L<sup>A</sup>T<sub>E</sub>X and others
- Administering multiple servers
- Creating graphics of your database layout in various formats
- Creating complex queries using Query-by-example (QBE)
- Searching globally in a database or a subset of it
- Transforming stored data into any format using a set of predefined functions, like displaying BLOB-data as image or download-link

### ➤ **JavaScript**

JavaScript is a script based programming language that supports the development of both server and client components of web based applications. On client side it can be used to write programs that are executed by a web browser within the context of web page. On server side it can be used to write web server programs that can process information submitted by the web browser and update browser display accordingly.

Features of JavaScript:

- (a) Much of JavaScript's syntax and some of its semantics are adopted from c and c++. Support for basic mathematics and logic and a step by step execution model are fundamental to JavaScript.
- (b) JavaScript is an interpreted language.
- (c) Regular expressions are a prominent feature of JavaScript. These allow strings to be matched to a certain pattern and empower JavaScript significantly as a tool for manipulating text content of web pages.
- (d) Functions are treated as first class objects, which frequently make code concise and elegant.
- (e) JavaScript is well designed for object-oriented programming. Objects are at the root of JavaScript's data manipulation model.
- (f) JavaScript objects are associative arrays. The strings that index the properties and methods of an object can be constructed at runtime.

### ➤ **Hypertext Markup Language (Html)**

Html, short for hypertext markup language, is the predominant

markup language for the creation of web pages. It provides a means to describe the structure of text-based information in a document — by denoting certain text as headings, paragraphs, lists, and so on — and to supplement that text with interactive forms, embedded images, and other objects. Html is written in the form of labels (known as tags), surrounded by less-than (<) and greater-than signs (>). Html can include embedded scripting language code which can affect the behavior of web browsers and other html processors.

Html was originally developed by Tim Berners-Lee while at CERN, and popularized by the Mosaic browser developed at NCSA. During the course of the 1990s it has blossomed with the explosive growth of the web. During this time, html has been extended in a number of ways. The web depends on web page authors and vendors sharing the same conventions for html. This has motivated joint work on specifications for html.

Website is a collection of pages, publications and documents that reside on a web server. While these are publications and a document as a format in any single format. You should use html for home page and all primary pages and the site.

An Html code is essentially a set of instructions given to a web browser for formatting and layout of web page. Html does not actually tell a computer how the web page will look to a visitor rather that you use html to compose the page to specify all the elements that appear on the page-the text, graphics, horizontal rule, heading division and so on. In addition we use html to tell a computer what color to use where and to indicate the relative size and font of text.

#### ➤ **Cascading Style Sheets (CSS)**

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file which reduces complexity and repetition in the structural content as well as enabling the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based

tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.

The name cascading comes from the specified priority scheme to determine which style rule applies if more than one rule matches a particular element. This cascading priority scheme is predictable

## **SYSTEM DESIGN**

### **INPUT DESIGN**

Input design is the link that ties the information system into the world of its users. The input design involves determining what the inputs are, how to validate the data, how to minimize the data entry and how to provide a multi-user facility. Inaccurate input adapt are the most common cause of errors in data processing. Errors entered by the data entry operators can be controlled by input design. Input design is the process of converting user-originated inputs to a computer based format. Input data are collected and organized into groups of similar data. Once identified, the appropriate input media are selected for processing. All the input data are validated in the order and if any data violates any conditions, the user is warned by a message. If the data satisfied all the conditions then it is transferred to the appropriate tables in the database.

The data that have to be entered in the software is the test papers and the student details. A page is designed for entering these details which is user friendly so that an authorized user with even less computer knowledge can enter the data. Pages are designed to traverse through the various test papers, selecting the appropriate test field and downloading of various papers of their choice, in a very user friendly manner so that the student can give the test with minimum effort. The design must be done such that users get appropriate messages when exceptions occur.

### **OUTPUT DESIGN**

Computer output is the most important and direct source of information to the user. Output design is a very important phase since the output needs to be in an attractive manner. Efficient and intelligible output design improves the system relationship with the user and helps in decision making. A major form of the output is a hardcopy from the printer and screen reports. Printouts are designed around the output requirements of the user. Allowing the user to view the sample screen is important because the user is the ultimate judge of the quality of output.

The output module of this system is the user-friendly window. These user-friendly windows are meant for the purpose of easy view of the various test papers in different fields. Also there must be options for downloading or printing the papers so that the user can easily take down the hard copy of the output.

In this online examination project the users are provided with an output copy of various examination papers of previous years which are easy to download and to take printout.

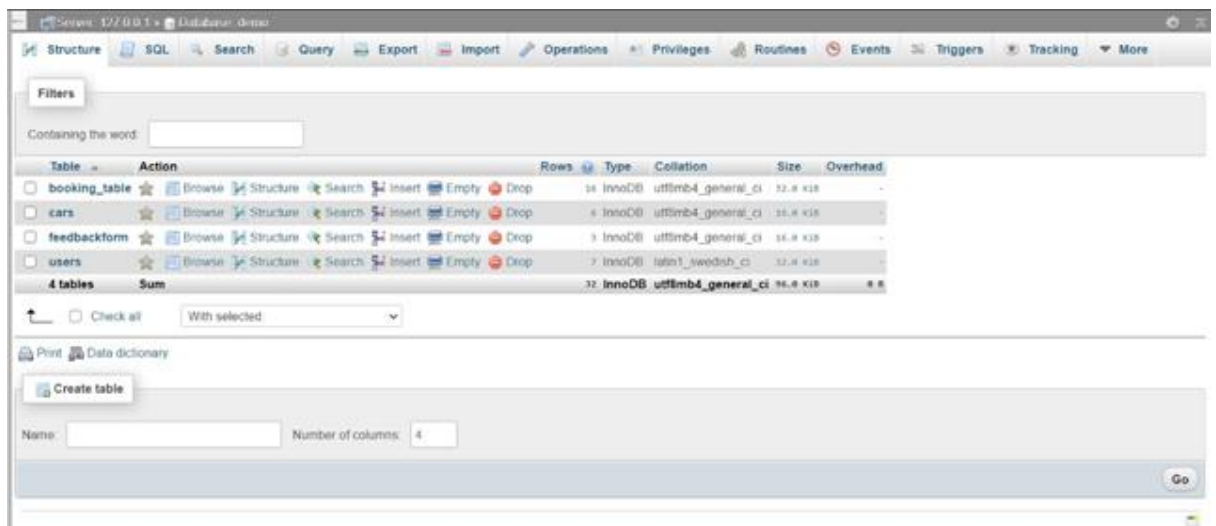
## DATABASE DESIGN

Databases are the storehouses of data used in the software systems. The data is stored in tables inside the database. Several tables are created for the manipulation of the data for the system. Two essential settings for a database are

- Primary Key- the field that is unique for all the record occurrences.
- Foreign Key-the field used to set relation between tables.

Normalization is a technique to avoid redundancy in the tables.

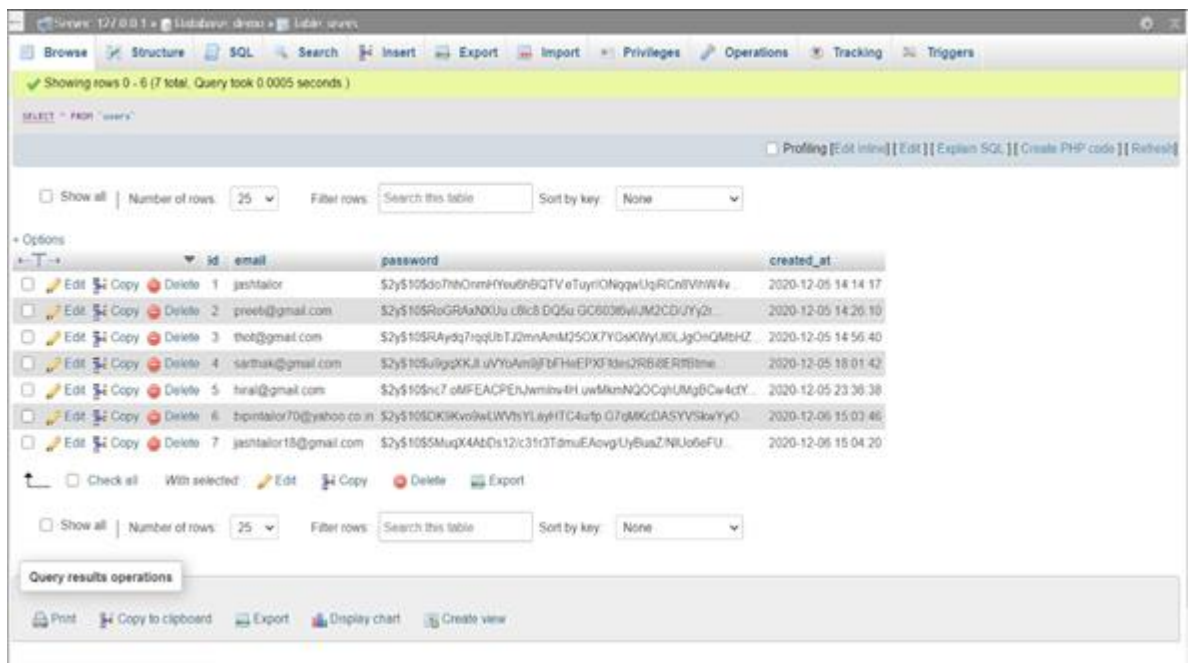
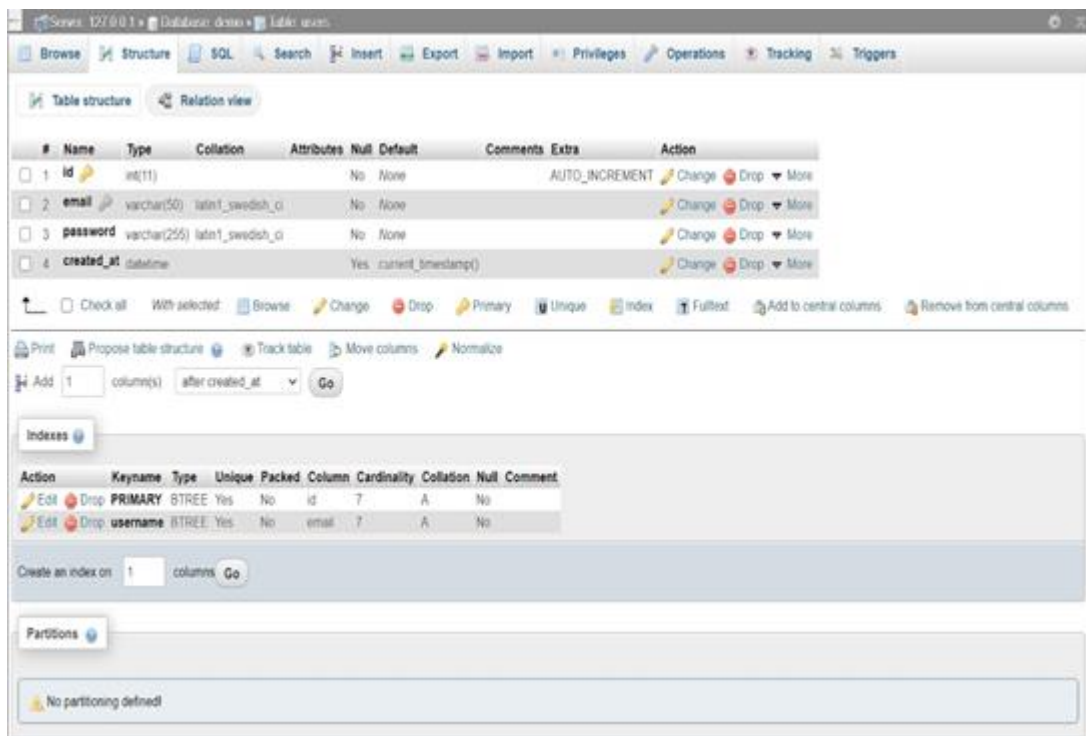
The tables include:



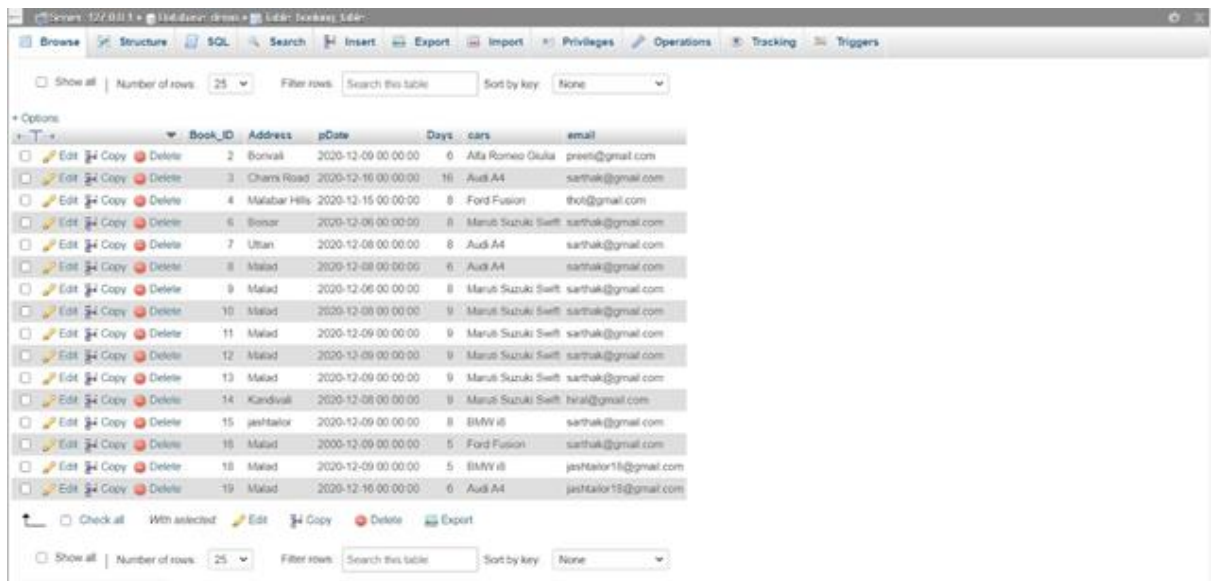
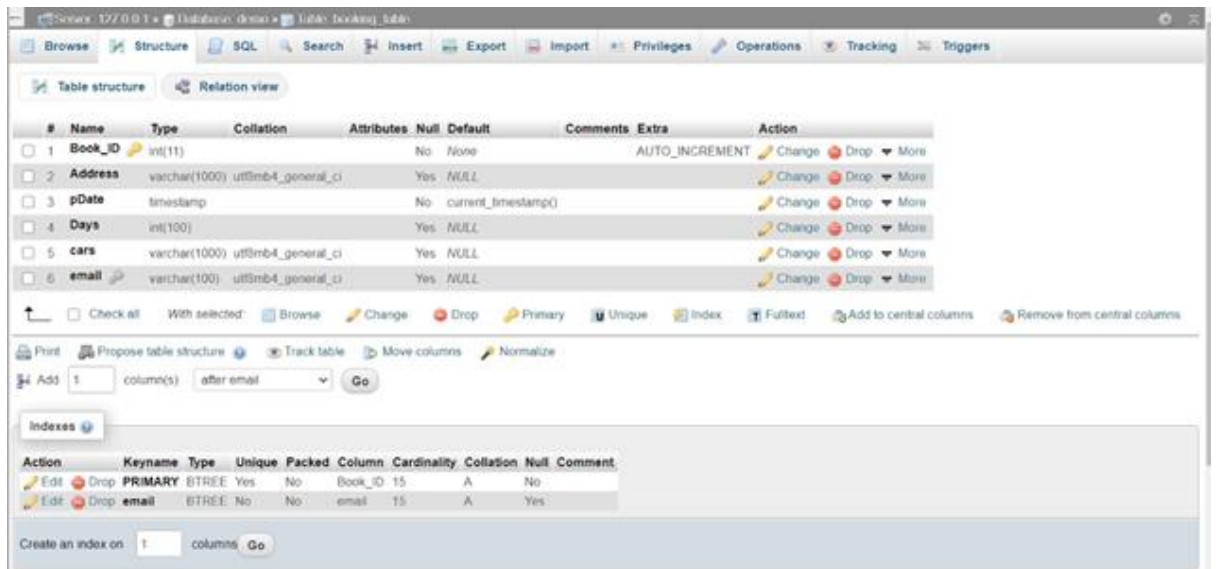
The screenshot shows a database management interface with a table list. The table list has columns: Table, Action, Rows, Type, Collation, Size, and Overhead. The tables listed are booking\_table, cars, feedbackform, and users. The 'users' table is highlighted. Below the table list, there is a 'Create table' button and a form with 'Name' and 'Number of columns' fields.

Table	Action	Rows	Type	Collation	Size	Overhead
booking_table	Browse Structure Search Insert Empty Drop	14	InnoDB	utf8mb4_general_ci	32.0 K	-
cars	Browse Structure Search Insert Empty Drop	4	InnoDB	utf8mb4_general_ci	16.0 K	-
feedbackform	Browse Structure Search Insert Empty Drop	9	InnoDB	utf8mb4_general_ci	16.0 K	-
users	Browse Structure Search Insert Empty Drop	7	InnoDB	latin1_swedish_ci	32.0 K	-
4 tables	Sum	34	InnoDB	utf8mb4_general_ci	96.0 K	8 B

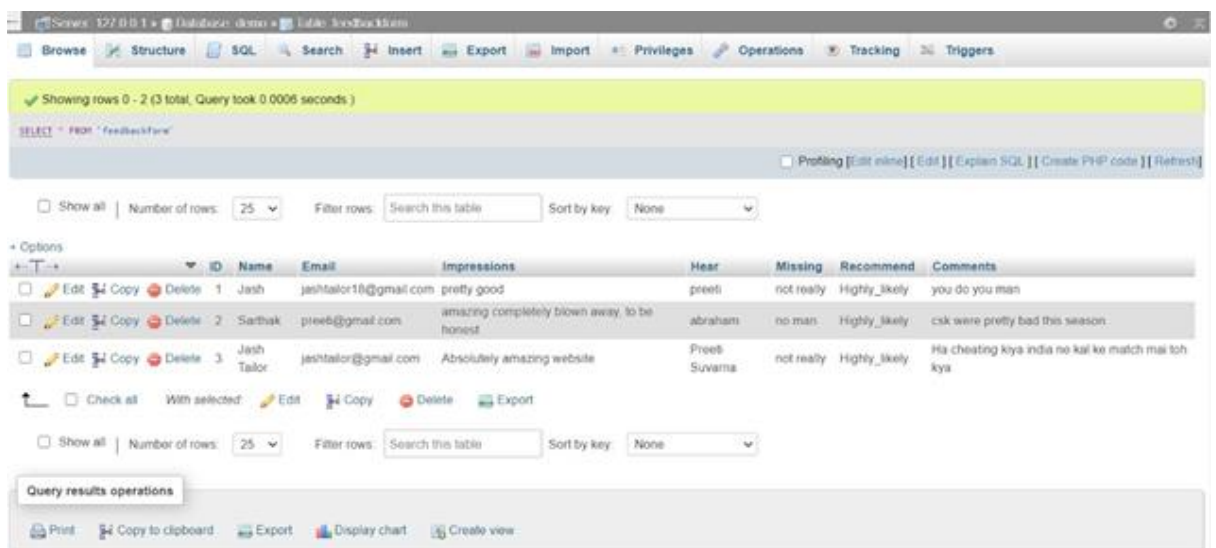
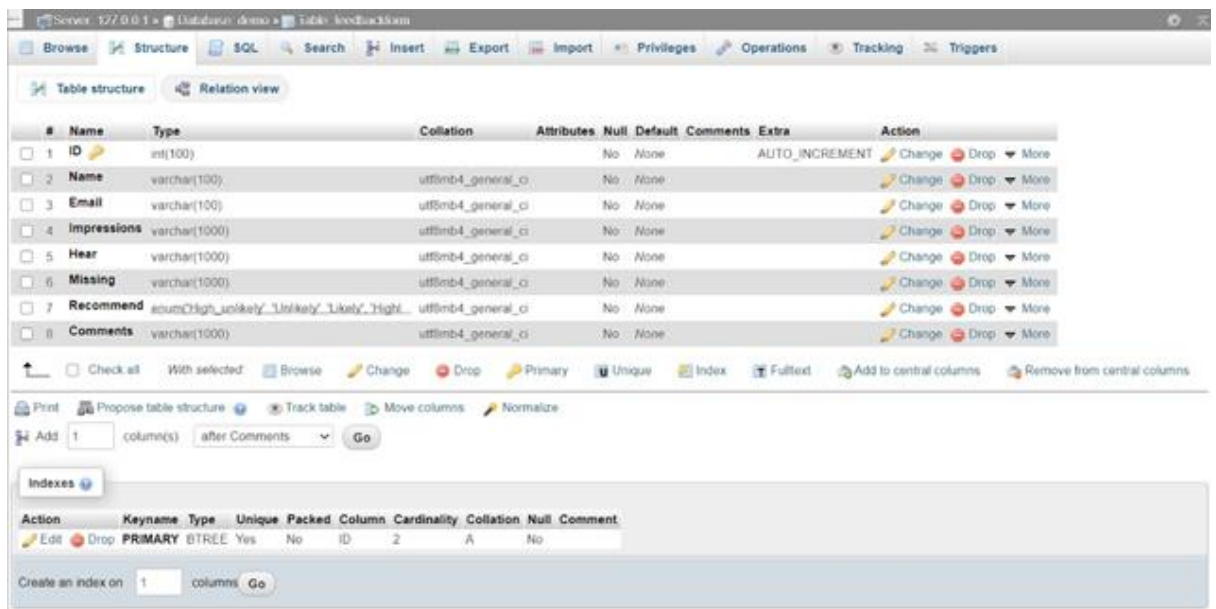
**Users table: This stores the data of the users**



**Booking table:** Here we can see the details of cars booked



**Feedback form table:**



## Architectural Design

### Data Flow Diagram

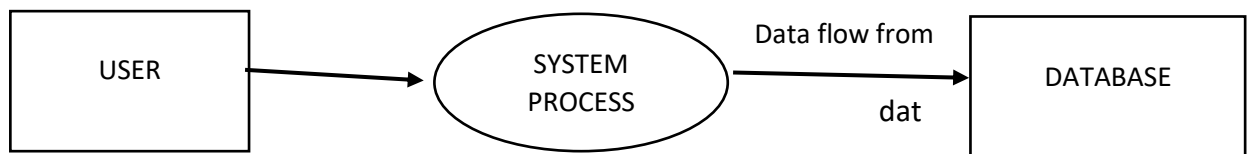
A Data Flow Diagram is a structured analysis and design tool that can be used for flowcharting in place of, or in association with, information-oriented and process-oriented system flowcharts. A DFD is a network that describes the flow of data and the processes that change or transform the data throughout a system. This network is constructed by using a set of symbols that do not imply any physical implementation. It has the purpose of clarifying system requirements and identifying major transformations that will become programs



in system design. So it is the starting point of the design phase that functionally decomposes the requirements specifications down to the lowest level of detail. DFD can be considered to an abstract of the logic of an information-oriented or a process-oriented system flow-chart. For these reasons DFD's are often referred to as logical data flow diagrams.

### Context Level Diagram (Level 0)

The Top-level diagram is often called a context level diagram. It is also called 0 level data flow diagram. It contains a single process, but it plays a very important role in studying the current system. The context diagram determines the boundaries. Anything that is not inside the process identified in the context diagram will not be part of the system study. The external elements, that are the sources and sinks function will not be studied in detail in detail in the context level data flow diagram.



### DATA MODELING (E-R DIAGRAMS):

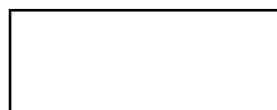
The over logical structure of a database can be expressed graphically by an E-R diagrams. The relative simplicity and pictorial clarity of this diagramming technique may well account in large part for the widespread use of the E-R model. Such a diagram

consists of the following major components.

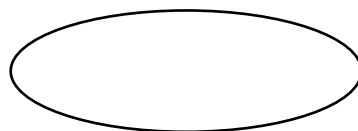
- ✓ Rectangles, which represent entity sets
- ✓ Ellipse, which represent attributes
- ✓ Diamonds, which link attributes to entity sets and entity sets to relationship sets.
- ✓ Lines, which link attributes into entity sets and entity sets to relationship sets.
- ✓ Dashed ellipse, which denote derived attributes
- ✓ Double lines, which indicate total participation of an entity in a relationship set.

#### NOTATIONS:

Entity Sets

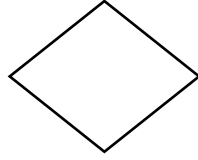


Attributes





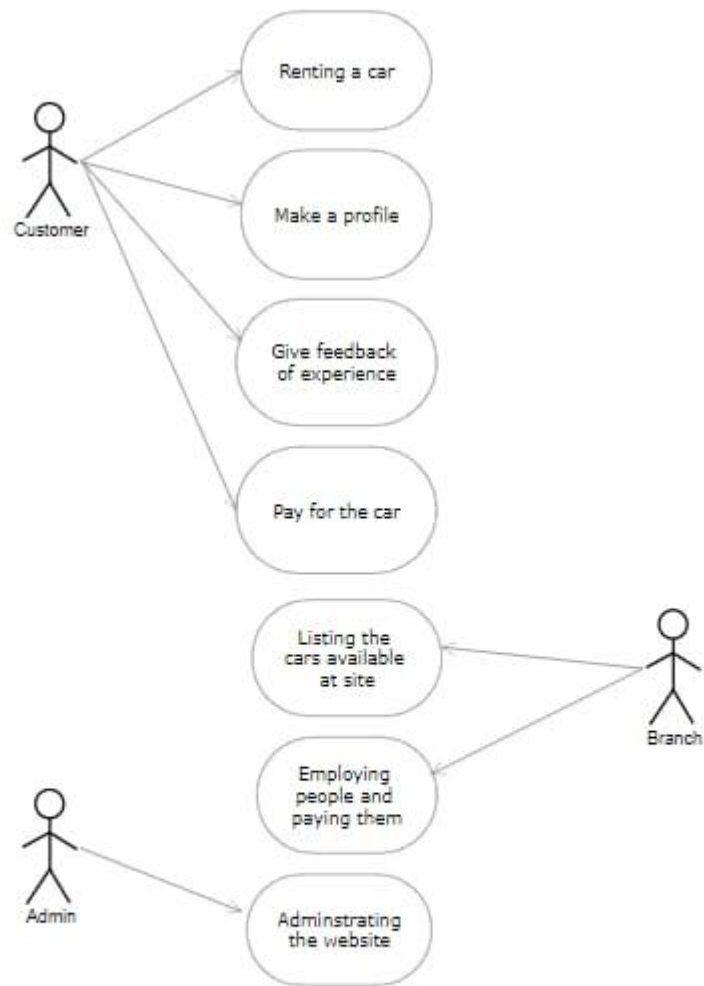
Relationships



links between entities and attributes



USE-CASE DIAGRAM



## CONCLUSION

### 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.

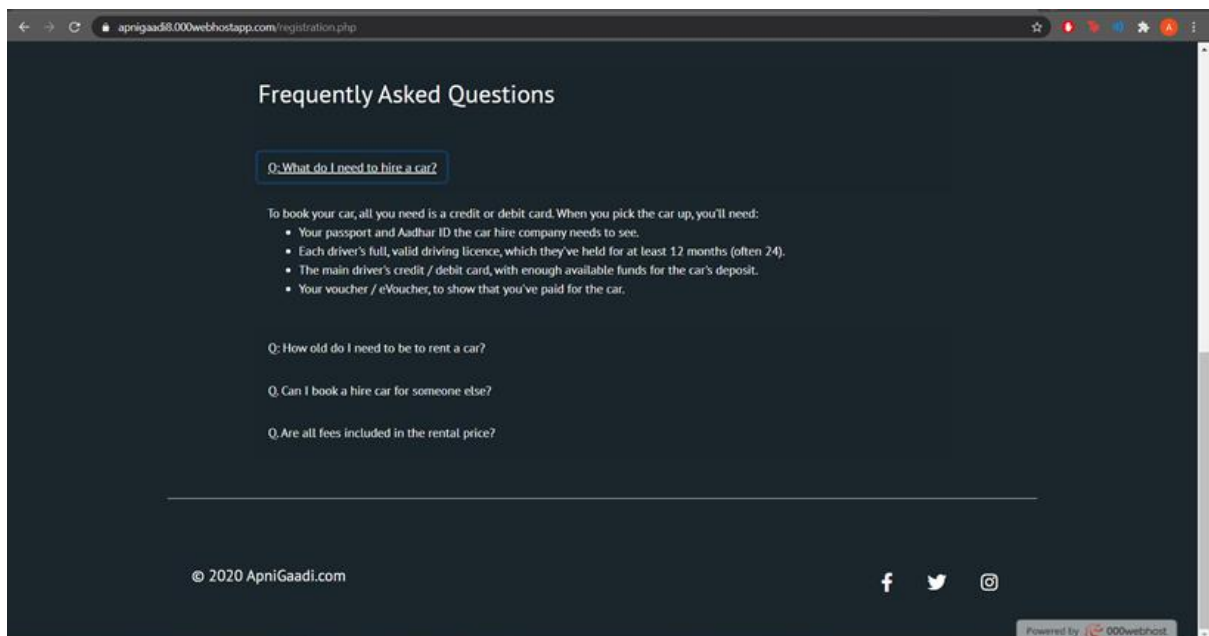
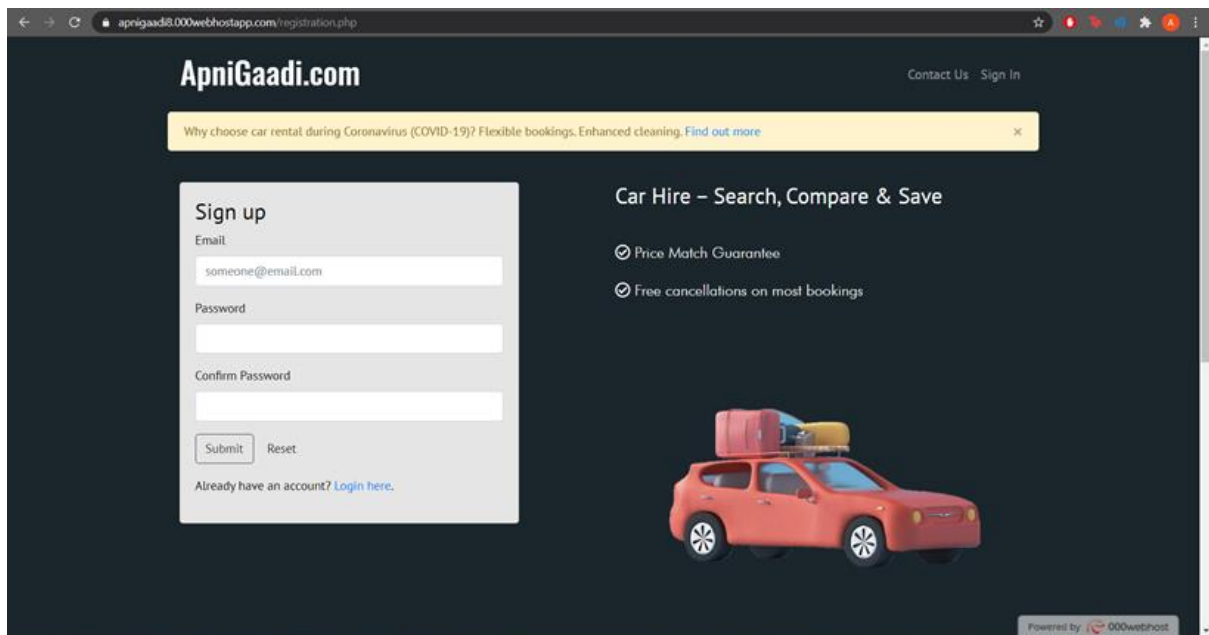
The web based car rental system has offered an advantage to both customers as well as Car Rental Company to efficiently and effectively manage the business and satisfies customers' need at the click of a button.

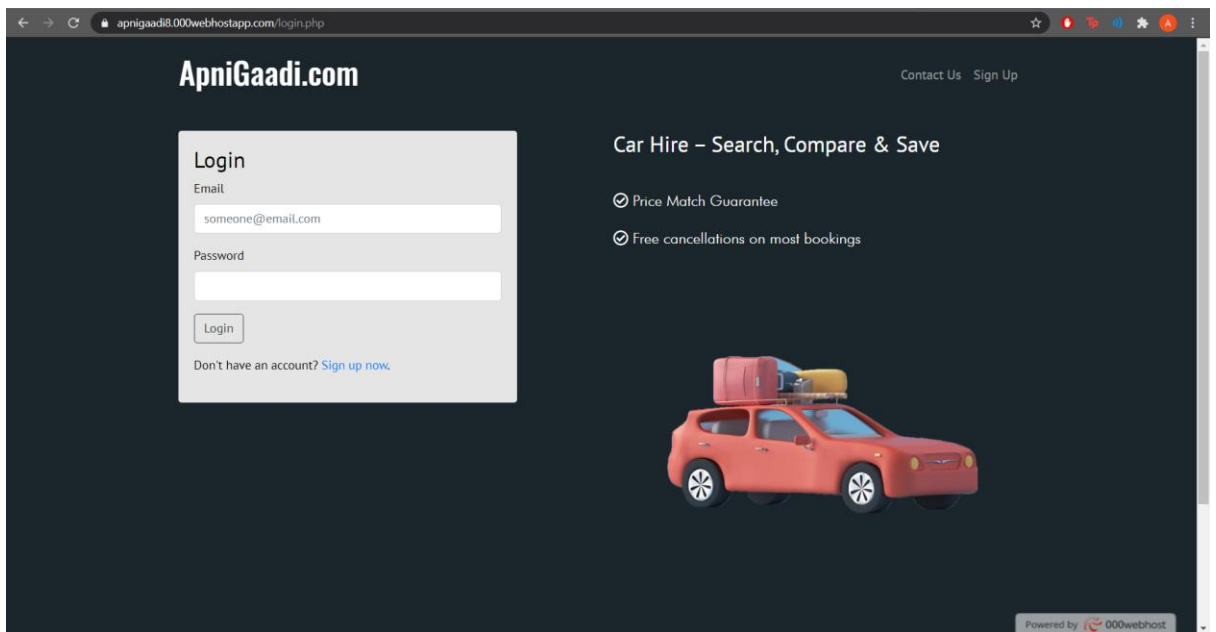
## **Scope**

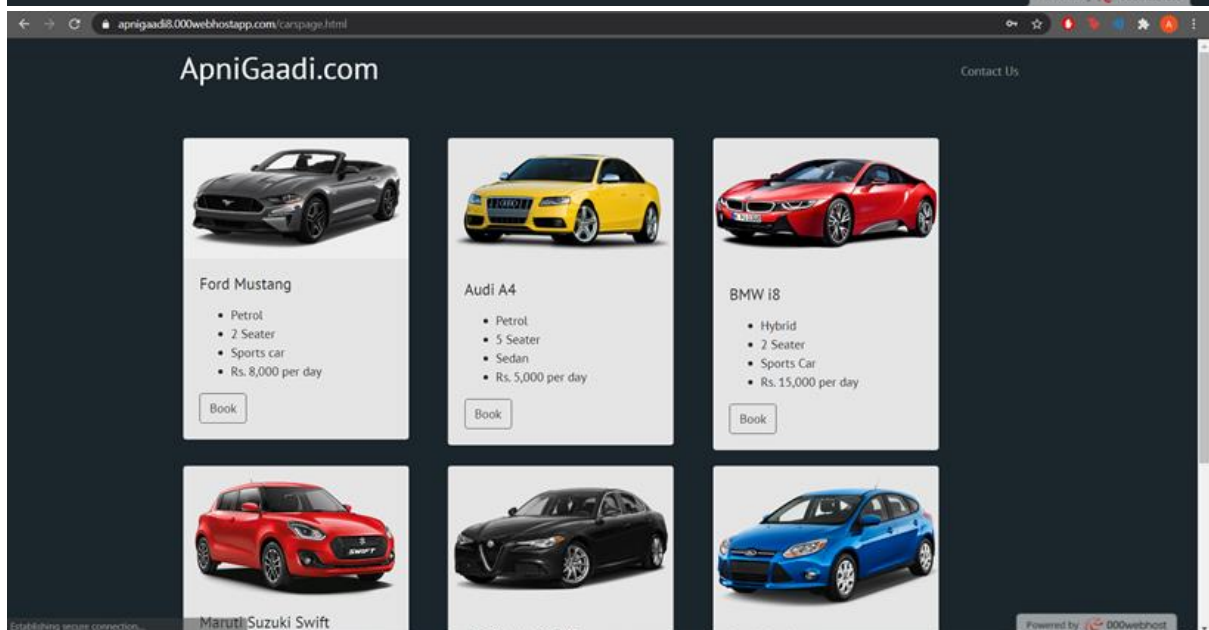
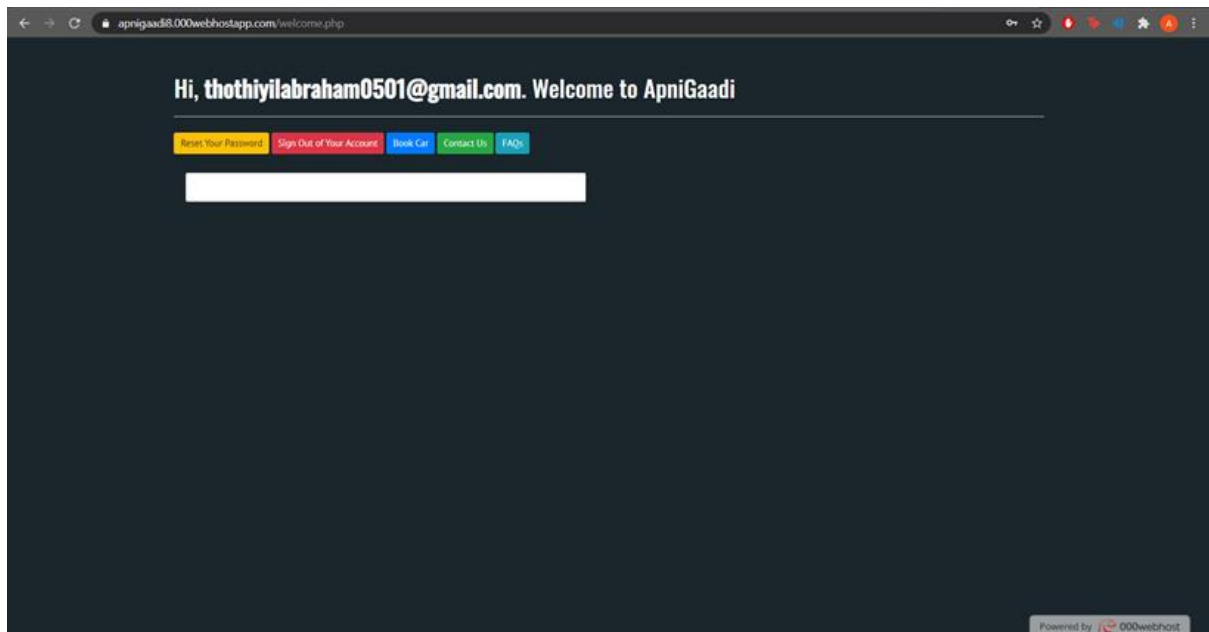
This project traverses a lot of areas ranging from business concept to computing field, and required to perform several researches to be able to achieve the project objectives. The area covers include

- Car rental industry: This includes study on how the car rental business is being done, process involved and opportunity that exist for improvement.
- PHP 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.

# SCREENSHOTS







apnigaadi8.000webhostapp.com/carspage.html

#### Ford Mustang

- Petrol
- 2 Seater
- Sports car
- Rs. 8,000 per day

Book

#### Audi A4


- Petrol
- 5 Seater
- Sedan
- Rs. 5,000 per day

Book

#### BMW i8

- Hybrid
- 2 Seater
- Sports Car
- Rs. 15,000 per day


Book



#### Maruti Suzuki Swift

- CNG
- 5 Seater
- Hatchback
- Rs. 1,000 per day


Book



#### Alfa Romeo Giulia

- Petrol
- 5 Seater
- Sedan
- Rs. 8,000 per day

Book



#### Ford Fusion

- Petrol
- 5 Seater
- Hatchback
- Rs. 1,500 per day

Book

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### Booking Details

Confirm Email:

someone@email.com

Address:

city,airport,station,region,district,...

Pickup Date:

dd-mm-yyyy

Number of Days

Cars:

☒ Ford Mustang

☐ Audi A4

☐ BMW i8

☐ Maruti Suzuki Swift

☐ Alfa Romeo Giulia

☐ Ford Fusion

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Feedback Form

Name:

John Doe

Email:

someone@email.com

What was your first impression when you entered the website?

How did you first hear about us?

Is there anything missing on this page?

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