



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

ONLINE CAR RENTAL SYSTEM DEPLOYED ON AMAZON EC2

A Report for the Evaluation 3 of Project 2

Submitted by

**ASHVIN PRAJAPATI
(1613101205)**

*in partial fulfilment for the award of the degree
of*

BACHELOR OF TECHNOLOGY

IN

**COMPUTER SCIENCE AND ENGINEERING WITH SPECIALIZATION OF
CLOUD COMPUTING AND VIRTUALIZATION**

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

**Under the Supervision of
Dr. ASHOK KUMAR YADAV, M.Tech., Ph.D.,
Professor**

APRIL / MAY- 2020



**SCHOOL OF COMPUTING AND SCIENCE AND
ENGINEERING**

BONAFIDE CERTIFICATE

Certified that this project report **“ONLINE CAR RENTAL SYSTEM DEPLOYED
ON AMAZON EC2”** is the bonafide work of **“ASHVIN PRAJAPATI
(1613105025)”** who carried out the project work under my supervision.

SIGNATURE OF HEAD

Dr. MUNISH SHABARWAL,
PhD (Management), PhD (CS)
**Professor & Dean,
School of Computing Science &
Engineering**

SIGNATURE OF SUPERVISOR

Dr. ASHOK KUMAR YADAV
**Professor
School of Computing Science &
Engineering**

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	1. ABSTRACT	
	2. INTRODUCTION	
	3. LITURATURE SURVEY	
	4. PROPOSED MODEL	
	5. IMPLEMENTATION	
	6. RESULTS AND DISCUSSION	
	7. CONCLUSIONS	
	8. REFERENCES	

ABSTRACT

The Car Rental System is being developed for customers so that they can book their vehicles from any part of the world. This application takes information from the customers through filling their details. A customer being registered in the website has the facility to book a vehicle which he requires.

The proposed system is completely integrated online systems. It automates manual procedure in an effective and efficient way. This automated system facilitates customer and provides to fill up the details according to their requirements. It includes type of vehicle they are trying to hire and location. The purpose of this system is to develop a web site for the people who can book their vehicles along with requirements from any part of the world.

A Cloud Computing, that is providing computer resources as a service, is a technology revolution offering flexible IT usage in a cost efficient and pay-per-use ways for the evaluation of companies to whether which technology solution to use, it would be necessary to decide whether or not the evaluation of cloud computing would actually differ to the traditional way of IT outsourcing.

Outsourcing IT capabilities are a crucial and inevitable step for enterprises that want to survive in the currently high competitive climate. Until now most of the researches, that has been done so far, only consider the XaaS model only from a traditional IT outsourcing point of view rather than in the cloud computing context. This research will now include the evaluation of cloud solutions giving companies another possibility to outsource their IT resources.

1.

INTRODUCTION

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 available cars, register, view profile and book car.

1.1 Reason for the Project

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:

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).

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

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.

Group bookings: Allows the customer to book space for a group in the case of weddings or corporate meetings (Event management).

A car rental is a vehicle that can be used temporarily for a fee during a specified period. Getting a rental car helps people get around despite the fact they do not have access to their own personal vehicle or don't own a vehicle at all. The individual who needs a car must contact a rental car company and contract out for a vehicle. This system increases customer retention and simplify vehicle and staff management.

1.2 Aims & Objectives

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.

1.3 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.

2.

LITERATURE SURVEY

A country like India where most of the population belong to the middle-class family. Most of them can't afford a car. In this era, people have less time and more work that force them to travel different places to work, business meeting and tourism.

The public vehicle is not the best option. Public vehicles are crowded, generally not running on time e.g. trains, buses etc. Here is our main problem to reach at own place on time with comfort. Thus, Car renting come up with a solution. People who can't afford a car.

They can book a car for trip, marriage, business meeting, and office to home, home to office, home to a market where ever they want to travel as simple as that. Car Rental System specializing in renting cars to clients.

It is an online system through which clients can view available cars, signup, login, view profile and book car. They even do not need to drive themselves driver is available with car. Prices are very less with all comfort.

3.

PROPOSED MODEL

3.1 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:

- a. Customer's registration: The system should allow new users to register online and generate membership card.
- 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 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.
- d. Feedbacks to customers: It should provide means for customers to leave feedback.

3.2 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 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.

b. 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.

c. 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.

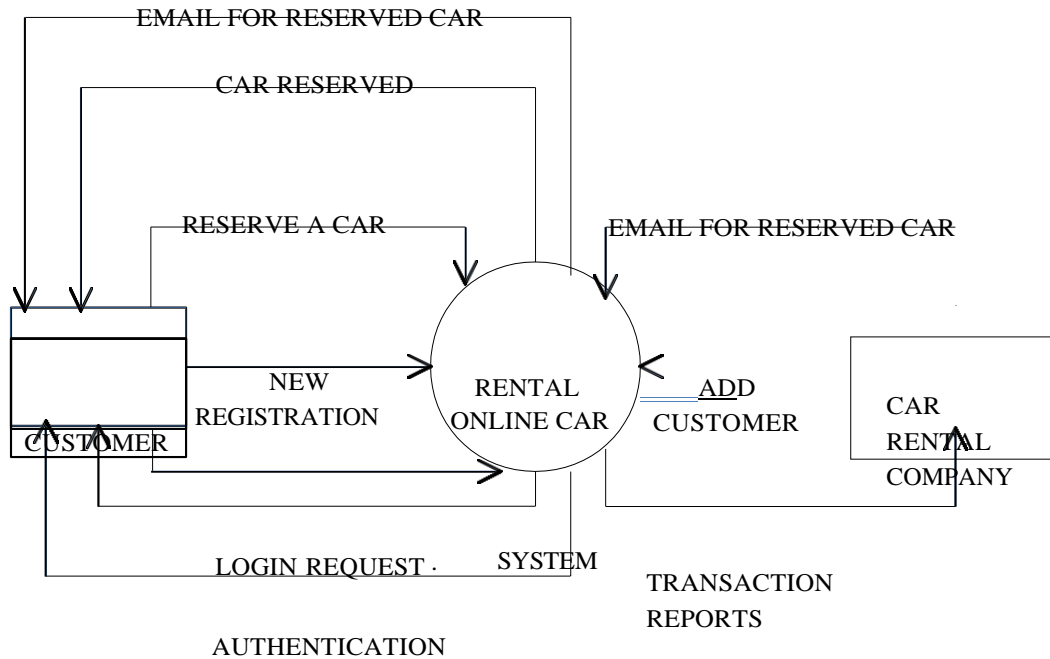
d. Availability: This system should always be available for access at 24 hours, 7 days a week. Also, in the occurrence of any major system malfunctioning, the system should be available in 1 to 2 working days, so that the business process is not severely affected.

e. 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.

4.

DATA FLOW DIAGRAMS

A Data Flow Diagram (DFD) is a graphical representation that depicts the information flow and the transforms that are applied as data moves from input to output.



Level 0 DFD of Online Car Rental System

In this diagram, Customer and Car Rental Company are the two entity sets.

Functions of Customer:

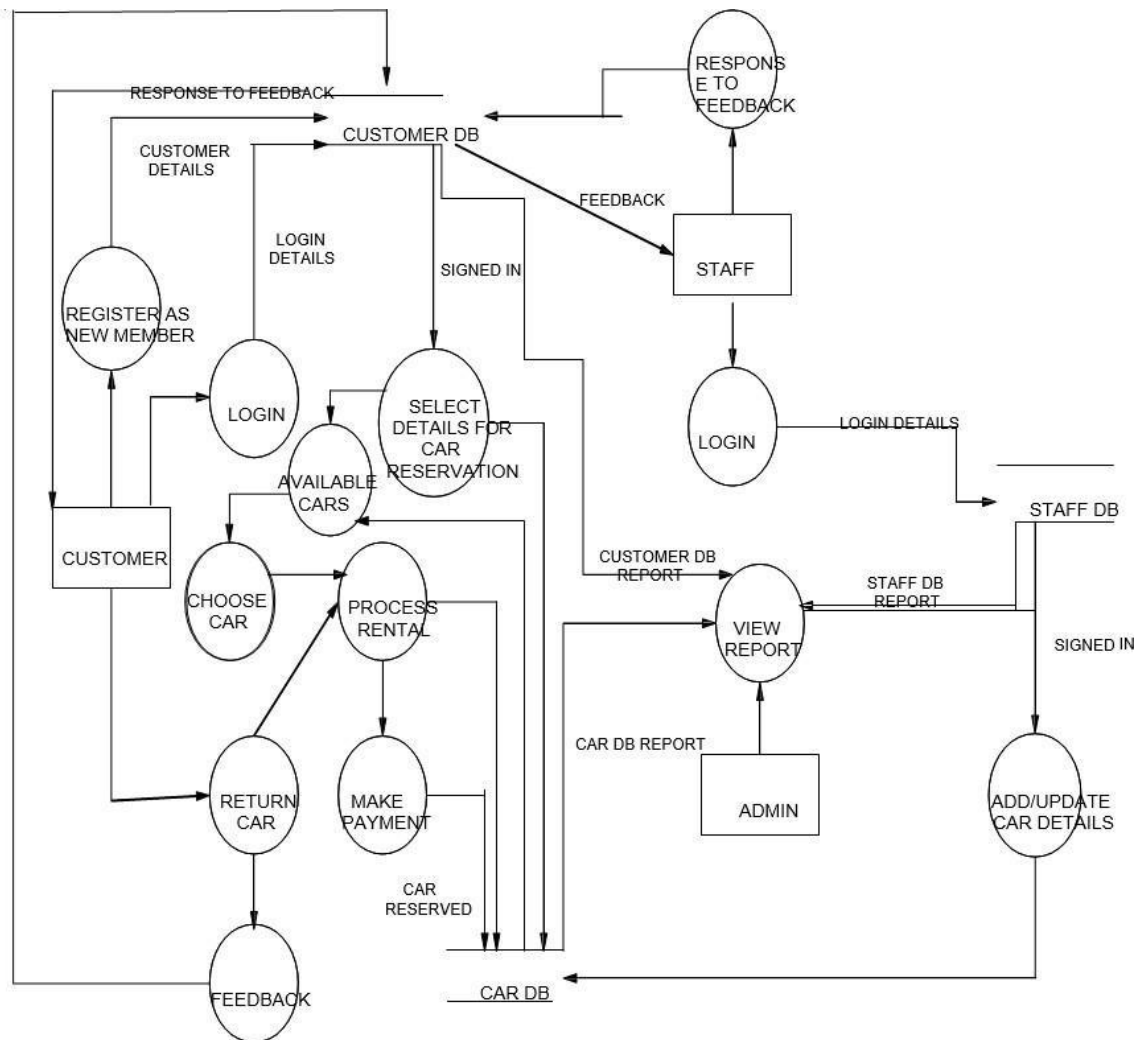
- New Registration
- Login Request
- Registration Confirmation by the System
- Reserve Car

- Car Issued by the System

- Email received for Reserved Car

Functions of Car Rental Company:

- Add Customer
- Send E-Mails for Reserved Car
- View Transaction reports



Level 1 DFD of Online Car Rental System

5.

USE-CASE DIAGRAMS

Actor and Use Case Description

Actor and use case description show the detail description of interaction between the actors and their use cases. The description enables to have a proper understanding of how actor interacts with the system through their use cases.

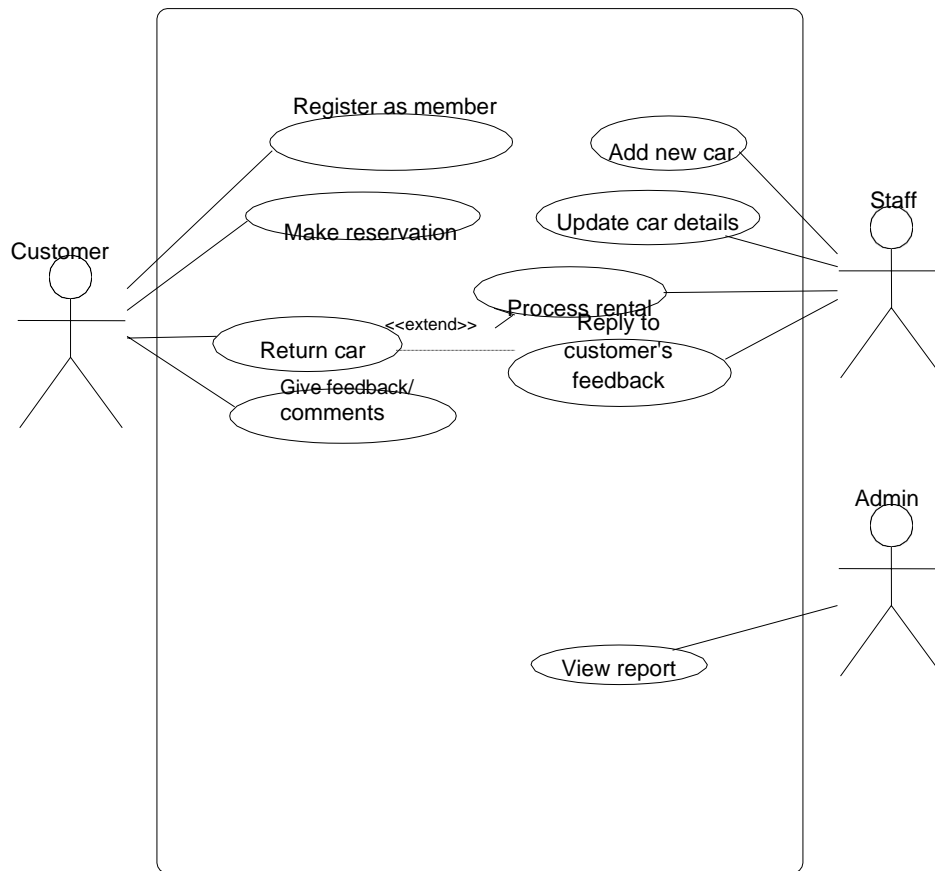
Actor	Use Case	Use Case Description
Customer	Register as member	This use case describes the activities of the customer to register online and become a member. Customer's details are required as part of the registration. Login detail is automatically sent to the customer after successful registration.
	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.
	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.
	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.
Staff	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.
	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.
	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.
	Process rental	This use case described the event by which staff updates the system when customer pick up or when returning car.
Admin	Add new staff	This use case describes the event by which Admin add new staff detail to the company's staff database. It is invoke whenever a new staff join the company.
	View report	This use case is used by the Admin to view transaction report.

Actors and Use Case Description

6.

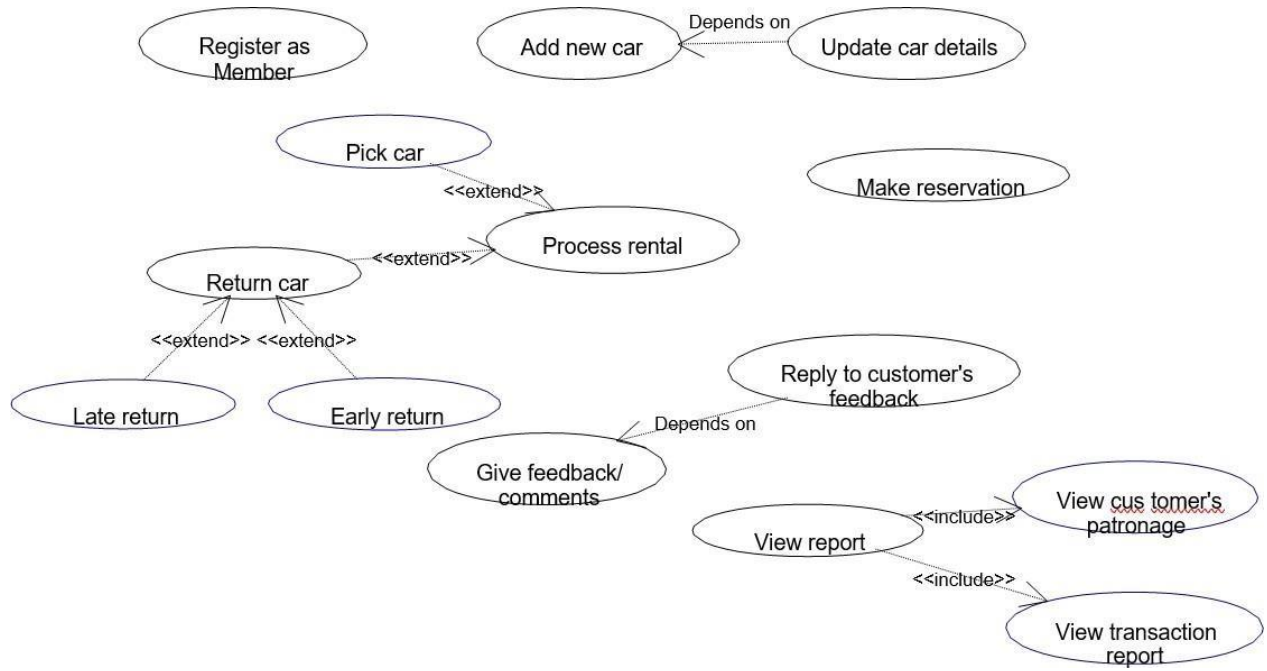
USE CASE DIAGRAM



E-Car Rental System [use case]

7.

USE-CASE DEPENDENCY DIAGRAM



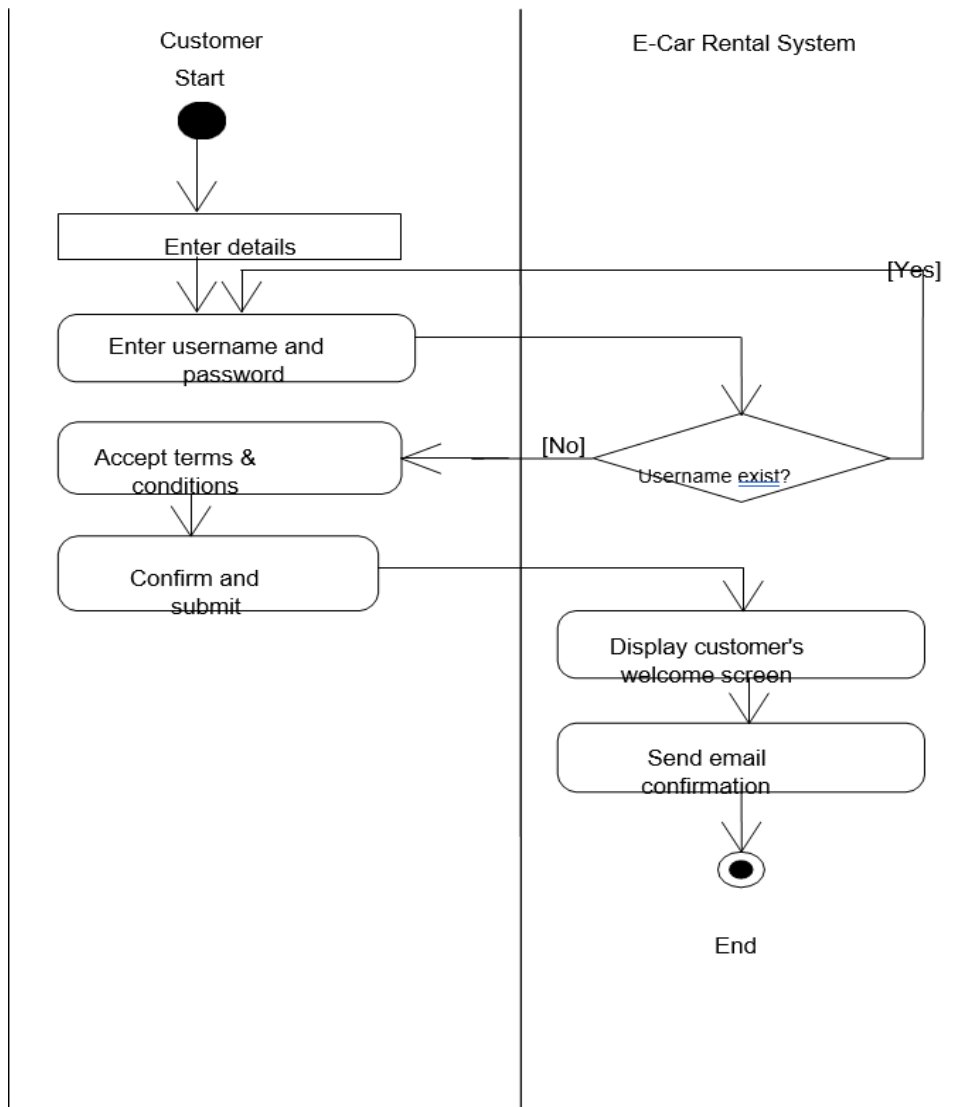
Use-Case Dependency Diagram

8.

ACTIVITY DIAGRAMS

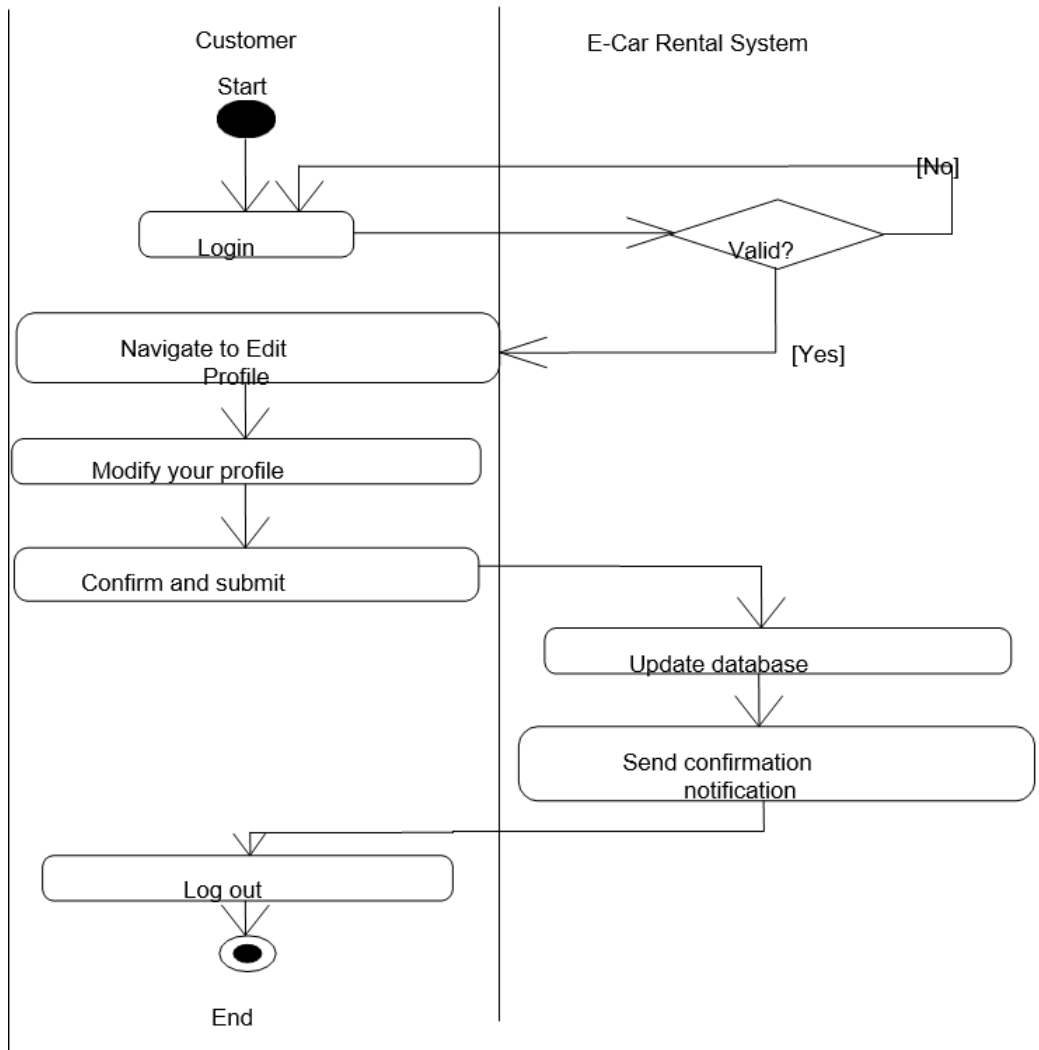
Activity diagrams graphically represent the sequential business and operational workflows of a system. It is a dynamic diagram that shows the activity and the event that causes the object to be in the particular state. The workflows from activity diagram will serve as guide for system navigation in the final design phase of the system.

Member Registration



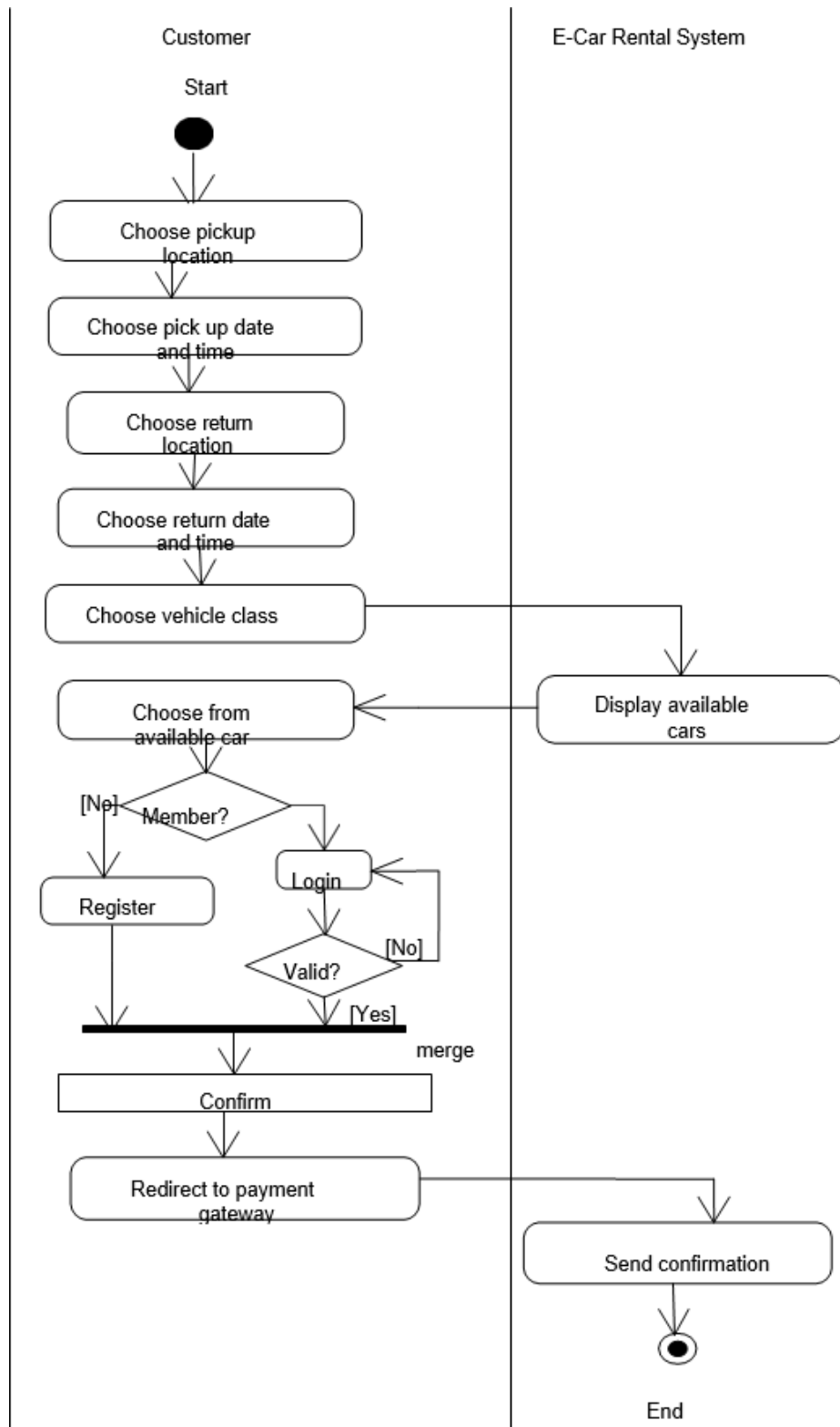
Register as member

Profile Modification



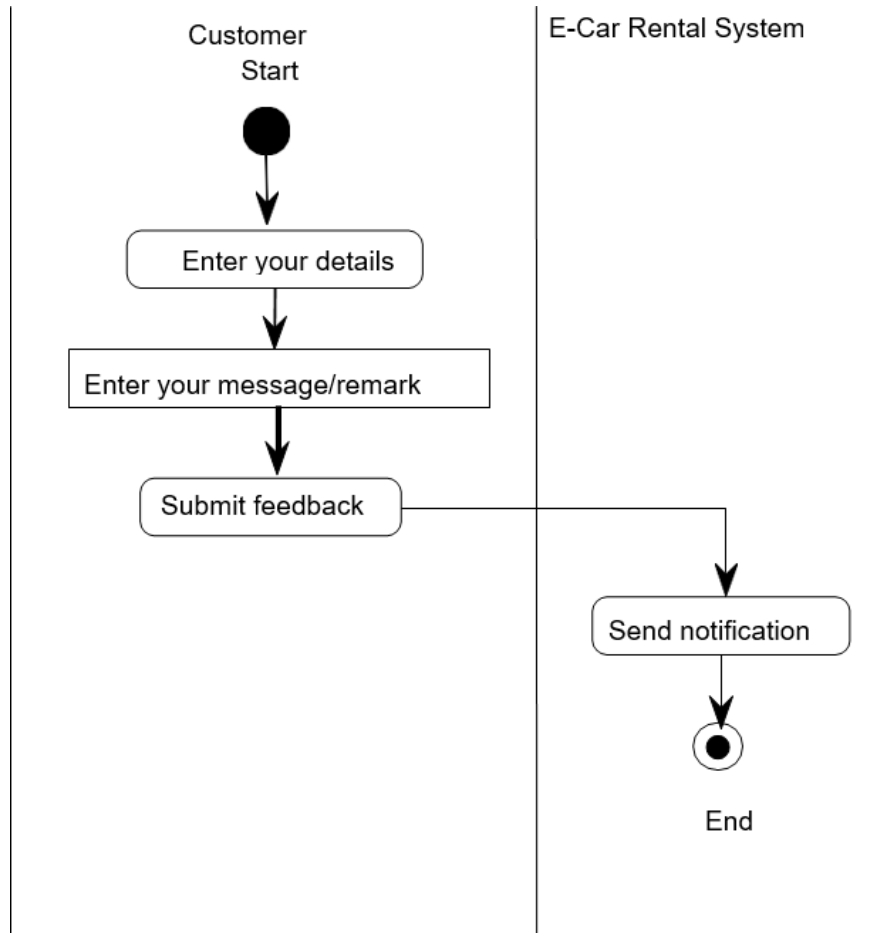
Modify Profile

Car Reservation



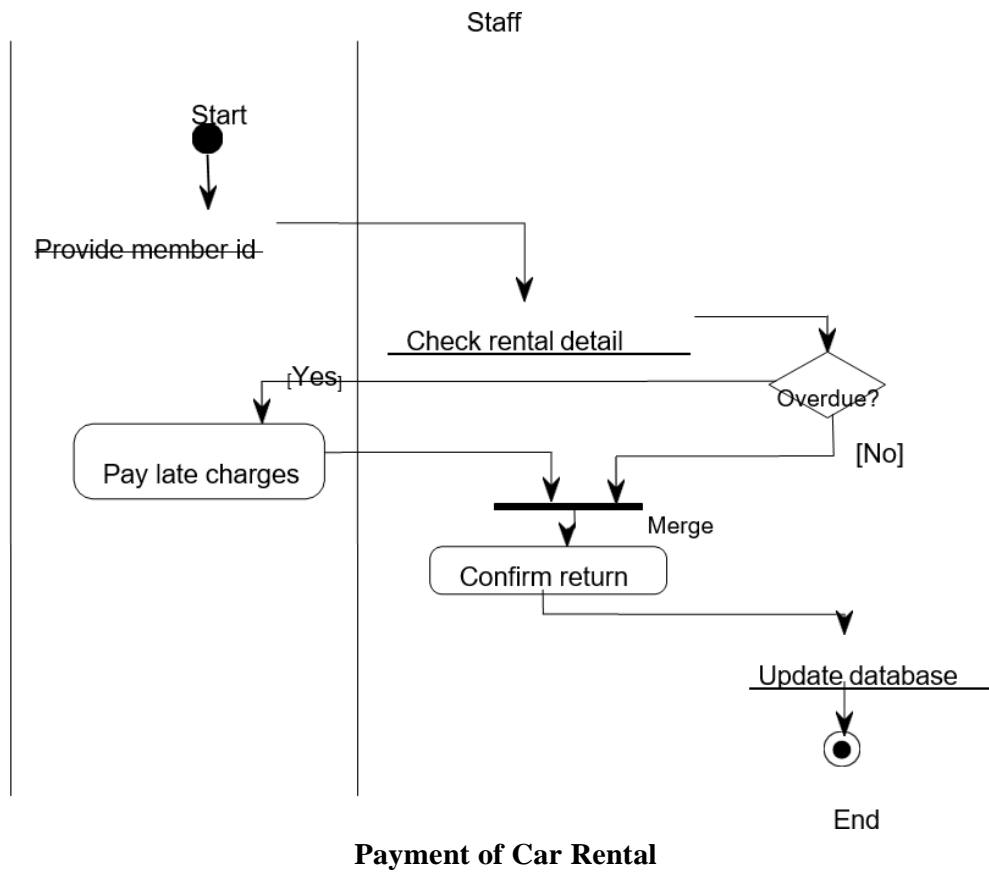
Car Reservation

Customer Feedback

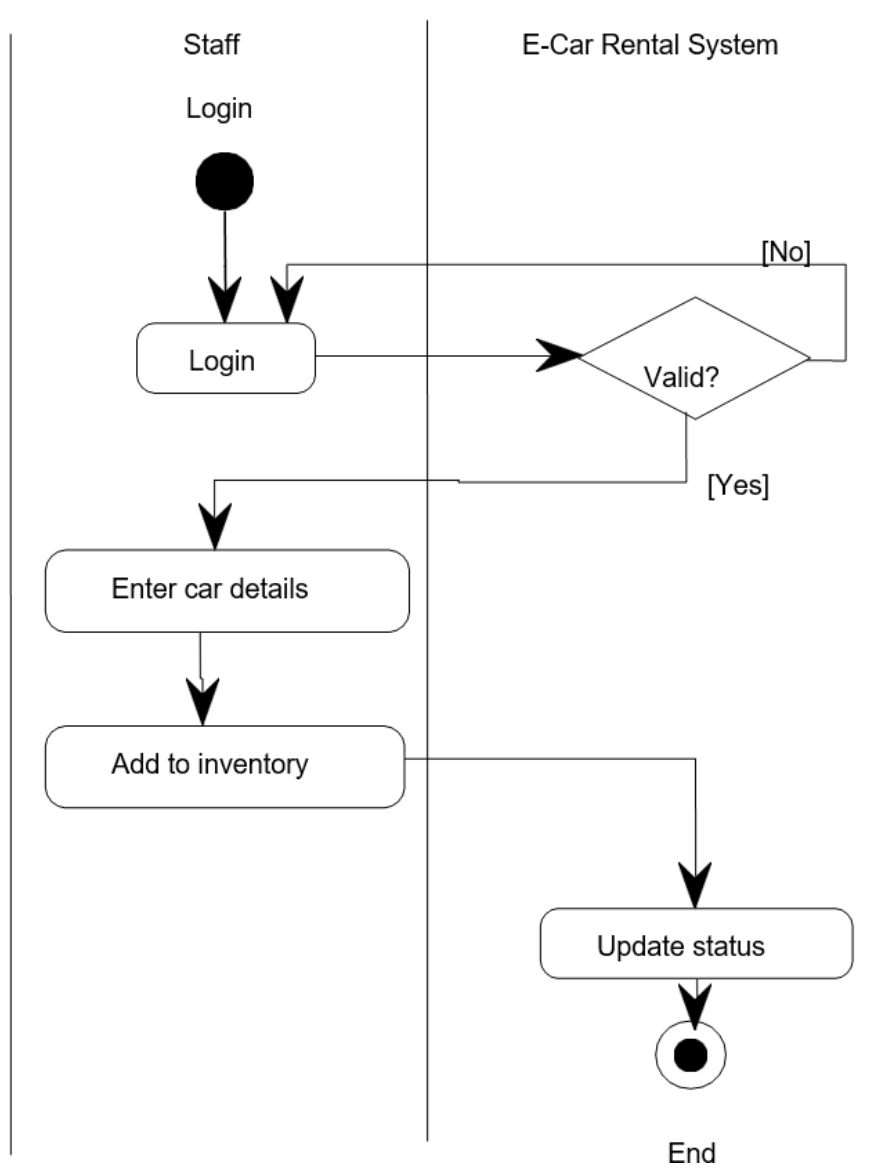


Customer Feedback

Payment of Car Rent

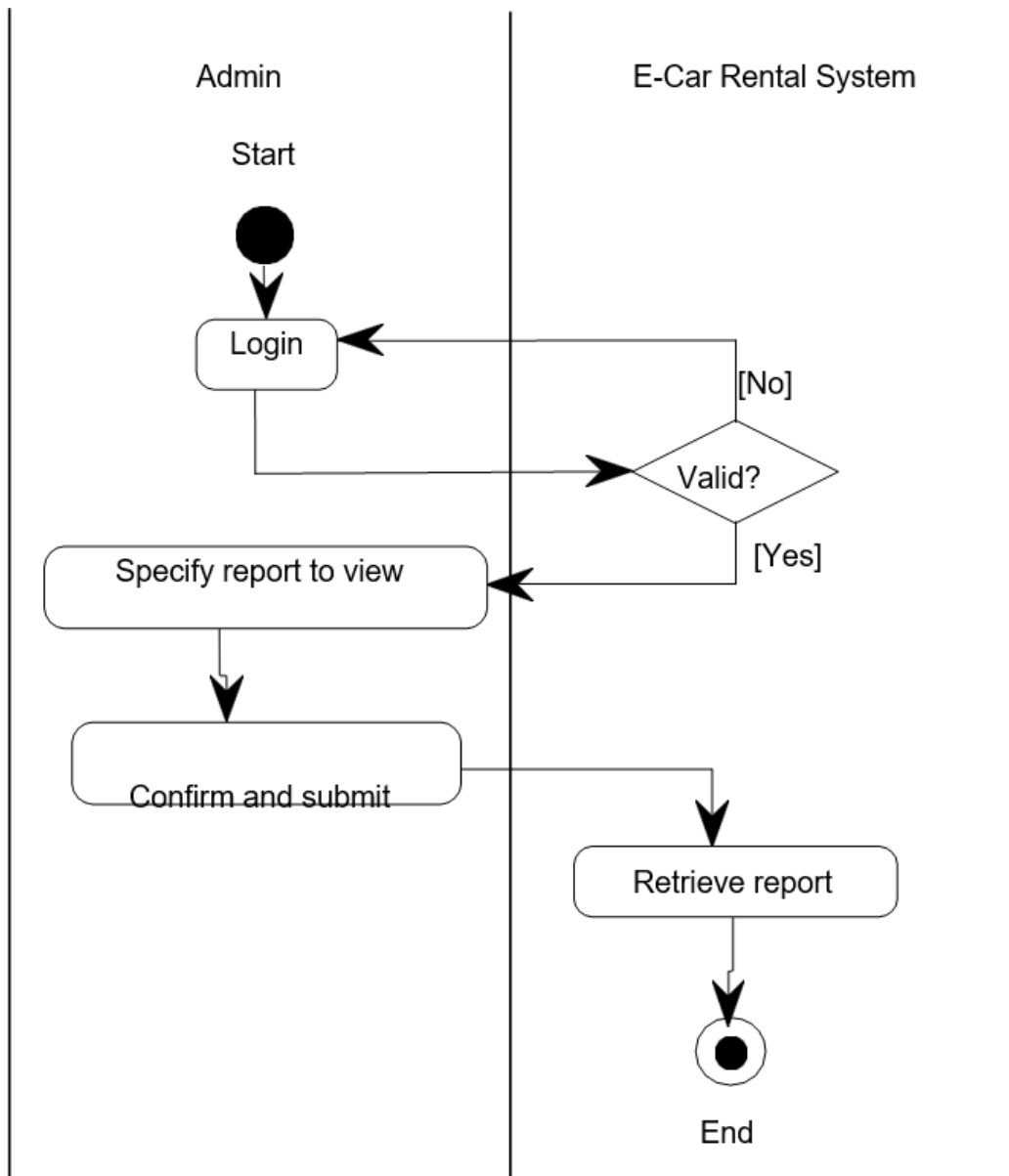


Adding a New Car



Adding a New Car

View Report



View Report

9. IMPLEMENTATION

The screenshot shows the AWS Management Console for EC2 instances in the ap-south-1 region. A table lists several instances, with 'seventenserver' selected. Below the table, the details for instance 'i-0158f53bba973a759' are displayed, including its Elastic IP address: 13.235.37.196.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IP)
seventenserver	i-0158f53bba973a759	t2.micro	ap-south-1a	running	2/2 checks ...	None	ec2-13-235-37-...
New1-env	i-02cfec35aa9bf834a	t2.micro	ap-south-1b	running	2/2 checks ...	None	ec2-13-127-65-...
webserver	i-0b9580571198bddfc	t2.micro	ap-south-1a	running	2/2 checks ...	None	ec2-13-126-20-...
OsfgWebser...	i-0bc211fbc91f5fdde	t2.micro	ap-south-1b	running	2/2 checks ...	None	ec2-13-233-193...

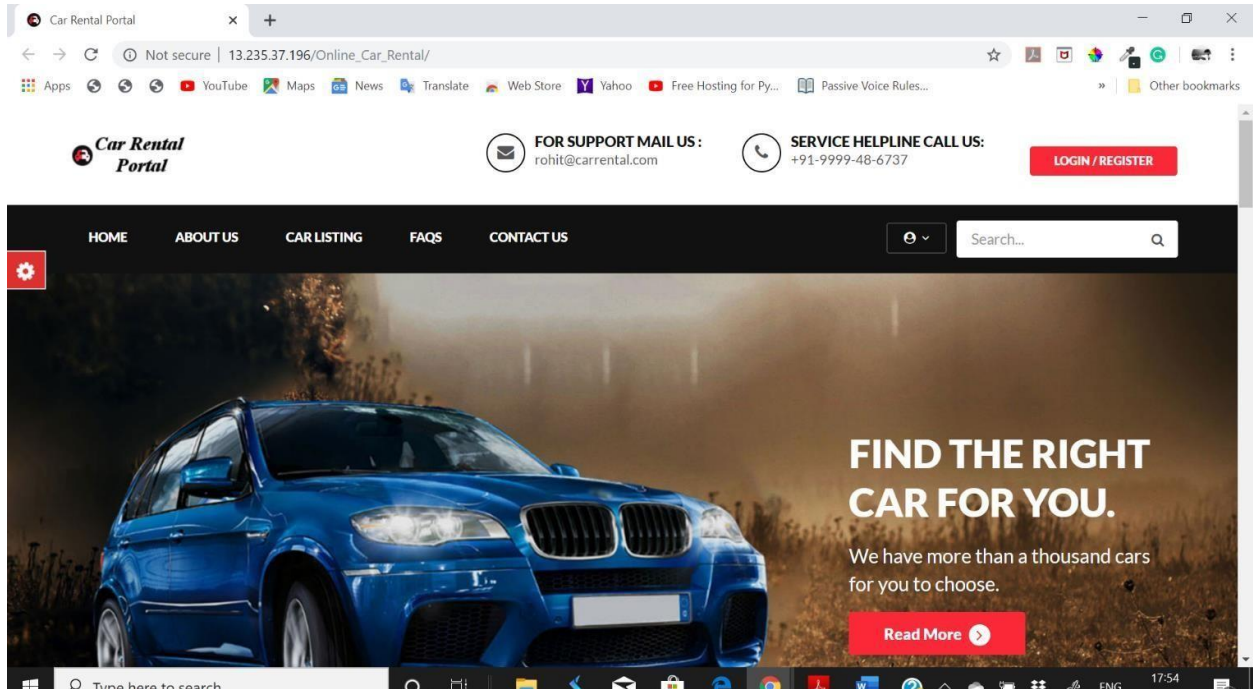
Instance: **i-0158f53bba973a759 (seventenserver)** Elastic IP: 13.235.37.196

Public DNS (IPv4): ec2-13-235-37-196.ap-south-1.compute.amazonaws.com

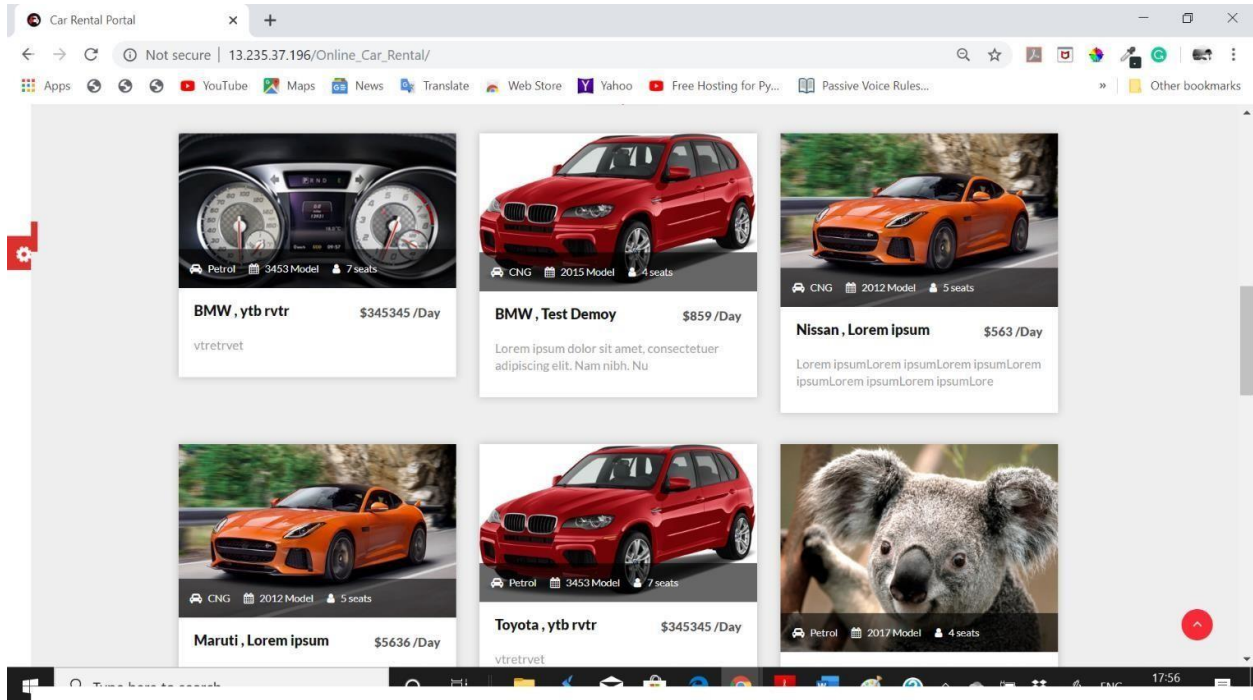
The screenshot shows the details of an Elastic IP address in the AWS Management Console. The IP address is 13.235.37.196, and it is associated with the instance 'i-0158f53bba973a759'. The summary table provides details about the allocation, association, and network configuration.

Field	Value
Public IPv4 address	13.235.37.196
Allocation ID	eipalloc-0e5a8f67866b12fc8
Association ID	eipassoc-0b493a29762de38fd
Scope	VPC
Associated instance ID	i-0158f53bba973a759
Private IP address	172.31.24.82
Network interface ID	eni-0163fcd3bf126b631
Network interface owner account ID	735867776244
Public DNS	ec2-13-235-37-196.ap-south-1.compute.amazonaws.com
NAT Gateway ID	-
Address pool	Amazon

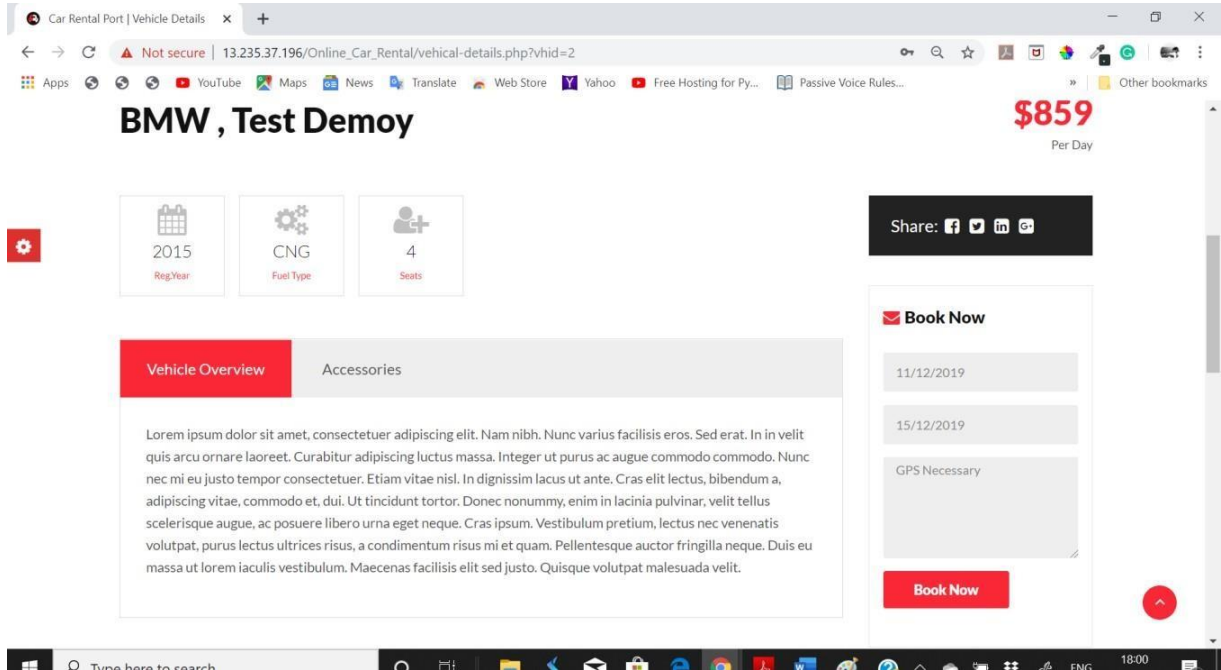
10. RESULTS



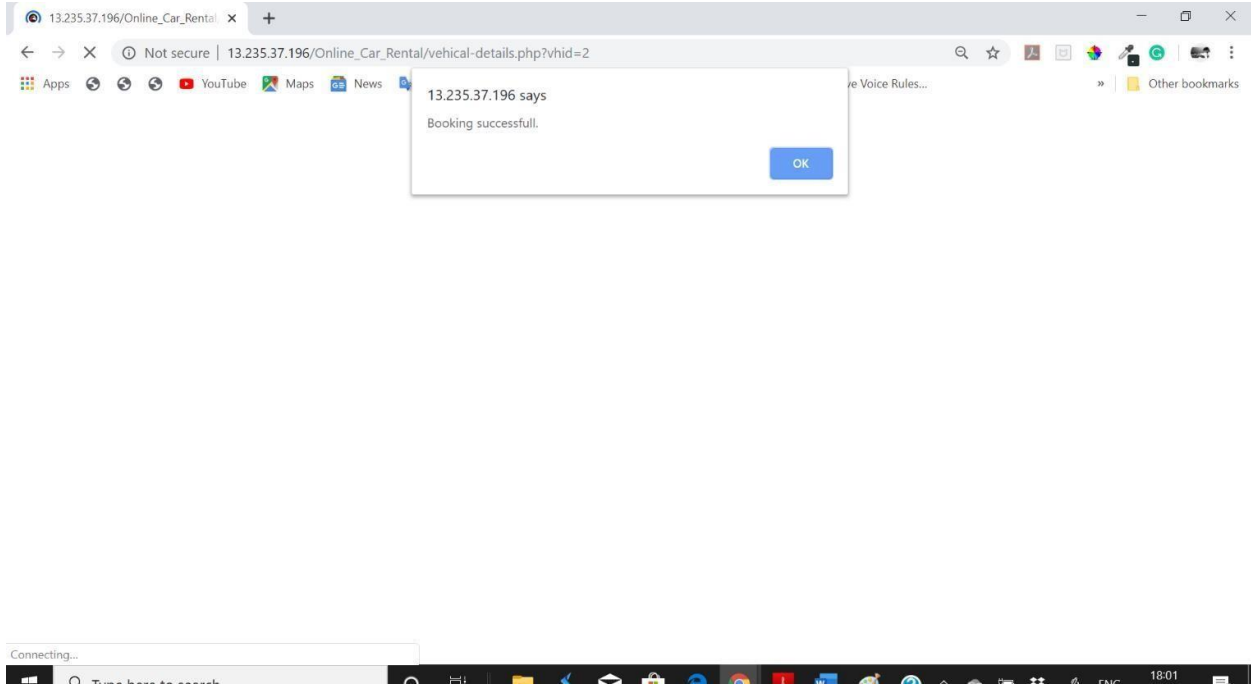
Front Page of Car Rental System



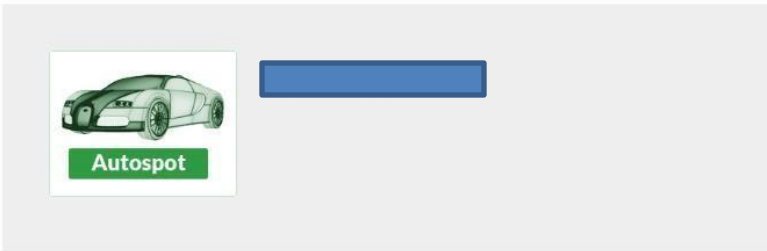
Available Car Page



Car Booking Page



Successful Booking Notification



- Profile Settings
- Update Password
- My Booking
- Post a Testimonial
- My Testimonials
- Sign Out

MY BOOIKNGS

 **BMW , Test Demoy** Not Confirm yet
From Date: 09/10/2019
To Date: 10/10/2019
Message: pls book it

 **BMW , Test Demoy** Not Confirm yet
From Date: 11/12/2019
To Date: 15/12/2019
Message: GPS Necessary

My Bookings Page



Rohit Bisht



- Profile Settings
- Update Password
- My Booking
- Post a Testimonial
- My Testimonials
- Sign Out

GENERAL SETTINGS

Reg Date - 2019-10-08 15:52:09

Full Name

Rohit Bisht

Email Address

rohitmayo@gmail.com

Phone Number

9999486737

Date of Birth (dd/mm/yyyy)

dd/mm/yyyy

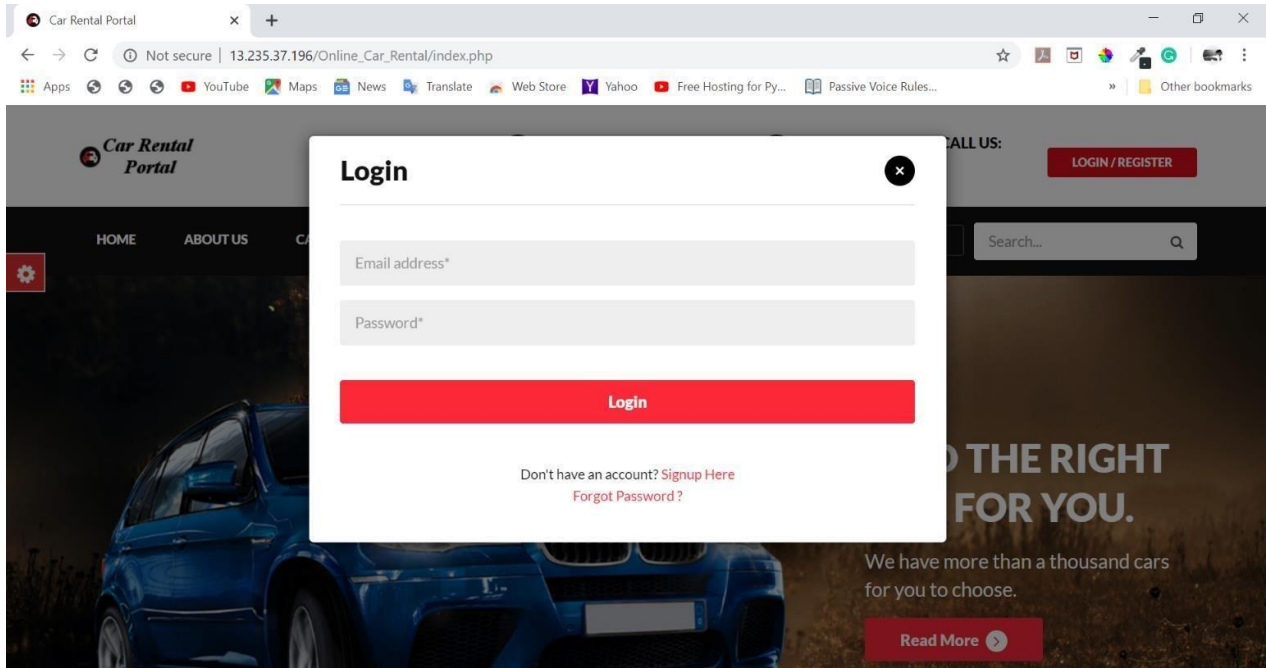
Your Address

Country

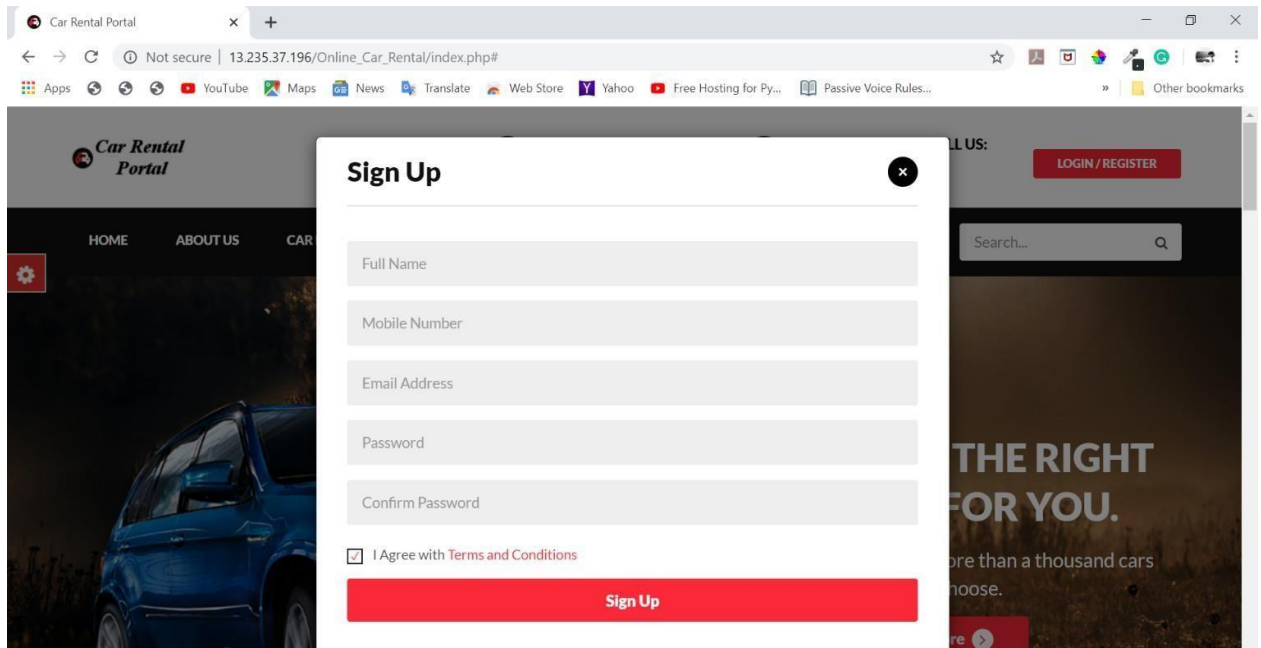
City

Save Changes >

General Setting Page



Login Page



Sign Up Page

11. CONCLUSION

Car rental business has emerged with a new goody 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.

12. REFERENCES

Books Used:

- ┌ Software Engineering - R.S. Pressman
- ┌ PHP For Dummies
- ┌ PHP Beginners Guide By McGrawhill Publication
- ┌ Javascript By McGrawhill Publication

References Used:

- ┌ [1] "The NIST Definition of Cloud Computing". National Institute of Standards and Technology. Retrieved 24 July 2011.
- ┌ [2] "Know Why Cloud Computing Technology is the New Revolution". By Fonebell. Retrieved 8 January 2015.
- ┌ [3] IBM Cloud, <http://www.ibm.com/cloud-computing/in/en/what-is-cloud-computing.html>.
- ┌ [4] Lu Cheng, Qi Zhang and Raouf Boutaba, Cloud computing: state-of-the-art and research challenges, IEEE Journal of Internet Services and Applications, 2010. Vidhya.V International Journal of Advances in Computer Science and Technology, 2(5), May 2013, 65 – 69 @ 2012, IJACST All Rights Reserved
- ┌ [5] Nikhil Nischal and Peeyush Mathur „Cloud Computing: New challenge to the entire computer industry, IEEE 1st International Conference on Parallel, Distributed and Grid Computing,2010.
- ┌ [6] —Recent Trends in Cloud Computing: A Surveyll Vidhya.V , May 2013 <http://warse.org/pdfs/2013/ijacst04252013.pdf>
- ┌ [7] Ling Liu, Shicong Meng, Enhanced Monitoring –as –a-Service for Effective Cloud Managementll, IEEE Transactions on Computers, pp.1-14
- ┌ [8] <http://www.virtualizationpractice.com/monitoring-as-a-service-maas-6861>.
- ┌ [9] <http://www.toolsjournal.com/cloud-articles/item/1146-rivermeadow-cloud-transitionsaas-to-reach-masses-with-vmwarelink-up>.
- ┌ [10] <http://www.logitel.gr/solution/server-based-cloud-computing/communications-as- aservice-caas>