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ONLINE CAR PARKING MANAGEMENT SYSTEM (OCPMS)

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Abstract - *Finding a free parking spot in a congested or large parking lot is a big problem in our everyday lives. with the growing number of vehicles on the road, drivers in most areas are having difficulty finding a parking space. The Manual searching is a popular method of locating a free room. This approach necessitates a significant amount of time and effort. As a result, this project provides an online reservation system that allows users to view different parking areas and choose the best one. If the booking room is open, he or she may reserve it for a particular time period. because of the increase in the number of vehicles on the route, traffic congestion is unavoidable. This is because the existing transportation system and parking facilities are unable to handle the increased number of vehicles on the route. The smart parking system was created to address the above issues. The smart parking system has been implemented. The introduction of a hassle-free payment system often makes vehicle ingress and egress more convenient. In this paper, we suggest a new online parking system for parking lots that allows users to reserve a parking spot ahead of time, avoiding last-minute hassle. The proposed system will provide real-time parking navigation, protection, and parking information dissemination to users.*

***Key Words*: Online reservation system, Smart parking system, Manual searching**

INTRODUCTION

Many drivers are concerned with finding an empty parking space in a metropolitan area on a regular basis because it is time-consuming. Owing to the relentless cruising of vehicles for an accessible parking space, it often results in increased traffic congestion and air pollution. For example, according to a recent survey, during peak hours in most metropolises, the traffic created by cars searching for parking spaces - accounts for up to 40% of overall traffic. Many smart parking systems aimed at satisfying the involved parties (e.g., parking service providers and drivers) have been implemented to mitigate such traffic congestion and relieve drivers from the hassle of looking for parking spaces. The current smart parking or parking guidance systems only collect parking availability data. Many smart parking systems have been implemented to meet the needs of all parties involved (e.g., parking service providers and drivers). Currently available smart parking or parking guidance systems only acquire parking space availability information from installed sensor networks and then simply publish the parking information to guide drivers. However, these devices are not "smart" enough because they cannot direct drivers to their desired parking destinations and, in some cases, make the problem worse. When the number of available parking spaces in each area is restricted, for example, more drivers who have access to parking information may seek out these spaces. It would exacerbate congestion. As a result, it is critical to have an effective solution. a viable plan for addressing these issues in this paper, we design and implement an Online Car Parking Management System (OCPMS) prototype that not only broadcasts real- time parking information to users, but also offers reservations as part of a user-targeted service. Drivers may use the internet to get parking details and reserve their preferred spot. Our online reservation system for immediate parking, additional facilities, and home purchasing can boost your website's traffic by allowing customers to make reservations to make a payment or go online Its aim is to make it easier for people to reserve parking spots online. There is no uniform procedure for checking for parking spaces in today's parking lots. In a big city, looking for a free parking spot can be difficult.

Literature survey:

Parking areas, visitors, and the administrator are the three elements seen in this architecture. As a result, consumers parking changes the state of parking facilities. decision-making Users could get real-time parking availability information from the management system (also drivers). After obtaining parking details, the user chooses a parking lot and makes a reservation. The user has the choice of having their own username, login id, phone number, email, and address are all necessary fields. The database system allows the administrator to collect all the data.

The layout of the user-defined API software architecture primarily displays Android applications, user applications, and functions assigned to the central control system, as well as the structure of the user-defined API software architecture. the location of the host device application point.

The first step is to build a user account in order to use the service. After creating an account, the user can log in to his phone using his username and password. The user can select the proper parking slots and check availability free spaces are available so the user can go to a space reservation. A user is barely allowed to order an area.

Blind Search:

When there is no parking detail, drivers use a simple technique called blind searching. The drivers in this situation continue to look for parking spaces within a certain distance of their destination. The drivers can only come to a halt if they come across an open parking space. Otherwise, the drivers will broaden their search range and continue to hunt for open spaces in nearby parking lots.

Parking Information Sharing (PIS):

The current state of smart parking system design often employs this mechanism. Following the publication of parking availability details to drivers by the smart parking system, the driver can choose their preferred parking destination where a parking slot is open. However, if the amount of available parking spaces in a parking lot is restricted, the number of drivers looking for these spaces is likely to be limited.

System Architecture & Design:

The objective of OCPMS is to reduce air pollution and traffic congestion caused by blind parking search techniques. As a result of achieving this primary goal, users can save time, money, and fuel. The OPS act as a connection between customers and parking service providers.

The proposed parking infrastructure includes three components: parking zones, drivers, and the OPS database. The management system sets parking rates and sends real-time parking availability data to OPS, which makes it accessible to users. The user selects the desired parking lot and reserves a parking bay after obtaining parking details. As soon as a parking space is reserved by a driver, the user receives a verification email from OPS. Therefore, users parking decisions affect the state of the parking resource.

There are so many parking spaces in the parking lot. The number of occupied spaces and total spaces determines the condition of a parking lot. Every parking lot has Internet connectivity in order to connect with the management system and users, as well as to exchange parking data with OPS. The reservation authority is stationed in each parking lot to verify the individual user's identity and reservation request.

Each user is identified by the specific mail sent to them by OCPMS at the time of reservation by the reservation authority.

The reservation authority updates the reservation details to retain the related space for the user until the reservation order is verified. The device updates the condition of the parking lot after retrieving the parking details. The system

(1) analyses the occupancy status and congestion level of parking lots,

(2) broadcasts the prices to all users on a regular basis

(3) stores the parking data.

For further study, mail verification and prices are needed. This is a closed-loop system that adjusts parking prices dynamically, balances the advantages of users and service providers, and reduces traffic looking for parking. When a user arrives at a parking spot, the reservation authority is placed on the gate, and the user is identified by the verification mail.

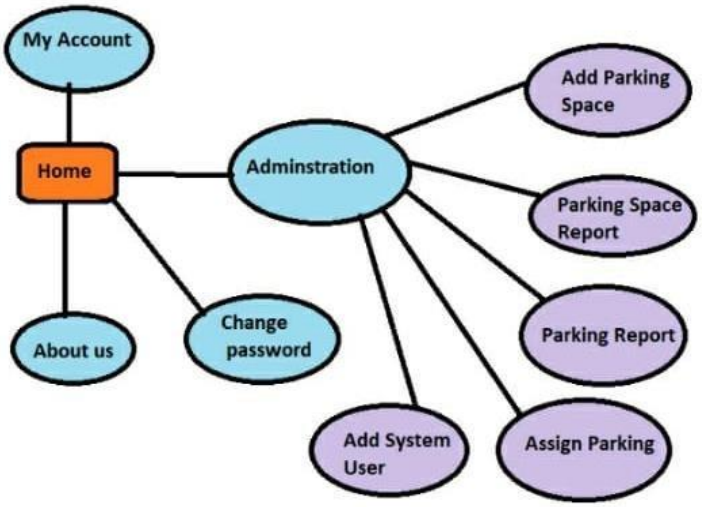
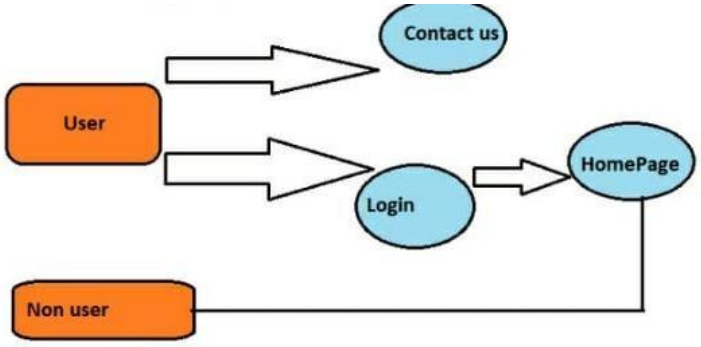


Fig1: System Architecture

Implementation of OCPMS:

The development of a user API software architecture the following are some of the most important software components: Fig 2: User API



The consumer must first register in order to book a parking spot. If the user is already a member of the site, he may simply log in to the OPS by entering his credentials, which include his username and password. Following this phase, the user can access the parking information given by OPS, such as viewing parking lots in a specific location, looking up parking slot prices, and so on. After that, the user can choose a suitable parking lot and check its availability. If there are open spaces, the user can reserve a space by selecting Make a payment using one of the following methods: Credit Card, Debit Card, or Internet Banking. Multiple parking spaces can be reserved by a single person.

To reserve a parking spot, the user must enter his vehicle's identification number as well as the reservation's start and end times. When a parking space is reserved, a verification email is sent, which is used for admin authentication.

This mail, which was sent to the customer at the time of reservation, is checked by the parking lot authority. This ensures that only users who have made a reservation are permitted to park their vehicles. If the email has been verified as genuine, the database is automatically modified, and the status of the parking space is changed from RESERVED to OCCUPIED. All parking slot details are visible to the administrator. He can upgrade or deleted parking slots, display information about users, adjust rates, and so on.

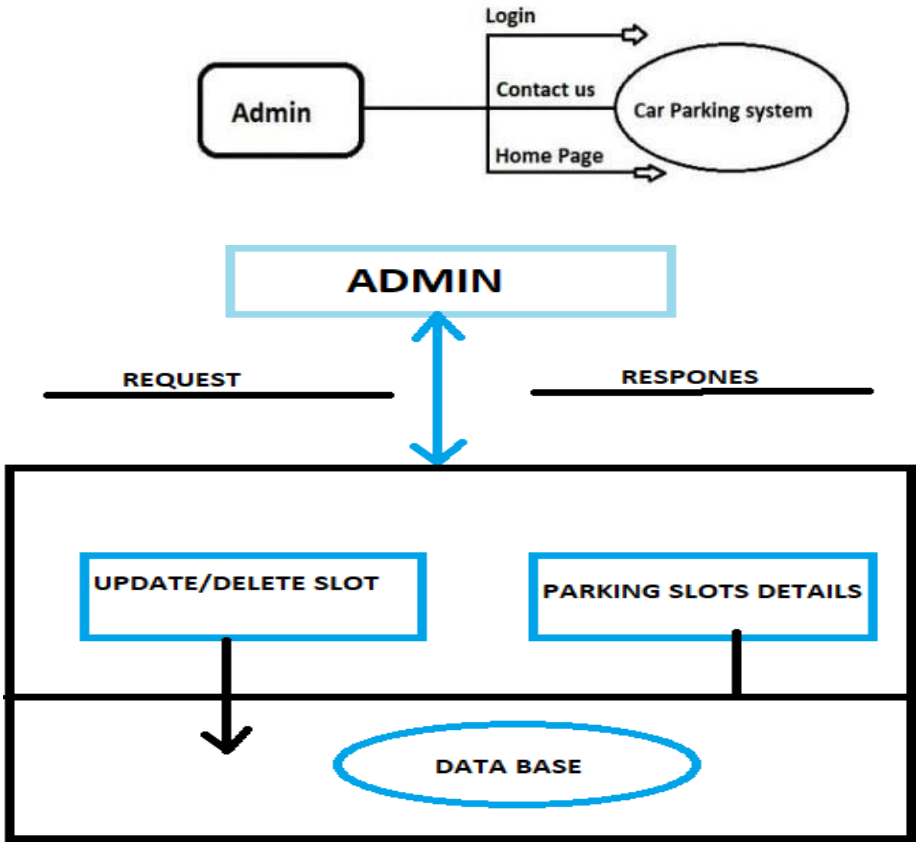
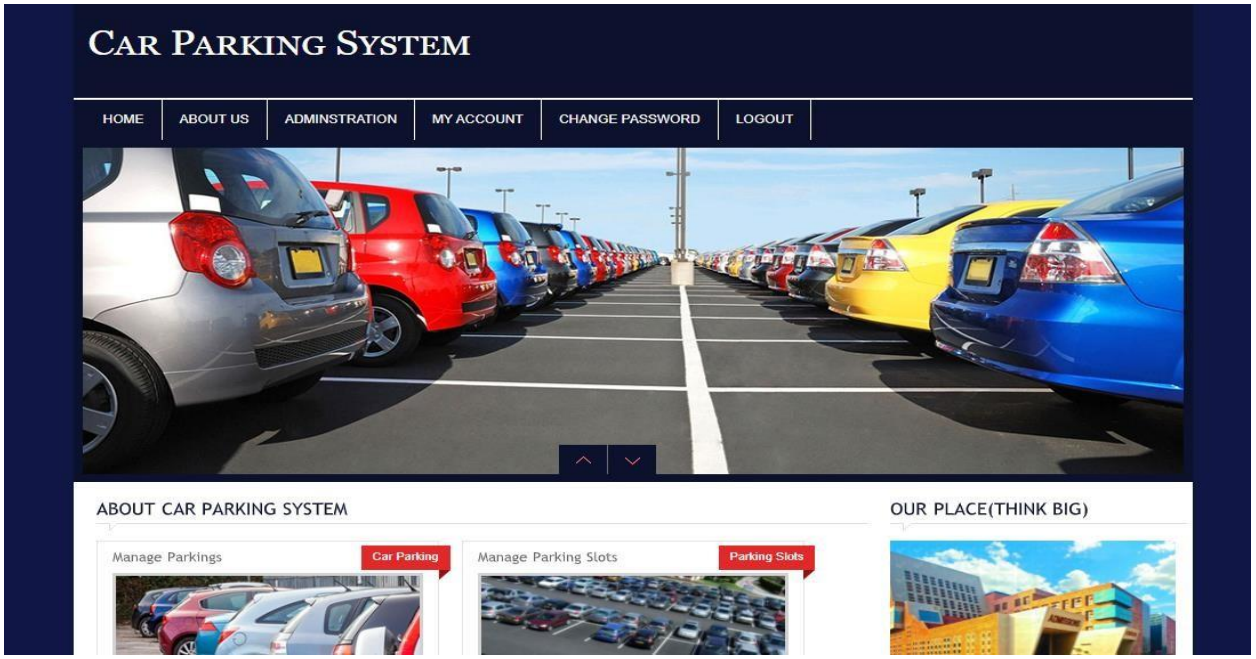


Fig 3: Admin AP

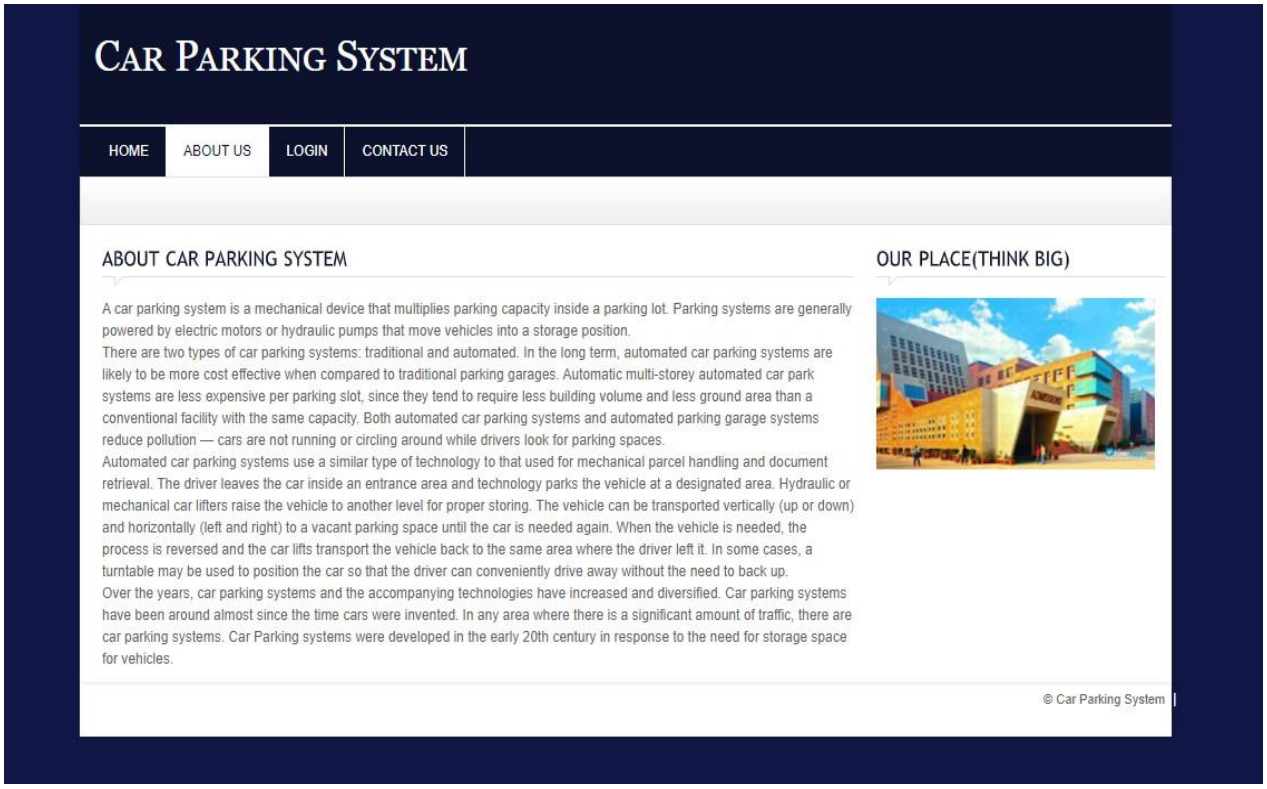
Front-end Proposal System:

In this segment depicts the proposed system's front end by including screenshots of different OCPMS pages:

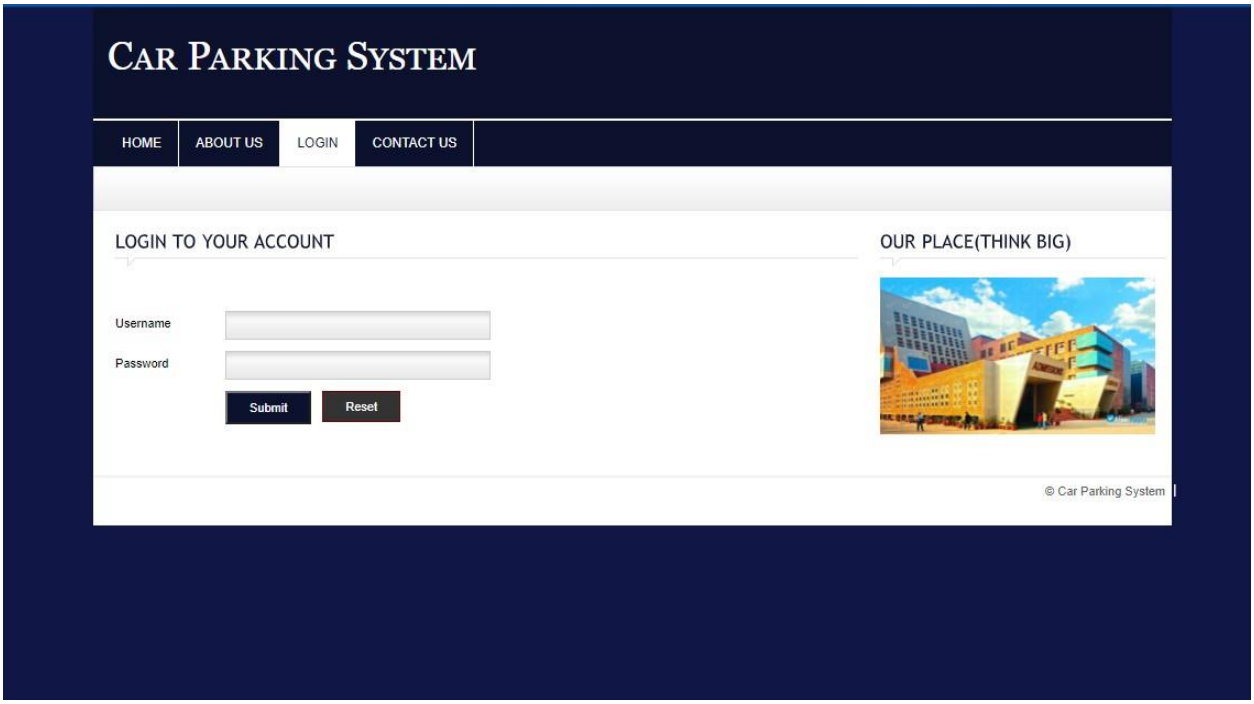
1)Home page



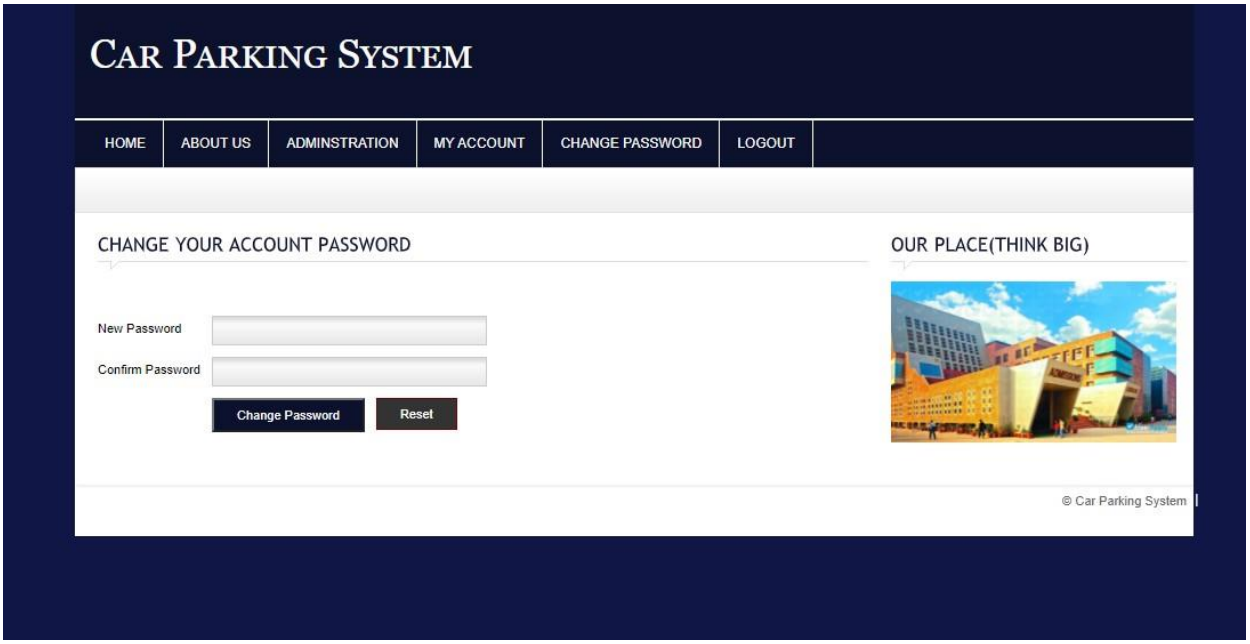
2) About us



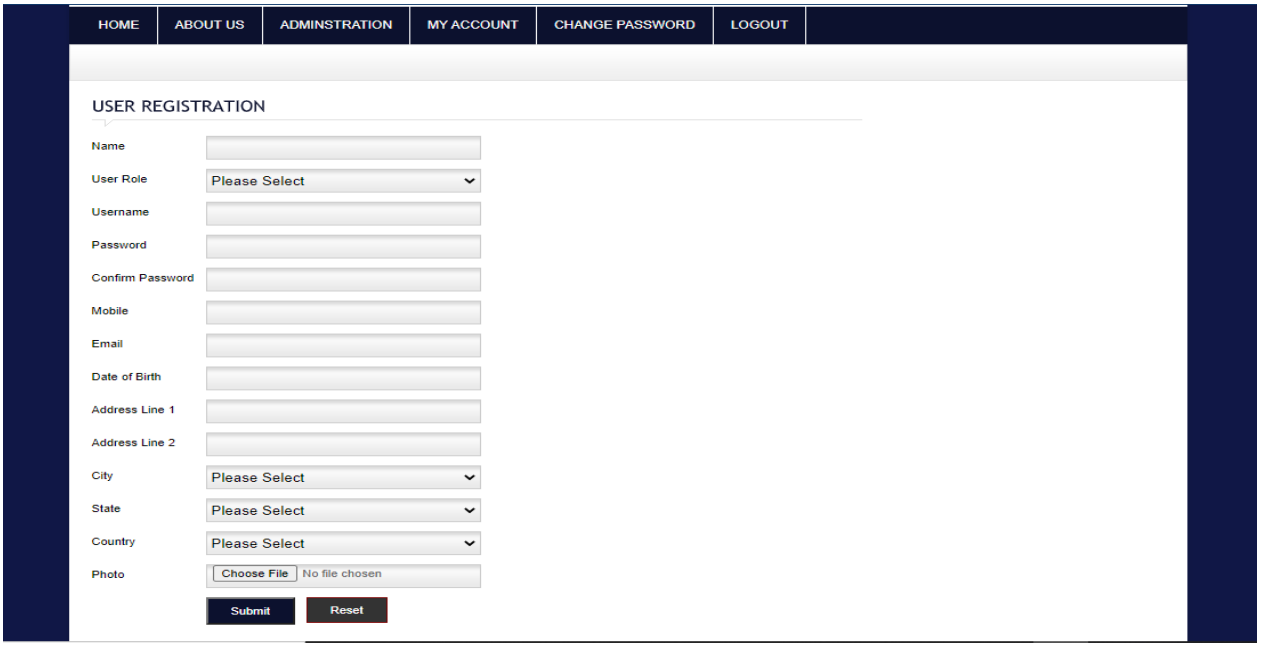
3) Log In



4) Change Password



5) My Account



Future Scope:

In addition to the mail, we might send QR codes or verification messages to the user's mobile phone in the future. As a result, QR scanners will be needed at all parking spaces in order to scan the sent QR. This would raise the expense of implementing OPS, but it would improve the user's overall experience.

We may also have a time delay; in which case the customer would be able to park his vehicle for the booked period of time even though the start time was delayed by up to 15 minutes. We could also give the user the option of extending the duration of his reservation.

Conclusion:

Since we live in a computerized world, an online vehicle parking reservation system enhances the current system. This new system is needed, and it allows system users (clients, employees, and system administrators) to reserve parking spaces online. Since we live in a computerized world, an online vehicle parking reservation system enhances the current system.

To improve parking management, we built a new prototype of Parking System based on Reservation in this paper. We use a parking reservation policy in this framework to align the benefits of service providers with the needs of users. We also presented the prototype's comprehensive design, implementation, and evaluation. Our simulation analysis yielded the following conclusions and We conclude that the proposed OCPMS will help relieve traffic congestion created by parking searches and reduce the amount of traffic volume spent looking for a parking spot.

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