

Parking Management System Using Mobile Application

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Abstract- We know that this is the modern period where every age group holds a Smartphone whether they require or not. The utilization of these mobile phones is not up to the standards. We can utilize the mobile phone for various social activities like helping the needy and providing service to the public. We know that the Smartphone provide various facilities like paying bills Online, chatting etc. They can also be used to perform various operations like data monitoring, load control etc. So, utilizing these android applications may decrease our work pressure and also help us by accessing various facilities remotely. We know that the traffic in our cities are present almost all the time. Proper actions are taken to eliminate such traffics. But the traffic caused while parking causes, complex issues rather than vehicle parking. So, we propose a system to remotely monitor the available space for vehicle parking and booking the vacant space for our convenience, on time basis. If the user needs to park their vehicle, then they can book the slot with the help of an android application.

Keywords- Smartphone, Android Application, parking, vehicle, slot, pre-booking, time-basis.

I. INTRODUCTION

India is facing a new problem nowadays, the lack of sufficient parking space. With families getting smaller and the total number of motor vehicles exceeding the total number of heads per family, the parking scenario is woefully falling short of the current requirements in the country. In existing system, the user was facing the problem of parking. Previously, it was very time consuming for searching the space for parking and there was no safety for car if they park in road.

So as to overcome from this situation we propose the application over the mobile phones to book the parking space for the cars before arriving from the home. If the parking space is free, then we can easily book for car parking space in the parking lot on time basis. But in case the space is not available in the parking lot, then we can monitor on the mobile application that any other car by that time is leaving from the parking lot, if it is going to be free then we can book the space. On the time basis, if the user wants to extend their time

in parking lot they have to book within the first 30 minutes of their total time, then only they will be allowed to park their car for extended time.

II. EXISTING SYSTEM

In existing work, if user wants to park their car, they have to wait until the space gets evacuated. If there is no space they have to wait for hours and then they will park the car. It was very time consuming. The user if they park their car in road, then there will be no safety for their cars. We have to be careful not to get bumped into. Being parked on the street heightens the risk of your vehicle getting knocked up by a vehicle that's trying to pull in at the front or at the rear of you. You never know when a vehicle may collide with the side of your car either. High curbs, poles or fire hydrants may leave ugly scrapes on your passenger door if your passenger isn't careful when opening. You should probably give them a little heads up. Parking on the curb probably means that you're not directly in front of parking slot. This can be inconvenient for those who are carrying load or who are late for a specific event

III. PROPOSED SYSTEM

The system automates the parking process. When a user reaches the parking, he/she will be automatically connected to the parking network, establishing connection between the client mobile and the mall/center network. Starting with the gate; the gate could be controlled by the application where the user can open the gate before entering and leaving. The user is just allowed to choose one space which is reserved for the user and is shown in blue, differentiating it from other spaces. After choosing a location, a timer records the time spent at this mall. The user is allowed to choose the time interval he/she wants and is notified as soon as this time interval ends (e.g. one hour). Every one hour, the user is notified that he/she has parked for one hour and specific amount of credit is withdrawn from his/her account. When the client enters the parking, a map appears on his/her mobile application showing him/her the empty and full places in this floor so the client can choose one of the free spaces to park his/her car.

A. Setbacks with the existing system

It was very time consuming. If they park their car in any inappropriate place there was no safety for their cars. It is not possible to extend their time for the booked slot. The existing system application uses, only an e-wallet payment system to make payments.

B. Architecture Diagram

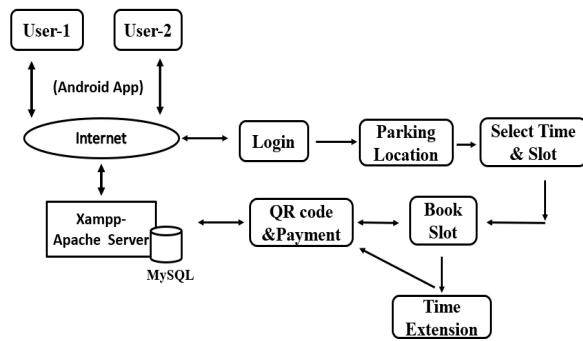


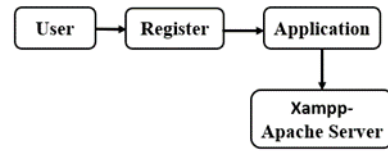
Fig.[1] Architecture diagram for parking management system using mobile application.

IV. MODULES

1. Registration and login
2. View parking location
3. Check for a slot and its status
4. Booking parking slot
5. Navigation to the Parking Slot
6. Time extension
7. QR Code & payment

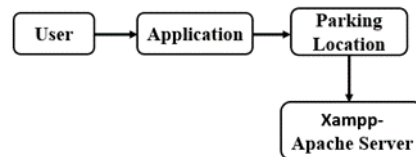
1. Registration and login

If the user is a new user he needs to get registered with the application by giving all his details. The data which is entered by the user is stored on the server. These details consists user name, email, password, address etc. This registration is done only for the first time. After successful registration he receives a unique login ID both to his mobile and mail. After the user gets registered with the application, the user can login by providing email and unique ID. User gets this unique ID both to user’s mail and mobile number as soon as he gets registered. If the user gets successfully login to the application then the user is said to be an authorized user.



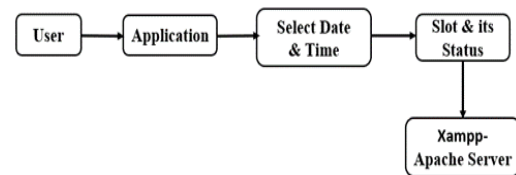
2.. View parking location

The user can select any location which is nearest to his destination. In this application the user can view various parking slots and check for the availability of slots. Initially the slot selection is made by the user from his mobile phone. He checks for the availability of a parking slot that is nearest to his location.



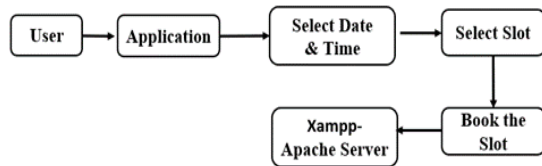
3. Check for a slot and its status

User login the app where he can view various parking slots in his destination location. User selects his desired parking slot that is nearest to his destination. After selecting a slot, the user needs to check for the availability of that respective slot. The user can check the status of the slots with the help of color indications.



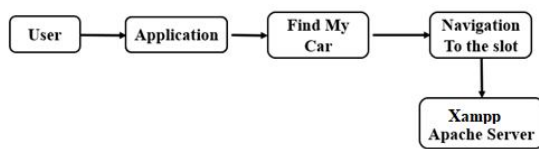
4. Booking parking slot

The user can book their parking slot if it is available. User just have to login and they can view the parking space. If it is not available they can monitor until any car leaves the parking slot. So that the car owner can park their car. If their parking is confirmed then the user will get the notification through this application. If the user doesn’t arrive to the parking slot within 20 minutes from the time of booking his booking will be cancelled and the slot would be updated to another user.



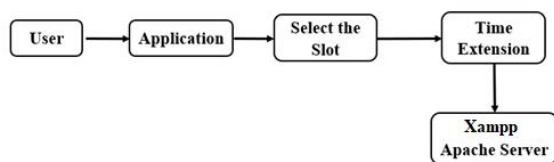
5. Navigation to the Parking Slot

The user can press Find My Car button and the navigation starts till they reach their car. This helps people find the parking spots quickly, thus enhancing the visitor’s experience. This is the key advantage of the proposed parking system application.



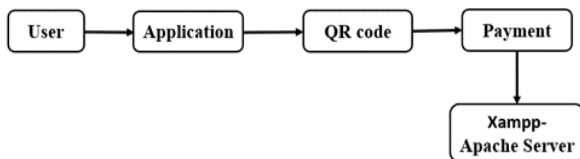
6. Time extension

The specific duration is allotted for the car parking in the slots. If any case user wants to extend the time they have book within 30 minutes of their total duration otherwise the duration would not be extended. As soon as the vehicle gets entered into the parking slot, the timer gets ON and measures the total time. As soon as the vehicle moves out of the parking slot, the timer gets OFF.



7. QR Code & payment

The QR code is generated as soon as the user books a slot By scanning the QR code, the user’s details are verified and allowed inside and allocated their respective parking slot.. The generated QR code is used to pay the payment charges for the parking.



V. ADVANTAGES

To help people find parking spots quickly, thus reducing traffic jams and the resulting frustration, and enhancing the visitor’s experience. The client does not spend a lot of time to find his/her car. He/she simply pushes the find my car button and the navigation starts till he/she reaches his/her car. When the client enters the parking, a map appears on his/her mobile application showing him/her the empty and full places in this floor so the client can choose one of the free spaces to park his/her car.

VI. LIMITATION OF EXISTING SYSTEM

In the current existing system, the user cannot pre-book the car parking slots from home before they leave, and the user has to wait in the queue for getting their car placed in the desired parking where first come first serve principle is followed thus pre-booking option cannot be used, and the user cannot extend their booked slot time. If there is no space for parking then the user has to park his/her car outside in the streets where the safety of the car will not be assured, thus the user is in the situation of parking the car in the private bays which is far from the location the user wishes to go.

VII. APPLICATIONS

Android application can make the non-profitable organization to easily access the available slots indicate places where car is parked. The user if needs to park their vehicle, then they can book the slot with the help of an android application. The application displays the status of the slots in an area indicating whether the slots are available or booked. Based on the status, the user can book a slot for their parking. When the booking is done, a token number is generated. When the user reaches their slot, then the provided token number needs to be entered by the user. If the token number is matched by the respective slot, then the user can park without any problems. If the token number is wrongly entered after three times, then the buzzer starts buzzing which alerts the monitoring person present in the parking zone.

VIII. CONCLUSION

Parking Management System using mobile app is a prototype of parking and event management system. It is a mobile web-based application, the server containing all parking-related information, and database. This project facilitates the parking process, reducing traffic and saves time. Moreover, Parking Management System can be adapted to places like universities, institutions and other kinds of

organizations on different geographic areas, with more features.

IX. FUTURE ENHANCEMENTS

The process of populating the database entries with real data provided from sensors and making it automated.

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