

## REAL TIME VEHICLE PARKING SYSTEM USING MOBILE APPLICATION

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**ABSTRACT:** *The proposed project is a real time vehicle parking booking system using android application that provides customers an easy way of reserving a parking space online. It overcomes the problem of finding a parking space in commercial areas that unnecessarily consumes time. Hence this project offers a web-based reservation system where users can view various parking areas and select the space to view whether space is available or not. If the booking space is available then he can book it for specific time slot. This system provides an additional feature of cancelling the bookings. User can cancel their booked space anytime. Users can even make payment online via credit card based on the time taken for the reserved space the amount will be calculated and the user can make payment.*

### I. INTRODUCTION

The “REAL TIME VEHICLE PARKING SYSTEM USING ANDROID APPLICATION” is web based android application. This is aimed to provide easier way to book the vehicle parking slot. This application is secured due to login authentication of Admin. This application includes two modules that are Admin and user [2]. Each module will be given with unique login id and password after which they can access the information accordingly. A variety of instances turns on when we visit various public places like malls, Restaurants and theatres. People experience many troubles at these places for the accessibility of the parking slot. A large portion of the circumstances we must go to locate empty space for parking. The problem becomes too critical if parking slots are full and it becomes time-consuming. As the population increasing, the number of usage of vehicles also increasing in metropolitan cities. It causes a problem for parking area and as well as air pollution [1].

In recent research found that a driver consumes 8 minutes to park the specific vehicle because of searching the parking space. This searching nearly leads to 30 to 40 percent of traffic jams. The main contribution of our proposed systems is to search for the parking slots it decreases the parking problem and provide secure parking. The first module is an admin. Admin is the head i.e., the person has the authority to confirm the parking slots to the registered ones and he has an authority to fix the prices for the parking slots according to the timings. The second module is user. User needs to login with their registered id and then they must search for the nearest parking places through the GPS location tracker and they must reserve the required parking area and then they have to pay the money for the parking slots as of the duration of parking. The Android Application for vehicle parking

system is developed by \using XML, JavaScript, JAVA and FIREBASE interfaces.

### II. LITERATURE SURVEY

[1] Intelligent Parking System Using Android Application J. Anitha, Y.Thoyajakshi, A.Ramya, V. Sravani, Prashant Kumar Department of Information Technology, International Journal of Pure and Applied Mathematics Volume 114 No. 7 2017, 165-174. This paper provides the easy reservation system for parking. In this application the user can view various parking slots and check for the availability of slots. Whenever a user books a particular slot it will be marked red and all the available slots will be green. Booking can be done through credit card/net banking. If the user fails to reach the destination on time then the reservation will be cancelled and the payment is refunded. On successful payment a parking number is sent to user’s email or to his mobile number for further enquiry.

[2] Android Based Smart Parking Reservation Abhishek Mitra, Kenil Dinesh Patel, Prof.Indumathy, Dinesh. K, International Journal of Innovative Research in Computer and Communication Engineering. 4, Issue 9, September 2016 Currently, there are many smart parking systems that aim to implement similar techniques. However, the system that we propose includes online payment option and features like QR code scanning that ensures that user parks his vehicle in the same slot that the user had chosen. It proposes a design of an Android-based car parking system is automated of the parking and un-parking of the car with the help of an android application

[3] ParkSmart: Android Application for Parking System Supriya Gatalwar, Radhika Agnihotri, Nitesh Gujarathi, AtmeshBehere, IJCSN International Journal of Computer Science and Network, Volume 5, Issue 1,February 2016.This paper focuses on facilitating the car parking management system at both ends i.e. customers and parking owners. The application is distributed for connecting the user to the owners. Any user who is new to any city or state can use this app to safe parking of the vehicle. The app assures the safety of the identity of the user by addressing username and unique id. As there will be no fake parking as parking registration are under the control of government. The customer must submit the necessary document photocopy is required for the owner to be submitted while registering. The user can search the parking space through GPS. Among the suggested area the user gets the choice to select which increases the usability of the app.

[4] An Android Application for Parking Management and Dissemination System Shinde Smita N., Shinde Komal V, Nagpure Rashmila D, Tupkar Avanti S, Prof. Ankoshe M.S, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 4 Issue 3, March 2015 The aim of this paper is to extend the required space for parking slots and develop a user-friendly mechanism that helps the user find the available parking space in the campus, in advance. At times of peak parking in the parking slot, the only pristine way to accurately provide users with available parking spots inside the parking slot

[5] Android Application for Vehicle Parking System: "Park Me" Lalitha Iyer, Manali Tare, Renu Yadav, HetalAmrutia, IJIACS International Journal of Innovations & Advancement in Computer Science, Volume 3, Issue 3, May 2014 "Park Me" is an application which is based on the client-server architecture. The client is provided with an interactive Android-based user interface for the process of advance-booking of the parking slot. The server-side processing will be enabled using XML and MySQL. The client requests the server for locations where parking slot is available and the server responds with availability of slots using GPS location tracker

### III. METHODOLOGY

The slot allocation method follows a sequence as stated below:

Step1: 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 within 2kms to 3kms. If it is available, he moves to the next stage or else go to the initial state.

Step2: Transfers request for parking slot from the mobile using Android application.

Step3: The Parking Control Unit (PCU) gets the slot number requested by the user.

Step4: If the payment is done successfully, then the requested slot is reserved in the parking area.

Step5: After reserving a particular slot by the user then the status of that respective slot will be marked.

Step6: As soon as the vehicle gets entered into the parking slot, the timer gets ON and measures the total time.

Step7: As soon as the vehicle moves out of the parking slot, the timer gets OFF and the total cost will be displayed.

#### Modules

Real time vehicle parking system using android application mainly consists of three modules. They are

##### 3.2.1 User Module

##### 3.2.2 Administrator Module

##### 3.2.3 Booking Module

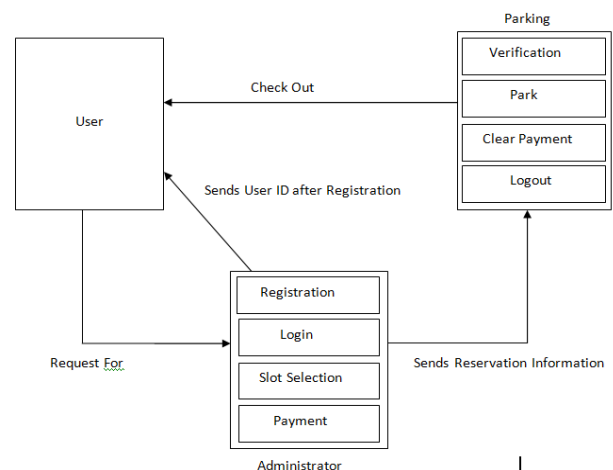


Figure 3.2.1 Architecture of Real Time Vehicle Parking System

#### User Module

This module of the application deals with the user interface/user experience. This module provides the user with the flexibility of registering, logging in, booking and making the payment. If the user is new to the application then, the user must register in the application by providing the user's details. After the registration, the user logs in using the user-id and password. Once the user logs in, then the user browses the parking slot then books that parking slot followed by the making the online payment.

#### Administrator Module

This is the operative module of the application. It works in the backend for managing the database and performs various operations on it. The administrator stores all the user's data in the database as soon as he gets registered with the application. Administrator maintains the details of all parking slots (both empty and reserved), their price for booking, user details in database and the modification on these data is only can be done by the administrator. The administrator also provides the payment method to the user.

#### Booking Module

This is the main module of the application and it deals with the booking of the parking slot. When the user is ready for booking then the booking module comes in the scenario to provide user the necessary information for booking. The available slot, cost to book the slot and the necessary processing in regards to these, are done by this booking module.

#### Client Side

Initially, the user needs to install application on his android device. After installation the application icon will be displayed on his android mobile screen.

#### 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

consist 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.

Check for a slot and its status:

User login the application 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 green and red color indications. Where green color indicates that the respective slot is empty and the red color indicates that the respective slot is already allocated to some other user.

Payment and Logout:

On availability of empty slot, the user can confirm his booking of his desired slot. After reserving a particular slot, the use can proceed to the payment option or else terminate the entire process. The system requires full payment in advance either through a credit card or a debit card. Hence, the user needs to give all his card details to book his desired slot. After successful payment he receives a slot number, both to his mobile and mail. After utilization of a particular slot he can move out of the parking area by clearing his payment. He can check all the details in his account and can logout. The user can also leave a feedback to share his experience.

Server Side

Initially the administrator logs in the application by using his username and password. The administrator has authority to add new users and stores their details in the database which are used for further purpose. On receiving the request at server side by user, the administrator shows all available locations at the nearest requested destination.

Login:

The administrator can login to the application by giving email and password. If the administrator gets successfully login then the administrator is said to be authorized. After getting login to the application the administrator can carry out many tasks such as:

- Adding Parking Locations
- View Parking Locations
- View All Users
- View All Bookings
- Users Feedback

Add and view Parking Locations:

The administrator can add different locations where parking slots are available. The user can select any location which is nearest to his destination. The administrator can also delete

the locations if he wishes. The administrator can view different locations where parking slots are available and can also check the status of different parking slots. View All Users and Respective

Booked Slots:

The administrator can view all the users who are using the application and can also check the booking details such as the time and date at which the user requires a slot, number of hours a user is using the allocated slot, at which location he requires a slot etc., The administrator can view all the reserved slots of all registered users. The administrator takes this as a reference for further allocation.

Users Feedback and Logout:

The administrator can take feedback from different users. He can either reply to the user's feedback messages or simple delete them. The administrator can move out of the application by simply clicking on logout button. He can check all the details in his account and can logout.

#### IV. CONCLUSIONS

Now a days, the trending operating system is Android. This application "Real Time Vehicle Parking Booking System Using Android Application" makes it available in a wide range. As every person need to book the parking slot before leaving instead of searching afterward, this application would be the best to book the vehicle parking slots. This application automates the existing manual system. It can be monitored and controlled remotely. Information can be accessed anywhere at any time. The application can be easily installed and used on any mobile phones supporting Android operating system. So, it is better to have an Android Based application "Real Time Vehicle Parking Booking System Using Android Application". Administrator confirms the parking slot. This application is essential in the high-tech cities.

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