

# Android Application For Smart Parking System

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**Abstract-** Now-a-days, vehicle parking has become a major problem in urban areas with the shortage of parking spaces. it is very difficult and frustrating to find a parking space in most metropolitan areas, especially during the rush hours to solve this problem. The paper entitled smart parking system using android application, the major motivation of this paper is to reduce the traffic congestion in roads, multistoried buildings and malls due to unavailability of parking spaces. The proposed application provides an easy way for reservation of parking slot. In this application user can view various parking areas and also view whether space is available or not. If the booking space is available then he can book it for specific time slot. The paper displays the nearest empty slot if present with respect to user location. Our project aims to make efficient use of parking spaces. Also, this system provides an additional feature for user. To alleviate the parking problems, smart parking systems must be implemented. In this paper, the background on parking problems is introduced and relevant algorithms, systems, and techniques behind the smart parking are reviewed and discussed. This system gives a further feature of cancelling the bookings. User can cancel their booked area anytime. Users may even make price online primarily based totally at the time taken for the reserved area the quantity might be calculated and the person can make charge.

**Keywords-** Android Application, Firebase, Cloud Storage, GPS, Real-Time System, Parking Space Detection

## I. INTRODUCTION

The number of personal vehicles usage is increasing day by day. Due to this searching for a vacant parking area during peak hours is not only time-consuming but also results in wastage of fuel. The drivers keep searching for a proper parking lot that leads to increased traffic. Increasing volume of vehicular exhaust creates a negative impact on the environment. Hence reservation-based smart parking has become the need of the day. At this time, most existing parking lots do not have a system in place. Most of them are managed by hand and are a bit ineffective. Every user's demand should be I. Should be more efficient ii. Users friendly iii. They should provide more security. The idea behind our Android Application- "valid spot" is to help the user for online parking booking.

## Workflow Diagram—

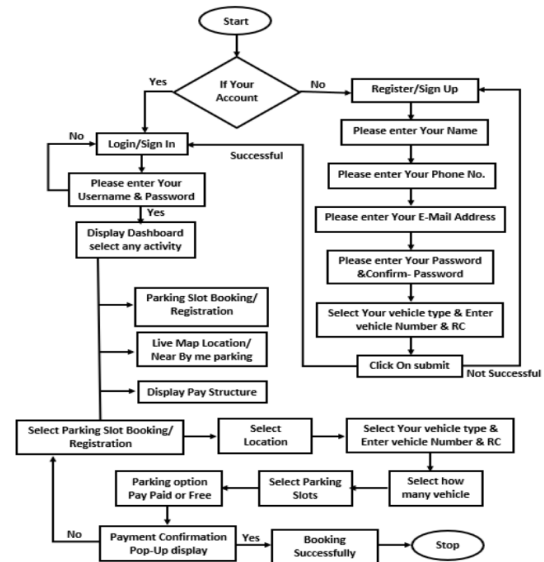


Fig. 1 Workflow Diagram

The smart parking system based on slot reservation is implemented, utilizing the Android application. The app having the features of slot allocation, by using the slot allocation method, user can reserve their own lowest-cost parking slot. It is an effective way in resolving the parking issues, which helps for traffic congestions and also provide the automated payment billing process. This work gets extended as a fully automated system using multilayer parking method. The workflow shown in fig. 1

## II. SYSTEM ARCHITECTURE

The Application Based Vehicle Parking System. This is Android Based Application.

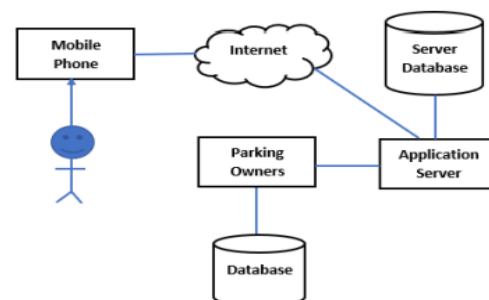


Fig.2 System Architecture

**1. Start the application:** The person desires to put in the application on his Android primarily based totally device. After installation, the icon of the app will function at the Home Screen of the person’s device. App welcome display might be flashed to the person on beginning the software.

**2. Registration:** Initially, the person has to sign in his information with the application for the primary time. This is a one-time registration. The person has to go into information like person name, gender, phone number and email- id. All these records can be saved on server. Booking for slots mandatory must be carried out a day before to arrival. On server aspect the parking owner additionally needs to sign in the number of parking slots available and for what sort of cars and the amount that needs to be paid.

**3. Login:** Once the user registers, he can use his email id and phone number to login in future. This authenticates the user.

**III. IMPLIMENTATION**

In this section , the detailed designed and implementation of the system are presented.

**A. Software Login and Register Interface :**

This Part Of System Gives the Convenient way to register and login himself.

It is an Android Application and Consist 3 Modules.

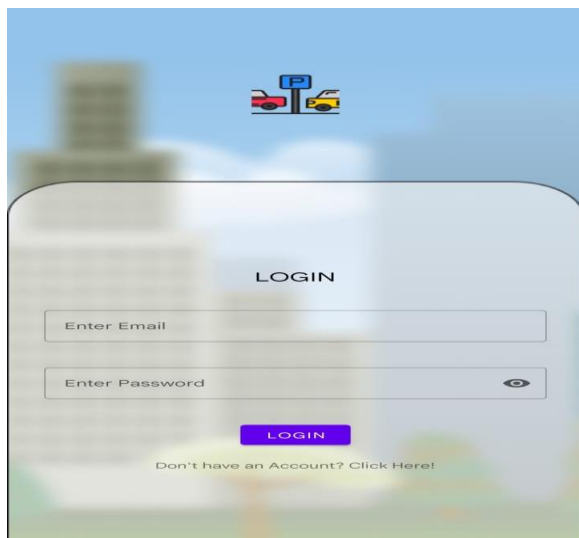


Fig 3 home page

**B. Android Application Registration Interface:**

In This Interface User Can Register Themselves By Using Credential That is Name, Mobile Number, Email ID, Car Owner Type, Vehicle Number.

The Email ID and Password Is Important for User to Log In Again. After Registration Successfully Completed. The Success Pop-Up Box Comes Out.

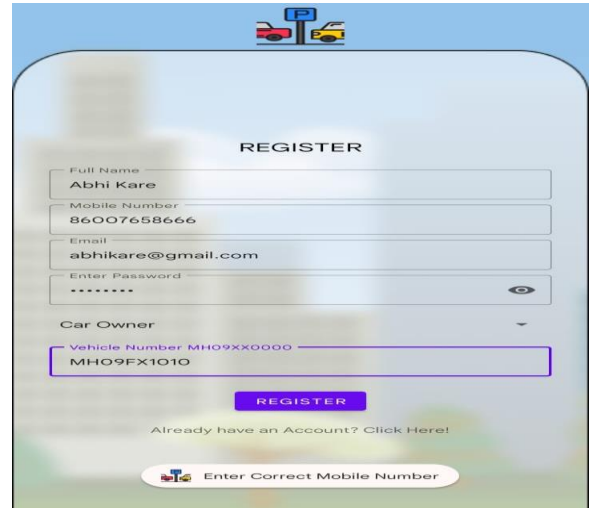


Fig. 4 Registration

**IV. CONCLUSION**

1. From this we can conclude that with the growing use of vehicles and smartphones being a very accessible device most of the places it becomes greatly convenient to solve the problem of managing a parking place with the help of a mobile application. Android has the largest user base and hence helps us get access to much more customers than any other platform. An Android app will be of great help to manage any parking place on the go.

2. Android apps being comparatively cheaper and more accessible, it becomes easier for the user to have access to the app. This app will provide the user with most of the basic requirements such as logging in details of the vehicles and rent generation. Further, it also helps the user by indicating him statistics about his operations, which will be of great help in monitoring the working of the parking place and take some data backed decisions.

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