ONLINE PARKING BOOKING VIA ANDROID APPLICATION

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ABSTRACT

The aim of this project is to provide a parking services to common people to overcome the parking norms violation due to haphazard commercialization. To provide services to both users (car owners) and customers (owners of parking tender) with no ease of time. We offer users the possibility to reserve and pay for their parking spots in advance. This project is to overcome the problem related illegal vehicle parking on and off road. We provide the perfect smart application to control parking payments and booking session. In this work, we will cover the most relevant solution to this rising parking issues our aim is to provide solution to parking problems by exploiting the most recent technology used day to day to reduce driver's frustration and decrease environmental risk, leading to safer driving and a healthier environment.

Keyword: - *Android Application, Reservation of Parking, Smart Application.*

1. INTRODUCTION

As we all know how important transportation is in our lives, and we realize the significant role of motorcars in our daily activities. Despite their personal need for vehicles, however, some people are not aware of the overall growth rate of the vehicle population. The demand for parking is also increasing, in proportion to the increase in vehicle use. In many big cities, finding a vacant parking space is becoming a major problem. In this app, we will address this issue and present our systematic solution to this challenging obstacle by introducing a mobile-based parking reservation system. Furthermore, online booking makes it easy, fast, and safe to grant a parking spot, and also enables the businesses of service providers to grow. Wide usage of android technology with the recent advances in wireless applications for parking, manifests that digital data dissemination could be the key to solve emerging parking problems. Now-a-days there is a steady increase in the number of people using Android mobile phones. This paper proposes a Smart Parking System based on android technology for avoiding the parking problems which provides process of advance booking the slots through the use of a simple and interactive Android application. It will assign a well-organized solution to the vehicle parking issue. It narrates the complete system architecture of our application. The user needs to have an Android enabled device to take in the benefits of the application. After installing the "Parking application" app, user needs to mandatorily register with the application.

2. LITERATURE SURVEY

In today's world parking lots have become redundant and needs lot of manpower to handle and maintain it. These parking lots are not user friendly and do not provide data regarding availability of free spaces. Many researchers have contributed to this issue and formalized with various methods to better optimize the parking lot to serve the needs. The author proposed smart parking reservation system using short message services (SMS), for that he uses Global System for Mobile (GSM) with microcontroller to enhance security [8]. The Zig Bee technique is used along with the GSM module for parking management and reservation

[9]. The author uses Global Positioning System (GPS) and Android platform to show available parking spaces. However, reservation for the same is not available. The author uses wide angle camera as a sensor which detect only free parking spaces and records them. These records are then used to assign parking space to the incoming user [10]. Intelligent Transport System (ITS) and Electronic toll collection (ETC) using optical character recognition (OCR) creates a record for all entering vehicle. This creates tag less entry for all vehicles in the parking lot, but it does not assign a slot to the user. A universal OCR algorithm is not available, making it difficult to create said records [10].

Motor vehicles are a major mode of transportation, which has seen a significant growth over the years. The need for parking spaces is increasing in conjunction with this growth and becoming a major problem in busy cities. There are many problems associated with this overuse such as pollution, fuel consumption, wasted time because of the looping process [11], a higher percentage of accidents, and drivers' frustration due to traffic congestion [12]. The open loop strategy is defined as the Blind Search, where drivers keep cruising the area looking for a vacant parking and will stop once they reach a free spot [13]. A study shows that approximately 45% of road traffic is caused by motorists looking for a free parking spot [13]. Drivers' eyes are often busy off-road and they lose their focus on what is happening on the road, by searching for parking signs or free parking. Even if they temporarily wait for a spot to be vacant, parking illegally on-road has a direct impact on road traffic [11]. Nowadays, we have advanced technologies that are used in many different fields to solve problems like reservations. Evoking these technologies and merging them with a single travel related system is still in the early stages and needs to be used by drivers in their day-to-day travels. Certain companies are already applying several reservation methodologies and are making huge investments to achieve customer satisfaction and maximize their profits. In the last decade, there have been many online parking reservation systems that were developed to serve people using computer-based web browsers and allow them to book their parking in advance. Unfortunately, these systems were developed to work on personal computers and laptops, before the era of smartphones. With the growth of technology, the idea of finding and reserving parking online can be realized by creating a reservation system that assimilates the concept of a smartphone parking reservation application with parking service providers everywhere. This system will save users time and allow them to know ahead of time when and how to reach their guaranteed parking space, instead of having to travel to their desired destination unsure of where to park their vehicle.

3.WORK DONE

"Parking application" is based on the admin-user server architecture. The user is assign with an interactive Android based user interface for the procedure of pre-booking of parking slot. The server-side action will be authorized using PHP and MySQL. The user appeals the server for locations where parking is accessible and the server returns with slots accessible.

Fig 3[a] Work Done

3.1 Modules

It is an analytical case for correlate objects interconnected to a specific task with elective programming logical request modules assign an easy runtime data connection model and a condition for clarifying and accomplishing transactions.
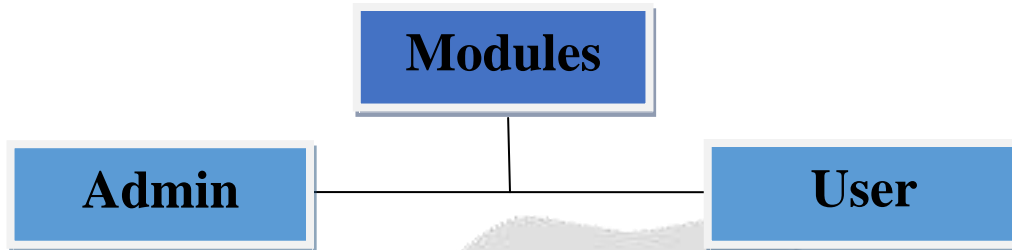

Fig 3[b] Modules

3.1.1 User module

Firstly "Park Me" application has to be installed in an Android based device. After installation at first, the user has to rolldown his details with the app for the initial time. This is a one-time process. Once user login then the user gets their present location on map and get accessible parking with area availability down with navigation facility by google. User can check spot and book their parking space according to time and date and user also get confirmation of booking and also get the cancel option for booking.

 3.1.2 Admin module

Admin login will manage all the bookings which will be made by the user. Admin can check how many bookings are made by the user. Admin will also notify about the space availability as the updates will be made after each booking. Admin can also give reply to the feedbacks of users.

3.2 Work Flow

The suggested model has three main elements: customers/end-users, middleware, and parking service source. User have to login to the suggested PRS in order to outpour data or to make a new reservation. Each autonomous parking service provider subscribed to the system provides parking details such as location and pricing, as well as any other facility details, to the middleware. The middleware is the link between the PRS and all service providers. After consulting with service providers, it prepares a list of parking options satisfying the customer's request, as shown in Figure.
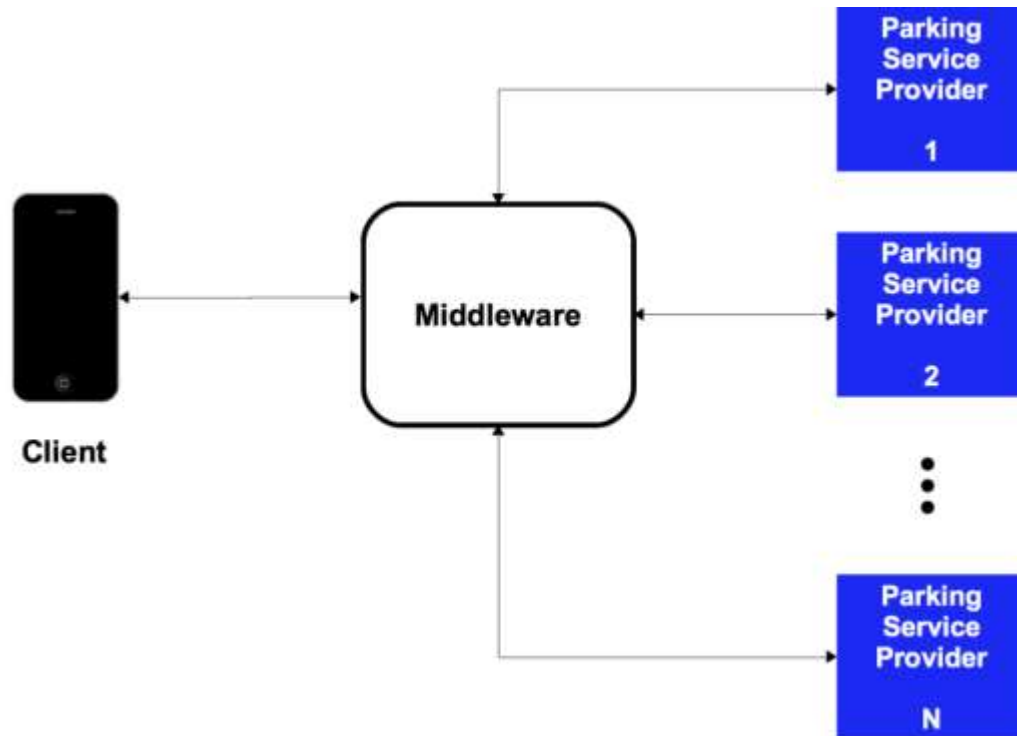
Fig. 3[c] workflow between user and admin

3.3 Parking Reservation System Components

In this model, we will describe the three main elements of our parking reservation system: The client (user) who is using the mobile device, the middleware that has webserver and database server, and finally parking facility contributors (admin) who will have the assured parking spots for their clients. Details about each component is as follows.

3.3.1 Client (User)

Clients (user) of the system would use their smartphones to access the system. They may access the middleware through the Parking Reservation System installed on their smartphones. This system connects to the middleware using a cellular network such as 3G or 4G data networks. Since the PRS is a mobile based application, the smartphone manages all the functionalities based on its hardware capabilities and all the data related to interactions between the PRS and the mobile system, such as user profile information, car information, parking availability, etc. are stored in the middleware zone. Clients (user) have to be connected to the network in order to get all the up-to-date and real-time information.

3.3.2 Middleware

The middleware zone is the hub between user and parking service providers. It has two hardware components: The web server, which is an Apache HTTP server, and the data base (DB) server. The web server is the only gate to the DB that stores all the information for both ends. All data will be synchronized between both ends (the client and the service provider workstations), and through the web server. The web server uses software called PHP My Admin to administrate the database server

The web server will be handling all administrations in MySQL DB in order to access the DB. Since the user interface is a mobile application-based system, there is no web interface required for the client. Thus, the middleware works mainly as a data store and synchronizes its data with both ends simultaneously, in real-time.
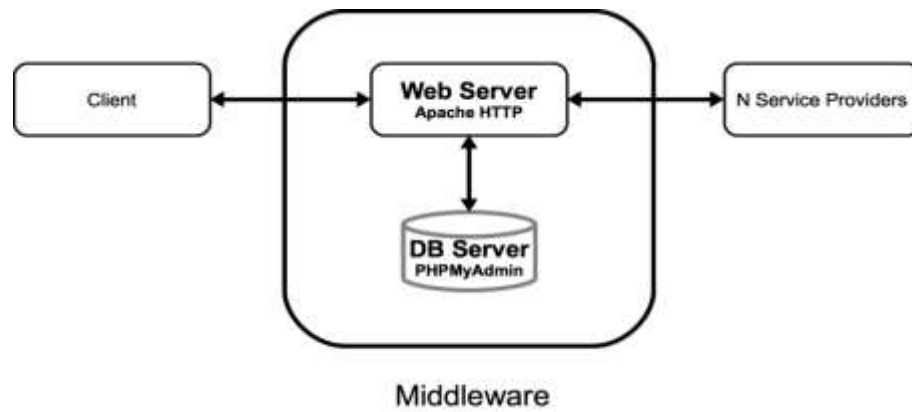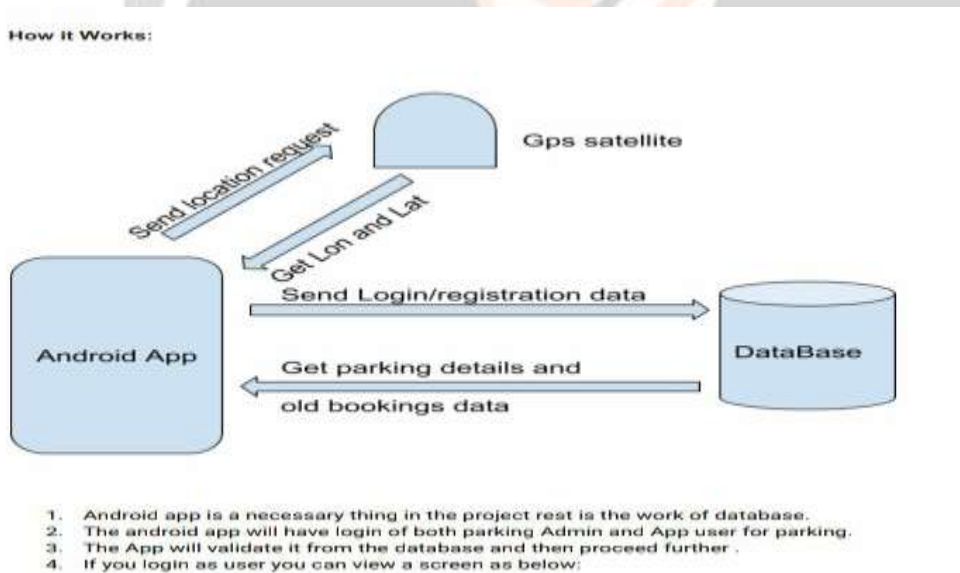
Fig. 3[d] Middleware

3.3.3 Parking Service Provider (admin)

Parking lot providers have two hardware device types on their sites. The first is a workstation that is used for administration proposes such as to update the pricing, closures, or any site-related information The other option for the service provider is that the system administrator manually checks the number of spots available at the location and updates the vacant parking spaces using the workstation at the site.

3.4 For viewing map we had used Google Map API:

1. Android app is a necessary thing in the project rest is the work of database.
2. The android app will have login of both parking Admin and App user for parking.
3. The App will validate it from the database and then proceed further .
4. If you login as user you can view a screen as below:

4 Results and Discussion

4.1 Implementation

Application is design in ANDROID STUDIO 2.3.3 design frontend using AVD.XML (android virtual device) and backend with java script. We are using google API keys for several map activities and we also require Payment Gateway and e-wallet facility.

Database - SQLite

5. CONCLUSIONS

If it is a residential, amusement center or a market place, the first and leading question in the minds of each and every one is about the parking slot. In Contrast to other developed countries, the issue of parking is saddened in India as there is no well composed plan in place. There is a wide gap and total contradiction between the construction of vehicles and the parking slots. Government authorities have been raking their brains day in and day out to tackle this problem. The parking issue is quite severe in places of amusement such as theatres and shopping malls. This plan helps both the visitors and administrators. It helps the visitors in finding out the availability of a parking slot, get the availability confirmed, and reach the place within the time slot allotted. It helps the administration to allocate the vacant slot to the next person in chain. A well reasoning parking plan saves the time of visitors in booking a parking slot in advance and the administration to assign the vacant slot in a methodical and organized manner. The systems proposed by various authors help us effectively in reserving as well as eliminates the need for searching of a parking space in private parking lot. Many researchers have implemented systems which have dynamic arrangement scheme for satisfying the different needs of drivers and service providers, which is based on real-time parking information. Hence, we conclude that this paper is very useful for new researcher for innovation of new techniques to manage the problem faced by drivers on day to day basis. The table contains advantages and disadvantages of various systems implemented by researchers. In future work, we innovate this system which is not only used in a particular parking area available but can be extended and also be implemented on various other platforms such as railway stations, airports, mall parking spaces. This will make the management of the parking spaces efficiently, by eliminating need of manual labor work.

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