

# Parking Aggregator APP

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**Abstract-** With the growth of the urban population and their reliance on private transport contributes to congestion of traffic. Smart parking is a subject to be concerned with in the field of research and the economic sector. The advancement of Information technology helps drivers find convenient and secure parking spaces using smart parking services. The existing systems for smart parking are complex and it takes a lot of time to deploy a smart parking system in cities. There is a necessity for an intelligent, quick, reliable, automatic system. The system should be able to search for the unoccupied parking facilities in the nearby area, directions to the parking facilities, fair parking fees, as well as effective parking facility management.

**Key Words:** Computer Science, Smart Parking, GPS, Aggregator.

## I. INTRODUCTION

The industrial development in the planet is reflected in the increasing number of cars on the streets around the planet, which has caused many problems with parking. The slow paced urban planning has made the matter even bigger. The parking lot look may be a time-consuming process that affects not only the output of the economic activities, but also the social interactions and quality.

Human errors are the main source of traffic accidents, therefore building in-car technologies for checking the parking zone, avoiding accidents and guidance to the parking facility is popping bent be an integral area for research. These technologies aim to reduce the driver pressure, improve traffic efficiency and provide safe and efficient car functions. The parking meters that use coins or tokens are an inefficient system because it needs man power for parking control and exact change to pay the parking fees. Parking control and enforcement systems provide efficient and effective monitoring of meter and it also keeps a check on any violations of the parking zone. This leads to absolute best use of the parking lot for increasing the revenue. Currently used parking system isn't an efficient one; because the drivers are allowed to park with none

restriction, and therefore the parking facility can't be went to its full extent.

## II. LITERATURE SURVEY

Android Application for Vehicle Parking System: "Park Me" written by Lalitha Iyer, Manali Tare, Renu Yadav and Hetal Amrutiya in year 2014. Their work included finding out availability of a parking slot, get the availability confirmed. It also included automatic allocation of vacant space to the next reservation in queue [1]. Park Smart: Android Application for Parking System written by Supriya Gatalwar, Radhika Agnihotri, Nitesh Gujarathi and Atmesh Behere in year 2016. In it the user can take control of the parking decision. The user will only need to download this app and click button to find nearest location for parking [2]. Intelligent Parking System Using Android Application written by J. Anitha, Y. Thoyajakshi, A. Ramya, V. Sravani, Prashant Kumar in the year 2017. The user can book parking slots without any great effort using an android device. The user can check the status of parking area and book the parking slot in advance. The application also provides an additional feature of cancelling the booked slot within 20 minutes from the time of booking [3].

## III. IMPLEMENTATION

So, the parking aggregator app is an android app and will be fully functional in all the android devices. There will be two users for this application (customer and owner). The customer can find the nearby parking location from the google maps api available in the application. The customer can also reserve the parking slot at a particular location. The customer is also able to suggest any feedbacks on the particular parking area based on which the owner can make any changes if required. The owner is able to assign a parking area using the google maps api. A particular owner can have the multiple parking areas. The whole application is free to use for both the users. The security is provided for both the users with proper authentication and providing login only to the legitimate architecture. The architecture diagram shows the idea of the application. (fig 1).

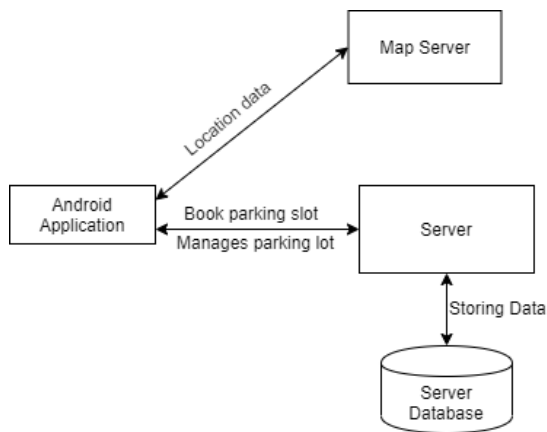


Fig.1 Architecture Diagram

The customer takes the location from the map server and checks whether there are slots available for parking at a particular date and time from the server. The server checks from the server database and provides the information to the user.

#### A. Android Studio

Android-powered gadgets such as tablets are loved by tech-savvy all over the world. It also makes the mobile app development easy because of its freely availability for all the users. Also, the app developers can publish their apps immediately without any hassle. Lots of developers are associating with mobile app development for the Android platform considering its incredible growth. If you're looking for a stable IDE, you must always choose Android Studio. Besides there is inbuilt google maps api available in the android studio which was necessary for the parking application.

#### B. Firebase API

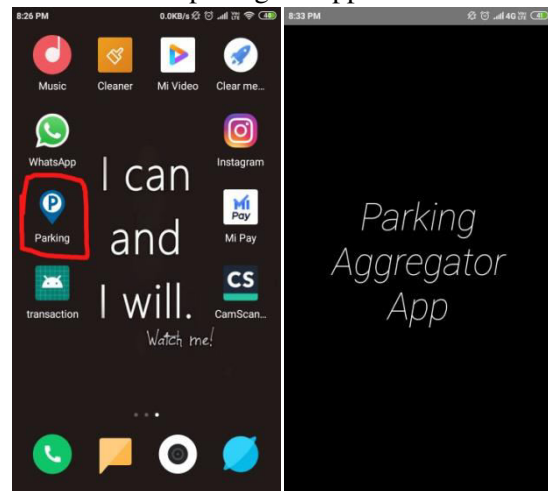
Firebase API store and sync data with all our cloud related database. The data can be synced across all clients in realtime, and remains available when your app goes offline. The Firebase Realtime Database is a cloud-hosted database. Data is stored as JSON and synchronized in realtime to every connected client. When you build cross-platform apps with our Android, and JavaScript SDKs, all of your clients share one Realtime Database instance and automatically receive updates with the newest data.

## IV. WORKING

### 4.1 Customer's interface

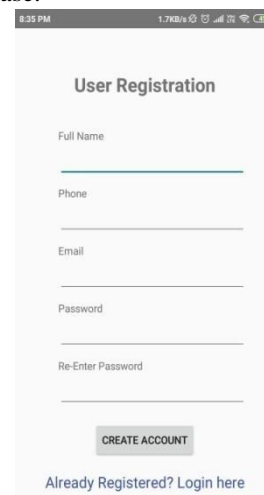
#### 4.1.1 Starting the application

The user needs to install the application on his Android based device. After installation, the icon of the app will feature on the Home Screen of the user's device. The welcome screen will be flashed to the user on opening the application.



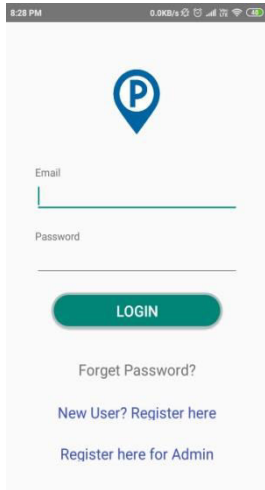
#### 4.1.2 Registration

Initially, the user has to register their details with the application for the first time. This is a one-time registration. The user has to enter details like full name, phone number and email-id. All this data will be stored on server database.



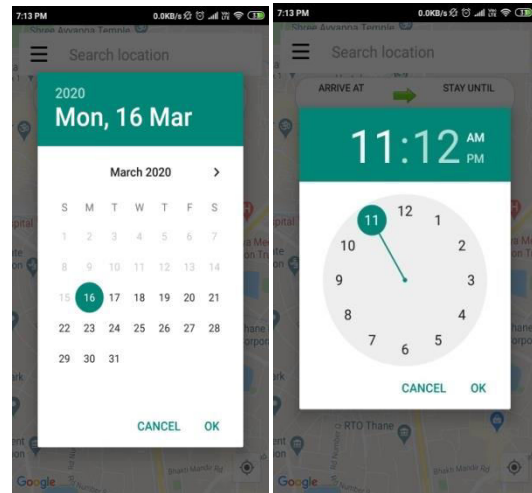
#### 4.1.3 Login

Once the user register's, he/she will receive a verification mail on the registered email-id where the user must authenticate himself. Once the user is verified the customer can login with the email-id and set password.



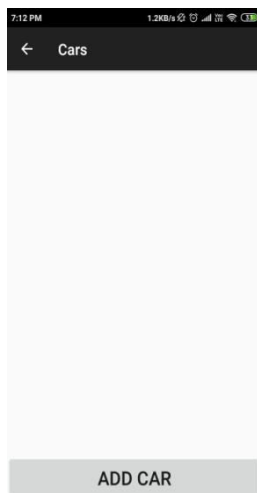
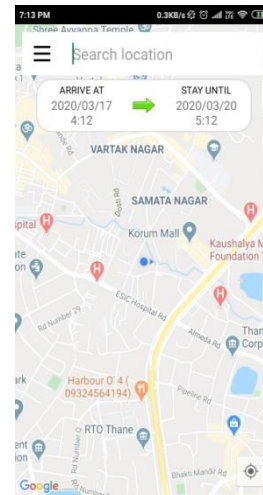
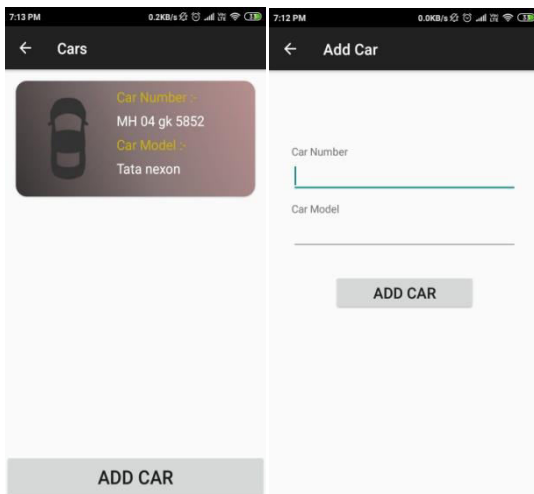
**4.1.5 Add Date-Time of booking**

Once the customer is done with adding the vehicle details he can proceed to the procedure to reserve the parking slot. But before that he/she has to select the date-time from which the reservation at the particular slot is to be made and date-time till the reservation has to be made. This plays vital role for checking the availability of parking slots.



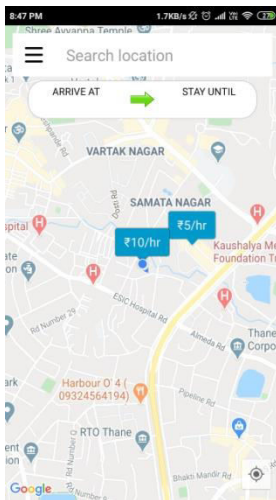
**4.1.4 Add Vehicle details**

Since the customer is a new user he/she will required to add car details before reserving a parking slot. The filling of car details prior to first reservation is mandatory. The details will be saved in the server database and the customer can use the same details while making the reservation again. One customer can add multiple vehicles.



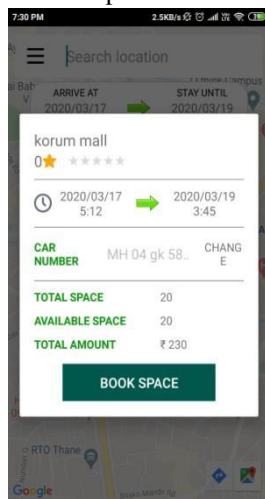
**4.1.6 Select parking location on map**

Since the main need for the parking is the nearby location where we can park, so the main part is the map showing the parking locations nearby. The customer can also search the particular based on the name of place rather than dragging on the map.



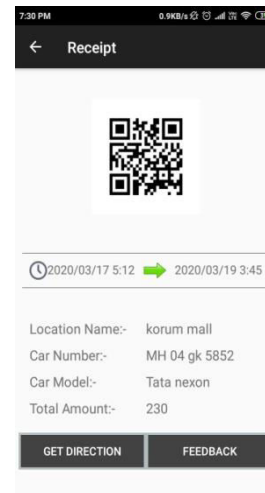
#### 4.1.7 Availability status of the slots

After selecting date-time and the particular parking area it will show the display showing the current availability at the required date-time and also the fares for parking their. The preview also show the rating of that parking area based on previous experience of other users.



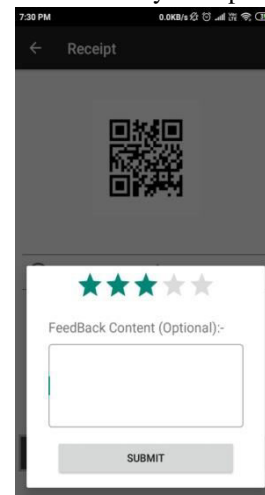
#### 4.1.8 Confirmation Screen

From the availability window if the parking is available then the customer can reserve the parking slot or else the user can go back to find some other location for parking. Once the reservation is made the receipt is displayed. The receipt has different QR code for the individuality of each transactions.



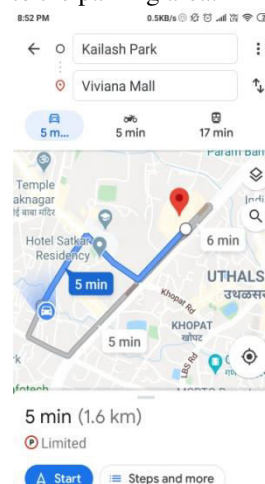
#### 4.1.9 Feedback Screen

The receipt has two options now. The user can give feedback or navigate. The feedback is for rating the services of the parking area. The customer can give any written suggestions apart from rating the services. Looking at which the owner may try to make changes in his business and try to improve his services.



#### 4.1.10 Navigate

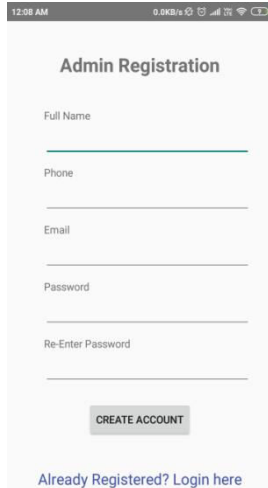
The application has the feature that redirects us to google maps so that the customer can be navigated from their current location to the parking area.



## 4.2 Owner's interface

### 4.2.1 Registration

If the user is the owner and he/she is the first time user than he/she will also required to register to the application. The registration will require all the same details as required for the customer registration. The main features will be available once the owner has registered and then logged into the application.



### 4.2.2 Login

After the registration is done the owner will have to authenticate himself by verifying the mail they have received on the registered email-id. Once the authentication is done the owner is able to use all the features of this application.

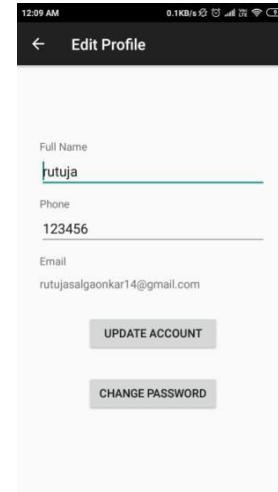
### 4.2.3 Menu

As soon as the owner get themselves logged in they can see a menu having following options- Profile, locations, add location.



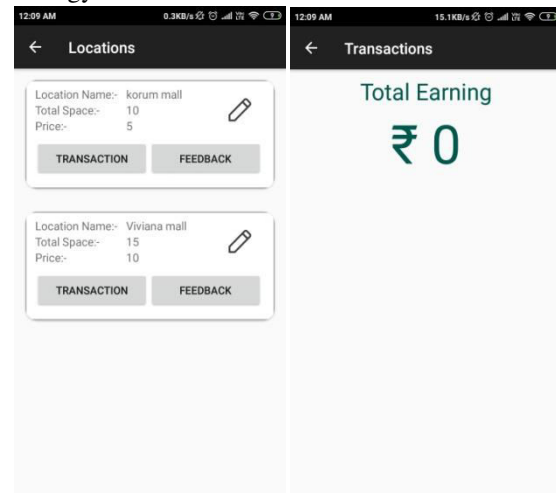
### A) Profile

Here the owner can change password of there account, also can change the name of the owner and their contact details.



### B) Locations

Here all the details regarding the specific location of the owner will be available. The informations like transactions over a certain period, feedbacks given by the customer will be visible to the owner. Based on which the owner can make any changes in his/her business strategy.



### C) Add Location

If the owner wants then he/she can expand their business by buying some other parking slots. If he/she is doing so, then the application has a feature to handle multiple locations for single owner.





## V RESULTS

The applications is running smoothly with minimum glitches. Both the customers and the owner accounts can do all the operations smoothly.

## VI CONCLUSION

Parking aggregator app is an android application which we have developed keeping in mind about both the users so the parking will be a convenient task. The main functionality of this app is to book the parking space in advance. Basically, this parking system save time, money, space and help to simplify the often-tedious task of parking.

This app allows the user to take control of the parking decision unlike traditional method where the user have to visit that area and then find the parking space. The app is user friendly and handy so people of all age groups can use it easily. Navigation provided in the app will allow the customer to reach the parking area without any confusion. The owner can read all the feedbacks and do necessary changes if necessary to improve their business. The app is user friendly for both the users.

## VII REFERENCE

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