

Bikgo(A mobile app for instant Bike rentals) Using Flutter

Mr. G. Sai Krishna¹, A.Ajay Chandra Kumar², S.Leela Deepak³, Kamalnath⁴

¹Assistant Professor, Anurag University-Hyderabad

UG Scholar, Anurag University-Hyderabad

¹saikrishnait@anurag.edu.in, ²19h61a1261@cvsr.ac.in, ³19h61a12a7@cvsr.ac.in

⁴a20h65a1212@cvsr.ac.in

Abstract— Bikgo is a mobile app that enables the user to rent a bike within a 2km radius of his residence. In this app, there are two users; one is the giver of the bike and the other is user of the bike or one who needs the bike for which the user must pay an hourly fee. The giver of bike has to register in the app and upload the necessary documents such as the bike's insurance, RC etc. We will take the details from the giver and user during the registration only, using the chat module they can contact each other and can give the bike or user can take the bike. To use the bike, one must provide one's address and contact number before using it.

Utilising the app's location, the user contacts the nearest bike provider, then picks up the bike from the provider, since it would be walkable distance to the user of the bike. Registration and uploading of the driving license are both requirements for collecting the bike from the provider. After the user has used the bike, the user returns it to giver of bike and giver receives the payment in the form of cash from the user who took bike for rent.

Flutter is an open-source framework developed by Google which allows us to create apps using data from the provider and the user. For that we used Cloud Firestore, a database where all client data is stored and synced.

Keywords: Flutter, Bike rentals, Visual Studio Code, Cloud Firestore-NO SQL database, renter, rider

Date of Submission: 11-03-2023

Date of acceptance: 25-03-2023

I. INTRODUCTION

Bikgo is a mobile App which would ensure the user gets a bike quickly when in need of travelling for some reasons. This would reduce the distance between the bike provider and the bike user since the app will show the nearest bikes available. Since almost everyone has smartphones and is accessible to the internet when people will install this app they would find the bikes available near their residing place and would get access through this app to get their bike for travelling very easily. This app asks for the details of the user of the bike and the provider of the bike where they have to upload and fill in the necessary documents and details which would ensure the safe lending of the bike. We developed this App using Flutter because it is a Framework using a single code base which can be used on different platforms like iOS, Android and the web.

A. Existing System

Like few apps provide the bike for rentals by asking the user to come to specific locations which are far from the user and difficult to access. It is not much feasible for the user to go to a specific location which may be far away from his residence and take bike for rent. There are a few existing systems such as ONN Bikes Rental, and Vogo bikes. So we try to reduce the distance of going and collecting bike from a long distance.

B. Proposed System

The problem with the existing system is that the users have to go to a specific location or a bike point which is at a far distance making it not feasible for the user who wants bike immediately/instantly. Our motivation is to create an environment amongst the users to get bike quickly within their residence.

II. METHODOLOGY

A. Requirements

- **The system analysis is done keeping in mind the following key requirements:**

IDE: Visual Studio Code (VS - Code)

Framework: Google Flutter

Programming Language Used: Dart-Language

Database: Cloud Firestore (Firebase)

- **This App development must have the following specifications for good performance:**

Processor : Intel Dual Core processor/Apple M chip

Hard Disk : 8 GB & above

Primary memory : 4GB / 8GB.

B. Modules Description

- User Registration
- User Authentication and Credential Management
- Renter Identity and Vehicle Registration
- Rider Identity and Registration
- Data validation and verification
- Finding a Bike and booking a ride
- Renter acceptance and confirmation
- Payment confirmation and bike returning

1. User Registration:

• The users must register in the app by providing basic personal information in order to rent a bike or ride a bike.

• **2. User Authentication and Credential Management: -**

• The users will be authenticated with the email and password. The emails are also used to track user activities. The credentials are managed by providing forgotten passwords and generating password options in the App.

• **3. Renter Identity and Vehicle Registration: -**

• After the successful Authentication, if the user wants to rent a bike then they must submit the important documents along with personal information as mentioned below for verification and registration. It is a one-time process which can be updated as and when required.

- Renter-Bike-Insurance (The bikes for which valid insurance is available are only considered for rental).
- Renter-Bike-Registration-Certificate (To check the owner of the bike)
- Renter-Bike-Pollution-Certificate (To check the Govt. norms)
- Renter-License (For reference)
- Renter-Selfie (To identify and show to the Rider)

• **4. Rider Identity and Registration:**

• After the successful Authentication, if the user wants to ride a bike then they must submit the following documents along with personal information for verification and registration. It is a one-time process which can be updated as and when required.

- Rider-License (For Validation and safety assurance)
- Rider-Selfie (To identify and show to the Renter)

• **5. Data validation and verification:**

• The information submitted by the users is being validated and verified with the documents provided, based on the correctness of the information provided, the users will be accepted or rejected for the rent/ride of the bike.

• **6. Finding Bike and booking a ride: -**

• The riders can view the available list of bikes for rent around their surroundings using the Map feature that shows nearby bikes available and choose any bike for a ride, on choosing a bike, an automated rent request will be sent to the renter.

• **7. Renter acceptance and Confirmation: -**

• The renter can accept or reject the rider's request. Based on the renter's response, the acceptance/rejection notification will be sent to the rider. If the renter accepts the riding request an RFR (Rent for a Ride) transaction will be initiated, and the rider will go to the renter, collect the bike and go for the ride. If the ride request is rejected by the renter, the rider will have to choose another bike.

• **8. Payment confirmation and bike submission: -**

• After completion of the ride, the rider will pay the rental amount to the renter and return the bike to the renter safely. After confirmation of receipt of payment by the renter, the RFR (Rent for a Ride) transaction will be closed.

C. System architecture

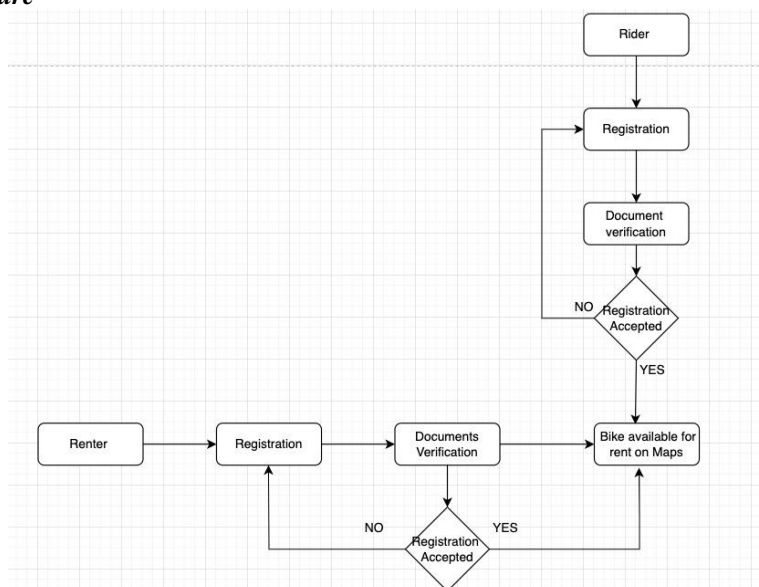


Figure 1:- System Architecture

The above figure shows the system’s architecture or the flow chart of the app for both rider and renter beginning from registration to verification of the documents and finally bikes available nearby on the maps.

D. Database Implementation

The database used in this project is a No-SQL database named Cloud Firestore which is a part of the Firebase. Firebase is generally used as a backend as a service in order to build applications effectively. The Cloud Firestore contains collections with their respective documents in order to maintain the data.

Our Project named Bikgo(A Mobile App For Instant Bike Rentals) uses the Cloud firestore to store the data in the format of collections with their respective documents as shown below.

1.Sign-up Collection:

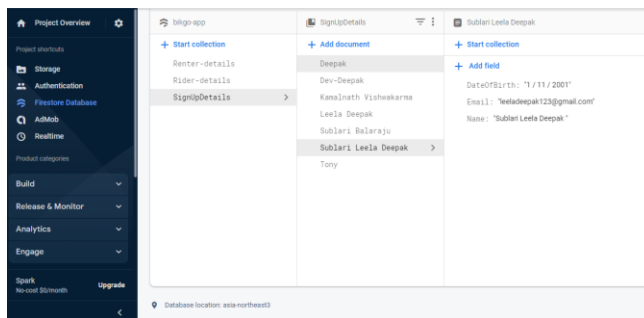


Figure 2 : Sign-up collection.

- It is used to store the data related to credential management while using the app.

2.Rider-details Collection:

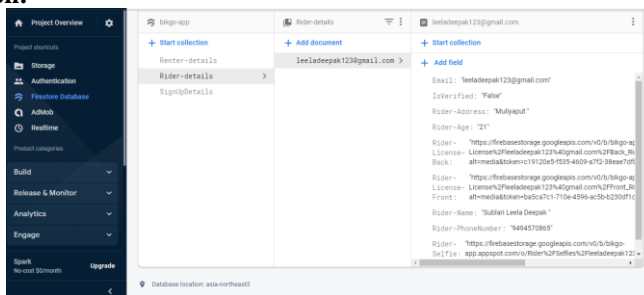


Figure 3:- Rider-Details collection.

- The collection of the rider details with their personal information and required documents is stored here safely in order to validate and verify the user in the app.

3.Renter-details Collection:

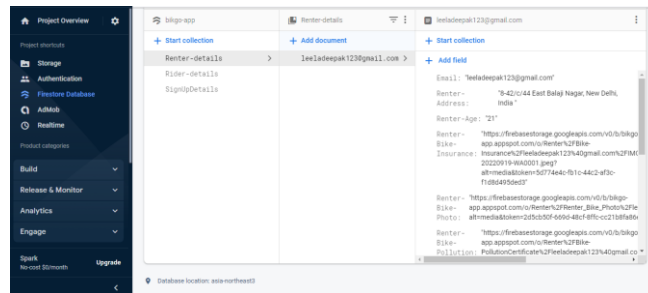


Figure 4:-Renter-details Collection.

- The collection of the renter details with their personal information and required documents is stored here safely in order to validate and verify the user in the app.

3. USER INTERFACES

The User Interfaces are in-fact the results that is after applying the methodology and designing the modules, by utilising the firestore database.



Figure 5: Home Screen
In this tab, the user can either choose their role as a renter or as a rider.



Figure 6: Choose Rent
In this tab, the user is going to rent bike on slot or on the moment.

According to the system architecture the user interface or the result is shown in the following figures. So , in this way the user can interact with the app.



Figure 7: Rent slot
The user so as to provide bike for rent gives available slot.

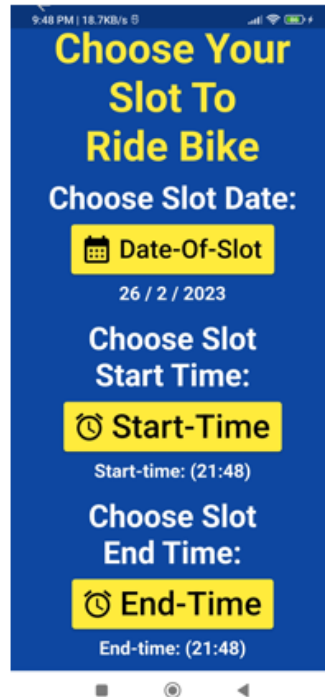


Figure 8: Ride slot
The user so as to get a bike gives a slot.

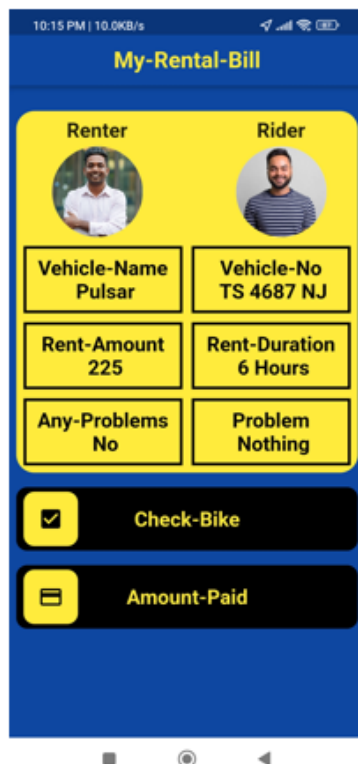


Figure 9:- Rental bill received
The user so as to check the amount paid by the rider.

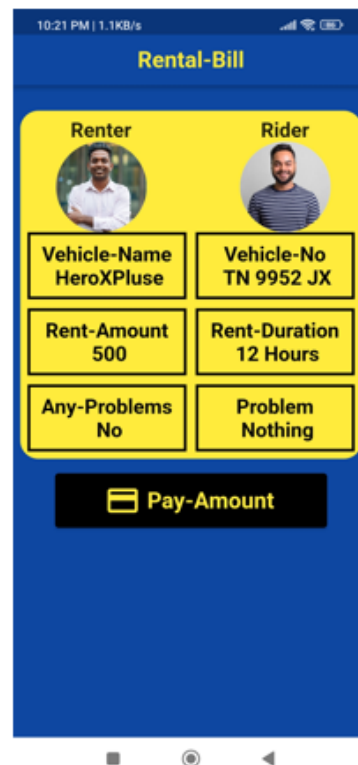


Figure 10: Rent paid
The user who will pay the rent amount.

III. FUTURE SCOPE

The Indian two-wheeler rental market was valued at USD 38.76 million in 2021 and is expected to reach USD 63.82 million, growing at a CAGR of more than 7% during the forecast period (2022 – 2027).

The booming tourism, rapid urbanisation, increasing interest of people in adventure tourism, rapid digitalisation, international and national migration, micro-mobility, traffic congestion, and the cost associated with owning and maintenance of two-wheelers have been some of the factors that are expected to fuel the demand for two-wheeler rental market during the forecast period.

Two-wheeler rental provides an easy and convenient way to own a motorcycle without paying any maintenance costs for it. Two-wheeler rental companies offer the motorcycles/scooters as per the requirement of the customer based on the hourly, daily, weekly, and monthly renting duration, along with additional facilities like panniers, helmets, riding gears, and many more.

Two-wheeler rentals company verifies the renter by validating the driving license and other national certificates. Renting a bike has become easy and convenient after digitalisation. Most of the players in this industry have mobile applications by which they provide seamless service at the user's fingertips. The rapid rise of migration among the students and the young workforce has unlocked a new market segment in the form of two-wheeler rental.

India's two-wheeler rental market has witnessed a thump in demand during the outbreak of covid-19 due to the lockdown and restriction norms. This results in flattening the demand curve and brutally hinders the revenue bar of companies. However, the restrictions have been waved off, and the market is gradually picking momentum, which is expected to remain in the growth trajectory over the study period.

There are generally two kinds of rental firms according to their bike renting duration. In urban areas, the new app-based startups are strengthening their presence by providing app-based dock-less scooter rental/sharing services as the urban located player caters to the working professionals and students for their commuting needs. This app being related two wheeler rental strategy would help the people by getting access of the bikes nearby one's residence when in need.

IV. CONCLUSION

In conclusion, Bikgo is a mobile application that facilitates the rental of bikes within a 2km radius of a user's residence. The app has two users, the giver of bike and the user of bike, who can communicate with each other using a chat module. The giver of bike needs to register on the app and upload necessary documents such as insurance and RC, while the user needs to provide their address and contact number during registration. The user contacts the nearest bike provider using the app's location and picks up the bike after registering and uploading their driving license. After using the bike, the user returns it to the giver and pays the giver in cash. Flutter, an open-source framework, and Cloud Firestore, a database, are used to create the app and store client data.

ACKNOWLEDGEMENT

We would like to express our sincere thanks to **Dr K. S. Reddy**, Dean, Academics and Planning, Head of the Department of Information Technology, Anurag Group of Institutions, Ghatkesar, whose motivation in the field of software development has made us overcome all hardships during the course of study and successful completion of the project.

We would like to express our profound sense of gratitude to all for having helped us in completing this dissertation. We would like to express our deep-felt gratitude and sincere thanks to our guide **Mr. G. Sai Krishna**, Assistant Professor, Department of Information Technology, Anurag Group of Institutions, Ghatkesar, for his skilful guidance, timely suggestions and encouragement in completing this project.

We extend our sincere thanks to Dr V.Vijay Kumar, Dean, School of Engineering, Dr K.S. Reddy, Dean, Academics and Planning, Head of the Department of Information Technology, of **Anurag Group of Institutions**, Venkatapur(V), Ghatkesar(M), for their encouragement and constant help.

Finally, we would like to express our heartfelt thanks to our parents who were very supportive financially and mentally also for their encouragement to achieve our goals.

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