Mobile Application Using Flutter (Know Your Ride)

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Abstract – *Flutter is Google's UI toolkit for building beautiful, natively compiled applications for mobile, web, and desktop from a single codebase. In this project, we will make a mobile application using FLUTTER named Know Your Ride. This app will provide detail information of vehicles. We used flutter for frontend and Firebase for backend. Admin Panel is made using Python Django. ChatBot is also available for quick question answer related to the vehicles.*

*Key Words***: Flutter, FireBase, Django, ChatBot, Admin Panel**

1. INTRODUCTION

Flutter is a free and open source Google mobile UI framework that provides a fast and expressive way for developers to build native apps on both IOS and Android.There are so many technologies available for making mobile applications such Android Studio using Java or Kotlin, React Native, Python Kivy. The flutter is the only framework with mobile SDK which provides reactive styles without using any Javascript bridge. The SDK is free and launched as a source developer to explore and create powerful tracking applications around. It is the reason for apps and interface made with flutter. Flutter builds from a single codebase, compile directly to the native arm code, Use the GPU and access the platform APIs and services. Thus we used Flutter for this project.

This app will help user to find the details and accurate information of the vehicles. So user will easily and certainly choose right type of vehicles. User can add to favorite any vehicle.

In Automobile industry everyday some new model of any brands of vehicles are launched with some new features and technology. So to update and add every vehicle to our application we provide an admin panel to add, delete, edit and update. Therefore user need internet connection for access updated information and data.

Hierarchy to reach detail page of any vehicle from home is as follow.

Select Category ---> Select Brand ---> Select Model ---> Detail Page.

Categories of vehicles we include such as Car, Bike, Truck, Bicycle, Electric Car, Bus etc

he detail page display images of specific vehicle with different angle Including description, feature table and other relevant information customers may want to know before making a purchase. Feature table will have list of features such as Engine, BHP, Mileage, Price, Transmission Type, Fuel Tank Capacity, Fuel Type and other feature that are only related to specific vehicle type.

1.1 Problem Definition

In this era of technology, there are lots of people who have vehicles and everyday some new vehicles are launched. Thus there is long list of vehicles are available in the market. Therefore it is hard for a person to decide what type of vehicles and brand and model is suitable for him/her. If anyone found any vehicle suitable for him/her after knowing best features manufacturer has provide But then they can't compare it to any other brands vehicle or model. Therefore we add Compare Page to compare between vehicles of same type, for example Car to Car, Bike to Bike etc.

2. Literature Survey

There are lots of websites such as droom, cardekho, bikedekho and applications such as carwale, Zigwheels available on internet for purchasing vehicles. Sometime customer or user doesn't want to purchase anything but only want to know details of his/her vehicle. These websites and applications don't have all vehicles data on single platform and Because of updating and including lots of things in one app, things are got messy.

So we provide all vehicles type data on single platform and application and for ease of access we provide complete information in simple hierarchy and with simple and understandable User Interface.

If application required any update then because of flutter we can update application on both playStore and appStore by making changes on single codebase. This is one of the big advantage flutter provide.

Flutter uses dart language to give the functionality to applications. Dart is the programming language used to code Flutter apps. Dart is another product by Google and released version 2.1, before Flutter, in November. As it is starting out, the Flutter community is not as extensive as ReactNative, Ionic, or Xamarin.

Most of the Dart features are similar to that of static and dynamic languages and it makes it easy for developers to learn and understand Dart easily and quickly. Dart's manifesto is that it uses Ahead Of Time (AOT) which compiles the code swiftly into native in a predictable way. Developers' thus enjoy the breeze of developing apps using Dart for Flutter. This feature makes it favorable for developers to code accurately and check for the response, thereby delivering the program instantly.

Due to trend of machine learning and AI, Nowadays most of the websites and application uses its technology for fast result and for making user interaction easily like chatbot, categorizing user and recommendation system.

Thus we also include a chatbot feature in our mobile application using Dialogflow. Dialogflow is a natural language understanding platform used to design and integrate a conversational user interface into mobile apps, web applications, devices, bots, interactive voice response systems and related uses.

3. Developing Model

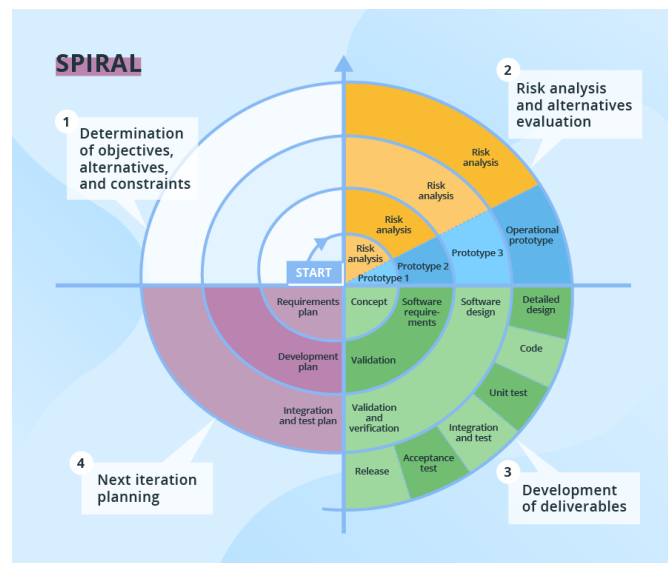This section is divided into the following parts:

1. Software development model.

2. Front end.

3. Back end.

4. System architecture.

5. Complete Example.

3. 1 Software Development Model

The spiral model is a **risk-driven process model**. This SDLC model helps the group to adopt elements of one or more process models like a waterfall, incremental, waterfall, etc. The spiral technique is a combination of rapid prototyping and concurrency in design and development activities.

Each cycle in the spiral begins with the identification of objectives for that cycle, the different alternatives that are possible for achieving the goals, and the constraints that exist. This is the first quadrant of the cycle (upper-left quadrant).

The next step in the cycle is to evaluate these different alternatives based on the objectives and constraints. The focus of evaluation in this step is based on the risk perception for the project.

The next step is to develop strategies that solve uncertainties and risks. This step may involve activities such as benchmarking, simulation, and prototyping.

3. 2 Front end

There are different technology for developing software application front end like xml but we use latest technology for developing front end that makes the software application more flexible.

We are using flutter and dart for creating front end of the software application and we use html and css for creating admin panel to store the data. In front end we can create different screens like homepage, categories page, comparison page, chatbot page and drawer. In home page we can use drawer in header of home page and in bottom we use bottom navigator that can navigate user from home page to different pages like categories page comparison page and chatbot page. In home page we can use horizontal view for displaying different new vehicles. In home page right side of header we display the bell icon which can contain list of favorite vehicles which can selected by user.

In Categories page we can display different cities like Mumbai, Pune, and Nashik etc. In that city's we can display different vehicle categories which can contain list of showrooms of selected vehicle in that city. In chatbot page we can use dark mode for make it more attractive. In the bottom navigator bar we use svg images. In comparison page for comparing different vehicle we display the first tab is select vehicle tab which can contain different vehicles name. Then the second tab is select brand of that vehicle and then in third tab select model for compare. In the top of the drawer we can display app icon and display two tabs first is about us tab which can contain developer name and contact. And second is feedback tab for user feedback.
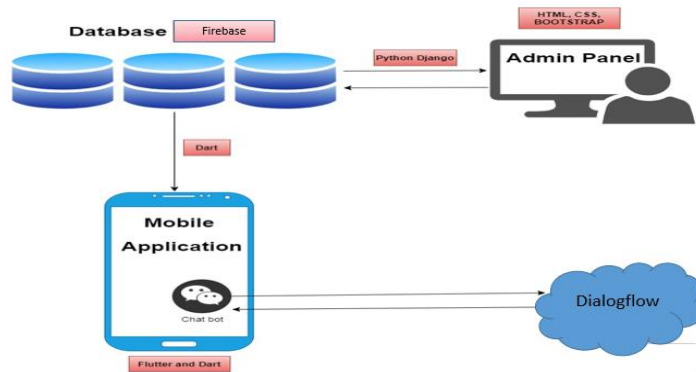
3. 3 Back end

In back end of that software application we can use firebase and dialogflow and Django.

Firebase is database which can store data of software application. The firebase provides various tools and services like authentication and storage etc. the firebase is categorized as a NoSQL database program. We use firebase to store the software application data. And firebase can use JSON file to store the data. We can add the JSON file in project/android/app folder and use firebase core and firebase authentication commands in dependencies for connecting the database to the software application.

3.4 System architecture

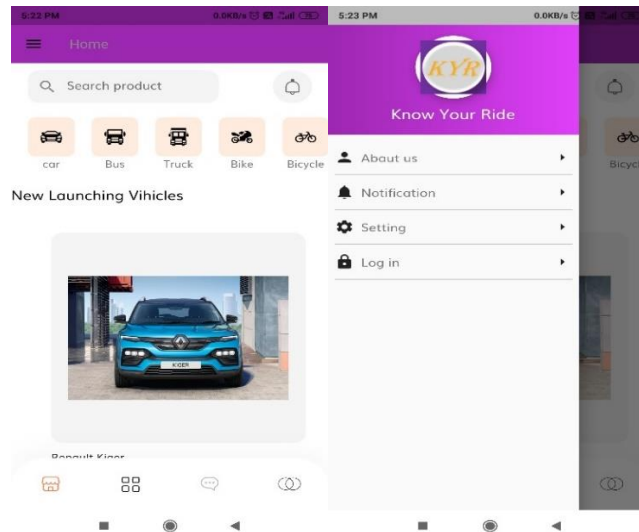We defined a software application based on the flutter, firebase and dialogflow.
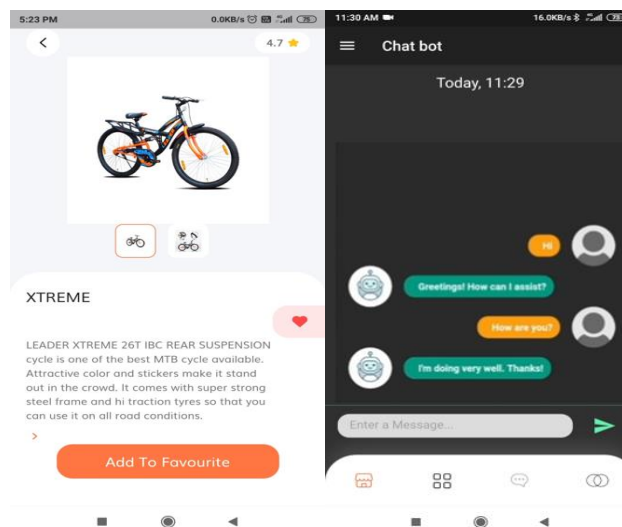

System architecture describe in four parts:

- Mobile application:

  This is the main application runs on mobile OS whether android or IOS. This client side user interface that is created using flutter and dart. User will experience and use different functionalities on Different pages.

- Database:

  Data will show on mobile application from the database. Database usually integrated with the application on local storage or can be saved on cloud so internet connectivity is needed to access these databases.

- Dialogflow:

  We used Dialogflow to enable chatBot functionality in our app. Dialogflow is a natural language understanding platform used to design and integrate a conversational user interface into mobile apps, web applications

- Admin Panel:

  Admin panel is used to perform basic crud operations. i.e Create, Read, Update, Delete. It has only access to admin.
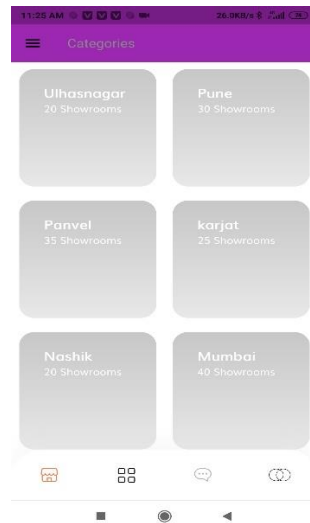
3.5 Complete Example

Home page: Drawer:

Detail page: Chatbot page:

Categories page:

4. CONCLUSIONS

After studying different research papers published nationally and internationally, we have seen many types of applications, techniques. We implemented Flutter application using the Dialogflow and Firebase. which is more Flexible for android and ios That is actually required, we also faced some difficulties also such ascustomization of the model as we want which result in moderate results and we are going to tackle that problem, and bring more customization to our project. Although we learned a lot about the implementation of Flutter application using the firebase and dialogflow libraries.

5. REFERENCES

[1] Marco L. Napoli. "Beginning Flutter: A Hands On Guide to App Development."

[2] Alessandro Biessek. "Flutter for Beginners: An Introductory Guide to Building Cross-platform Mobile Applications with Flutter and Dart 2."

[3] Dzenan Ridjanovic and Ivo Balbaert. " Learning Dart."

[4] https://flutter.dev/docs.

[5] https://flutter.dev/docs/reference/tutorials

[6] https://dart.dev/guides/language/language-tour.

[7] https://cloud.google.com/dialogflow/docs.

[8] https://firebase.google.com/docs/guides