Cross – Platform Development for an Online Food Delivery Application

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Abstract:

Nowadays, there are various mobile operating system are available in the market that user uses daily. All Operating System having so many apps like system apps or installed apps and each app having their own features. Different platform having different apps and sometime different platform having same app. To make an application we require some programming language for different platform. Like if we want to make an application for Android then we have to use Java and if we want to make an application for iOS then we have to use Swift or C# and if we want to make an application for Desktop then we have to use C++ So in that case the same app is developed by using different programming language for different platform. So, developer needs to spend more time, energy and cost to make an app. Though In today's life everyone is busy and wants to save their time as much as possible. To overcome these problems, we have to use cross platform application development. Cross platform application development is very useful because developer needs to write only single language to make an app that can easily be compiled to multiple platforms.

There are many cross - platform framework is available in the market but the Flutter framework considered the best one. In this paper we are going to build an application named as Online Food Delivery App where the whole application is develop using Flutter Framework which uses Dart programming language. The UI part is done with Flutter and backend part is done by using Firebase. With the help of these technologies, we are going to make an application with single codebase for different platform like Android, iOS, Desktop, Web Server.

We use these technologies because it is an open source and its performance is very smooth and fast. With Flutter the UI that made is very interactive and it is different from other technology. Thus, the time and cost of developers will be reduced.

Introduction:

To eat food, customers have to go to the restaurants and in that restaurant the waiter takes the order from the customer and write down in the paper. In this system each and every type of record is stored on the paper. Then the waiter sends the paper to the kitchen for further processing. After completing the process, the food is served to the customer table. The main drawback of this system is wastage of time and money. So, to overcome these problems we have developed Online Food Delivery App in that customer can order any food from anywhere with their smartphone.

Online food delivery is the process in which the food is ordered place via internet and delivered to the customer to their specified place. This application is mainly designed for those people who don't have time to go to restaurant or to cook food at home. Anyone who have smartphone they can easily order for the food from anywhere and they can receive food at his/her home and the payment can be done either on delivery or by online transaction.

There are so many applications are available in the market to order food like Zomato, Swiggy, Food Panda, Uber eats, etc. all these apps can help customer to save their time and cost. But these apps are native apps not a cross platform.

The meaning of native apps in the field of mobile applications refers to applications that are built to run on specific platform or OS. To make an application we require different programming languages for different platform like Java or Kotlin for Android, Swift or Object – C for iOS, C++ for Desktop. Thus, developers need to spend more time and cost to make an application. So, to overcome these problems we are going to make a cross platform application which require single code base for multiple platforms.

Cross platform development is useful because user can write their code in one language that can easily be compiled to multiple platforms, i.e., platform independency can be achieved.

We have studied the previous paper in that case, we use a food delivery application, where the application front end is developed using PhoneGap as well as AngularJS, jQuery mobile for optimum performance and backend is developed for web services using PHP, JSON and MySQL. The PhoneGap framework uses the web technologies like HTML, CSS, JavaScript. Thus, with the help of Cross platform the time as well as cost will be reduced.

In this paper we are going to make an application Food Delivery App using Flutter Framework instead of PhoneGap Framework because flutter provides fast performance and the best user interface. Flutter is Google's UI toolkit for building beautiful, natively compiled applications for mobile, web and desktop from a single codebase. Flutter uses the Dart programming language to make an app. The UI part will be done with Flutter and the backend part will be done by using firebase. Firebase is a Backend-as-a-service (BaaS). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. Firebase is categorized as a NoSQL database program, which stores data in JSON-like documents.

Literature Survey:

Sr. No	Paper	Author	Pros	Cons	Conclusions
1	Food Ordering Mobile Applications – A new wave in Food Entrepreneurship.	Dr. Sonali Jadhav	1.They can save on the service time and effectively deliver more orders. 2.Promotional deals, discount and loyalty reward point will ensure that customer comes back for a repeat order.	1.One of the biggest disadvantages of using app is the inability to return the dish if it is not up to the expectation. 2. With the app, once the ordered is placed, it cannot be cancelled or revised.	There has been a 150% growth in the online food delivery business in the 2017 year. Most of the customers attribute growth to 3 factors: internet penetration, smartphone gaining the status of a necessity in life, and the restaurants being force to explore delivery options to increase their business in the face of competition. The food delivery business also caters to the customers' expectations – wide choices of restaurants, ease of ordering, convenience of having the food delivered at home and reduced cost.
2	Review of Online Food Delivery Platforms and their impacts on Sustainability	1.Charlene Li 2.Miranda Mirosa 3.Phil Bremer	1. The rise of the online FD industry has provided job opportunities for many people across a range of types of employment including as chefs and administrative staff in restaurants, delivery people or as programmers behind the Apps/online platforms. 2. On a more positive note, online FD and delivery	1. Owing to the online FD platform's commission and management systems, the delivery people often race against the clock to meet delivery deadlines and to obtain higher commissions which can, thereby, impact road safety as riders may ignore traffic lights and fail to ride to road conditions, increasing the possibility of traffic	This review has outlined a large array of impacts from online FD that are affecting a range of stakeholders in different ways. While an attempt has been made to categorize the impacts as being either 'positive' or 'negative', in reality, an argument could be made for each impact to be categorized differently. For example, during the COVID-19 crises, online FD had a positive impact in that it allowed people to source food without leaving home (i.e., a positive impact for

| | | people provided a critical lifeline during the 2020 COVID-19 pandemic for the tens of millions of people quarantined at home. | accidents. 2. Currently, some delivery providers use cars or motorcycles which generate exhaust fumes, which contribute to air pollution. | consumers), but using online FD at this time did mean greater exposure for delivery people (i.e., a negative impact for delivery people). |

Existing System:

In the existing system, the food delivery app is developed using PhoneGap framework.

PhoneGap is a mobile app development framework by Adobe System, which is used to develop mobile applications for multiple platforms. To develop apps using PhoneGap, the developer can be illiterate about native programming languages, only requirement is to be familiar with web development languages like, HTML, CSS, and JavaScript. PhoneGap can access different types of device API like accelerometer, contacts, file system, and network connectivity, geo location, camera, notification etc.

The frontend application is used index.html as the whole page. We have retrieved data from database server via JSON to display food information on food page and send data to server so that we can authenticate user log-in and registration. User login and registration of the page is absolutely vital for the user to access the website. The page contains linking of others page of the application. We have added CSS and java scripts file in the head section.

All the data of the application cab be updated from backend. Backend contains admin log-in system and different types of navigation task. We have used MySQL database. We need to define the database hostname, database username, database password to establish the connection. Token is used for authenticating users to the database system.

The database contains different types of tables like; category, menu, message, register, user etc. All the log-in credentials are secured with md5 encryption. We have used SSL (Secure Sockets Layer) which is a standard security technology for establishing an encrypted link between a server and an application.

Proposed System:

In the proposed system, the app is developed using Flutter framework because the PhoneGap framework is dead. It means we can't add or update features in PhoneGap that's why we have choose the Flutter framework. There are lots of framework are available to build the same app but flutter provides cross-platform native application.

Flutter is Google's UI toolkit for building beautiful, natively compiled applications for mobile, web and desktop from a single codebase. Flutter uses the Dart programming language to make an app. The UI part will be done with Flutter and the backend part will be done by using firebase. Firebase is a Backend-as-a-service (BaaS). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. Firebase is categorized as a NoSQL database program, which stores data in JSON-like documents.

System Architecture:

The system architecture explains us that how our app will be design and work. The working of application is very easy. Firstly, the user needs to login or register to the app to take the benefits of app. The user will be authenticated via our system, if user is found in our authentication system or database then the user will get the benefit else they need to register first. Once the user is entered in our app then they have to make an order of food from our category list and then they will choose the payment option to place the order. After the placing the order, the food is delivered to user in given time period. The user also needs to give some feedback of our services so that we can improve our services.

Conclusions and Future Work:

We have tested the well-known applications for feasibility study named Foodpanda, Zomato, Swiggy, Uber eats, etc. which are commonly made with HTML, JavaScript, Java, Kotlin, C# which are native apps. All these apps have used the different languages to make app for different platform. We have used Flutter framework, which is well known. With the simple way of developing, we have made the application in a short time and it also outperforms other applications in terms of cost and time benefit analysis. The application can run in various platform as well as browsers with the minimum developer effort. It can be considered to be one of the greatest advantages. Now the application is built only for android and desktop platform which can be extended in future.

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