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Android Application for Grocery Ordering System

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Abstract - *There has been an extraordinary growth all around the world regarding android applications. People from every age group are using an android application for some reason or the other. Internet and applications have become a huge thing now. Companies have realized its potential and that it can reach the concerned consumers of any business. One of the primary reasons of people turning towards technology is that it makes their lives easier. One of the areas of real potential is online grocery shopping. When we talk about shopping, people usually find it tedious to stand in a queue for hours or find their products around a supermarket. In Addition to that the whole world has been affected by the Covid-19 Pandemic which has made it really tough to venture out and get groceries. So, we have come up with an android application for grocery shopping that can solve all your problems in the current climate. The main objective of this application is to make it interactive and its ease of use. It would make searching, viewing and selection of a product easier. The app has a search feature from where the user can easily search for any item, he/she wants to shop for with ease. The main emphasis lies in providing a user-friendly interface and making sure people stay at home and don't venture out to get their groceries during the pandemic.*

***Key Words*: Android Studio, Shopping cart, Android Application, Google IDE, Zopnow**

1. INTRODUCTION

Online Grocery is a form of ecommerce that allows consumers to directly buy fresh food or produce from a seller over the internet. An online grocery shop evokes the physical analogy of buying produce like it is done in a local market. E-Bay and Amazon.com two of the largest online retailers are based in the US. India on the other hand has Bigbasket, Grofers. Zopnow. Nature's Basket. These giant online shops have with time been able to add to their sales the ability to sell fresh food and other home products through the internet.

Online markets have been a thing that has come to stay with the society of today since most financial transactions can be attained online. Internet access has vastly grown across the world today and has given rise to interconnectivity even to the remotest areas in the world This takes multi-tasking to another level since you can be in a meeting and visit a market located several kilo-meters away at the same time. This has made businesses to grow without spending as much as they would have if they had to build another branch of their business in another location. India is among the largest marketing hub in the entire world. The production and consumption in India have drastically increased over the past few years. Thus, it is imperative that we provide our consumers with the best experience.

With the advancement in technology, mobile devices are not just tools for making calls or sending a message. They have become our communication hub, entertainment portal, our wallet and the gateway to real-time information designed to our needs. This was possible only through the development in android which resulted in numerous inventions in the mobile world that gave birth to the powerful mobile devices that we use today. Hence its all the more necessary to develop better and more sophisticated android applications in order to take India to the next level in shopping.

This app has been built with the Android Studio. Android Studio is Android's official IDE. It is purpose-built for Android to accelerate your development and help you build the highest-quality apps for every Android device. Android Studio provides extensive tools to help you test your Android apps with JUnit 4 and functional UI test frameworks. With Espresso Test Recorder, you can generate UI test code by recording your interactions with the app on a device or emulator. The main purpose of this application is to ensure that people stay home and stay safe instead of stepping outside to get their groceries. This application provides an User friendly GUI so that anybody can order grocery items with ease sitting at home safely. The rest of this paper Section II describes the Motivation of the work. Related work is explained in the Section III. System Architecture is explained in the Section IV. Implementation and results are discussed in the Section V and VI. Conclusion are explained in Section VII and finally gives future work in Section VIII

1.1 Motivation

There is primary two major reasons that motivated us to take this up. The first being Covid-19. With this devastating pandemic affecting all of the world, everything has come to a standstill. Markets have been incurred with loss. Huge number of people have lost their lives. But we still have to weather this storm. With all of this ongoing we can't stop living our daily lives, can we? Thus, we came up with this application which could help people at least get their daily groceries on time and in a safe manner. People can relax at home at order their groceries with utmost ease without

having to risk their lives stepping outside. The other reason is that As technology evolves, so does the human race. The adoption of android applications in our daily lives has saved us a lot of time and effort. When we take a survey, people doing outdoor shopping is declining at a rapid pace as compared to online shopping mainly because of the painless and time-saving advantage of the later. Although there has been adoption of technologies to change this scenario, smart applications to turn the supermarket experience to an effortless process is still a dream in the industry.

1.2 Related Work

In research paper [1] it describes a bookstore management application which is used to administrate the transaction of books. Users have to register and make an account during the first-time login. A mobile application to evaluate English pronunciation skills is reported in research work. In paper [2] the authors have developed an android application which can track the nutritional consumption of the users. The application was developed using Android Studio. The app can provide tips to the user for improving his/her diet. In the research paper in [3] an Android application for controlling a robot is discussed. The application is used to achieve the movement of the robot. A Bluetooth module along with 8051 microcontrollers is used to receive data from the smartphone. In research [4] the authors introduce a wheelchair controlled by an android application. The application acts as a wireless control system for the wheelchair. The application is developed using the tool MIT app inventor. In research [5], Rajesh Kannan Megalingam, Souraj Vishnu, Swathi Sekhar, Vishnu Sasikumar, Sreekumar S "Design and Implementation of an Android Application for Smart Shopping" in International Conference on Communication and Signal Processing, April 4-6, 2019. In research [6] Online Shopping is talked about by Chaitanya Reddy Mittapelli Kansas State University Manhattan, Kansas 2008.

2. SYSTEM ARCHITECTURE

The Data Flow Diagram of the application has been shown in figure 1. Basically, a connection is estabilised between the user and the shopping cart.

Fig -1: DFD Level 0

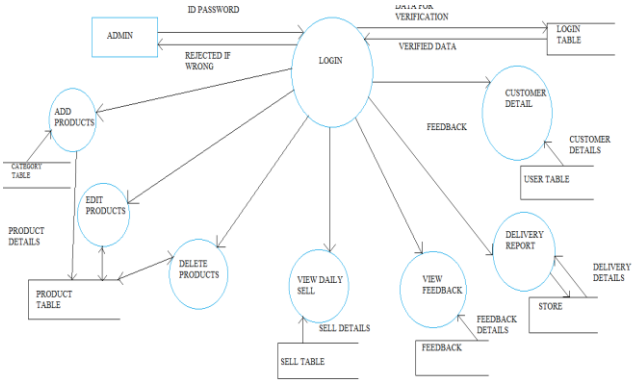

Fig -2: DFD Level 1 Admin

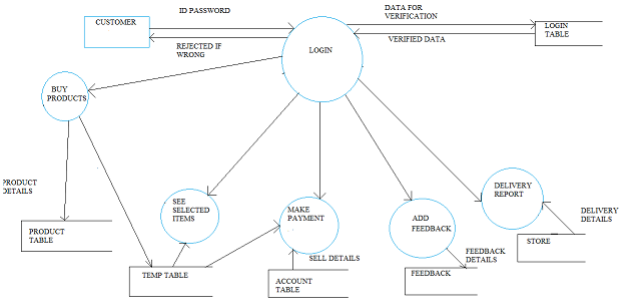

Fig -3: DFD Level 1 Customer

2.1 Design

The design of the application is discussed below. The application is coded in Java and will run on all android devices. The app has different features each having a specific purpose.

The first image that you shall see is the home page of the application in figure-4. It is also the login page for the app. In order to use it the user first has to login with a valid phone number and password. For a new user they first need to sign up. Only after signing up can, they be able to login to the app and use it.

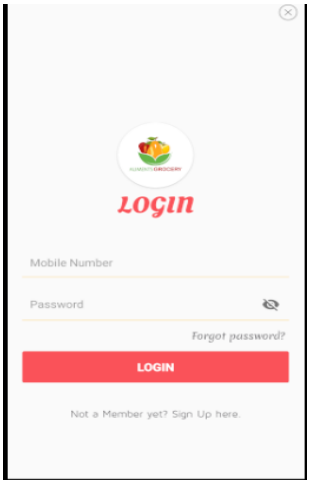

Fig -4: Sign up/Log in Page

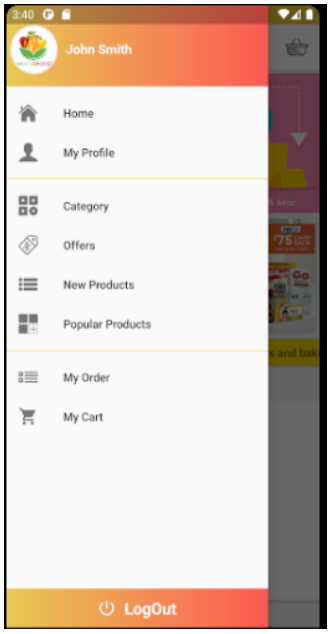

Fig -5: Browsing area

In the above Figure-5 we can see the page after we login or signup. Right from the Home tab to My Cart we have all the features. The last option saying LogOut logs you out from the app if you wish to. The next time you use the app you will have to login again.

After this the user is free to browse through all the products and choose the one needed. This application has a host of products ranging from fruits to vegetables. One more exciting thing the user can find here is the category of Offers. In this category all the products having offers and discounts are displayed. So, in this way the customer can save a bit of money too.

The next figure shows us the layout of the first page of the application. This helps the user to locate items easily from the menu. As you go down you can see the Category. In this section all the grocery products have been categorized. For example fruits, vegetables, dairy products etc. This makes the user easier to search for items than manually searching them. After that the next tab is New Products. In this section all the new products that have been introduced in the market are displayed. With new brands and products emerging every other day it is important for us to keep them in this section and not with the regular brands and products. Now followed by that is Popular Products. This sections basically has items which have been bought the most or the ones which are in demand. These also are those which might get sold out the quickest. The android app consists of a text View onto which the tag number is loaded; a button which is used to add the items to the list and a List View which contains the items that the user purchased.

Fig –6: Cart

3. IMPLEMENTATION

The application consists of various activities aiding in Navigation and product scanning. Each activity can be understood as a single page in the app. These activities are Java classes. The layout of a screen is described in the activity called XML file. The JAVA file contains the main code that is written for the working of the app. It contains the UUID (Universally Unique Identifier) that is used to connect the smart cart with the app and the UID (Unique Identification Number) of the items that are scanned. Text View is used to display texts. In order to access the map, an image View is first placed into the layout and the url is referenced through the Picasso extension available for android studio.

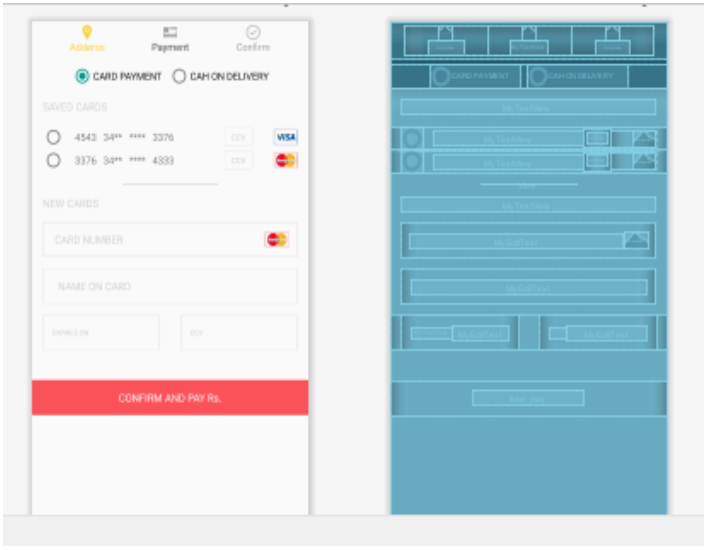

Fig -7: Layout of the Payment Section

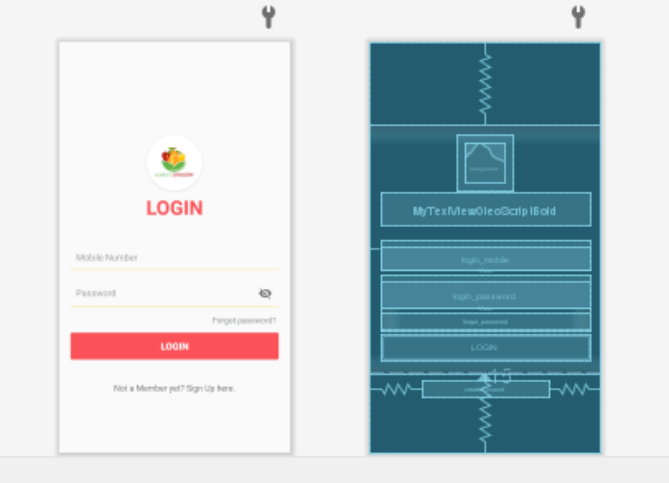

Fig -8: Layout of the Login Page

4. RESULTS

The application was tested on emulator and smartphones. In both cases, the app performed efficiently with no errors. The application did not crash at any point in time. The app was able to control the smart shopping cart without any delays. Based on the commands received from the smartphone, the shopping cart was able to move in the preferred directions. While examining the working of the app, it was found that there is 100% success rate in each direction of the motion control.

5. CONCLUSION

As they say it is imperative that we move along with time, move along with the trend and try to make the world a better and efficient place to live in. As the years go by there will be many more grocery applications and the real grocery stores might eventually shut down. If you look at it these applications save a lot of time, they save a lot of energy and they do even save some money. This is the future of Online Shopping. Through this research we have been able to address a few issues of shopping grocery. The most important of them all is staying home and safe instead of risking your lives by going out to buy your groceries in this pandemic. Our dear Government has appealed to us to stay home and this is the least we can do to save our lives as well as others. Our aim was to develop an user friendly application to order groceries and we have been successful in it.

6. FUTURE WORK

The following features could be implemented in our future works for this application. We intend to make the User interface even simpler for the elder generation to use. We will try to promote this application as it could reach more and more people. We also intend on taking personalized orders etc for certain users.

ACKNOWLEDGEMENT

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