



ANDROID APPLICATION DEVELOPMENT FOR SMART TROLLEY

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Abstract : Shopping is really fascinating and alluring; at the same time, it involves getting tired due to standing in a long queue for the bill and payment process. Hence, it is proposed to design a smart trolley which can take care of shopping and billing. By this, the customer can walk straightaway into the shop, purchase products using the smart trolley and walk out of the shop. Our focus is to develop a software which should make the purchase easier without the help of shopping staffs. How to bring a device which should have android OS which is the one of the best opensource OS in the market. We develop an application which will provide the functionalities and UI which make the job easier. Application will have a registration for each user and they can find the products through it. It works entirely like a online shopping application it has entire product details and their current offers. User will be added to the special user list based on their purchasing points through the application and it enables the special offers for the products.

I. INTRODUCTION

Shopping involves visiting a store, examine the products, take the products, go through the billing section etc. However sometimes people don't find its enjoying. People struggle during shopping and it makes them irritable. Technology can make it simple as well as attractive. Smart trolley is a concept which makes customers more enjoyable and easier to do the job. Android is the most popular OS in the market for tablets. It would help us to put the android tablets into the trolleys and make it easy accessible for the customer. So in this concept we concentrate to deploy as an android application which is more productive as well as more simple to deploy among people. Furthermore, features like promotions, order monitoring, and tailored recommendations improve the buying experience. Time-saving shopping, a large selection of products, and customized offers are all advantages for users. Moreover, the app offers safe payment methods and smooth transactions. People looking for a simple way to shop for groceries and other necessities, as well as families and busy professionals, are among the varied groups that the app serves. The software seeks to improve the shopping experience for people of all ages by catering to both tech-savvy and convenience-seeking consumers

II. METHODOLOGY

In general, the smart trolley system proposed by [1] is designed as an automated self-checkout system on a shopping trolley with a smartphone user interface that enables customers to pay for items scanned and placed in the trolley before leaving the store entrance. The smart trolley itself, which is built on an automated mobile robot system with minor modifications, is the main topic of this study. For Effective Navigation, Menus, categories, and search features are examples of intuitive navigation frameworks that make it simple for users to find products and move about the app. User happiness and engagement are increased by logical flow and clear labelling .

[2] The main characteristics and features of the e-commerce application are covered in this article. Here, we create an application for a particular shop that includes functions like order processing, payment integration, user authentication, and product catalog management. The purpose of this part is to give a general overview of the approach used to develop a reliable and useful Android application.

Requirements Gathering: Conditions Collecting and evaluating the requirements for the online shopping application is the first stage in the technique. This include figuring out the essential features, designing the user interface, taking security into account, and

determining the needs for integrating the system with other systems such as databases and payment gateways. Typically, market research, stakeholder interviews, and conversations with subject matter experts are used to gather requirements.

System Design: The system design process starts when the requirements are determined. This entails developing the application's architectural design, which includes selecting the frameworks and design patterns to be applied. Considerations including performance, maintainability, and scalability are made in the system design. The Model-View-View Model (MVVM) architectural pattern is frequently chosen in the Kotlin context because of its testability and concern separation.

Development: Writing Kotlin code to implement the many features and functionalities of the e-commerce application is a part of the development phase. Kotlin's strong language features and succinct syntax make code development more effective and readable. Tasks like order processing, shopping cart functionality, user authentication, product catalog management, and payment gateway integration may all be a part of the development process. During this stage, industry best practices, coding standards, and version control systems are frequently used to guarantee code quality and cooperation.

Security Implementation: Throughout the development process, security measures are put in place to safeguard user data and guarantee safe transactions. Data encryption, safe authentication procedures, and secure connection management are a few examples of this. To find and fix any security flaws, penetration tests and vulnerability assessments may also be carried out.

Deployment and Maintenance: After the stages of development and testing are over, the program is put into a live environment so people can utilize it. To fix any errors, add new features, and make sure the application stays current and safe, regular maintenance is necessary.

[3] The goal of the java-based mobile augmented reality application for fashion retail shopping is to improve the in-store experience for customers. Similarly, Kotlin is used in the development of an Android application for a certain super market. Because of its null safety, easy-to-understand syntax, and compatibility with Java, Kotlin is a popular option for developing Android apps. Its cutting-edge features accelerate development cycles by improving productivity and code readability.

Firestore Integration: Firestore provides a comprehensive backend solution for Android apps, offering features like real-time database, authentication, cloud storage, and notifications. Its integration with Android Studio simplifies the development process and enables seamless data management.

Android Studio and SDKS: Android Studio is the official IDE for Android development, providing tools for coding, debugging, and testing applications. The Android Software Development Kit (SDK) includes libraries, APIs, and developer tools to build robust and feature-rich Android apps.

[4] The customers can add products into the cart using the app. During shopping, the customer can scan the required products using RFID and the details will be displayed on the LCD and will be updated in the centralized database. The recent couple of years have observed explosive interest in RFID and supporting technologies. But there is disadvantage of using such hardware as they are not cost effective. Equipping each and every cart with such hardware would require a huge investment which would also include their maintenance costs

III. CONCLUSION

The creation of a shopping application using the flexible and contemporary programming language Kotlin was demonstrated in this paper. The application's goal was to provide strong functioning, safe transactions, and an intuitive user interface while giving users a seamless and pleasurable shopping experience. Kotlin's benefits and features were used throughout the development process to maximize code development and maintenance. Kotlin's short syntax, null safety, co-routines, and extension functions made code more understandable and efficient while also improving the development process as a whole. The program included all of the necessary capabilities, including order processing, payment integration, shopping cart functionality, user authentication, and product catalog management. Through integrated payment gateways, these services allowed customers to explore products, create accounts, add items to cart, place orders, and securely process payments. In conclusion, the Kotlin-implemented retail application demonstrated the effective fusion of contemporary programming methods and features. The app is evidence of Kotlin's strength and adaptability in developing creative and effective shopping application solutions

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