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Smart Shopping using Android Application

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ABSTRACT
In present Life, traditional shopping takes more time. The customer waiting in a long queue to pay bills is more time consuming and waste of energy for both the shopper and as well as the cashier. A smart shopping system using android application is being developed to overcome this problem. Mobile application development is expanding all over the world. Consumers are shifting to technology in order to make their lives easier and more innovative by seeking solutions to their difficulties. Customers find it hard to locate items in the supermarkets and to wait in a long billing line when they go shopping. As a result, an Android app that is utilised in smart shopping carts to tackle the problem has been developed. This purchasing app is divided into two sections, the first of which concentrates on navigating to the individual item position and the second of which concentrates on automatic payment of the things that the user purchased using RFID. As a development environment, the Android application software, which is open source, is being used.
KEYWORDS: Android studio software, Android application, Java, RFID

I. INTRODUCTION

During the last decade, there is fast increase in the commercial use of RFID everywhere. Develop and promote innovative services for clients in order to enhance the purchasing experience. Manufacturers are progressively incorporating RFID tech into supermarket items [1-5]. Radio waves are used in RFID technology to detect, authenticate, and transmit data without any need for human interaction [6]. The RFID-based solution is self-contained and contactless [7]. It gathers data about certain objects in the region and sends this to the host. RFID readers provides a communication connection. It scans the labels and tracks the objects' travels around the space. RFID is a technology that increases business performance while also lowering transaction costs [8-14]. Because tag does not require human involvement, it lowers personnel costs and increases productivity. RFID technology has a lot of implementations high flexibility as well as efficiency, including Logistics &

Supply Chain Management, Item Level Inventory Tracking, Race Timing, Attendee Tracking, Materials Management, Access Control, IT Asset Tracking, Tool Tracking, Kiosks, Library Systems, Interactive Marketing, automated Smart Shopping System reading and receipt of goods at end sale points, and e-padding. [15].

India is one of the world's biggest advertising hubs. In India, output and consumption have increased dramatically in recent years. As a result, it is critical to give the best possible customer satisfaction. People may have difficulty finding the things they would like to purchase when shopping. It may take longer due to long lines and congested billing [16]. With the advancement, of technology mobile phones are no longer merely for making phone calls or sending text messages. Mobile phones are increasingly used for browsing, checking emails, snap, style & personality, amusement, note & appointments, calendar & organisations, maps, navigating, travel, online banking and finance, emergency, media, sport, sports concerts, and education & investigation. This was made feasible by advancements in Android, which led to a slew of discoveries inside the mobile sector, giving rise to the modern phones we use today [17]. As a result, a better and more user-friendly Android app is made to undertake India's purchasing to the next level. The Android Studio Program, Google's official IDE for such Android platform, was used to create the app. Because Android Studio is a free alternative, it is cost-effective. On each and every Android smartphone, it gives a variety of tools for application development. The emulation is the key benefit of this software.

It's a platform where we can test our software in real time. Other than that, USB testing can be used to test the programme on phones [18-25]. Routing and Payment System are the two aspects of this app. The management of the cart is the primary emphasis of navigation. Buyers who are unable to locate their purchases in a vast, busy retail market may find this handy. The billing system is primarily concerned with updating the list of things bought and the overall sum due. This can be accomplished by attaching an RFID scanning to the shopping basket that reads the tag number and scans the items [26-34]. After that, add it to the application. The Android software could be used in automated grocery bags equipped with sensors and geolocation.

II. BACKGROUND STUDY (LITERATURE):

The research evaluation is an essential step in the system architecture life cycle since it is during this stage that we acquire and obtain the necessary knowledge to manage or start a program. A literature review is a survey of publications relevant to a given topic or issue. It gives an overview of what it's just about discuss, whoever the main author is, what the various observations and

hypotheses are, and what the next steps are and hypothesis and what procedure and what methodologies are suitable [35-40].

Prior to beginning the project, a literature assessment is conducted, and the many methodologies that have been employed in the past are used to comprehend the situation. A thorough examination of the existing systems was carried out. This research will aid in determining the advantages and disadvantages of current systems.

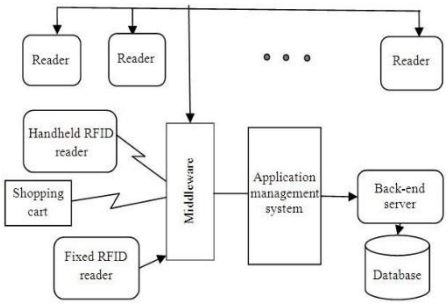
We conducted a literature review on some of the articles relating to our elements and some techniques or methods [41-45] because this research is itself an RFID-based solution.

III. METHODOLOGY

In the existing system users don't have any suggestions about shopping area, they used to search manually and they will go to that place.

- • The main disadvantage is that if the user's desired product is not accessible, or if the item in that retail location is substantially more expensive than that of the identical thing available in those other purchasing markets, or if the customer is unable to search for the desired goods.
- • Another significant flaw in the financial marketplace is the use of barcode scanners, which relies on line-of-sight advertising.

The document contains some data on building communication between both the devices



which we use in our work, as well as more basic information on how to build this proposal.

Figure 1: Block diagram of existing

Figure 1 shows that they are using a lot of RFID readers at check locations and providing a connection to update cart data to the back-end computer across the Supermarket. When the user begins browsing and gathering products to buy, the cart communicates with an RFID reader that is closer to it and upgrades the cart's contents. The complexity of the hardware, as well as the detection of the tags, is raised as a result of this.

It is simple to get information about a single cart, but as the quantity of carts grows, it becomes increasingly difficult to get data about all of them at the same time. Because of this, they are just utilising RFID to transport information from of the cart to the computer and to scan the tags. This will be a huge source of diversion.

IV. IMPLEMENTATION

The designed system is converted to an operational one using suitable programming language. Android studio is made used as the development platform of this project because it comes loaded with features like: Open source platform, Support multi functions, Rich tools to make interactive applications. For the implementation purpose java is used for back-end logic because of its features like: Portability, Platform Independence, Robust, Great market reach.

System strategy is the process of bringing the established system into practise. The following tasks are included in the implementation stage: Careful planning, a thorough examination of the system's limitations, and a thorough examination of the system's limitations are Techniques for achieving the switchover are being devised. Staff training during the transition phase, and evaluation of the transition technique.

Figure 2 depicts the essential procedures for designing applications. The developmental steps are divided into four stages, which are as follows:

Setup: Download and set up production environment Throughout that phase, you can instal and set up your development platform Enables Android Virtual Devices (AVDs) and connects physical devices to whom this app can be installed.

Development: During this step, you must set up and construct an Android version, that includes all of software's source code and modalities with source code.

Debugging and Testing: Throughout that stage, an android application can be turned into a debug gable. The users can download and configure the APK package upon on simulator.

Publishing: Configure and create an Android app for development and distribution to users throughout this stage.

Figure 2: Steps for application development.

SDK plug-in for Android Studio:

The Software Development Kit (SDK) is an Android IDE plug-in that provides us with a robust, interactive platform with which to build Android apps. SDK enhances Android Studio's abilities by allowing us to swiftly develop new Android projects, design user interfaces, and add modules application on the Android Foundation.

AVD Manager:

The AVD Manager is a visual user experience for creating and managing Android Virtual Devices (AVDs), wherein the Android Emulator requires. The user must define guidance for emulating.

Select Window an Android AVD Manager from the menu

Platforms:

The platforms used for this project are:

Front End: Android

Back End: Firebase database.

V. CONCLUSION

Shopping experience is a time-consuming task in today's world. Android application development is expanding all over the world. It is changing the way the technology particular capacity. When items are placed in the shopping cart, RFID technology is being used to scan them automatically. Users can utilise a store-specific map to find products in the store. THE APP will provide additional information on the commodities, such as their life cycle, nutritional benefits, and items that are frequently purchased together, among other things. You can see all of the goods you've bought and how much they cost. This allows users to keep track of their

spending while shopping. We were prepared to address many of the most prevalent concerns encountered by the respondents in shopping centres as a result of this study. The software will be given a unique user interface with creative elements. Hosting the software on cloud platforms will be studied in order to make it more productive. The main programming which is developed for the app's operation is contained in the java file. The app was put through its paces on a simulator and on a smartphone. In both occasions, the programme ran well and without issues. The application was not crash at anytime.

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