Garbage Vehicle Tracking System Using Android

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Abstract. *Trash vehicle global positioning framework constructed utilizing android programming, we can utilize this application on our mobiles to follow trash vehicles and send a warning to the clients when the trash vehicle going into their roads, assuming we have any grievances about their administration, we can give our input and objections about that help, we can give our criticism and grumblings utilizing this application The protests can be seen by the administrator. They can figure out their grievances in a current framework. The trash vehicle gives a notice by whistle (or) playing a tune however it makes more commotion contamination (or) the client misses the vehicle, so the client puts their trash close to their city intersections, so it makes our roads non-cleanliness and grimy, to beat this issue we foster an application that sends a warning to the client, while trash vehicle goes into their roads, clients need to enlist their subtleties and they need to sign in by their enrolled subtleties. On the off chance that the login and enlistment are coordinated, it permits the client to get to an application they get a warning and send their criticism and objections about their administrations, The trash vehicle gatherer needs to enroll their subtleties and sign in, subsequent to signing in, the administrator has a data set of roads, where they need to go today, which roads are distributed for them. The administrator can deal with the client subtleties and gatherer subtleties and they can figure out the grumblings of clients, to give great support of the clients.*
Keywords: Android, Kotlin, Firebase, XML, Android App Studio.

1. INTRODUCTION

The Trash Vehicle Global positioning framework is a strategy that gives notice to individuals while trash vehicle going into their roads , so we can put our everyday garbage day to day , assuming we miss the trash vehicle , we will put a trash close to a road in any case there is a terrible stenches which sense in our home ,so utilizing this method we can keep away from this kinds of problems In our region, fundamentally the trash vehicles are give caution by this whistles and by playing a melodies ,in some cases it cant hear to the us so we the vehicle and we need to deal with such an issues or by commotion which is made by their vehicles influence a few heart patients and individuals ,its likewise make clamor contamination in such a public spots So this global positioning framework is extremely effective to deal with this issues in our everyday life, we can likewise give our grumbling and criticism in our application by online so the administrator can see our protests and sort our concerns, The trash are likewise have a rundown of the roads where they need to go ,which roads are distributed for them utilizing their telephones by basically login in into their framework.

2. PROPOSED METHODOLOGY

Utilization of Web based Application: In Tracking SYSTEM Cyrus Adhikari et.al (2020) [6] 2they made a web based solution. The purpose of this was to make the process easier for the registration of sports events by providing a web interface to teachers and students. The admin part consists of multiple modules. Students can register themselves. After the event has been completed the Admin can declare the results. So at that point of time Web based Applications are the start of cloud based Storage so it's efficient to make it. It requires less maintenance than a file system and less time to conduct operations on time. A web page application is usually created to provide a friendly user interface. Admin has the power to handle the events they can create and end and students can view their progress and declare who is the winner.

Implementing Screening Method: The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations using Visual Studio as the IDE.

Notification Generation: Mr. Kalpesh Kubal et.al (2021) [2] proposed An integrated development environment (IDE) is a feature rich program that supports many aspects of software development. The Visual Studio IDE is a creative launching pad that you can use to edit, debug, and build code, and then publish an app. Over and above the standard editor and debugger that most IDEs provide, Visual Studio includes compilers, code completion tools, graphical designers, and many more features to enhance the software development process. Like how we are using Android App studio everybody used Visual Studio as their IDE when they are making their web applications. It usually helps to run languages like Visual Basic, C, C++ etc.,

Implementation of Visual Basic: In [6] we can Witness how Visual Basic is used for designing as well as coding purposes. Visual Basic (VB) is an event-driven programming language and environment from Microsoft that provides a graphical user interface (GUI) which allows programmers to modify code by simply dragging and dropping objects and defining their behavior and appearance. VB is derived from the BASIC programming language and is considered to be event-driven and object-oriented. VB is intended to be easy to learn and fast to write code with; as a result, it is sometimes called a rapid application development (RAD) system and is used to prototype an application that will later be written in a more difficult but efficient language.

Data storing methods: In [1] Tracking System, SQL is the only way back then to save the data in the form of Data Base. SQL is used to communicate with a database. According to ANSI (American National Standards Institute), it is the standard language for relational database management systems. SQL statements are used to perform tasks such as update data on a database, or retrieve data from a database. Somehow it has some limitations and it has to manually change for every change that we want to make so we are using Firebase here. The only Disadvantage is the manual updating of data and not offering a cloud based database

Usage of HTML/CSS Languages: In Hikester et.al [7] Proposed the languages which are used for designing purposes especially for the front end. HTML (Hyper Text Markup Language) is the code that is used to structure a web page and its content. For example, content could be structured within a set of paragraphs, a list of bulleted points, or using images and data tables. As the title suggests, this article will give you a basic understanding of HTML and its functions. Like HTML, CSS is not a programming language. It's not a markup language either. CSS is a style sheet language. CSS is what you use to selectively style HTML elements. Mainly used for designing purposes here in our project Android App Studio provides XML for designing the layouts

3. PROPOSED SYSTEM

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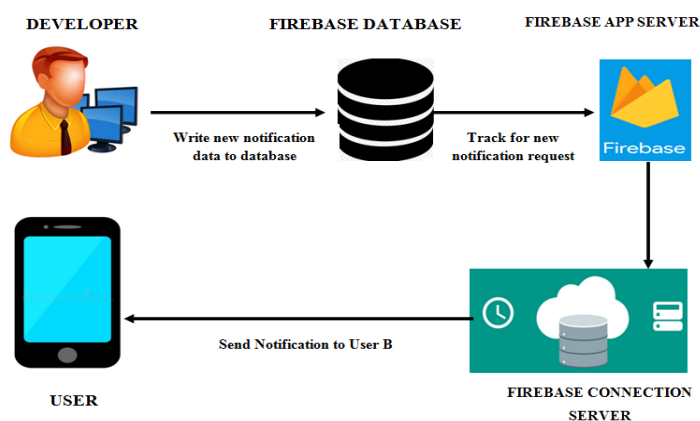
4. SYSTEM ARCHITECTURE

FIGURE 1. Garbage Vehicle Tracking System Architecture

5. TOOLS DESCRIPTION

Android: Android is a mobile operating system based on a modified version of the Linux kernel and other opensource software, designed primarily for touch screen mobile devices. Android is developed by a consortium of developers known as the Open Handset Alliance and commercially sponsored by Google.

Kotlin the programming language: Kotlin is a cross-platform, statically typed, general purpose programming language with type inference. Kotlin is designed to interoperate fully with Java, and the JVM version of Kotlin's standard library depends on the Java Class Library but type inference allows its syntax to be more concise. Kotlin mainly targets the JVM, but also compiles to Java Script or native code via LLVM Language development costs are borne by JetBrains, while the Kotlin Foundation protects the Kotlin trademark.

Google fire base : Firebase is a set of hosting services for any type of application (Android, iOS, Java script, Node.js, Java, Unity, PHP, C++ ...). It offers NoSQL and real-time hosting of databases, content, social authentication (Google, Face book, Twitter and GitHub), and notifications, or services, such as a real-time communication server. Firebase is a Backend-as-a-Service (BaaS) app development platform that provides hosted backend services such as a real time database, cloud storage, authentication, crash reporting, .

Secure socket layer: SSL stands for secure sockets layer. Protocol for web browsers and servers that allows for the authentication, encryption & decryption of data sent over the internet.

Real time database: Fire Base is a Real time Data Base. Having a real-time database is the standout feature of the Firebase framework. Firebase caters to a cloud-hosted database in which the data is stored as JSON and further synchronized constantly to each associated client. Having a real-time database instance that updates the current data is essential for modern applications.

XML: XML stands for Extensible Mark-up Language, which is a way of describing data using a text-based document. Because XML is extensible and very flexible, it's used for many different things, including defining the UI layout of Android apps. Other resources like strings for your app are also defined in an XML file called strings.xml. You describe the view hierarchy of UI elements on the screen.

For example, a Constraint Layout can contain Buttons, Text Views, Image Views, or other views. Remember, Constraint Layout is a subclass of View Group. It allows you to position or size child views in a flexible manner. We can see there are three sections at top right corner

Code, Split and Design: Code option allows us to view the entire code the working slide. Split is useful when we want to check both the code and design side by side. Design is used to view the design of the screen generated and allows us to make changes According to that it will modify the code.

6. MODULES

Android App Studio: Android Studio provides a unified environment where you can build apps for Android phones, tablets, Android Wear, Android TV, and Android Auto. Structured code modules allow you to divide your project into units of functionality that you can independently build, test, and debug. It provides Gradle-based build support. Android specific refactoring and quick fixes. Lint tools to catch performance, usability, version compatibility and other problems. It contains Templates to create Android designs and components. A rich layout editor that allows users to drag-and-drop components even has Option to preview layouts on multiple screen configurations. It has Built-in support for Google Cloud Platform, enabling integration with Firebase Cloud Messaging and Google App Engine. It even contains a Virtual Device (Emulator) to run and debug apps in the Android studio.

Login/Register: First thing in an app is to create a Login page which takes users into the App. For we need to design the layout in the form that it is convenient to the users. Then the Registration part has to contain all the things that has to be get from the users. Login Screen is the first moment where a user will make his/her impression about the app Login needs some texts and Image to display.
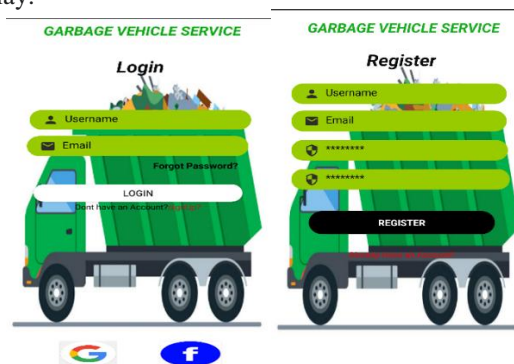

FIGURE 2. Garbage Vehicle Service

Dash Board Announcements: A dashboard is a way of displaying various types of visual data in one place. Usually, a dashboard is intended to convey different, but related information in an easy-to digest form. The next thing where the Login takes us to select what the user needs to select which sport or other options. It's the main part where users decide what they need to do. It's like guiding the user about the application what it is capable of and them to realize the real efficiency of an application. Announcement Tab manages all the announcements that has to made or released by declaring the announcements in this application we can make sure that whether information reached everyone or not
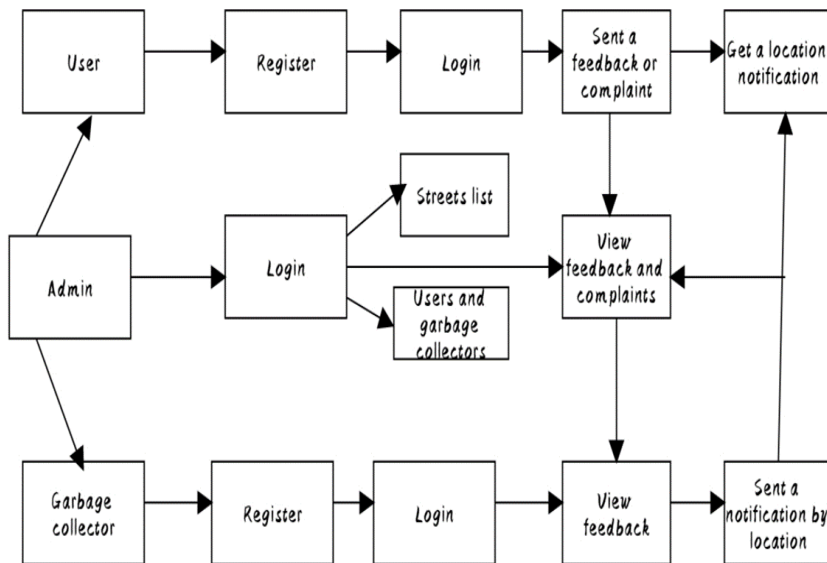

FIGURE 3. Fire Base Authentication

7. EXPERIMENTAL RESULT

In this report, a functional real time vision based Android App for Vehicle Tracking and notification generation System has been developed. We achieved final accuracy of **70.0%** on our implementation. We have improved our App where the students as well as the Faculties can keep track of everything and Admin keeps each and every data securely & he is the only one who can make changes in it. Thus this application created by Kotlin will be useful for peoples who wants to keep clean their houses . It can be used in government smart city project.
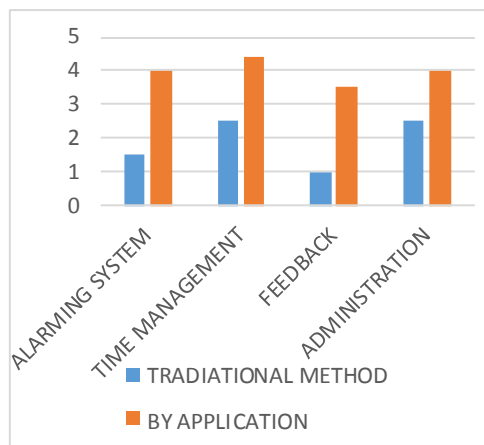

FIGURE 4. Comparison chart

8. CONCLUSION

Garbage Vehicle tracking system using android and kotlin is achieved 50% accuracy and its very useful for the peoples to keep their city clean their data also kept securely by the admin and the garbage collector also have list of streets which they want to go,so their works will be easy too by this application ,We are completed a login page and created a database for each users and garbage collectors for accessing a application. It will be very useful for government of our country to maintain garbage vehicle to garbage collectors properly. So its leads to keep our country clean and hygienic. We are planning to achieve higher accuracy even in case of anyone forgot their passwords they can be retrieved by after OTP verification for security purpose we also plan to build a very large database for high level use which interconnect the overall cities.

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