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PAAS-based User Services App Development Using Android Studio

Upesh Sharma, Brijesh Korgaonkar, Prasad Kavthankar, Yasin Shaikh, Devendra Sutar

Undergraduate B.E. Student, Dept. of E&TC, Goa College of Engineering, Farmagudi, Goa- India.

Undergraduate B.E. Student, Dept. of E&TC, Goa College of Engineering, Farmagudi, Goa- India.

Undergraduate B.E. Student, Dept. of E&TC, Goa College of Engineering, Farmagudi, Goa- India.

Undergraduate B.E. Student, Dept. of E&TC, Goa College of Engineering, Farmagudi, Goa- India.

Assistant Professor, Dept. of E&TC, Goa College of Engineering, Farmagudi, Goa- India.

ABSTRACT: The adoption of technology aims to enable businesses to accurately meet customer needs and expectations. This study focused on examining the role of mobile application acceptance in shaping customer electronic experience. Mobile apps are associated with benefits, such as convenience, ease of use, and the ability to access various products and services. With the rapid development in technology, e-commerce retailers should leverage such innovations to meet customer needs. Smart phones are becoming a vital innovation which had modified the human life in many aspects. Day by day, the mobile application development business is growing by leaps and bounds, and today's shoppers square measure progressively adopting mobile as their medium of selection for browsing, researching, and buying things, because the world's preferred mobile platform, Android powers many uncountable mobile devices in additional than a hundred ninety countries around the world.

KEY WORDS: User services, Android, App Development, Android Studio, Repair, Maintenance, Consumer Services.

I.INTRODUCTION

In our paper, the main focus is to build a consumer services-based app which is compatible with an Android device having Android operating system. Many people are facing problems in finding and hiring local technical professionals to avail maintenance & repairing services for their homes & offices. Because of the unavailability of such type of system, new workers are also facing the dilemma of finding appropriate professional/ technical workers in their vicinity to handle such tasks & serve. In this recent growing trend, we have proposed an Android application used to establish connection between user & local service provider. We have developed the application using Android Studio. It is an official integrated development tool or environment for Google's Android operating system. It is built on JetBrains' IntelliJ IDEA software. Nowadays, everyone is in a need of smart phones majorly people use Android phones for day-to-day communication. Many applications are developed for unlimited fun for people lives and the Android system has become popular in the market of smart phones. The web application has become more and more reliant upon large amount of database and unorganized data such as videos, images, audio, text, files and other arbitrary types. It is difficult for Relational Database Management System (RDBMS) to handle the unstructured data. Firebase is a relatively new technology for handling large amount of unstructured data. It is very fast as compared to RDBMS. This paper focuses on the application of Firebase with Android and aims at familiarizing its concepts, related terminologies, advantages and limitations.

II. BACKGROUND

Due to rapid advancements in technology, the smartphones are proved to be an imperative source of communication and now have become an integral part of our daily lives. Many people are facing problems in finding and hiring local technical professionals to avail repairing and maintenance services for their homes and offices. New workers are also facing dilemma of finding appropriate work in their vicinity. To overcome this problem, it is immensely important to design and develop a platform in order to bridge the communication gap between the technical workers and end-users which can provide an easy and understandable interface for both using the current trends of technology. To get the best of



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smartphones, this work proposes progressive web application for smartphones and a website. It is an app that can communicate with the user and experts possessing different technical skills.

III. SCOPE OF RESEARCH

The paper aims to bring a difference in the lives of people who want certain work of theirs to get done but lack the required professional skill. There are tasks but there is no platform that integrates both where the problem and service is met at the right place and at the right time. So, the objective is to bring a solution that is on time, on demand and at the required location. The main objective of this project is to bring the cheapest and best service providers online and enable service to customers with the best service and at the best price.

IV. LITERATURE SURVEY

Android apps are built as a combination of components that can be invoked individually. For example, an activity is a type of app component that provides a user interface (UI). The "main" activity starts when the user taps your app's icon. You can also direct the user to an activity from elsewhere, such as from a notification or even from a different app. Other components, such as WorkManager, allow your app to perform background tasks without a UI.

Android allows one to provide different resources for different devices. For example, one can create different layouts for different screen sizes. The system determines which layout to use based on the screen size of the current device. If any of your app's features need specific hardware, such as a camera, you can query at runtime whether the device has that hardware or not, and then disable the corresponding features if it doesn't. You can specify that your app requires certain hardware so that Google Play won't allow the app to be installed on devices without them.

Hardware Requirements

In order to implement the project, personal computers and Android smartphones were needed. A personal computer is required to run Android Studio and to carry out the miscellaneous tasks of website development. Following are the minimum system requirements necessary to run Android Studio comfortably on a personal computer and an Android smartphone.

a) Personal Computer

• For Windows Operating System

- 64-bit Microsoft® Windows® 8/10
- x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor
- 8 GB RAM or more
- 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
- 1280 x 800 minimum screen resolution

• For Macintosh Operating System

- MacOS® 10.14 (Mojave) or higher
- ARM-based chips, or 2nd generation Intel Core or newer with support for Hypervisor.Framework
- 8 GB RAM or more
- 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
- 1280 x 800 minimum screen resolution

b) Android Smartphone

The application has been checked for proper functionality several times during the course of the project implementation. A device with Android 10 installed was used for the same. In Android Studio, an Android Virtual Device (AVD) having an operating system version 5.0 Lollipop was used in order to make the application functional to maximum Android users.



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Software/ Platform Requirements

a) Android Studio

Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. Android Studio provides the fastest tools for building apps on every type of Android device claims its website.

b) Google Maps API

Google Maps Platform products are secured from unauthorized use by restricting API calls to those that provide proper authentication credentials. These credentials are in the form of an API key - a unique alphanumeric string that associates your Google billing account with your project, and with the specific API or SDK. The API key is a unique identifier that authenticates requests associated with your project for usage and billing purposes. You must have at least one API key associated with your project.

c) Firebase Realtime Database

- Firebase is an app development platform that helps one build and grow apps & games which users love. It is backed by Google and trusted by millions of businesses around the world.
- One must make sure that the project meets these requirements:
 - Targets API level 19 (KitKat) or higher
 - Uses Android 4.4 or higher
 - Uses Jetpack (AndroidX), which includes meeting these version requirements:
com.android.tools.build:gradle v3.2.1 or later
compileSdkVersion 28 or later
 - Set up a physical device or use an emulator to run your app.
 - Note that Firebase SDKs with a dependency on Google Play services require the device or emulator to have Google Play services installed.
 - Sign into Firebase using your Google account.
- Instead of typical HTTP requests, the Firebase Realtime Database uses data synchronization—every time data changes, any connected device receives that update within milliseconds. Provide collaborative and immersive experiences without thinking about networking code.
- Firebase apps remain responsive even when offline because the Firebase Realtime Database SDK persists your data to disk. Once connectivity is re-established, the client device receives any changes it missed, synchronizing it with the current server state.
- The Firebase Realtime Database can be accessed directly from a mobile device or web browser; there's no need for an application server. Security and data validation are available through the Firebase Realtime Database Security Rules, expression-based rules that are executed when data is read or written.
- The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, realtime events continue to fire, giving the end user a responsive experience. When the device regains connection, the Realtime Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically.
- The Realtime Database provides a flexible, expression-based rules language, called Firebase Realtime Database Security Rules, to define how your data should be structured and when data can be read from or written to. When integrated with Firebase Authentication, developers can define who has access to what data, and how they can access it.
- The Realtime Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database. The Realtime Database API is designed to only allow operations that can be executed quickly. This enables you to build a great real-time experience that can serve millions of users without compromising on responsiveness. Because of this, it is important to think about how users need to access your data and then structure it accordingly.



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d) Google Sites

We decided to use Google Sites platform for our miscellaneous website development activity as the platform is synonymous with that of Android's. The platform is easy to use and would help audiences get to our app faster. It is a structured wiki and web page creation tool offered by Google.

Build internal project hubs, team sites, public-facing websites, and more- all without designer, programmer, or IT help. With the new Google Sites, building websites is easy. Just drag content where you need it.

When you create a new site, it's automatically added to Drive, like your other files stored in Drive. You can edit a Google Site together with someone else in real time, and see each other's changes live. Publish the site for everyone to see, or restrict sharing permissions and make the site accessible only to people you want to share it with, like vendors or suppliers.

Programming Languages

a) Kotlin

- Mature language and environment: Since its creation in 2011, Kotlin has developed continuously, not only as a language but as a whole ecosystem with robust tooling. Now it's seamlessly integrated in Android Studio and is actively used by many companies for developing Android applications.
- Expressive and concise: You can do more with less. Express your ideas and reduce the amount of boilerplate code. 67% of professional developers who use Kotlin say Kotlin has increased their productivity.
- Safer code: Kotlin has many language features to help you avoid common programming mistakes such as null pointer exceptions. Android apps that contain Kotlin code are 20% less likely to crash.
- Interoperable: Call Java-based code from Kotlin, or call Kotlin from Java-based code. Kotlin is 100% interoperable with the Java programming language, so one can have as little or as much of Kotlin in one's project as one want.
- Structured Concurrency: Kotlin coroutines make asynchronous code as easy to work with as blocking code. Coroutines dramatically simplify background task management for everything from network calls to accessing local data.
- Easy learning: Kotlin is very easy to learn, especially for Java developers.
- Big community: Kotlin has great support and many contributions from the community, which is growing all over the world. According to Google, over 60% of the top 1000 apps on the Play Store use Kotlin.

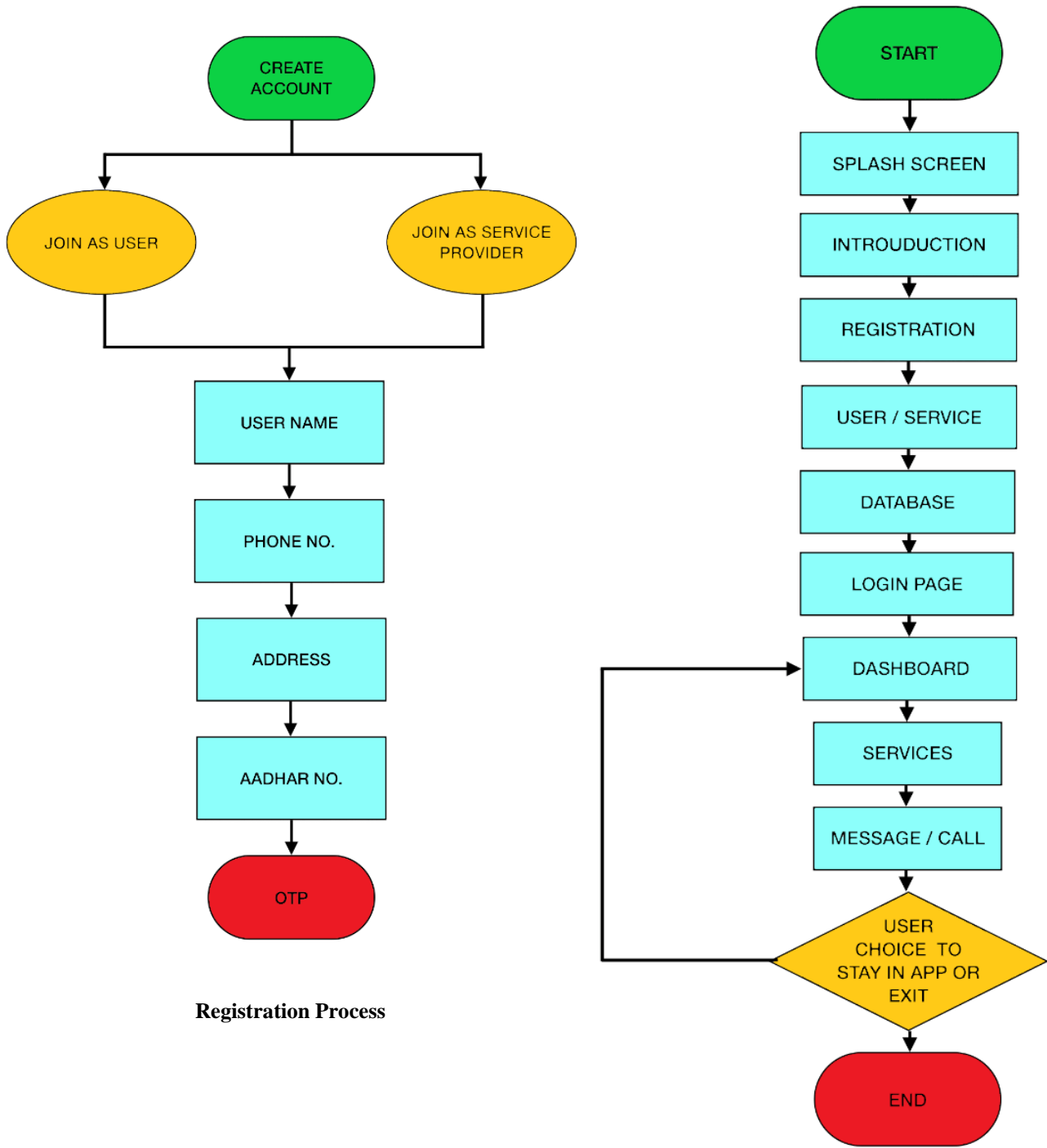
b) Java

Java is a programming language and computing platform first released by Sun Microsystems in 1995. It has evolved from humble beginnings to power a large share of today's digital world, by providing the reliable platform upon which many services and applications are built. New, innovative products and digital services designed for the future continue to rely on Java, as well.

There are many applications and even some websites that will not function unless one have Java installed. Java.com, this website, is intended for consumers who require Java for their desktop applications– specifically applications targeting Java 8.

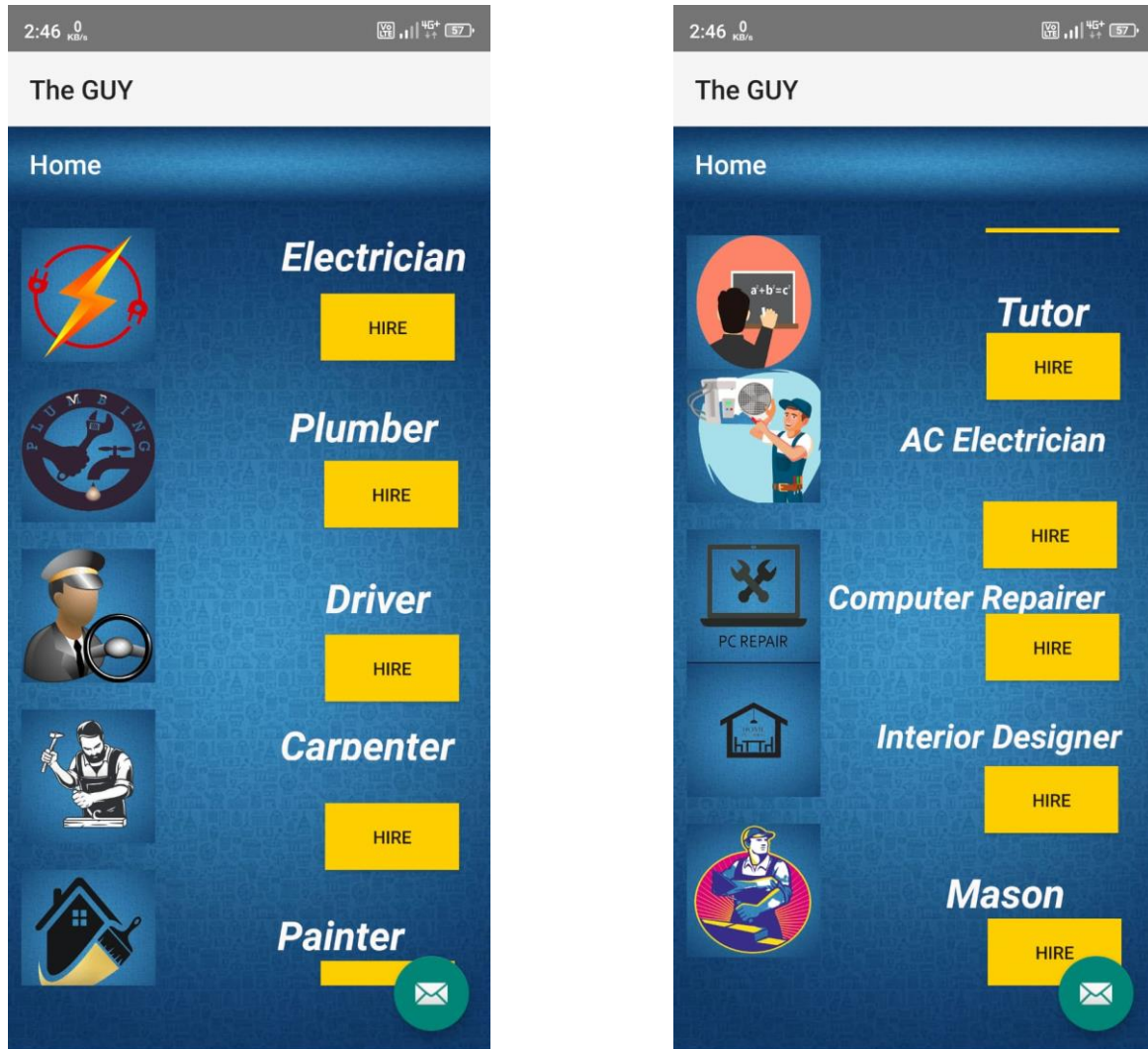
IV. METHODOLOGY

The user will have to register himself or herself once opening the app the registration dept will take through the registration process where the user must select whether he or she wants to seek for service weather here she wants to kata bus service depending on the kind of registration the juice when will be directed to other the consumer page or the supplier page from there the registration process will be about verification and then it would ask for an OTP verification and entering Aadhar card and once this is done the registration process is complete and the user will be able to use the platform for their benefit there is also a feedback that will be provided for grievances and by that we mean call support to the uses as well as for the skilled workforce.



Registration Process

Application Flow

V. EXPERIMENTAL RESULTS**VI. CONCLUSION AND FUTURE WORK**

The paper helps in developing Android application using Android Studio for needy consumers and workers. Wide scope can be anticipated on commercialising this app on infusing robust professional, financial, technological inputs. Value creation terms of explicate human resources utilization by virtue of doorstep employment opportunities can be generated. It can be visioned as another step towards taking life comforts to another level as cheap human resources will be available for carrying time consuming, routine, tedious tasks. This app has the potential to revolutionise socio-economic world order. Implementation on other OSes, such as iOS, can be seen as an improvement and added work of development ahead.

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