Social Media Application Development in Android with Firebase

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Abstract: *Sharing thoughts and information through internet has become crucial these days. An online writing enables the users to communicate with other people in a fast and convenient way. Considering this, the online writing application must be able to share the content or any other useful text in a faster way with minimum delay or with no delay. Firebase is one of the platform that provides a real-time database and cloud services which allows the developer to create these applications with ease. Instant writing can be considered as a platform to maintain communication. Android offers a better platform to develop various applications for instant writing compared to other platforms such as iOS. The main objective of this paper is to present a software application where people across the globe with similar interests can connect with each other and share their thoughts, insight, and emotions. The application developed will enable the writers to share their amazing content with the readers and also with the fellow writers. This application will be based on Android with the backend provided by Google Firebase.*

Keywords: Android App; Content Writing; Firebase; Social Media; Reader Response

I. INTRODUCTION

These days, no application is focusing on the valuable content of writers. There are a variety of social networking applications available, but none of them are solely dedicated to writing. So, keeping this in mind we will be developing an application which will give that privilege to writers to share their amazing content with the readers and also with the fellow writers.

In this project, we will be introducing an application for content writers and readers. "Writocity" will be an app where users can create a "Writer" or "Reader" account, and writers will be able to add new articles to their profile for readers and fellow writers to read, like, comment on, and rate.

The application will be developed to revoke the problems prevailing in practicing the typical writing system. This App can be an attempt to wipe out and in some cases reduce the troubles faced by the existing system. Moreover, this App will be designed for the particular need of the individual to carry out operations in a smooth and effective manner. The application will be built using Android studio for the structural and the main part. It will be an effective effort to showcase the remarkable content of writers and increase people's interest in reading.

This isn't the first paper to advocate for a reader-centered approach. In the 1960s and 1970s, literary theory shifted from focusing solely on the literary object to incorporating the reader's response to the literature. Reader-response theory, often known as reader-response criticism, focuses on the audience's response and interpretation of the text rather than the literature itself. The reader isn't merely a passive recipient of information; he or she is also involved in an active evaluation process. Reality and meaning exist neither solely in the text nor solely in the reader, but are built through the dialectic interactions between the two. Similarly, the reality and significance of writing are found not merely in the writer or the reader, but rather in the reader's active comprehension and interaction with the blog. Commenting, linking, tagging, and trackbacks, for example, allow for a level of direct involvement with both the text and the author that was previously unavailable in textual media. This paper asserts for a shift in the building of a creative writing system similar to that in literary criticism represented by reader response theory.

Now, you must be pondering over the reason behind developing the Writocity application. For that, we would like to put-forth some distinctions between our application and other existing applications.

1. There are some applications in the market as such but, they have Laggy-UI which results in bad user experience. In contrast, we will be trying to give a smooth and fast UI.
2. Other applications do not have Text-to-Speech or Speech-to-Text feature. While "Writocity" will be having Text-to-Speech and Speech-to-Text feature.
3. Other Applications are not sorted with different categories, for eg. Technical-content, News-articles, Stories, etc. Whereas "Writocity" will have different Categories such as Technical-content, News-articles, Stories, philosophies, etc.

In this article, we will essentially be focusing on the core concept of our project which we are going to develop. For that, we have arranged this paper into chronological chapters; the second chapter is literature review which embodies several documents and analyzed papers which are associated with our project plan; third chapter focuses on the method which we will be going to follow during the implementation of our project, also in this section we would be discussing about the application flowchart and an architecture diagram and thereafter, about the features of an application. Finally, we will be focusing on the future work and then will conclude the project thereby presenting the detailed planning and functioning of the project.

II. LITERATURE REVIEW

For the deep analysis of the subject we studied different journals and papers. The detailed study of papers helped us understand the concepts more clearly. So here is our literature survey to present the knowledge we got from different studies. Application framework can be defined as the common structure in specific domain related to the program. We know that a framework component is such that it can be reused, made from set of architecture of applications, presented as a set of abstract classes also the cooperation with the instances. Android is open and also free mobile device platform, having powerful functions and gives good user experience. It is rapidly developed and maintained by the software developers in different operating system in mobile phones. The need of any android application includes to firstly identify if any user permission is required by the application, for example Internet service [1]. The android system already have the following permissions:

1. We have to present the minimum API level required by the application.
2. Also need to declare hardware with software features used or required by the application.
3. The API libraries the application needs should be download.

In the paper of survey they studied and presented that library is divided further to two parts: Android Runtime and Andral Ling Android Runtime both are permitted with the Java Core Library and Dalvik vimal machine. The Ce Library is provided by Java core library with all functions Dalva virtual machine and completes some specific improvements in the mobile devices [2].

Android system library supports the application framework, also acts as connection between application framework and Linux Kernel. This vystos, Shary were developed in C or C++ language. Android system uses this kind of libraries for their work. The framework support is given by Libraries [3].

In these days all the mobiles run on IOS or android systems. Mobile apps acts as a channel for raising the brand and also advertise about the marketing purpose by the Companies. A native mobile app can be defined as the application which search for specific operating system by using IDE and SDK [5].

Native apps do have ability to use device-specific hardware and software that can provide quality and also have a very high performance rate. The native mobile apps have following advantages that includes – 1) High performance 2) Ultimate user experience 3) Greater app store visibility.

A mobile app which is compatible with multiple operating systems and run on any smart phones or tablets is called cross platform application. 'Widgets' are bunch of option in the Android from where you can drag and drop things [6].

In Android Studio, it does not show the XML code but rendering how the layout will appear on the screen. The behaviour of your application is defined by the MainActivy.java. You can find the tabs under Application>Java. Once done with the code or layout design you can run your application. You can also test your application and you can run on Android Virtual Device called Emulator.

The research about the Linux Kernel includes: The Linux Kernel is at the end of the architecture. The level of abstraction between the device hardware and the upper layers of the Android architecture is provided by the Linux kernel. The kernel

version 2.6 delivered pre-emptive multitasking, power management in addition to providing a network stack and device drivers for hardware such as the device display and low-level core system services such as memory process, Wi-Fi and audio.

The original Linux kernel was developed by Linus Torvalds in 1991 which was combined with a set of compilers, utilities and tools developed at the Free Software Foundation by Richard Stallman to create a full operating system referred to as GNU/Linux. Different Linux distributions have been derived from these basic underpinnings such as Ubuntu and Red Hat Enterprise Linux. [4]

So many utilities for implementing application services, one of them is android. Due to the consistent platform, the thoughts of the developer can be brought to reality. Also the large number of libraries can be used to develop number of applications and services. [8] The components and libraries used in android systems are

- Bionic system C library:
- SGL: 2D graphics engine library.
- SSL: located between TCP/IP protocol and other
- MP3, AAC, AMR, JPG, PNG.
- SQLite: relational database.
- Webkit: Web browser engine [4]

We all know that, smart phone is considered as a major blessing in terms of innovation. In those smart phones, the most used and preferred operation system is Android. It is freely available and open android system. Lots of games, softwares are available on the android system and is widely used. There is a lot of competition in the development of the platforms and games [7]. The following are the challenges faced by the Android App developers:

1. **Multiple Devices:** This is the most faced problem by the android developers as there are numerous platforms and versions of different devices and hence it becomes difficult to operate on such lot numbers of the android. It create lots of opportunities but yet it becomes a problem for the developers.
2. **Testing of Android Application:** The tools available for testing the applications are very less and it becomes a challenge for the developer and now the platforms for the development.
3. **Limited Capabilities of Different Devices:** The newer version of the apps do support the old versions of the apps and hence this is emerging as a problem.
4. **Emulators/Simulators Problem:** Emulators are the devices that provides us hardware environment of Android Devices, while Simulators provide us the software environment. Emulators are used to test the softwares that are not so efficient and hence creates an issue.

III. METHODOLOGY

As we know, social media's power is rising exponentially, and creating a social media application is a popular trend these days. New ideas and new adventures can be formed into great minds in 2022 and beyond, which is the major reason for establishing such an app where writers can come up with innovative thoughts and beliefs and enlighten readers' minds.

As a result, for developing this application we will be using JAVA code because it is open-source, platform-independent, safe, object-oriented, and has a large community behind it. To give this application a professional appearance, the Extensible Markup Language (XML) will be used and Firebase back-end service for storing real-time database and for perceiving analytics.

The First page will be the login page where user needs to input their e-mail id and password. If the entered e-mail id and password is correct then the user will be redirected to the main page where he will get an access to read the articles posted by different writers or authors and also, if he wants to share his writings he can also publish his writings by clicking on "write your post" option. In a nutshell, the application's UI is straightforward and user-friendly. A flowchart can help you grasp the situation better.
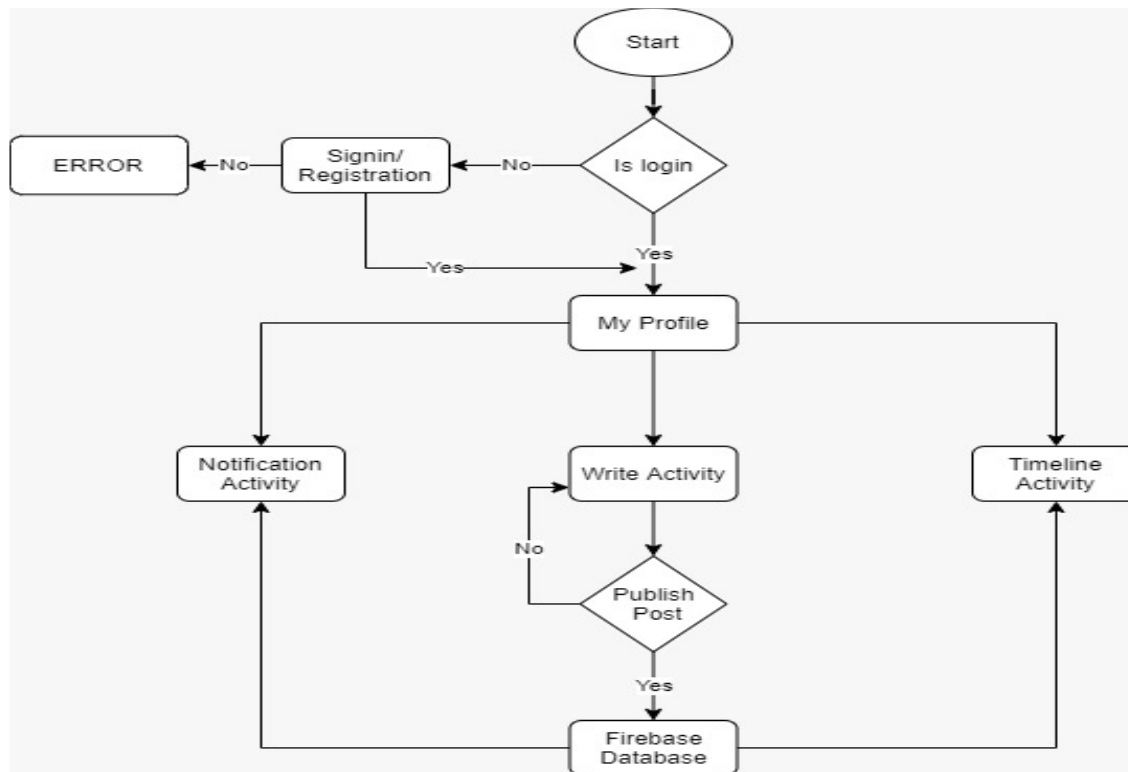
3.1 Architecture Diagram of Application

The basic architecture of this proposed system provides a better understanding of the application. It follows a simple architecture, which uses a firebase database service to store data and perform back-end operations. It will be having a simple and attractive user interface. After connecting to the internet, an application will run smoothly.
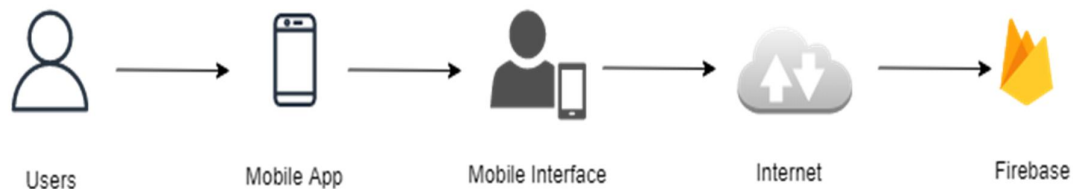

As we will be designing this application for the users of all age, to make an application more flexible and readable we will be trying to make it more featured for readers convenience. Following is the detailed exposition of the features we would be trying to implement:

- **Speech-to-text:** It is a speech recognition programme that recognises and transforms spoken words into text using computational linguistics. It's also known as voice recognition software or computer speech recognition. Specific programmes, tools, and devices can transcribe audio streams in real time to display text and act on it.
- **Text-to-speech:** It is a form of assistive technology that reads aloud digital text. A "read aloud" system is another name for it. Text-to-speech converts words on a computer or other digital device into audio with the click of a button or the touch of a finger.
- **Upload post:** By this option, users can upload their notable works or articles and publish them. This is one of the main features which will enable the writers to get spread their creativity with the world.
- **View post:** This will enable the readers to view or see the post of the writers who published their articles. There will also be a category bar at the top section of an app for the users to select the category of their interest. Hence, the readers can enjoy a variety of articles from a variety of genres.

- **Like post:** Clicking Like below a post will let people know that you enjoyed an article without leaving a comment. Just like a comment and anyone who see the post can see that you liked it. This feature actually reduces the effort of commenting on a post if you are reluctant to. Just hit the like button and you passed a message that you liked it.
- **Follow/Following:** By hitting a Follow button user can follow a particular writer directly and can get the chance to read his articles at first place. Whereas, in the following section, there will be a list of writers to whom all the user is following.
- **Search Post:** Beside going into an individual category and searching for the desired article, the search bar at the top will give the user the choice to search and read any article of his interest and can revisit the article just by typing the title of the same.
- **Theme:** An application will have the option of light and dark mode. Hence, the user can switch between the two as per his comfort.

Below is a sample prototype of an application:
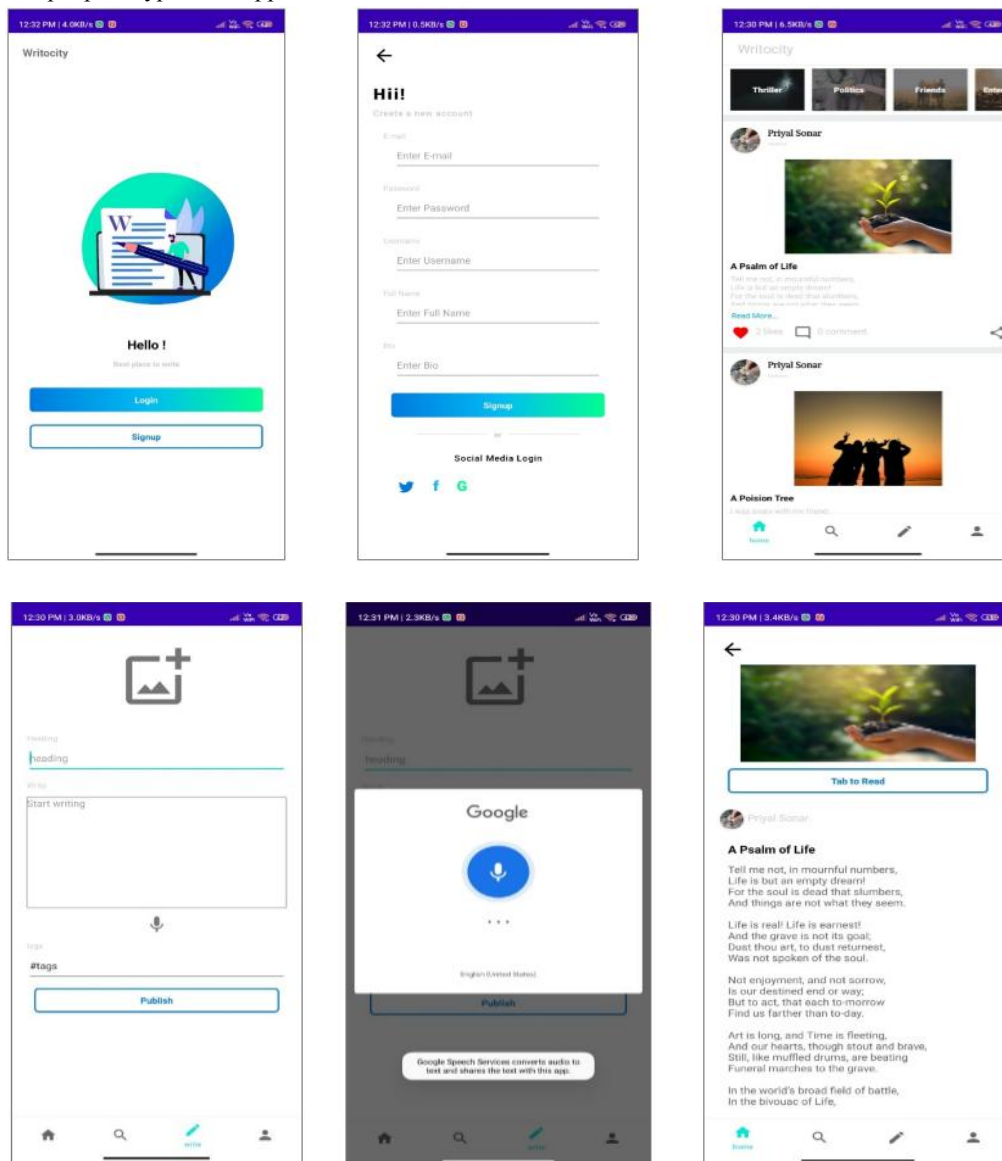
IV. DISCUSSION

The concept and methodologies we will be implementing will make an app compatible with all the systems and platforms. By designing such an application we want to avail readers the prominent content of the writers so as to develop a long-standing reading habit among them. Also, our focus will be on making an application abuse-free and in a way serve only to supported audience.

While our research, we come across some of the content writing applications among which most of them where very simple with not many features and others were having many UI errors. Therefore, as a solution to this critical problem, we proposed and will now implement and create an application where everything will be under one umbrella. There will be no need for the user to switch from application to application in search for a right platform to share his thoughts with the genuine audience. Our app will cater to all his search.

V. CONCLUSION

The main goal of the project is to create an application where writers can post their articles and readers can read and review their content. The application is solely dedicated to readers and writers so that only fanatic and passionate people who are ardent lovers of reading and writing would only use an app and in a way form an ambient community. In this way, content writers will also get the right audience who will value their content. We strongly can feel the problem of both the parties not being able to get the right platform to showcase the work and not being able to read the right and useful content, because we all know on other platforms there is a mix of everything, which leads to a great amount of distraction and thereby becomes a wasteful activity. Therefore, by developing this application we want to build a bridge between readers and writers of common interest.

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