

Mobile Application Development - Native App

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Abstract - Android software development is the process in which applications are created so that the app can run on the Android Operating System. Android OS is a widely used, popular, and user-friendly mobile platform. Android applications are programmed in java language. Developers can make use of existing java IDEs which also helps and gives flexibility to the developers. In this paper, the approach for android application development is discussed. Moreover, a brief introduction to new android platforms including the framework as well as the design and how the app is built is discussed. Android is a software stack for mobile devices that includes an operating system, middleware, and key applications. Android is a software platform and operating system for mobile devices which is based on the modified version of the Linux operating system and is developed by Google and the Open Handset Alliance. It allows developers to write and manage code in a Java-like language that utilizes Google-developed Java libraries but it does not support programs developed in native code.

Keywords: Mobile, Application, Native App, Android software.

I. INTRODUCTION

Mobile applications are rapidly increasing in the world of business and Android Development is one of them. There are 3 types of applications made in android with unique features, Native app, Web app, Hybrid app. This app is built with programming languages and ide which have different tools that are specific to a single platform. For example, one can develop a native app with Java or Kotlin. Web apps are android apps that are created using website addresses and icon images. Hybrid is a mixture of native and web apps, here we write one code that will run in both IOS and ANDROID. This also saves the money and time of the developer and attracts users of both the operating system. Here we have developed a native-pre primary school app with two activities, some fragments and some unique features than other similar apps.

II. MOBILE DEVELOPMENT OVERVIEW

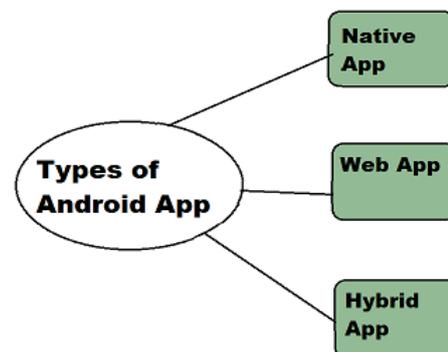
Mobile app development is rapidly growing. It is a process of making software for smartphones and commonly for

Android and iOS. The software can be preinstalled on smart devices, downloaded from a play store, app store, or accessed through a mobile web browser. The programming and markup languages used for this type of development include Java, kotlin, Swift, C# and HTML5, etc.

III. GENRE OF APPS

Android apps have three categories Native, web, and hybrid apps. These types of apps are coded in different languages such as java, kotlin, JavaScript, objective, etc.

1. **Native apps** are created for a specific operating system.
2. **Web apps** are versions of websites which can work on any OS as they're delivered using a browser.
3. **Hybrid apps** are combinations of both native as well as web apps, but it is down in native app.



▪ Native App

Native apps are built specially for a mobile device's operating system (OS). Thus, you can have native Android mobile apps. Because they're built for just a single platform, you cannot mix and match. Native apps are coded using numerous programming languages. Examples: Java, Kotlin, Python, Swift, Objective-C, C++, and React.

Pros: In usability native apps are more reliable and faster. They're more efficient with the device's resources than other types of apps.

Cons: In this type of app, the code you create for one platform cannot be reused on another as they are developed in another language. Due to this both time and money are wasted. Then every time there's an update, the user has to download the new file and reinstall the app.

▪ **Web App**

Web apps are the same as native apps but are accessed via a web browser on your mobile device. They are not particularly apps but actually reactive websites that adapt their user interface to the device. When you see the option to “install” a web app, it simply bookmarks the website URL on your device. They are designed using HTML5, CSS, JavaScript, Ruby, etc.

Pros: As it's web-based, there is no need to customize a platform and this cuts down on development costs. This type of app won't take up space on your device's memory like a native app. Users don't need to download the update at the app store as other types of apps.

Cons: Web apps are entirely dependent on the web browser used on the device. There will be functionalities available within one browser and not available on another, possibly giving users varying experiences. They won't completely work offline as they are web-based.

▪ **Hybrid App**

Hybrid apps are a mixture of web apps and native apps, they look and feel like each other. They might have a home screen app icon, fast performance, able to function offline too, but they're literally web apps made to look native. These apps use a mixture of both web technologies and native APIs. Programming language used: Ionic, Objective C, Swift, HTML5, etc.

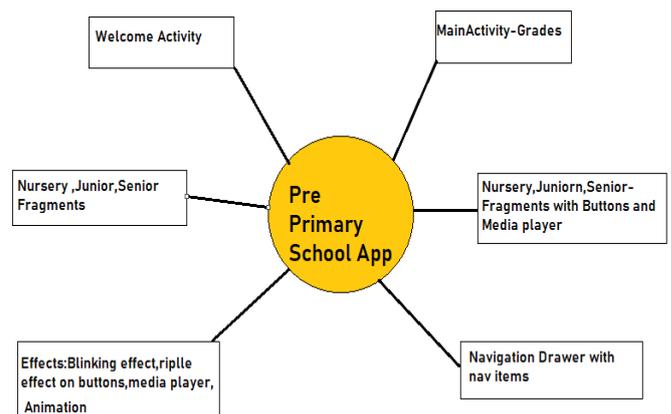
Pros: Building a hybrid app is much faster than a native app. A hybrid app can be the minimum viable product – a way to prove the viability of building a native app. They load rapidly and give users a consistent user experience. As they use a single code base, there is much less code to maintain in this app.

Cons: Hybrid apps might lack in power and speed sometimes.

IV. NATIVE APP-PRE PRIMARY SCHOOL

Built-in android studio, this native app i.e pre-primary school uses java programming language and is developed not only for the teachers but also for the kids of pre-primary school, keeping in mind that it will be easy for them to find every sort of study material related to the nursery, junior and senior. Our app is quite user-interactive; though there are

many similar apps, we have given our best to include some unique and ravishing features. There are many kids learning apps that have poetry and storytelling widgets, but our main focus is on animation-based learning which restricts text formats as that can't be read by kids and so for that purpose, you might have to download some other reading app for the text that leads to a lot of storage occupancy on your device. Our app stands out because we have developed it by keeping in mind both teachers' and kids' perspectives. If we go in-depth of this app, you will find a welcome activity, as you open the app it will start by showing text which will open the main activity in a blink of seconds. Main Activity consists of a navigation drawer that has 4 nav items home, favorite, about, and help which on a click opens another fragment. Also, there is three buttons nursery, junior and senior which on click will give a sound effect. After that, each button will take you to another fragment and then you can particularly choose your learning interest and can understand it. We intentionally avoided the usage of activity instead of fragments as it takes more time to load which makes the app slow and less responsive. We have also included match, quiz, poetry, coloring, storytelling, numbers, and much more at your convenience. Each of these is available in Hindi, Marathi, and English i.e all Hindi-Marathi poems, numbers, etc are also covered by this app. As you start a video for poetry it will depict cute animations which will attract kids' attention and they will surely enjoy it.



V. ANDROID DEVELOPMENT AND ITS DEMAND WORLDWIDE

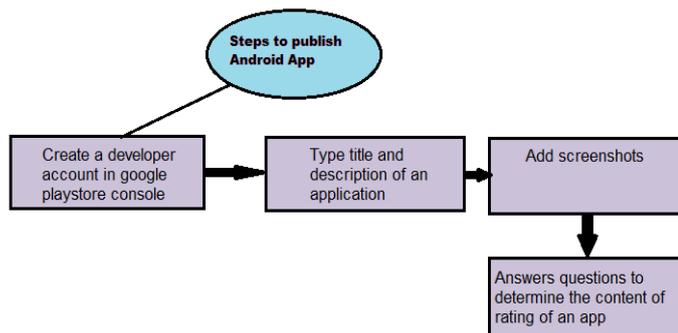
Android apps are made in such a way that they are user-friendly and it's also going to lead the app industry in the forthcoming years. There are more than 2 million apps on the Google play store and there are some which are in great demand such as Instagram, Meta, Telegram, and Whatsapp. The app that we have created is demanding because it is unique and has all properties which are required by the user and which is currently in demand worldwide. Mobile applications have brought a drastic transformation globally. People being addicted to mobile apps have made the demand for android development more. Mobile apps have completely changed the way of communication as it is faster and effective. Demand for developers has risen over the years as well.

VI. DEPLOYMENT OF ANDROID APP

Deployment is all about pushing updates from one deployment environment to another. While setting up an app you will always have your live/original app, called the production environment. While publishing an android app you have to perform 2 main tasks:

1. Prepare the application for release and during this step build a release version of your application, which users can download and install on their Android-powered devices.
2. Then release the application to users.

Steps to publish android app:



VII. CONCLUSION

Mobile devices have created great challenges for developers to achieve High quality app for known platforms. This article gives us a detailed introduction about Android, its overview, its demand and deployment but has particularly focused on Native app development. A kids learning app (pre-primary app) on the android platform was put forward as an example to illustrate this mechanism. This app can be accessed by everyone as it is user friendly and easy to use.

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