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Technical Review Paper: Mobile App Development

Introduction

Through the emergence of mobile apps, people's lives have been made easier in many aspects. People are now able to complete their daily routine such as managing their finances, checking the weather forecast, and checking sports updates all on their phones. The use of mobile apps has brought an enormous amount of convenience to people's lives which is why my senior design group decided to implement a mobile app into our project. This paper reviews the requirements of building a mobile application along with capturing its future growth.

Choosing a Platform

The two platforms of mobile app development are Android and iOS. The pros and cons of each platform should be considered in depth before choosing which route is best to code in. The Android operating system uses Java, which is the most common programming language used by software developers [1]. Also, hundreds of millions of mobile devices around the world are backed by Android [2], which serves as the preferable platform if a global audience is targeted. The iPhone operating system uses an Xcode IDE that primarily uses Swift, a language that is similar to C and C++. A Mac is needed for iOS development because XCode is only offered for Mac.

Another notable difference between Android vs iOS is the UI design. Material Design is the standard for Android app design. It opts for square, sharper shapes versus rounded corners. It uses a bright color pallet along with shadows on elements to show "depth". The iOS9 Flat Design uses mostly white and grey as a background color and blue as an accent color. It is stripped of any multidimensional elements. Unlike Material Design, it doesn't use vibrant colors as much. Flat design uses negative space, large images, and lots of glowing elements. Also, iOS devices only have a home button so a back button is needed in the UI.

Distribution between iOS and Android differ monetarily. The main distribution medium for Android is the Android Market, managed by google. An Android Market Developer account is needed to publish applications in the Android market. The account is offered at a one-time fee of $25. If a publisher chooses to distribute an app for a price, Google keeps 30% of the price [3]. To publish to the

App Store, an iOS Developer license is required for $99 per year. Apple takes 30% of the revenue if a price is charged for the app.

Fragmentation is also something else that should be considered when choosing between the two platforms. Unlike iOS, there are many different Android devices that have to be accounted for when developing an app. This means that the app developer must take into account the different screen sizes, dots per inch, and aspect ratios. Over 24, 000 distinct devices can immediately use an Android developer's app, which makes optimization an issue [4]. Despite Google upgrading its operating system to version to 4.4, also known as *KitKat,* users continue to use the earlier versions of the operating system [5]. This is because hardware manufacturers of the devices are not able to upgrade to the later operating system for a number of reasons. This creates confusion when adding a new feature to an app because it may prevent a big part of the Android market from being able to run the app.

Future of Mobile Apps

As mentioned earlier, the use of mobile apps has made people's lives easier. This can be seen in the emergence Internet of Things applications. Smart domestic objects such as LED light bulbs, toys, sports equipment, and controllable power sockets will be controlled by an app on smartphone. The phones will act as remote controls, exhibiting and parsing useful information. Combined with magnetometers, mobile apps are able to use the orientation of a smartphone relative to the Earth's magnetic north to complete a desired task [6]. Motion and location sensing on mobile apps has also been rapidly improving. These apps are used for security, anti-theft, and power-saving. Indoor location sensing along with mobile applications will allow a new generation of better tailored services and information.

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