Android in opposition to iPhone

Kavita Sharma

Ph.D Student
Singhania University, Rajasthan

Abstract-- The paper is an analysis and comparison of the android mobile OS with the iPhone which have ruled the mobile market in past years today is facing a downfall just because of the introduction of this new OS. Android with its new and extraordinary features is being loved by all and is promising various amendments and introduction of newer applications to give the best to its users.Paper also highlights some of the imperative features that makes android better than the iPhone. Comparison is done on the basis of their platform, their performances and the growth in mobile land. Special attention is given to the role of user s to co-constructing the platform.

Keywords: Android, DVK, platform independence, market share, openness, notifications, endless, iPhone, cocoa, objective-C, java, provider, growth.

I. INTRODUCTION

Google's android and apple's iPhone provides not only the mobile operating system but also provide a mobile development platform because of this they both are facing a tough competition against each other.
The basic approach of the two is different but both have the power to win the user's heart.

A. Android

Android is developed under Linux and in accordance with the Open Handset Alliance (OHA), which means anyone can develop Android on their hardware. The internal structure of Android OS consists of software stacks. The base of the stack is the kernel. Google used the Linux version 2.6 OS to build Android's kernel, which includes Android's memory management programs, security settings, power management software and several hardware drivers. Drivers are programs that control hardware devices. For example, the Nexus One has a camera. **The Android kernel** includes a camera driver, which allows the user to send commands to the camera hardware. The next level of software includes **Android's libraries**. You can think of libraries as a set of instructions that tell the device how to handle different kinds of data. For example, the media framework library supports playback and recording of various audio, video and picture formats. Other libraries include a three-dimensional acceleration library (for devices with accelerometers) and a Web browser library. Located on the same level as the libraries layer, the **Android runtime layer** includes a set of core Java libraries -- Android application programmers build their apps using the Java programming language. It also includes the **Dalvik Virtual Machine (DVK).**
The Android OS uses virtual machines to run each application as its own process. First, no application is dependent upon another. Second, if an application crashes, it shouldn't affect any other applications running on the device. Third, it simplifies memory management.
    The next layer is the **application framework**. This includes the programs that manage the phone's basic functions like resource allocation, telephone applications, switching between processes or programs and keeping track of the phone's physical location. Application developers have full access to Android's application framework. At the top of the stack are the **applications** themselves. This is where we find the basic functions of the device such as making phone calls, accessing the Web browser and accessing your contacts list.
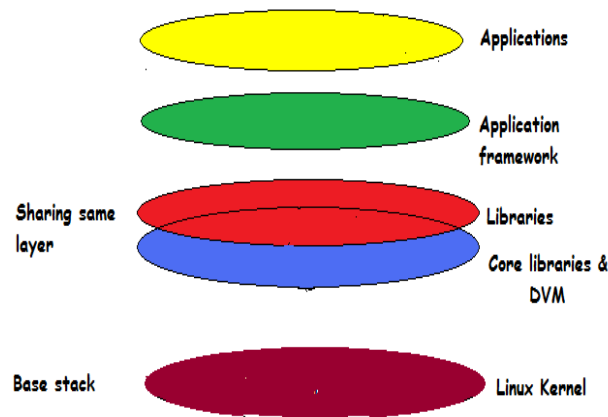
Figure 1: Internal architecture and working

B.   iPhone OS

 iPhone OS is a mobile operating system developed and marketed by Apple Inc. It is the default operating system of the iPhone, the iPod Touch, and for the iPad. It ia a UNIX like OS that is derived from Mac OS X. iPhone OS has four abstraction layers: the Core OS layer, the Core Services layer, the Media layer, and the Cocoa Touch layer.

The Core OS and Core Services layers contain the fundamental interfaces for iPhone OS, including those used for accessing files, low-level data types, Bonjour services, network sockets, etc.These interfaces are mostly C-based and include technologies such as Core Foundation, CFNetwork, SQLite, and access to POSIX threads and UNIX sockets among others.

The Media layer contains the fundamental technologies used to support 2D and 3D drawing, audio, and video. This layer includes the C-based technologies OpenGL ES, Quartz, and Core Audio. It also contains Core Animation, which is an advanced Objective-C based animation engine. It is uses a mixture of C-based and Objective-C based interfaces.

The Cocoa Touch layer provides the fundamental infrastructure used by your application. For example, the Foundation framework provides object oriented support for collections, file management, network operations, and more. It is based on Objective-C.

II.   ANDROID AGAINST IPHONE

Today mobile market provides us with so many options that it makes difficult for us to choose the best but as the saying goes "that what is wanted more is the best" and the same goes with our favourite Android. This Google's OS came into market in the year 2008 and before completing two years it has shown a remarkable growth in the market. This is all because of some reasons that I will try to elaborate in the following discussion. These are the points that are the most important that creates such a difference in my opinion.

It is changing the scenario in the world wide market as it is being adopted by major players in smartphone market like HTC, Samsung, Motorola, and Samsung and not to forget Google's Nexus One. Android, because of its highlighting features is competing against mobile platforms from Apple, Microsoft, Nokia, Palm, Research in Motion and Symbian.
The android is growing faster than the iPhone. Its platform is showing a rapid growth from the last two years and the openness of the platform can account for this rapid growth. The comparison of android and iPhone can be done from different perspective but the final result is supposed to be same foe each viewpoint. Here we discuss some of the main features that makes the difference between android and iPhone.

A.   Language

Google's android provide a customized java virtual machine , and java byte code interpreter that facilitate android to offer free services and make android to be a java platform thus introduce a new development

platform that influence developers to create there application using java programming whereas, iPhone has totally different approach for development environment. It introduces a small scale version of its desktop Mac OS X Cocoa.iPhone only supports Objective-C language. Android's popularity is due to its open platform and availability of excellent developer's tools. Java and the Eclipse IDE are major attractive aspects of Android to make it's the best choice of developers. iPhone is based on objective-C that is difficult to use and its development platform is not properly defined. The development environment of the iPhone is more tedious than android's. Almost all the standard Java IO, network libraries are easily available.

B. Performance

Performance is one factor among many that defines whether or not a platform will succeed. Performance comparisons depend on many factors, here I am discussing the performance of Android's JVM vs. the iPhone's Objective C. Android is a Java based platform and uses a Java Virtual Machine (Dalvik) to execute apps Java was considered to be a slow and cumbersome platform. Java has been optimized and now its performance is extremely fast. Dalvik has been optimized even more for mobile devices, so now the Android is one fast platform.
iPhone OS is written using Objective C, which is an object oriented version of C that uses messages It's like having every phone call go through an operator who relays on the message to the other person rather than just calling the other person directly. There is a message passing system called objc_msgSend(), is a critical piece of software for anything written for OS X on the Mac or the iPhone.

C. Open vs. close (platform approach)

Apple offers a closed, proprietary system with peerless marketing, an excellent user interface and strong ties between hardware and software; Google prefers open-source approach to develop new applications. The iPhone doesn't offer background processing for third-party applications as comparison to Android. It is much more open. One can build any kind of application take benefit of any features. This is one of the main feature of android that shines.

D. Choice of carrier and handsets

Android is a huge platform. Based on user choices, a variety of service providers and android devices are available.

E. Runs Flash

Other mobile OS platforms begin to adopt Flash such as BlackBerry OS, QNX, webOS), but still iphone OS is one of the platform that can't play Flash videos, websites and games.

F. Notification system

The notification system of iPhone is un-friendly whereas android's has excellent pull-down window shade notification tray. It is just great.

G. Voice-to-Text

iPhone OS does not support voice–to-text except in third party applications on the other hand in android we can easily send long messages by voice and can respond to an e-mail through voice and many more.

H. Syncing

iphone users have to plug into the computers to do all sorts of syncing but in android this can be easily done through Google account.

I. Application Publication charges

As apple provide a proprietary system the applications can't be sold without Apple's approval, there cannot be multitasking and also there is freedom to the user to duplicate the features of the core apps. Both platforms take 30 per cent of application revenues, although Android is free to sign up to, while Apple charges developers $99

per year. To publish their application on the apple store the developer need to pay an annual fee of US$99 on the other hand android developer has to pay only $25 fee to one time registration and also they can publish the same application in other application market there is no restriction for that.

J.   Content

On the net the content and the information regarding iPhone is not much as compared to Google's android We can easily get all the content, source code and information related to android platform as and when required. Android SDK is installed with the full information, helping guide and APIreferences.it takes a few seconds to found information regarding our queries. IPhone also provides lots of resources that help developers to perform their task but it takes much time to do that.

K.   Browsing

In terms of internet browsing, which platform is better? The answer is given by the researcher Neilsen. According to data collected by him and compiled by eMarketer, owners of Android phones are the most likely to use their device's Internet functionality. Ninety-two percent of Androiders say they take utilize their phone's Web connection, compared to 88 percent of iPhone owners. Both devices are well above the curve for smartphone owners in general, however, where the overall Net-using percentage is only 71.

L.   Development environment

Development environment of the both alone cannot decide the superiority of one on the other as both platforms are similar in their capabilities and other reason is that iPhone has having its experience of desktop Mac OS and android is new in mobile development.

M.   Security

There are some privileges on iPhone to restrict the addition of new software for the users. Each application runs on a single UNIX kernel. If there is some problem from running application then whole system can be affected. Whereas in android each application runs independently .there are pre-defined permissions and authorizations for each feature. So from security point of view android is much better then iPhone for users.

N.   Google benefit

One another benefit of android is to make use of the facilities that Google offers such as Google maps, Google voice, Google documents and many more.

O.   Market growth

Both the platforms have high demand for advanced functions. They both are competing each other leaving far behind all others.An NPD study showed that Google's Android was comfortably beating iPhone, with Q1 2010 unit sales of 28% against 21%.
Gartner study showed that Android was closing the gap on the iPhone in terms of market share with 9.6% global market share for Google versus 15.4% for Apple.
Nielsen claiming that the iPhone has three times the operating system market compared to Android, with Apple holding 28% compared to Google's 9%. The Nielsen study say that 80% of iPhone owners plan on buying another iPhone (with only 7% planning a switch to Android), compared to Android which sees 70% of customers planning to re-buy an Android handset and 14% eyeing an iPhone. Another interesting aspect of the Nielsen study was income levels of handset owners. According to the study around 40% of iPhone users earn over $100,000, while only 28% of Android users earn that much. On the flipside, 36% of Android users earn less than $50,000, while only 18% of iPhone users earn below that level.
Android phone market has grown almost doubled over the past year while the iPhone has lost over those same periods. Android is growing significantly.

CONCLUSION

The entire requirement a mobile operating system has to meet in the future is come across by this operating system but practical experience of anything in the real world is important. Google will definitely achieve something remarkable with its open-source Android operating system. Android is the fastest growing platform,

the use of which is booming. The Android mobile operating system an open OS that can be embedded in any device will be a market-moving open source platform Android seems to be developer's go-to mobile OS in the future. The key for the android OS success is to be a platform that enables the best user experience. Android architecture enables the developer to deliver a high quality application for consumer's best experience.

By all these studies I arrive at the conclusion that it is very hard to predict that which is ahead in mobile market. In some points iPhone is ahead from android and due to some extraordinary features such as open provided by android makes it a leader. Both are looking towards the future providing us to more and more advances in our mobiles. In an all I want to say that when we talk about enhancing or making a market move consistently from the beginning, leader is the……..Android.

I like android as it has highly developed platform that introduces a number of new paradigms in framework design.

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