

The Android - Mobile Operating System With its Mobile based Applications

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Abstract- Android mobile operating system is based on the Linux kernel and is developed by Google and primarily designed for smart phones and tablets. Android Operating System consist of four main layers, the specifying architecture is given in this paper. The advanced Smart applications of android in mobile, real-time and wireless sensor network are widening their service areas. Android is a disruptive technology, which was introduced initially on mobile handsets, but has much wider potential. In this paper we are studying, one of the smart and enhancing Android operating system application which are based on Automated and tracking from remote distance. These application helps students, teachers, parents, patients and users of home appliance as anytime and anywhere basis. Mobile Android Operating System it's possible to develop automated attendance system, secure transferring of medical data and automated home appliance monitoring system. Smartphone devices such as iPhone, Blackberry, and those that support the Android operating system are progressively making an impact on society. In addition to their support for voice and text exchange, smart phones are capable of executing sophisticated embedded software applications, as well as provide a simple link to the Internet and its resources.

Index Terms- Android Operating System, Dalvik Virtual Machine, Linux kernel, Automated attendance, Secure transferring of EMR, remote monitoring, open-source system, nJIT compiler.

I. INTRODUCTION

Android is a mobile operating system (OS) based on the Linux kernel and is currently developed by Google, with a user interface based on direct manipulation. Android is designed primarily for touch screen mobile devices such as smart phones and tablets. It also provides specialized user interfaces for televisions, cars, and wrist watches. The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching,

and reverse pinching to manipulate on-screen objects, and a virtual keyboard. Android's source code is released by Google under open source licenses, although most Android devices ultimately ship with a combination of open source and Proprietary software. Android was unveiled in 2007 along with the founding of the Open Handset Alliance—a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices.

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II. HISTORY

Android Inc . founded in 2003

Android, Inc. was founded in Palo Alto, California, United States in October, 2003 by Andy Rubin (co-founder of Danger), Rich Miner (co-founder of Wildfire Communications, Inc.), Nick Sears (once VP at T-Mobile), and Chris White (headed design and interface development at WebTV) to develop, in Rubin's words "...smarter mobile devices that are more aware of its owner's location and preferences."

Android Inc. acquired by Google:

Google acquired Android Inc. in August, 2005, making Android Inc. a wholly owned subsidiary of Google Inc. Key employees of Android Inc., including Andy Rubin, Rich Miner and Chris White, stayed at the company after the acquisition. Version history Android has seen a number of updates since its original release. These updates to the base operating system typically focus on fixing bugs as well as adding new features. Generally each new version of the Android operating system is developed under a code name based on a dessert item.

The most recent released versions of Android are:
Android 1.5 (Cupcake)

Android 1.6 (Donut):- (features) Most of the changes in 1.6 are behind the scenes, but users will be able to notice a few updates:

Analysis of Android 1.6: The new Android 1.6 Market could be a game changer for users and developers alike.

In 1.5, paid applications were hidden from users behind an obscure menu option.

But in 1.6 they will be brought to the forefront. By exposing users to high-quality paid applications, the Market should see a surge in revenue which will encourage developers to produce even more and better content. For months the Android Market has lagged the iPhone app store, but 1.6 could put it on a path to change that.

2.0/2.1 (Eclair), which revamped the user interface and introduced HTML5 and Exchange ActiveSync 2.5 support.

2.2 (Froyo), which introduced speed improvements with JIT optimization and the Chrome V8 JavaScript Engine, and added Wi-Fi hotspot tethering and Adobe Flash

Support.

2.3 (Gingerbread), which refined the user interface, improved the soft keyboard and copy/paste features, and added support for Near field Communication.

3.0 (Honeycomb), a tablet-oriented release which supports larger screen devices and introduces many new user interface features, and supports multicore processors and hardware acceleration for graphic. The Honeycomb SDK has been released and the first device featuring this version, the Motorola Xoom tablet, went on sale in February 2011.

This is the first closed source version of Android.

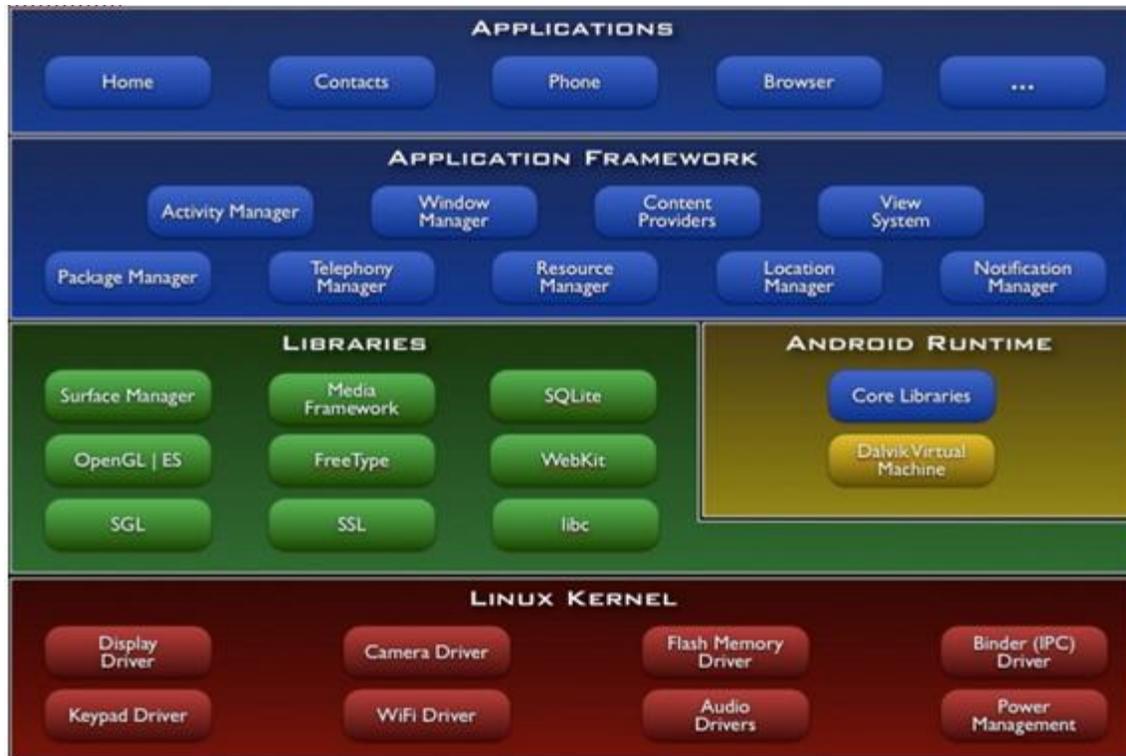
The upcoming version of Android is:

Ice Cream Sandwich, a combination of Gingerbread and Honeycomb into a "cohesive whole".

III. ANDROID ARCHITECTURE

The following diagram shows the major components of the Android operating system.

Each section is described in more detail below. It consist of four layers: Application, Application framework, the layer below is divided in two parts: libraries and Android RunTime, and the last layer is Linux Kernel.



IV. APPLICATIONS

Android will ship with a set of core applications including an email client, SMS program, calendar, maps, browser, contacts, and others. All applications are written using the Java programming language.

Application Framework

By providing an open development platform, Android offers developers the ability to build extremely rich and innovative applications. Developers are free to take advantage of the device hardware, access location information, run background services, set alarms, add notifications to the status bar, and much, much more. Developers have full access to the same framework APIs used by the core applications. The application architecture is designed to simplify the reuse of components; any application can publish its capabilities and any other application may then make use of those capabilities (subject to security constraints enforced by the framework). This same mechanism allows components to be replaced by the user.

Underlying all applications is a set of services and systems, including:

A rich and extensible set of Views that can be used to build an application, including lists, grids, text boxes, buttons, and even an embeddable web browser Content Providers that enable applications to access data from other applications (such as Contacts), or to share their own data.

A Resource Manager, providing access to non-code resources such as localized strings, graphics, and layout files A Notification Manager that enables all applications to display custom alerts in the status bar An Activity Manager that manages the life. Android OS and its Applications as Mobile OS.A mobile operating system, is an operating system that operates a smart phone, tablet, PDA, or other mobile device. Modern mobile operating systems combine the features of a personal computer operating system with other features, including a touch screen, cellular, Bluetooth, Wi-Fi, GPS mobile navigation, camera, video camera, speech recognition, voice recorder, music player, near field communication and infrared blaster.

Android OS and its Applications as Mobile OS

Android which is based on the Linux Kernel is from Google . It has the largest installed base worldwide on smart phones. Most of Android is free and open source, [10] but a large amount of software on Android devices such as Play Store, Google Search, Google Play Services, Google Music, and so on are proprietary, licensed proprietary, closed source applications .

Android is basically an operating system for smart phones that is based on a modified version of Linux. Now the Android is a market-mover. Now is an exciting time for mobile developers. Mobile phones have never been more popular and powerful smart phones. With stylish and versatile phones packing hardware features like GPS, accelerometers and touch screens are an enticing platform upon which to create innovative mobile applications. Android developers are free to write applications that take full advantage of increasingly powerful mobile hardware. Android is important is because of its application model. For users of smart phones, Android provides easy access to social networking. Now, everyone having the Android smart phone, because it is cheapest because nowadays mobile companies are also develop the smart phone and provide it in low cost.

Android devices come in all shapes and sizes. As of late 2014, the Android OS powers the following types of devices: Smartphone's, Tablets-reader devices, Notebook, MP4 players, Internet TVs. Android use, the recommended IDE is Eclipse, a multi-language software development Environment featuring an extensible plug-in system. It can be used to develop various types of applications, using languages such as Java, C, C++, COBOL, Python, are freely available on Internet. The packages contain the documentation and SDK specific to each version of the Android OS . They also contain sample code and tools for the various platforms. All these are freely available on Internet hence we chose to develop Automated, mobile and real-time applications like Attendance Monitoring, Electronic medical record, Product recognition system, electronic home appliances tracking, etc, application in Android.

Until very recently, Android deployment has been very focused on mobile handsets. This was Google's

target market and the available software IP and development tools are designed and configured with this in mind. The potential for Android is enormous in other market areas – anywhere that sophisticated software, including connectivity and a user interface, encapsulates the functionality of a device. Consumer, telecom, automotive, medical and home applications are all attractive candidates for the deployment of Android. Having a cool solution is great, but it is not useful unless it solves a real world problem. The challenge with electronic devices going forward is connectivity and interoperability. Android is well placed to address these issues. The

Mentor Graphics approach to enabling Android to reach a wider market is to bring three key attributes to bear on the issue: the supply of development tools, software IP and professional services. The goal is to take Android and create specific editions, tailored to various markets, for various different applications. To implement all of this and get it working needs extensive tool support for debugging, real time profiling, simulation, target device connection, tracking and so forth. An Android based mobile application for Attendance Monitoring is an example of that type. The application offers reliability, time savings and easy and in offices or any workplace, tracking Health status of patient remotely, etc. And this will help the users to reduce their workload by reducing the time and calculations required to update the data manually. Users of such system will also view the details using the website at anytime and anywhere.

IV. Some Smart Applications of Android as Mobile and Real-time Operating System Android is an open source platform built by Google that includes an operating system, middleware and applications for the development of devices employing cellular communications.

The mobile application would require connecting to the database using either General Packet Radio Service (GPRS) or Wi-Fi technology. Apart from that, the application would support strong user authentication and quick transmission of data via the web service. This system as based on Android which is available to most of the teachers as Android based Smart phones are most widely used.

V. CONCLUSION

As Mobile software development has evolved over time. From above discussion it is clear that Android Operating System has emerged as a new mobile development platform. Android was designed to empower the developer to write innovative applications and their own source code. The platform is open source, with no upfront fees, and developers enjoy many benefits over other competing platforms. We see the Android architecture which is most important to develop applications in different sectors of our life. When a developer install an application that run with its own instance of Dalvik VM. We see that Android is continuously growing and fastest acceptable platform. The time finally arrived when our Android OS would get a quick makeover and offer us with either some more simple or extravagant changes. Android is a truly open, free development platform based on Linux and open source and many application development tools are freely available on the internet. In this paper we see an Android based mobile application for Home monitoring, Attendance Monitoring, Health record monitoring system. The application offers reliability, time savings and easy control. It can be used as a base for creating similar applications for tracking attendance colleges and in offices or any workplace which also works for other sectors. These applications are used by many common navigation back stack.

REFERENCES

- [1] "Industry Leaders Announce Open Platform for Mobile Devices" (Press release). Open Handset Alliance. November 5, 2007. Retrieved February 17, 2012.
- Say[4] "Google details Android 4.4 KitKat, its latest mobile upgrade". *techradar.com*. October 31, 2013. Retrieved November 5, 2013.
- [2] "KitKat mocks Apple with Android 4.4 parody video". *The Verge*. Retrieved September 4, 2013.
- [3] Danny Choi (November 14, 2014). "Android 5.0 Release Date: Lollipop For Samsung Galaxy Available By January 2015". *Latin Times*. Retrieved November 15, 2014.