

Revolutionary mobile operating system: Android

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Abstract – Now days, Android operating system is one of the best of operating system in the world which is basically for mobiles. Android operating system is based on Linux kernel and is developed by Google which is primarily designed for smart phones and tablets. Smart phones devices such as iPhone, blackberry and those that support android operating system are progressively making an impact on society because of their support for voice, text exchange and therefore which are capable of handling embedded software applications.

Key Words: Android, tablets, iphone, blackberry, embedded, version.

1. INTRODUCTION

In recent years, emergence of smart phones has change the definition of mobile phones. Phone is no longer just a communication tool, but also an essential part of the people’s communications and daily life. Now the android system in the electronic market is becoming more and more popular, especially in the smart phones market. Because of the open source, some of the development tools are free so there are plenty of the applications are generated. In addition it provides a very convenient hardware platform for developers so that they can spend less effort to realize their ideas. Because of android , a communication tool can moved to the operations like listening music, watching videos ,tweeting ,internet banking, ticket booking etc. first of all the developers write their script in java and download the apps from the third party sites or online stores. In February 2012, 450,000 apps were available for android but the estimated no of downloads since December 2011 was more than 10 billion. There are over 300 million androids in use and over 850,000 devices activated every day. Android is one of the most used mobile operating system with the market share of 48%.

2. Android Architecture

Android operating system is a stack of software components. Main components of Android operating system architecture are:

1. Linux kernel
2. Native libraries layer
3. Android runtime
4. Application framework
5. Application layer

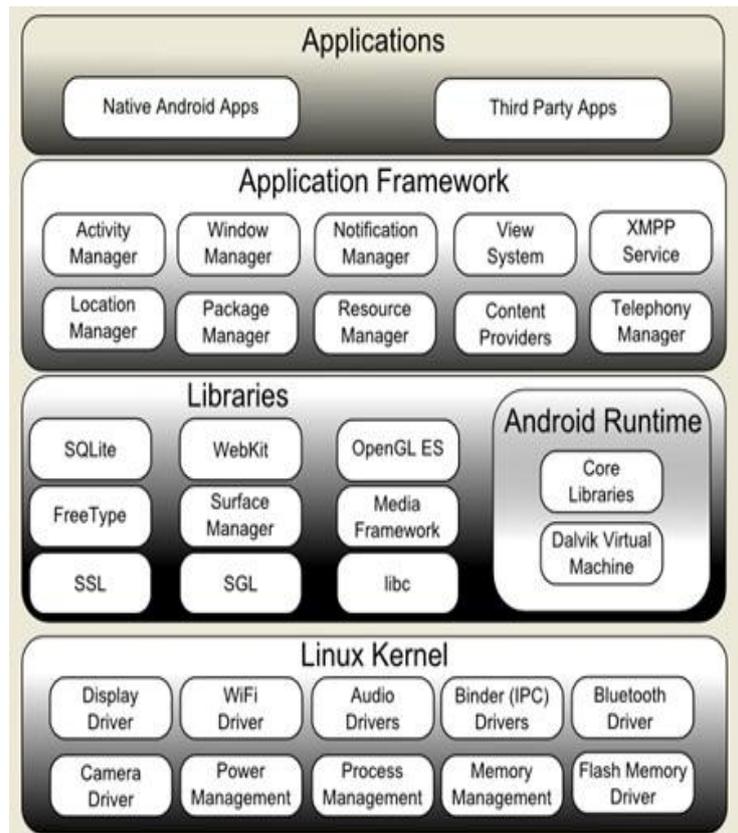


Fig -1: Android Architecture

2.1 Linux kernel:

It is the heart of android that exists at the root of android architecture. It is responsible for device drivers, power management, device management, memory management and resource access. Whole android operating system is built on this layer with some changes made by Google. Android operating system communicates with the hardware with this layer.

2.2 Native libraries layer

On the top of Linux kernel, there are native libraries which are written in C or C++ language such as webkit for browser support, SQLite for database, freetype for font support, media for playing and recording audio and video picture format, surface manager for display of device. This layer enables device to handle different types of data.

2.3 Android Runtime

It is located at same level as the library layer. It consists of Dalvik virtual machine (DVM) and core java libraries. DVM is like JVM but it is optimized for mobile devices. It allows multiple instance of virtual machine to be created simultaneously providing security, isolation and memory management. It consumes less memory and provides fast performance.

2.4 Android framework

At the top of libraries and android runtime, there is android or application framework. Android applications are directly interact with application framework. Important blocks of android/application frameworks are:

2.4.1 Activity manager

It manages complete life cycle of applications.

2.4.2 Content providers

It is used to manage the data sharing between two applications.

2.4.3 Telephony manager

It is used to manage all voice calls.

2.4.4 Location manager

It is used to manage location obtained using GPS or cell tower.

2.4.5 Resource manager

It is used to manage different types of resources used in android applications.

2.5 Application Layer

It is located at the top of android software stack. These comprise both the native application provided with the particular android implementation and third party application installed by the user after purchasing the device.

3. ADVANTAGES:

1. Free and open source.
2. Familiar and inexpensive development tools
3. Ability for anyone to customized the Google android platform
4. Familiar language, familiar development environment
5. Free market for application
6. No costly obstacles
7. Rich, secure application integration.

4. DISADVANTAGES:

1. Since Google android is an open source platform, it could significantly increase the risk of hacking these devices
2. Android operating system uses more amount of battery as compared to normal mobile phones.
3. As there are so many users sometimes it becomes difficult to connect all the users.
4. As we call Android is world of applications we continuously need to connect with the internet which is not possible for all the users.

5. VERSIONS OF ANDROID:

5.1 Android Beta: It is first Version of Android which focuses on testing incorporating usability. Android beta will generally have many more problems on speed and performance.

5.2 Android Astro1.0: First full version of android released on September 23, 2008 which supports Wi-Fi and Bluetooth. This version is quite slow in operating. Copy and paste feature in the web browser is not present.

5.3 Android Cupcake 1.5: This version of android is released on April 30, 2009 with added auto-rotation option. Copy and Paste feature added in the web browser with increased speed and performance but not up to required level.

5.4 Android Donut 1.6: This version of android is released on September 15, 2009. Voice search and Search box were added in this version with faster OS boot times and fast web browsing experience. Typing is quite slower

5.5 Android Éclair 2.0/2.1: This version of android is released on October 26, 2009. Bluetooth 2.1 support. Improved typing speed on virtual keyboard, with smarter dictionary. No Adobe flash media support

5.6 Android Froyo 2.2: This version of android is released on May 20, 2010 having support for Adobe Flash 10.1 and improved Application launcher with better browser. No internet calling.

5.7 Android Gingerbread 2.3: This version of android is released on December 6, 2010 with updated User Interface, high efficiency and speed. This version is having Internet calling, one touch word selection and copy/paste. New keyboard for faster word input. This is more successful version of Android than previous versions. It does not support for multi-core processors

5.8 Android Honeycomb 3.0: This version of android is released on February 22, 2011. With Support for multi-core processors

Ability to encrypt all user data. This version of android is only available for tablets.

5.9 Android IceCreamSandwich(ICS) 4.0: This version of android is released on November 14, 2011 having Virtual button in the UI. A new typeface family for the UI, Roboto. Ability to shut down apps that are using data in the background

5.10 Android JellyBean 4.1: This version of android is released on June 27, 2012. This is Latest version of Android with Smoother user interface.

5. APPLICATIONS:

1. In Medical application, physical sensor technology to provide a new type of application for human computer interface.
2. Built in accelerometer, GPS, Camera, microphone and other sensors provide a fundamentally new opportunity for early detection of AD.
3. Sight for the blind
4. Android application for the police force : with these application dependency on police emergency number 100 would reduce substantially and citizens can reach out to police to report any emergency situation or crime like robbery or assault on women 24/7
5. Banking
6. Shopping
7. Booking
8. Games

6. CONCLUSIONS:

Now cell phone is the major part of everyone's life. Android making them more and more users interactive by providing lots of applications and services. Its large touch pad and sensor mode provide easy access to user so we can conclude that Android is now stepping up in next level of mobile internet. There are chances of Android Mobile sales becomes more than iPhone in next two years.

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