ANDROID An operating system

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ABSTRACT:-

In this paper we initiate a formal study of android and its applications. Google’s new open source platform for mobile devices mainly this paper deals with the introduction and design, applications, security, and some useful data about latest android.

INTRODUCTION:-

Android is an operating system for mobile devices such as smartphones and tablet computers. It is developed by the Open Handset Alliance led by Google.

Android consists of a kernel based on the Linux kernel, with middleware, libraries, and APIs written in C and application software running on an application framework which includes Java-compatible libraries based on Apache Harmony. Android uses the Dalvik virtual machine with just-in-time compilation to run compiled Java code. Android has a large community of developers writing applications ("apps") that extend the functionality of the devices. Developers write primarily in Java. There are currently more than 250,000 apps available for Android Market is the online app store run by Google, though apps can also be downloaded from third-party sites.

In early 2011, Google chose to temporarily withhold the source code to the tablet-only Honeycomb release, which called into question the "open-ness" of this Android release. The reason, according to Andy Rubin in an official Android blog post, was because Honeycomb was rushed for production of the Motorola Xoom and they did not want third parties creating a "really bad user experience" by attempting to put onto Smartphone are a version of Android intended for tablets. Google later confirmed that the Honeycomb source code would not be released until after it was merged with the Gingerbread release in Ice Cream Sandwich.

Android has seen a number of updates since its original release. These updates to the base operating system typically fix bugs and add new features. Generally, each new version of the Android operating system is developed under a code name based on a dessert item. Past updates included Cupcake and Donut. The code names are in alphabetical order (Cupcake, Donut, Eclair, Froyo, Gingerbread, Honeycomb, and the upcoming Ice Cream.
Below is a list of the most recent versions, and what they include:

- Éclair
- Froyo
- Gingerbread
- Honeycomb

Future releases that have been announced include:

- 4.0 (Ice Cream Sandwich) is said to be a combination of Gingerbread and Honeycomb into a "cohesive whole". It will be released in Q4 2011.

**DESIGN**

Android's kernel is derived from the Linux kernel. Google contributed code to the Linux kernel as part of their Android effort, but certain features, notably a power management feature called wake locks, were rejected by mainline kernel developers, so the Android kernel is now a separate version or fork of the Linux kernel. Android device drivers that use wake locks can now be easily merged into mainline Linux, but that Android's opportunistic suspend features should not be included in the mainline kernel. Google announced that they would hire two employees to work with the Linux kernel community. the current Linux kernel maintainer for the -stable branch that he was concerned that Google was no longer trying to get their code changes included in mainstream Linux. Some Google Android developers hinted that "the Android team was getting fed up with the process", because they were a small team and had more urgent work to do on Android.[68] Android does not have a native X Window System nor does it support the full set of standard GNU libraries, and this makes it difficult to port existing Linux applications or libraries to Android.

**FEATURES**

**Handset layouts**

The platform is adaptable to larger, VGA, 2D graphics library, 3D graphics library based on OpenGL ES 2.0 specifications, and traditional Smartphone layouts.

**Storage**

SQLite, a lightweight relational database, is used for data storage purposes.

**Connectivity**

Android supports connectivity Technologies including GSM/EDGE, IDEN, CDMA, EVDO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.

**Messaging**

SMS and MMS are available
forms of messaging, including threaded text messaging and now Android Cloud to Device Messaging Framework (C2DM) is also a part of Android Push Messaging service.

Multiple language support
Android supports multiple human languages. The number of languages more than doubled for the platform 2.3 Gingerbread

Web browser
The web browser available in Android is based on the open-source WebKit layout engine, coupled with Chrome's V8 JavaScript engine. The browser scores a 93/100 on the Acid3 Test.

Java support
While most Android applications are written in Java, there is no Java Virtual Machine in the platform and Java byte code is not executed. Java classes are compiled into Dalvik executables and run on Dalvik, a specialized virtual machine designed specifically for Android and optimized for battery-powered mobile devices with limited memory and CPU. J2ME support can be provided via third-party applications.

Media support
Android supports the following audio/video/still media formats: WebM, H.263, and H.264 Apple HTTP
Live Streaming is supported by RealPlayer for Mobile and by the operating system in Android 3.0 (Honeycomb).

Additional hardware support
Android can use video/still cameras, touchscreens, GPS, accelerometers, gyroscopes, magnetometers, dedicated gaming controls, proximity and pressure sensors, thermometers, accelerated 2D bit blits (with hardware orientation, scaling, pixel format conversion) and accelerated 3D graphics.

Multi-touch
Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero. The feature was originally disabled at the kernel level (possibly to avoid infringing Apple's patents on touch-screen technology at the time). Google has since released an update for the Nexus One and the Motorola Droid which enables multi-touch natively.

Bluetooth
Supports A2DP, AVRCP, sending files (OPP), accessing the phone book (PBAP), voice dialing and sending contacts between phones. Keyboard, mouse and joystick (HID) support is available in Android 3.1+, and in earlier versions through
Video calling
Android does not support native video calling, but some handsets have a customized version of the operating system that supports it, either via the UMTS network (like the Samsung Galaxy S) or over IP. Video calling through Google Talk is available in Android 2.3.4 and later. Gingerbread allows Nexus S to place Internet calls with a SIP account. This allows for enhanced VoIP dialing to other SIP accounts and even phone numbers. Skype 2.1 offers video calling in Android 2.3, including front camera support.

Multitasking
Multitasking of applications is available.

Voice based features
Google search through voice has been available since initial release. Voice actions for calling, texting, navigation, etc. are supported on Android 2.2 onwards.

Tethering
Android supports tethering, which allows a phone to be used as a wireless/wired Wi-Fi hotspot. Before Android 2.2 this was supported by third-party applications or manufacturer customizations.

Screen capture
Android does not support screenshooting capture as of 2011. This is supported by manufacturer and third-party customizations.

Screen Capture is available through a PC connection using the DDMS developer's tool.

Fig: -
Architecture of android

VERSIONS
ECLAIR 2.0
Included a new web browser, with a new user interface and support for HTML5 and the W3C Geolocation API. It also included an enhanced camera app with features like digital zoom, flash, color effects, and more.
**ECLAIR 2.1**
Included support for voice controls throughout the entire OS. It also included a new launcher, with 5 home screens instead of 3, animated backgrounds, and a button to open the menu (instead of a slider). It also included a new weather app, and improved functionality in the Email and Phonebook apps.

**FROYO 2.2**
Introduced speed improvements with JIT optimization and the Chrome V8 JavaScript engine, and added Wi-Fi hotspot tethering and Adobe Flash support.

**Gingerbread**
Refined the user interface, improved the soft keyboard and copy/paste features, and added support for Near Field Communication.

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

**Honeycomb 3.1**
It was announced at the 2011 Google I/O on 10 May 2011. To allow honeycomb devices to directly transfer content from USB devices

**Security**
An SMS Trojan called Trojan-SMS AndroidOS.FakePlayer.a infected a number of mobile devices, according to security firm Kaspersky Lab. Disguised as a harmless media player application, the trojan, once installed sends out SMS text messages without the user's
knowledge or consent. According to Denis Maslennikov, Senior Malware Researcher at Kaspersky Lab, an exact number of devices infected is not available at present, but the outbreak is currently regional. For now, only Russian Android users can actually lose money after installing the Trojan, but anyone can be infected. Android users were advised not to use the Android web browser until Google issues a security patch. The Android Security Team responded and developed a fix. Open Source Android two days later.

Google pulled 58 malicious apps from the Android Market, but not before the 58 apps were downloaded to around 260,000 devices. These apps were malicious applications in the Android Market which contained Trojans hidden in pirated versions of legitimate apps. The malware (called Droid Dream) exploited a bug which was present in versions of Android older than 2.2.2. Android device manufacturers and carriers work in tandem to distribute Android based updates and had not uniformly issued patches to their customers for the Droid Dream exploit, leaving users vulnerable.

PRIVACY

Android smart phones have the ability to report the location of Wi-Fi access points it encounters as phone users move around to build vast databases containing physical locations of millions of such access points. These databases form electronic maps to locate smart phones, allowing them to run apps like Foursquare and companies like Google to deliver location-based ads.

MARKETING

As of June 2011 Google said that 550,000 new Android devices were being activated every day—up from 400,000 per day two months earlier in May 2011, and more than 100 million devices have been activated. Android hit 300,000 activations per day back in December 2010. In July 14, 2011, Android has about 48% of the Smartphone market share.
As the present generation keep going changes to new things like the android is latest version of technology which can perform all the operation of system
There’s not a doubt in our minds that every Apple store will have lines out the door on the day the iPhone 5 launches. Those willing to camp out and battle the endless lines are those that are in it for the android tech products

REFERENCES

4. Asad, Taimur (28 April 2011). "Google Releases Android 3.0".