

An Android – A Novel Mobile Operating System: A Survey

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ABSTRACT

As the usage of smart phone is increasing as leaps and bounds, Cellular phones had a vital impact on the acceptance of this technology in the global market. Today only Reliance GIO 4G has more than 5.5 Crore users in a span of almost one year. Almost 4B to 7B people on the planet had access of smart phones. Smartphone devices like Samsung, OPPO, Micromax, Asus, Lenovo, Panasonic, Sony, Redmi, Vivo, Motorola, Intex, LG etc. are operated on Android operating system. Due to the security reason it is basically based on the Linux security System. Moreover it is able to embed various other applications software's in order to support Text, voice, video and also support to various internet resources through a simple link only.

Keywords: *Android, Mobile operating System, open- source system,*

INTRODUCTION

An Android is system software currently used in mobile devices, which includes an operating system, middleware and key applications. This operating system is typically based on a changed version of the Linux – kernel based architecture. As it is a open –source software , it helps in better analyzing, better understanding, , bug fixing and further improvements regarding new functionalities and, finally, porting to new hardware. [1]

On the other hand, its Linux kernel-based architecture model also adds the use of Linux to the mobile industry, allowing taking advantage of the knowledge and features offered by Linux. Both of these aspects make Android an appealing target to be used in other type of environments and embedded in other application software's as well.

The Android OS is an open source operating system primarily used in mobile devices. Written primarily in Java and based on the Linux operating system, it was initially developed by Android Inc. and was eventually purchased by Google in 2005.

Another aspect that is important to consider when using Android is its own Virtual Machine (VM) environment. Android applications are Java-based and this factor entails the use of a VM environment, with both its advantages and known problems. In computing, a solution stack is a set of software subsystems or components needed to deliver a fully functional solution, e.g. a product or service [2]. Middleware is computer software that connects software components or some people and their applications. Software that provides a link between separate software applications. Middleware is sometimes called plumbing because it connects two applications

and passes data between them. Middleware allows data contained in one database to be accessed through another.

II.BACKGROUND

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." [3]

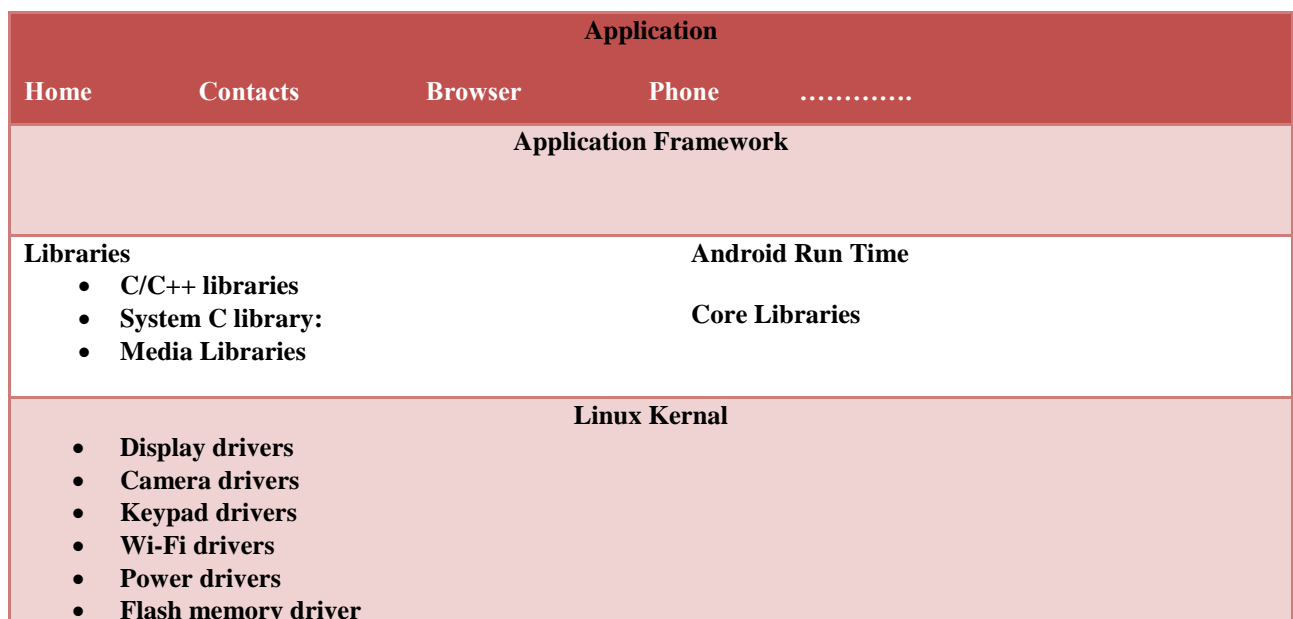
III.ARCHITECTURE OF ANDROID OPERATING SYSTEM

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.[4]

IV. APPLICATIONS

All applications are written using the Java programming language is used to write all applications in an Android Operating System. [5]

- Email client
- SMS program
- Calendar
- Maps
- Browser
- Contacts\



- Memory management

Figure 1.0 Architecture of Android Operating System

V. LIBRARIES

It includes:

- C/C++ libraries
 - System C library: A BSD-derived implementation of the standard C system library
- Media Libraries - the libraries support playback and recording of many popular audio and video formats, as well as static image files, including MPEG4, H.264, MP3, AAC, AMR, JPG, and PNG

VI. LINUX KERNEL

Android relies on Linux version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. The kernel also acts as an abstraction layer between the hardware and the rest of the software stack.

VII. APPLICATIONS

Medical application: physical sensor technology to provide a new type of application for human/computer interaction, one that can improve quality of life for people suffering from a variety of medical conditions. Android applications developed to improve the quality of life for accelerometers, GPS, camera, microphone, and other sensors provide a fundamentally new opportunity for early detection of AD. [6]

Fall detection: Injuries due to falls are among the leading causes of hospitalization in elderly persons, often resulting in a rapid decline in functionality and potentially, death. iFall is an alert system for fall detection using common commercially available electronic devices to both detect the fall and alert authorities.

Sight for the blind: Voice is a mobile application that can offer a form of vision to individuals that are completely blind. Voice utilizes a digital camera to capture a series of images which are converted into a sound field, providing an auditory representation of the image. This is achieved by translating each pixel of the image into a sound frequency.

Merits of Android OS based Phones:

Google Android is open source software.

- The ability of customize the Android platform due its nature of open system software
- One will be able to customize a mobile, right down to the screen.
- Features like weather details, opening screen and even the icons on the opening screen will be able to be customized.

Demerits of Android OS based Phones:

- Rejection of Google Android by carriers who charge a fee for some of the web based applications
- Risk of hacking as it is a open source software

VIII. CONCLUSION

Introduced the Android platform and the features of Android applications, gave a detailed description of Android application framework from the prospective of developers. Any simple application like any player, game, video player etc provides an overview in order to illustrate the basic working processes of Android application components. This research paper helps to guide and in understanding the operation mechanism of Android applications and to developing applications on Android platform.

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