A Report on Android-Based Mobile Phones: Performance, Price and Development

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1 INTRODUCTION

1.1 Android OS and Its Release

Android is an operating system built on Linux kernel and GNU software for mobile devices. The Android operating system mainly consists of source codes that are written in XML, C/C++, Java, HTML and BShell [1].

Above the Linux kernel of Android OS, a virtual machine and C/C++ libraries support an application framework which provides interfaces to software developers and on which applications can run. The Android OS is under the development by Google, it is not stable yet. A new version of the SDK releases almost every three month. According to the statistics ending on early August, 2010, 65.2% of the mobile phones that use android operating systems Android phones run 2.0/2.1/2.2 versions, the other 36% phones are running 1.5/1.6 versions [2].

1.2 Basic Requirements for Product Purchase

According to Chenguang's requirements of his Android application development project, we have summarized the following constraints for product purchase that the device:

- Should be installed with Android OS version 2.0 or higher, and,
- Should have bluetooth hardware, and,
- Should have WiFi support, and,
- [Optional] Relatively higher RAM.

2 A LIST OF PRODUCTS WITH PRICES AND SPECIFICATIONS

We investigate all feasible products that are currently available in Hong Kong market and take the lowest prices among three shops. Noting that the price could be lower around HKD100-HKD200 if we finally make an order.

Brand	Type	Price (HKD)	Platform	CPU	RAM (MB)	Bluetooth Version	WiFi
HTC	Wildfire	2690	2.1	528MHz	384	2.1	802.11 b/g
HTC	ARIA	3460	2.1	600MHz	384	2.1	802.11 b/g
HTC	DESIRE	4380	2.1	1GHz	576	2.1	802.11 b/g
SAMSUNG	I5800	2600	2.1	667MHz	158	2.1	802.11 b/g/n
MOTO	Milestone	3680	2.0	600MHz	256	2.1	802.11 b/g
MOTO	XT701	3380	2.0	600MHz	256	2.1	802.11 b/g
MOTO	XT720	3980	2.1	720MHz	256	2.1	802.11 b/g

TABLE 1
Specifications and prices of feasible mobile phone models with Android OS

From a developer's point of view, the author is lucky enough to have had touched upon android operating system source code in late 2007 before it releases [3], so he had a close relationship with the frontier android and its application developers. As far as he is concerned, at the beginning period there is only HTC devices that apply Android operating systems, so most developers are more familiar with them, and have accumulated more experiences on developing applications on HTC phones than other brands.

3 ALTERNATIVE OPTIONS AND RISKS

The Table 1 lists only products with Android OS version 2.0 and above. There are cheaper ones with lower versions like 1.5 and 1.6. The main difference between Android 2.0 with above and below Android 2.0 is the protocol version of Bluetooth: the former is with Bluetooth $v2.1$ and later is 2.0 which does support Bluetooth file exchange on Android mobile phones. Some hackers has developed particular methods that allow lower version Android to support Bluetooth file exchange, the author holds his doubt on the stability and reliability.

The products with lower versions can be upgraded to newer ones such as 2.0, 2.1 and 2.2 through community-built firmware which should need "rooting" the devices, *i.e.* get the root permission of the operating system. After such upgrade, a cell phone uses a non-official higher version of Android OS. However, all the "rooting" processes are with risks:

- A "rooted" mobile phone has a chance (though small) to be a brick, *i.e.*, cannot start forever.
- All cell phone manufactures declare that they do not provide customer services for a "rooted" mobile phone, or ones with customized firmware.
- The non-official upgrades are developed by enthusiasts in the open-source community. The features and functionalities may not be stable.
- Google had issued an article to remind that the customized firmware may violate copyright laws [4].

On the basis of above listed risks, the author did not list products with lower Android OS versions though they have competitive prices.

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