A Comparative Study of the Android and iPhone Operating Systems

COP 5611

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Presentation of Each System

Android

Development History

In June of 2003 Andy Rubin founded Android Inc. (Elgin, 2005) His goal "was to design a mobile hand-set platform open to any and all software designers." (Markoff, 2007) In July of 2005 Google purchased Android Inc. for an undisclosed sum of money. (Olsen, 2005) At Google Andy Rubin was named "Director of Mobile Platforms" (Markoff, 2007)

On November 5, 2007 the Open Handset Appliance is announced, along with the open source "Android platform" a "software stack" designed to "significantly lower the cost of developing and distributing mobile devices and services." (Open Handset Alliance, 2007) This Alliance is clearly headed by Google.

On October 21, 2008 Google and the Open Handset Alliance release the source code to the complete Android platform under the Apache license. According to Google Android Product Manager Erick Tseng this was designed to coincide with the October 22, 2008 release of the first "Google phone". The G1 released by T-Mobile. (Boulton, 2008)

Since the October 21st release of the Android platform (OS) there have been three major updates bringing us to version 2.1 in January of this year. (Android Developers, 2010a) Those three major updates have added a wide variety of features including: On-screen keyboard, Video recording, Stereo Bluetooth (Android Developers, April), VPN, Accessibility (Android Developers, 2009), Exchange Support, HTML5 Support (Android Developers, 2010b), etc. Google also believes there are at least 18 phones worldwide made by 8 or 9 manufactures that are using the Android OS. (Richtel, 2009)

Hardware

As of this writing the Nexus One is the newest phone to run the Android OS. The Nexus One uses Qualcomm's 1 GHz Snapdragon processor which also has a 600 MHz DSP and Quad-Band GSM/GPRS/Edge, UMTS, HSPA on board. Built in it has 4 GB of DDR ram and 4 GB of flash storage space, it also comes with a user replaceable 4 GB MicroSD Card, In addition to being a Quad-Band phone the Nexus One comes with a FM Transmitter/Receiver, Wi-Fi (A, B, G & N) and Bluetooth 2.1 + EDR, The screen is a 3.7 Inch OLED that runs at 480X800 and is multi touch, It has a built in 5 megapixel camera with LED flash, accelerometer, compass, GPS, Dual microphone for noise cancelation, External Speaker, Headphone Jack, 1400 mAh battery (iSuppli, 2010) (Galan) (Qualcomm) It appears that only two places have done tear downs of the Nexus One and posted them freely online. Neither of those tear downs contained any information about the bus speed of the snapdragon processor. I suspect that this is due to the snapdragon being a monolithic processor that has not yet released those specs.

Thread Management, Interrupts, Interprocess communication, System Calls

The Android OS has a rather sophisticated threading system that puts a lot of responsibility on the developer to build a thread safe application. By default applications including the UI are single threaded. This means that all "long running" tasks within an application must split off a background