Mobile Testing
ONLINE   PART 1

Created by Ivette Doss

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Why you need this class?

- This class is consolidation of real Internships/Jobs Interview Questions that were submitted by the Students of Portnov Computer School within 2011-2012 school year.

- This class is part of liveable QA Student Social Network established by Mikhail Portnov: Graduated Students shared their Interview's experiences with the current Students to help them successfully pass Internship or Job Interviews.

- Therefore, the Class will be always subject of change, reflection and adjustment of the new information from the Mobile Field.

Groups of Questions to be discuss:

1. Mobile OS/Platform Fundamental
2. How well you know Mobile Devices
3. Mobile/Software literacy
4. Specific of Mobile Testing
5. Mobile Testing tools
6. Security of Mobile Devices
7. The future Trends in Mobile World

Learning Objective Today: cover 17 questions

Section 1: Mobile OS/Platforms Fundamental –

17 questions

To use the presentation effectively:

Q **Interview Question**

The helpful online Resources
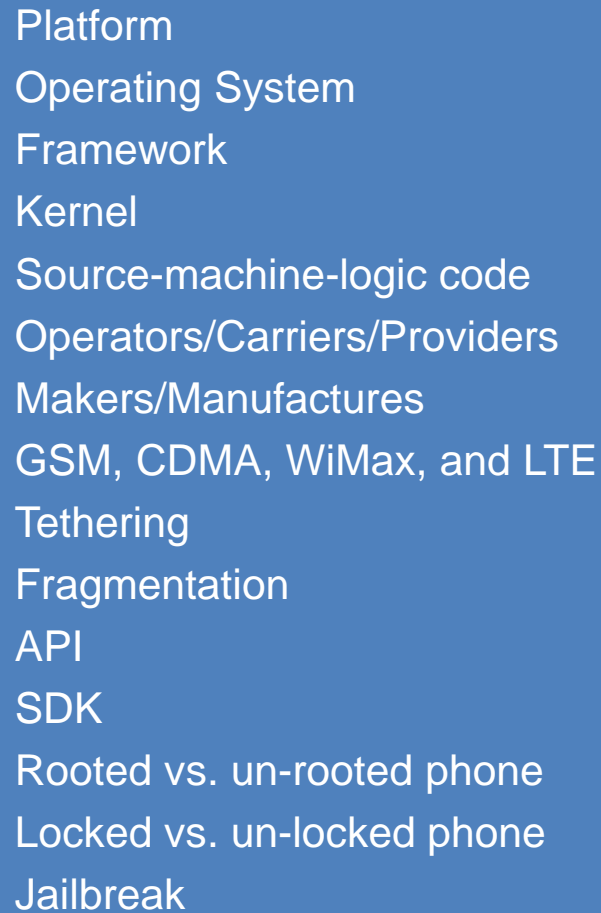
The information you should remember

U Last Minute Update

The information you need to find by yourself and learn

Definitions that you should know by now:

Platform

Operating System

Framework

Kernel

Source-machine-logic code

Operators/Carriers/Providers

Makers/Manufactures

GSM, CDMA, WiMax, and LTE

Tethering

Fragmentation

API

SDK

Rooted vs. un-rooted phone

Locked vs. un-locked phone

Jailbreak

Mobile OS/Platforms Fundamentals

Section 1

List of Interview Questions: Section 1

1. What mobile platforms you are familiar with?
2. What do you know about Android OS/Platform?
3. What is a most common Android Version?
4. A/B What are the latest Android/iOS versions?
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17 Questions

1. **What mobile platforms are you familiar with?**

Android

iOS

BlackBerry RIM

Windows Phone

Tizen Linux

Linux OS

BREW

Symbian OS

Palm webOS

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The Android History starts at October 22nd, 2008, when the T-Mobile G1 launched in the United States.
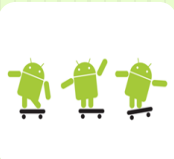
Android is a software stack for mobile devices that includes an operating system, middleware and key applications.
Android is software platform for mobile devices based on the Linux Operating System that developed by Google and the Open Handset Alliance (OHA).

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Applications
- Home
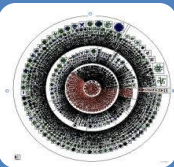- Contacts
- Browser
- Phone

Application Framework
- Package Manager
- Telephony Manager
- Content Providers
- Location System
- Notification System

Libraries and Android Runtime

Android Runtime consist:
- Core Libraries
- Dalvik Virtual Machine

ANDROID RUNTIME
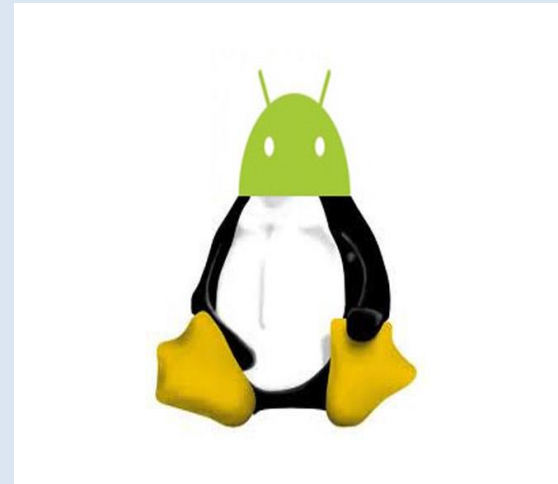
Core Liabraries

Dalvik Virtual Machine

Linux Kernel

Drivers Package

Power management

Hardware

Libraries:
Media SurfaceM FreeType
Open GL\   SSL SQLite
WebKit   SGL   libc

O S

http://www.mindcracker.com/Story/1076/architecture-of-android

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Cupcake
Android 1.5

04-2009

Donut
Android 1.6

09-2009

Eclair
Android 2.0/2.1

11-2009

Froyo
Android 2.2

05-2010

June 26, 2012

Gingerbread
Android 2.3

12-2010

Honeycomb
Android 3.0

02-2011

Ice Cream Sandwich
Android 4.0**?**

10-2011

Jelly Bean
Android 4.1

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Most common Android Version:

2.3.x Gingerbread	12-2010	64.0%

http://www.theverge.com/2011/12/7/2585779/android-history

Good to know: Upgrade concept

Android

- Only **specific Phones Models and Brands** will be upgraded.

- IF you are chosen one – be patient, soon or later your Phone will be upgraded via **FOTA** (firmware over the air) automatically.

- **Do it hard way**: follow your handset manufacturer and wireless carrier on Twitter. They will usually announce dates so you can be on the lookout and update manually.

- **Getting to the root of the matter**: "root" your phone and download a custom ROM of Android 4 once it becomes available.

http://www.roms4droid.com/

iPhone

- Apple provides updates to the iOS operating system, for the iPhone, iPad and iPod Touch, through **iTunes** and since iOS version 5.0 also through **firmware over the air** (FOTA).

- Simply Go to **Settings > General > Software Update**.

- **Since version 5.0**, a USB connection to iTunes is no longer needed to activate iOS devices; data synchronization happens automatically and wirelessly through Apple's new iCloud service.

http://www.androidauthority.com/android-4-ics-update-device-list-66785/
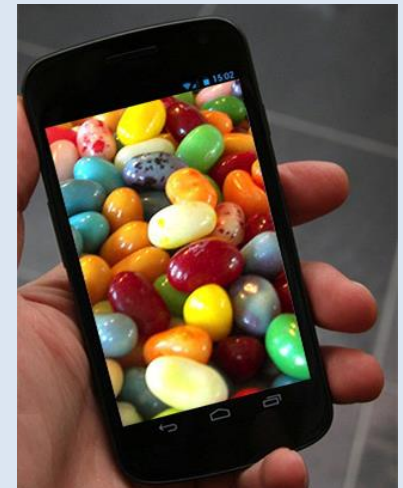
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4A. What is the Latest Android version?

JellyBean 4.1

- Project **Butter** has brought smoother and faster feeling user interface
- Improved notification center with expandable and actionable notifications
- Improved keyboard behavior with word prediction
- **Offline Voice** recognition and typing
- **Google Voice** search is more intelligent than ever
- **Google Now** adds automatic information feeds to your device (weather, traffic, sports, etc)
- **Bi-Directiona**l text and additional language support
- Truly high-resolution contact photos
- USB audio output and HDMI multichannel audio output

http://www.youtube.com/watch?v=afNRAOg5jUk

4B. What is the latest iOS version?

- The latest production version of iOS is **5.1.1** that currently run on upgraded iPhone 3GS, 4,4S, iPod Touch 4, iPad3, and Apple TV 3 (originally released March,2012)

- Specifically, for iPhone 4S the current version is 5.1.1 was released in May, 2012.

- **In June 2012, iOS 6 is released as a Beta version for Developers. It planned to be release for the end users on October 22, 2012 .**

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5A. What is the file extensions for Android?

.apk - application package file (APK) is the file format used to distribute and install application software and middleware onto Google's Android operating system.

.dex -Android programs are compiled into .dex *(Dalvik Executable) files*, which are in turn zipped into a single .apk file on the device.

5B. What is the iPhone file extensions?

ABC Player.ipa   Adobe Ideas 1.ipa

AT&T Navigator.ipa   BingMusic.ipa

- Apple Firmware files have an **.ipsw** extension
- The **.MDBACKUP** file type is primarily associated with 'IPhone' by Apple Inc.. An iTunes backup of the iPhone is stored in a backup folder in ~/Library/Application Support/MobileSync/Backup.
- Each subdirectory contains the backup from a different device. MDBACKUP files, found in the device directories, are property lists and are created in a compressed binary format.

An **.ipa** file is an iPhone application archive file.

- It is usually encrypted with Apple's FairPlay DRM technology.
- Each .ipa file is compressed with a binary for the ARM architecture and can only be installed on an iPhone, iPod Touch, or iPad.
- Files with the .ipa extension can be uncompressed by changing the extension to **.zip** and unzipping.
- **TIP: .ipa** files **cannot be installed on the iPhone Simulator** because they do not contain a binary for the x86 architecture.
- To run applications on the simulator, we need to open original project files using the **Xcode SDK**.

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.app extension – Good to know
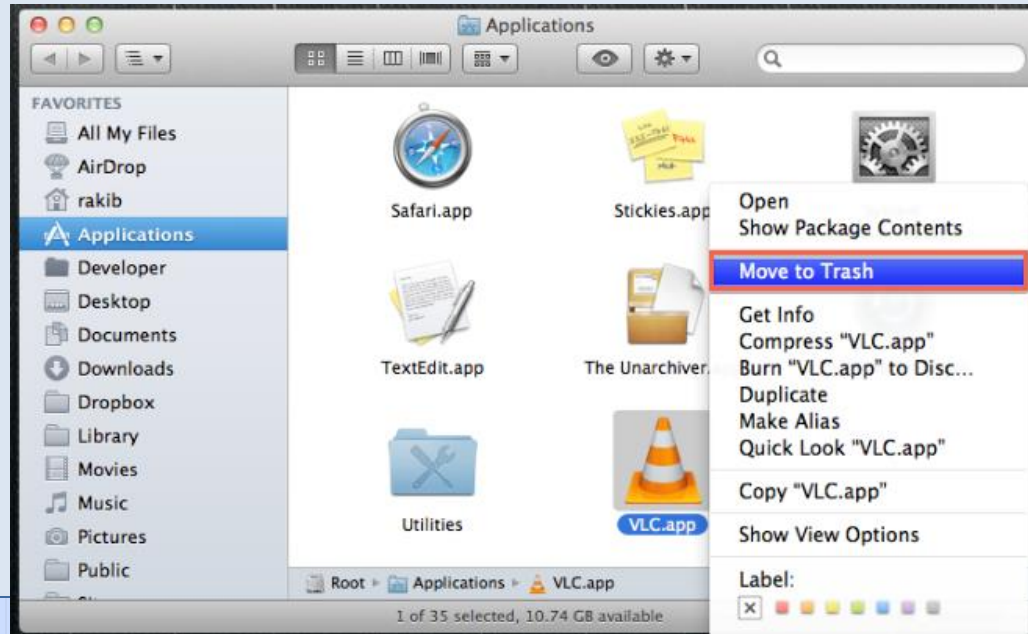
- **APP** is an abbreviation for application.
- The filename extension **.app** means application in Windows (via AppWave), iOS, Symbian OS, SkyOS, GNUstep and Mac OS X.
- For Mac OS X and GNUstep **.app** file is actually a folder containing binaries and supporting files.
- On Windows, AppWave supplies the support to run **.app** Windows binaries.
- **App** may also refer to a **lightweight application** tailored to a device's form factor and input-output interfaces (keypad, touch pad, remote control, display, etc).

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Modern Web Browser: WebKit

- **WebKit** is a **layout engine** designed to allow web browsers to render web pages.

- WebKit powers the Apple Safari and Google Chrome browsers.

- It is also used as **the basis** for the experimental browser included with the **Amazon Kindle** ebook reader, as well as the default browser in the **iOS, Android, BlackBerry Tablet OS and webOS** mobile operating systems.

- **The WebKit engine** provides a set of classes to display web content in windows, and implements browser features such as following links when clicked by the user, managing a back-forward list, and managing a history of pages recently visited.

- It is most popular Layout engine in the world (36% of Market Share).

http://en.wikipedia.org/wiki/Mobile_browser

http://www.webkit.org/

http://en.wikipedia.org/wiki/List_of_web_browsers#WebKit-based

6A. What **Android** Browsers do you know?

Google Chrome
June 28, 2012

Fennec (Mobile Firefox)

Opera

Opera Mini 7

SkyFire

xScope

Dolphin

Boat

Maxthon

OverSkreen

http://techhamlet.com/2012/06/best-browser-apps-android-device/

6B. What iPhone Browsers do you know?

Opera Mini

Safari

Dolphin

Private Web

Aquari

Wide Web

Atomic Web

Incognito

Chrome

iBrowse2

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7A. What Android <u>developing</u> Tools do you know?

1. Connect Bot
2. App Manager
3. Bar Code Scanner
4. WordPress for Android
5. Webmaster's HTML Editor Lite
6. JavaScript Reference
7. AndFTP
8. Joooid
9. HTML5 Reference
10. Color Pal

- Google provides the **Android Development Tools (ADT)** to develop Android applications with **Eclipse**.

- ADT is a set of components (plug-ins) which extend the Eclipse IDE with Android development capabilities.

- From Developer's perspective we should install **ADK** (Android Development Kit) to the PC and use **Java programming language** for development.

- For a lower level programs, *NDK* (Native Development Kit) in **C** language should be used.

http://www.gizmocrazed.com/2012/02/android-apps-web-developers/

7B. What iOS developing tools do you know?

Xcode 4
This is complete IDE toolset for creating Mac, iPhone, and iPad apps includes the Xcode IDE, performance analysis tools, iOS Simulator, and the latest Mac OS X and iOS SDKs

http://www.techotopia.com/index.php/The_iOS_4_Architecture_and_SDK_Frameworks
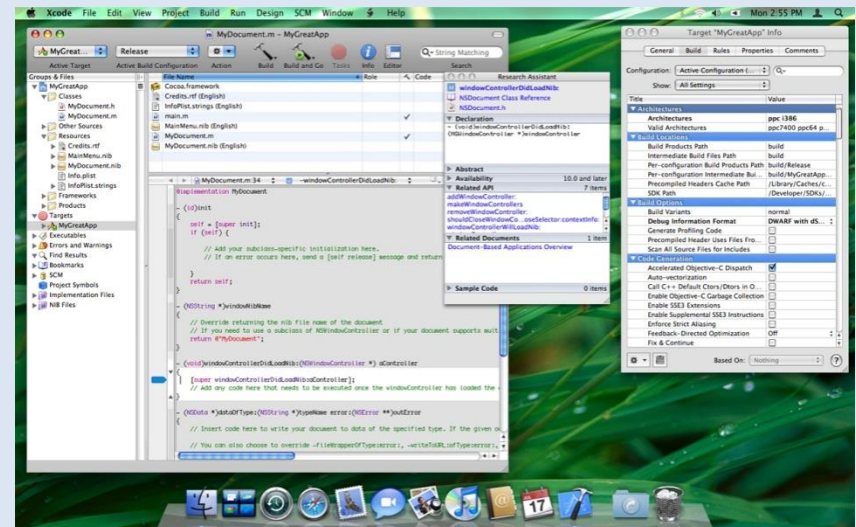
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8A. What Android's Testing Tools do you know?

- #1: Eclipse w/ADT
- #2: The SDK and AVD Manager
- #3: Android Debug Bridge
- #4: Dalvik Debug Monitor Server
- #5: The Android Emulator and Real Devices
- #6: LogCat
- #7: The Hierarchy Viewer
- #8: Draw 9-Patch
- #9: The Monkey Test Tools
- #10: ProGuard

http://www.developer.com/ws/android/development-tools/10-must-have-android-tools-for-developers.html

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8B. What iPhone Testing Tools do you know?

- **UIAutomation**
- **FoneMonkey5** (Gorilla Logic)
- **Frank**
- **Keep It Functional** (or KIF) on GitHub
- **iPhoney**
- **iPad Peek**
- **Telerik Test Studio**

http://www.mobileapptesting.com/the-best-tools-for-mobile-app-testing/2011/08/

http://www.drdobbs.com/joltawards/jolt-awards-the-best-testing-tools/232901286?pgno=5
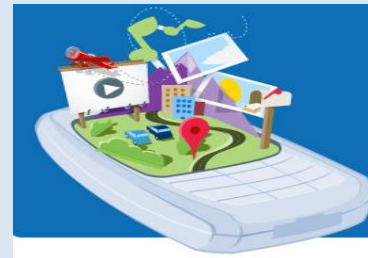
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9. What do you know about SDK?

- A **software development kit** (**SDK** or "**devkit**") is typically a set of software development tools that allows for the creation of applications for a certain software package, software framework, hardware platform, computer system, video game console, operating system, or similar platform.

- Typically an **SDK includes one or more APIs, programming tools, and documentation.**

iPhone SDK:
http://www.morgana.ca/freedev.html

Android SDK:
http://developer.android.com/training/basics/firstapp/index.html

Windows Phone SDK:
http://msdn.microsoft.com/en-us/library/ff402523(v=vs.92).aspx

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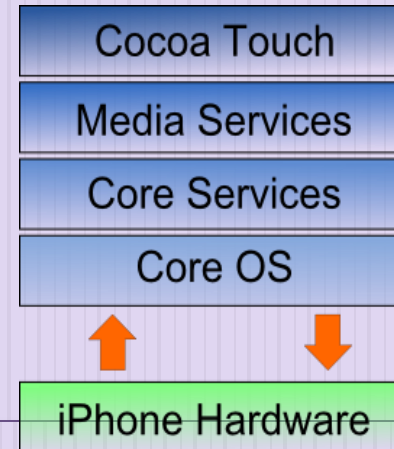12. Describe Android vs. iPhone devices

Operating System: iOS

iOS contains four abstractions layers, each of which provides programming frameworks for the development of applications that run on top of the underlying hardware.

Cocoa Touch
Media Services
Core Services
Core OS

⬆ ⬇

iPhone Hardware

- iOS is derived from **Mac OS X** that shares with the **Darwin foundation**; and therefore, it is a **Unix** operating system.
- Primary Apple development language is **Objective-C**; although, it is possible, with some translation work, to port Java code into iPhone.

http://www.techotopia.com/index.php/The_iOS_4_Architecture_and_SDK_Frameworks

http://iosframeworks.com/

- The Core OS Layer sits directly on top of the device hardware.
- The layer provides a variety of services including low level networking, access to external accessories and the usual fundamental operating system services such as memory management, file system handling and threads.

| Network Protocols	Compression	Sandboxes
Block Translator	Ports	Exception Handler
Block Interpreter	Data types	Native Functions
Memory Manager		

UNIX

iOS: Core Services

The iOS 4 Core Services layer, built on the previous, Core OS, provides the foundation for the bundle of the frameworks:

- 1 Address Book framework
- 2 CF Network Framework
- 3 Core Data Framework
- 4 Core Foundation Framework
- 5 Core Media Framework
- 6 Core Telephony Framework
- 7 EventKit Framework
- 8 Foundation Framework
- 9 Core Location Framework
- 10 Mobile Core Services Framework
- 11 Store Kit Framework
- 12 SQLite library
- 13 System Configuration Framework
- 14 Quick Look Framework

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iOS: Media
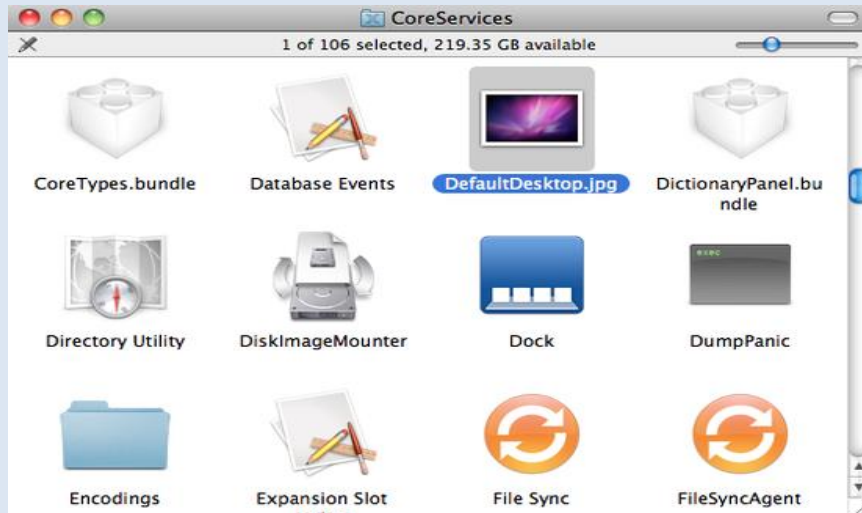
- 1 iOS Graphics and Video Support
  - 1.1 Core Video Framework
  - 1.2 Core Text Framework
  - 1.3 Image I/O Framework
  - 1.4 Assets Library Framework
  - 1.5 Core Graphics Framework
  - 1.6 Quartz Core Framework
  - 1.7 OpenGL ES framework
- 2 iOS Audio Support
  - 2.1 AV Foundation framework
  - 2.2 Core Audio Framework
  - 2.3 Open Audio Library (OpenAL)
  - 2.4 Media Player framework
  - 2.5 Core Midi Framework

- The role of the Media layer is to provide iOS with audio, video, animation and graphics capabilities.
- As the others layers that composed the iOS stack, the Media layer consist a number of frameworks that may be utilized when developing iPhone apps.

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iOS: Cocoa Touch

- The Cocoa Touch layer sits at the top of the iOS stack and contains the frameworks that are most commonly used by iPhone application developers.

- Cocoa Touch is primarily written in Objective-C, is based on the standard Mac OS X Cocoa API (as found on Apple desktop and laptop computers) and has been extended and modified to meet the needs of mobile technology.

- The Cocoa Touch layer provides the following frameworks for iPhone app development:

iOS
Cocoa Touch

- 1 UIKit Framework
- 2 Map Kit Framework
- 3 Push Notification Service
- 4 Message UI Framework
- 5 Address Book UI Framework
- 6 Game Kit Framework
- 7 iAd Framework
- 8 Event Kit UI Framework

- Apple's iOS did not have an official name until the release of the iPhone software development kit (iPhone SDK) on March 6, 2008.
- When introduced, it was named iPhone OS. It was renamed to iOS in June 2010, after iPhone was no longer the only device to run iOS.

Version	First Release	Originally create/highest upgrade
3.1.3	February, 2010	iPhone (original); iPod Touch (1st generation)
4.2.1	November, 2010	iPhone 3G; iPod Touch (2nd generation)
5.0	October, 2011	iPhone 4S
5.1	March, 2012	iPad (3rd generation)
5.1.1	May, 2012	iPod Touch (4th generation); iPhone 4S
	June, 2012	Apple TV (3rd generation)
6.0 In Progress	June 25, 2012 Beta Version **October 2012**	UPGRADE FOR: iPhone 3GS, iPhone 4, iPhone 4S, iPod Touch 4, iPad 2, iPad 3; Apple TV 3

http://en.wikipedia.org/wiki/IOS_version_history

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Source

Security

Platform

OS Architecture

Carriers

Life Battery

Web Browsers

iOS

ANDROID
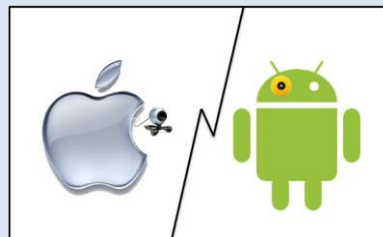
Comparison Table: Android vs. iOS

Category	Google Android	Apple iOS
License	Open Source	Close - Proprietary
Company	Open Handset Alliance/Google	Apple
OS Platform	Linux	OS X – Unix (Darwin)
Programming Language	Java	Objective-C
Virtual Machine	Dalvik VM	None
Package Manager	APK	iTunes
Carriers	AT&T, Verizon, T-Mobile, Sprint, MetroPCS, Virgin, 88% out of 180 US carriers	Apple Store, AT&T, Verizon, Sprint, Alaska Communications, + another 6 carriers
Life Battery	Moderate	Advance high
Browser Engine	WebKit: Fennec, Opera Mini 7, Dolphin, **Chrome**	WebKit: Safari, Opera Mini 7, Atomic Web, **Chrome**

User Interface

Users Controls

Application Store

Hardware

OS Openness

Hardware & OS lifecycle

Features & Services

iPhone

Android

Comparison Android vs. iPhone 2

| Category	ANDROID	iPHONE	Winner
User Interface	Java Application Framework Customatization	Cocoa Touch BeginnerUser friendly	
Navigation/User Controls	Widgets	Classic Touch	Android
Application Store	PlayStore 500,000 Apps	AppStore (iStore – iOS 6) 650,000 Apps	Apple
Hardware	Diversity create hard/software compatibility problems	Compatible among Apple product	Apple
OS openness	Freedom in managing apps and phone parts	Control and warranty limits over apps and phone parts	Android
Hardware & OS lifecycle	Variety of Makers on an "as-I-feel-like-it" basis, low-upgradable OS	Consistency in new iPhone forthcoming every year, high-upgradable OS	Apple

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Features	Android	iPhone	Winner
WorldPhone	Both GSM and CDMA radios	Both GSM & CDMA networks, GLONASS (Russian GPS System) and Siri (natural language voice control system) automated voice assistant	Apple
Voice Commands	Voice Actions (2.2) Better voice-guided set	Siri (4S) Better social implementation	50/50
Camera	Panoramic view, Buddy Photo Share, Burst Mode, Face Zoom	Ability to crop and rotate images, red-eye reduction, auto enhancement, and grid lines - solid basic	Android
Notifications	Badges and notification alerts, system-wide notifications, Widgets,	Badges and notification alerts, Notifications center, banner-style alerts	50/50

http://www.youtube.com/watch?v=2OSjyjjJkvM

http://www.msnbc.msn.com/id/38382217/ns/technology_and_science-wireless/t/app-showdown-android-vs-iphone/

Features	Android	iPhone	Winner
Internet Browsing	Chrome bookmarks sync, Save of the full Web-page for later browsing, an incognito mode - interactive	Tabbed browsing for the iPad and iPad 2, private browsing, Safari Reader and Reading List - solid	Android
Cloud Storage	Apps, music, photos – free service	iTunes Match, Photo Stream, iWork, iLife - $25/year fee	50/50
Extra Features	Face Unlock, People app, integrated screenshot,	Newsstand, integrated Twitter, Reminders app, Find My iPhone, AirPlay (with Apple TV), AirPrint	50/50
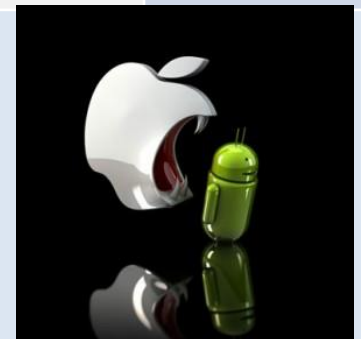
TO be continue: NEXT TIME

1. What phone do you use right now?
2. What devices do you use for testing?
3. What Android devices do you used for Testing?
4. A/B How familiar you are with Apple/Android devices?
5. Do you know how to use iPhone?
6. How do you know what a current Mobile Device version is?
7. Tell me about different uses of HOME button on iPhone
8. How to see and kill the last process on iPhone?
9. A/B Show me how to activate "Flight" Mode on Android/iPhone
10. Do you know how to go through Android?
11. Smartphone vs. Feature phone
12. What is the about Smartphone that change everything?
13. Understand Mobile Application Structure – 6 questions

19 Questions

THANK YOU, Folks, for listening…