

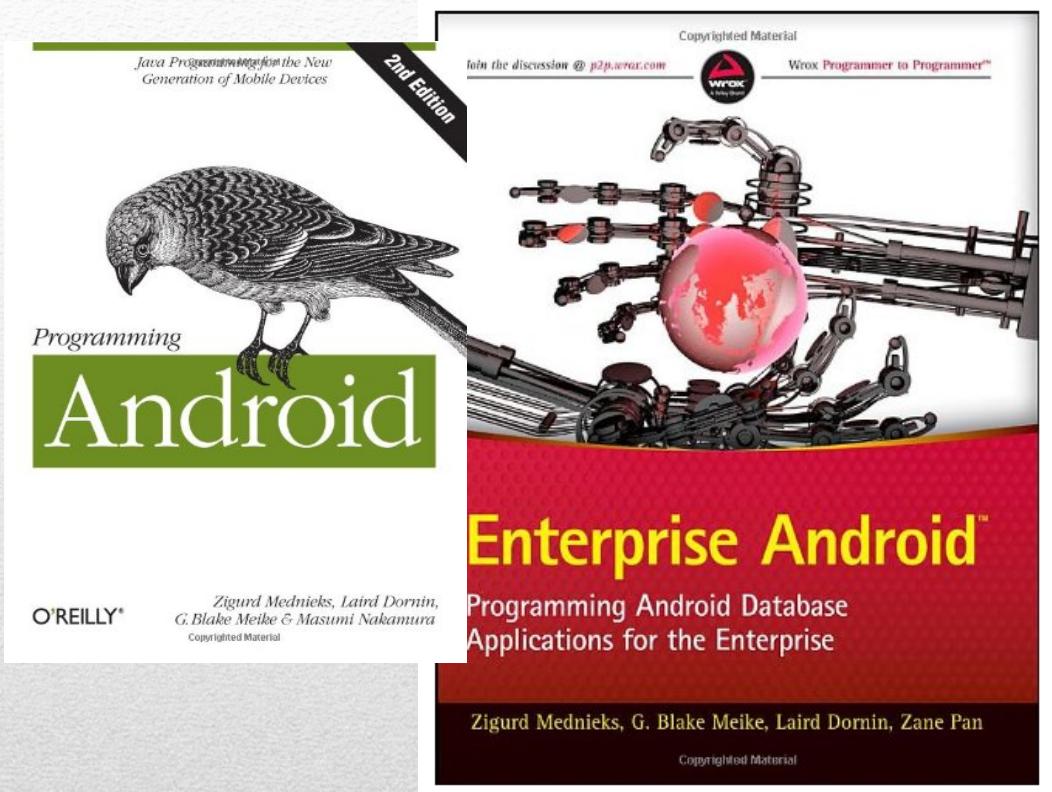
Android

Course Planner App

<http://github.com/rdornin/android>

- Lets students build U/Is to the course catalog and shop for courses
- JSON API by Scott Kearney behind PIN
- Stores unique token to ensure user can only add courses to their own planner, requires PIN login
- List of all courses is over 100k, with over 5000 courses, including the Kenyan language “Elementary Gikuyu”

What is Course Planner



Books & Inspiration

- Causing big changes in how we store data and build apps
- Like 1999 with low bandwidth but, now, also combined with inconsistent internet connection and bandwidth
- Use Restful APIs so the app is LESS dependent on internet
- Use simple database queries—SQL lite is simplified SQL
 - Not great with transactions and concurrencies
- Use less content, simpler interfaces
- See book Enterprise Android

Evolving Architecture

- Can have better access to other apps on phone to send via text
- Text messages are one of most dominant communication tools
- Can store data locally for instant access when offline
- Can share data with other apps—SMS or Local Notes
- IPhone is big at US colleges, but Android is over 25% at HBS
- Its Java and Linux so developing is an easy shift
 - Command line access to phone
- Easy access to SQL Lite database

Why Android: Pros

- Its Java, so development is slower then responsive web sites
 - Takes much more to build a comparable app in Android then in something like JQUERY mobile, and Android only works on one platform
- Because internet connections are not guaranteed, basically requires running processing in background and storing data in a database
- Security issues because it is LINUX

Android Cons

Top Smartphone Operating Systems, Shipments, and Market Share, 2013 Q3 (Units in Millions)

Operating System	2Q13 Unit Shipments	2Q13 Market Share	2Q12 Unit Shipments	2Q12 Market Share	Year-over-Year Change
Android	187.4	79.3%	108	69.1%	73.5%
iOS	31.2	13.2%	26	16.6%	20.0%
Windows Phone	8.7	3.7%	4.9	3.1%	77.6%
BlackBerry OS	6.8	2.9%	7.7	4.9%	-11.7%
Linux	1.8	0.8%	2.8	1.8%	-35.7%
Symbian	0.5	0.2%	6.5	4.2%	-92.3%
Others	N/A	0.0%	0.3	0.2%	-100.0%
Total	236.4	100.0%	156.2	100.0%	51.3%

Source: IDC Worldwide Mobile Phone Tracker, August 7, 2013

Huge & Growing Market Share

Most Popular Platforms

Legend:

1. Windows 7
2. Macintosh
3. Windows XP
4. iPhone
5. iPad
6. Windows 8
7. Windows NT
8. Android
9. Windows Vista
10. Linux
- All others

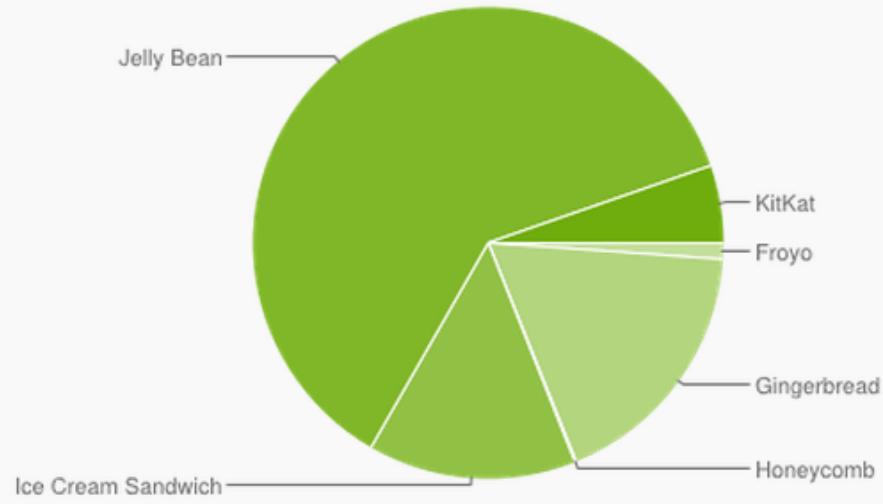
	Platform	Views	Visits
1.	Windows 7	2,550,210 (51.8%)	679,973 (48.7%)
2.	Macintosh	890,816 (18.1%)	249,588 (17.9%)
3.	Windows XP	271,259 (5.5%)	93,838 (6.7%)
4.	iPhone	242,620 (4.9%)	79,936 (5.7%)
5.	iPad	243,402 (4.9%)	73,698 (5.3%)
6.	Windows 8	228,950 (4.6%)	71,357 (5.1%)
7.	Windows NT	199,668 (4.1%)	55,553 (4.0%)
8.	Android	156,943 (3.2%)	49,490 (3.5%)
9.	Windows Vista	69,982 (1.4%)	20,937 (1.5%)
10.	Linux	19,881 (0.4%)	7,956 (0.6%)
Subtotal for rows 1 - 10		4,873,731 (98.9%)	1,382,326 (98.9%)

**Android is 25% of Mobile
Browser at one HU school**

- Emulator's can mimic any device out there
- Test on as many mobile devices back to gingerbread SDK
 - My demo app does not work on gingerbread
- Give emulator 2gb of memory, don't run with lots of other apps open
- Try using a many sizes for emulators, tablet, smart phone, etc. to see you how your app looks and runs
- Use the Android Studio Debugger to save time while running the app

Testing

Version	Codename	API	Distribution
2.2	Froyo	8	1.1%
2.3.3 - 2.3.7	Gingerbread	10	17.8%
3.2	Honeycomb	13	0.1%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	14.3%
4.1.x	Jelly Bean	16	34.4%
4.2.x		17	18.1%
4.3		18	8.9%
4.4	KitKat	19	5.3%



SDK Statistics

- Consider trying some of the new IDEs that create both IOS and Android from the same source code:
<https://www.redfoundry.com/seatwave-mobile-sdk/>

Lessons Learned
