Writing Labs for an Android Class

James Reed
Brief Intro...

- Mobile Development Class – Winter '09
  - Learn to write Android Applications
  - You'll be doing my labs

- What's novel about this?
  - Not much...
My Contributions

- **End goal:**
  - Get students to write publishable apps

- A set of detailed laboratory exercises
  - Tutorials
  - Tour guide of the Android Platform
  - Engaging sample programs
Android Platform:

- Majority of Research
Android Platform: Applications

- All basic interaction
- Written in Java
- Pre-installed apps
- Write and/or Install others
Android Platform: Application Framework

- All Core API's available
- Full UI Library
- Simplified Component re-use scheme
- Heavy reliance on Resource data
- Application Management
Android Platform: C/C++ Libraries

- Used by System
- Exposed through Application Framework
- Can write your own low level code:
  - high performance
  - bridged by JNI
  - rarely needed...
Android Platform: Runtime Environment

- Provide Core Java Functionality
- DVM:
  - register based
  - reduced memory footprint
  - runs Dalvik byte-code
- Each Application has:
  - separate process space
  - separate DVM's
Android Platform: Linux Kernel

- Ver. 2.6
- Security
- Memory Mgmt.
- Process Mgmt.
- Device Specific Drivers
- Hardware Abstraction
Android Platform: Application Framework

- Purpose of the class
- All Labs based on Application Framework
- 3 Core Application Components:
  - Activities
  - Services
  - Broadcast Receivers
Application Framework: Activity Manager

- Stack based
- Activities = Screen your working with
- Full Activity Life Cycle
Application Framework: Activity Manager

- Visible Lifetime
  - onStart()
  - onStop()
Application Framework: Activity Manager

- Active/Foreground Lifetime
- OnResume()
- onPause()
  - Save State in case killed
  - State Loaded in onCreate()
Application Framework: Intents

- Components started through intent messages
- Android resolves intent
- Finds best choice
Application Framework: Intents

- Tell Android to use a component of another application