Lifecycle Management

Android

Mobile and Ubiquitous Games
ICS 163
Donald J. Patterson
Callback

Unlike traditional Java, Android does not use a “main” function
It uses a sophisticated set of callbacks
Each step of the callback corresponds to a step in the lifecycle of the app
This is so that the phone can shut your app down when important things happen, like a phone calls arriving
An implementation of the Activity class contains the callbacks
“Activity” maps to “Observer”
Activity

Class

Callback


Callback


Your Activity

ConcreateObserverA
+notify()

ConcreateObserverB
+notify()
Callback

[Diagram of Observer pattern and Android OS]

Key loops

Entire Lifetime

onCreate() - onDestroy()
• Key loops
• Visible Lifetime
  • onStart() - onStop()
Key loops
- Foreground Lifetime
  - onResume() - onPause()
Activity Lifecycle

- `onPause()` may be followed by kill

http://developer.android.com/training/basics/activity-lifecycle/starting.html
Why do you care? So that your app ...

- Does not crash if the user receives a phone call or switches to another app while using your app.
- Does not consume valuable system resources when the user is not actively using it.
- Does not lose the user's progress if they leave your app and return to it at a later time.
- Does not crash or lose the user's progress when the screen rotates between landscape and portrait orientation.
Working with Location

- Fused Location
  - Sensor fusion from a variety of different location sources
  - Asking for location based on high level concerns rather than technologies

- Geofencing
  - Setting up geographic triggers

- Activity Recognition

http://developer.android.com/training/basics/activity-lifecycle/starting.html
## Working with Location

### Android SDK Manager

**SDK Path:** /Users/djp3/Downloads/adt-bundle-mac-x86_64-20140321/sdk

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**Show:** Updates/New, Installed, Obsolete
**Select:** New or Updates

**Sort by:** API level, Repository

**Done loading packages.**
Working with Location
Working with Location

File
New
Open File...
Close
Close All
Save
Save As...
Save All
Revert
Move...
Rename...
Refresh
Convert Line Delimiters To
Print...
Switch Workspace
Restart
Import...
Export...
Properties

1. activity_hello_world.xml [HelloWorld]
2. fragment_hello_world.xml [HelloWorld]
3. HelloWorld.java [HelloWorld/src/...]

Import
Select

Select an import source:

- General
- Android
- Existing Android Code Into Workspace
  - C/C++
  - Git
  - Install
  - Run/Debug
  - Tear
  - XML

Next >  Finish
Working with Location
Working with Location
Working with Location
Working with Location
Working with Location

• Install the Google Play SDK

• Import the Google Play Lib into your workspace

• Add it to your project as an Android Library

• Restart Eclipse

http://developer.android.com/google/play-services/setup.html#Install
Google Play SDK

• INSTALL IT SDK MANAGER

• IMPORT IT INTO WORKSPACE

• INCLUDE IT IN YOUR BUILD PROPERTIES AS A PROJECT

http://developer.android.com/google/play-services/setup.html#Install
Working with Location

- Add Permissions for your app to use location

http://developer.android.com/google/play-services/setup.html#Install
Working with Location

http://developer.android.com/google/play-services/setup.html#Install

Add Permissions for your app to use location
Working with Location
Working with Location
Setting up your environment